

博士論文

論文題目 Potential of Local Initiatives for Agricultural
Development in Africa: Researches on Livelihood
and Natural Resource Management of the Central
Nigerian Rural Community

(アフリカの農業開発におけるローカル・
イニシアティヴの可能性：ナイジェリア中部の
農村地域コミュニティにおける生業及び
自然資源管理に関する研究)

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List of Abbreviation and Local terms

General terminologies:

LG: Local Government

LGA: Local Government Area

Islamic terminologies:

Alkali: Islamic judge

Emir: a title of high office used throughout the Muslim world, meaning “general” or “commander”. *Bida Emir* is the highest level traditional chief in the Bida Emirate

Jihad: holy war of the Muslim

Nupe terminologies:

Amala: paste and porridge made out of yam flour

Bata: lowland fields

Cenkafa: rice

Communti: community work

Dife: irrigated field

Dugba: small farming hoe

Duku: sweet potato

Dzanka: land rent

Dzoro: a traditional institution of labor exchange

Echi: yams

Edzu: Bambara groundnut

Efako: family labor

Egbe: collective labor

Egun: the partition of the estate of the death persons

Emagi: roselle

Emi: house

Ena gbarufuzi: young men association

Enuna: monetized version of collective labor

Etsunu: head farmer of a village, leader of the young men association

Etsu Enunuchizhi: farmer leader

Etsu Nupe: king of Nupe

Etsu Yenkpa: Village Area (ward) head of the traditional administration

Eyi: generic of cereals, indicates both millet and sorghum

Eyikpan: sorghum
Ezo: cowpea
Fadama: lowland or marshland of inland valley bottom and river floodplain
Gada: cutlass
Gari: cassava meal
Gbako: old
Guzia: groundnut
Hakimi: District Head of the traditional administration
Immas: Islamic priest
Katamba: compound
Kpanmi: okra
Kpansanako: sugar cane
Kpayi: millet
Lali: henna
Lenzhe: sickle for farming
Liman: Islamic priest
Mallam: Islamic scholar
Mayakinu: head farmer of a village, leader of the young men association
Mayi: millet
Nusazi: elderly man
Paragi: esugi melon
Rogo: cassava
Shaba: the second person in command, deputy
Sobo: traditional sweet drink made out of roselle flower
Tatase: bell pepper
Tsunfiannia: spinach
Tunga: slave village
Tuta: flag which signified the official recognition as a leader and accepted feudal chief of the Fulani Empire
Woro: new
Yaka: red pepper
Yengi: eggplant
Zitsu: village head
Zuku: large farming hoe

Fulani terminologies:

Badde: household, patrilineal family of pastoral Fulani
Dabunda: the season of Harmattan that lasts from late December to February

Dikko: the highest level traditional chief among the pastoral Fulani. *Dikko Bida* is the traditional leader of all pastoral Fulani clans in the Bida Emirate

Dungu: peak of rainy season from mid-July to October

Fulbe bororo: nomadic Fulani who maintain a closed system

Fulbe ladde: Fulani residing in the wild, bush Fulani

Fulbe na'i: Fulani sustaining traditional cattle husbandry lifestyle, cow Fulani

Fulbe siire: Fulani urban dwellers, town Fulani

Fulbe wuro: semi-settled or settled transhumant Fulani having permanent homestead

Fulfulde: Fulani language

Hawaare: meeting in early morning in which decisions on daily grazing activity are made

Hoggo: cattle enclosure

Kauten hore bolwen hala hodde: meeting of pastoral Fulani where the seasonal migration and camp location are discussed

Moudo wuro: head of a pastoral Fulani group

Sarkin Fulani: pastoral Fulani leader

Setto: early rainy season which often lasts from April to mid-June

Setto luggini: short dry season in the middle of the rainy season, usually lasts from mid-June to mid-July

Sheedu: the hot dry season from late February to early April

Wuro: camp of pastoral Fulani

Yande: early dry season from November to December

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Summary

Getting agriculture growing is considered the most important solutions to the intractable problem of African impoverishment. Nevertheless, despite of the continuous intervention of international institutions, the African agricultural sector constantly suffers from stagnation. The generalized perspective on African agriculture is negative: the sector is held back by smallholder farmers who are low in productivity and lack of incentive to improve, and the environmental resources are over-exploited due to the rudimentary production methods. The conventional diagnoses to the stagnated African agriculture have been focusing on the provision of material inputs, the liberalization of market, and the experts-led intervention strategies. Improved technologies and intervention strategies have been transferred from the top down to the farmers. These conventional approaches, however, underplay the potential of local initiatives and the gradual successes achieved by smallholder farmers. Contrary to the bias that views African farmers as changeless, they are indeed capable of innovating and generating indigenous initiatives to improve their farming system, natural resources management and community livelihood. Local agricultural initiatives are adaptive to the local agro-ecological, socio-economic and cultural conditions. In this study, substantial anthropological fieldwork has been carried out to examine the local agricultural initiatives developed by the rural Nupe farmers and the pastoral Fulani. Multiple methods have been adopted to obtain materials for this study, mainly between 2004 and 2009, which include participant observation, unstructured and semi-structured interviews, questionnaire, diary recording by informants and land surveying.

Economic anthropology concepts on community economy and peasant economy are reviewed in chapter one. In the economic anthropology perspective, the economy consists of both the market and the community realms. The African peasant economy is dominated by the community realm, in which individual is embedded in a web of social dependencies and obligations; materials goods and resources are exchanged through a complex of social relationships and associations. The foundation of a community is the “base”, which consists of the shared commons, such as ecological resources, indigenous knowledge and social networks. Between communities, reciprocity is the tactical act to establish relationship through including another community as the user of the base. African peasant economy is not yet totally captured by capitalism and state control. Social and economic behaviors of African peasants are guided by the principles of

subsistence orientation and reciprocity. In the Nigerian peasant society, there is not yet a strong evidence of agrarian capitalism. Traditional institutions governing labour arrangement and natural resource allocation still persist, which means Nigerian peasants still have some control over their factor of production: land and labour.

The rural communities studied in this dissertation are the Nupe farmers and the pastoral Fulani residing in central Nigeria. Chapter two provides a description of the research site – the Cis-Kaduna region of the Bida Emirate in Central Nigeria. The research area belongs to the Guinea savanna zone with the rainy season lasting from April to October and the dry season from November to March. It is surrounded by multiple river channels with the special topography that contains of both uplands and lowlands within a close distance. The conquest of the old Nupe kingdom by the Fulani *jihad* and the establishment of the Bida Emirate in the 19th century have led to the emergence of the current dual public administrations and the multi-layered land ownership system.

Chapter three presents an ethnographic record on the rural livelihood and farming system of the Nupe farmers. The research area was originally a sparsely-populated zone. Majority of villages were founded by migrants who were former slaves and dependents of the conquerors in the late 19th to early 20th century. Farming for Nupe peasants is primarily for self-subsistence. By cultivating diverse crops and cultivars which adapt to the varying hydrological and meteorological environments, Nupe farmers ensure sufficient food supply throughout the year. Millet and sorghum are by far the most extensively cultivated cereals grains on uplands. Rice is the most dominant crop in the lowland marshy areas. A case study of a Nupe village shows that farm plots of Nupe farmers are small in size and scattered. Mature farmers with well-established social connections tend to acquire lands from multiple landlords in surrounding villages for safeguarding sufficient lands. Traditional institution of community labor remains as an important source of labor particularly for elderly farmers.

Chapter four reveals the first case of local agricultural initiative. Marshy areas were marginally used in the research site about half a century ago. With the higher demand for cash, lowland farming of rice and off-season crops has gradually become an important source of income for Nupe farmers. Although without any external assistance, Nupe farmers have been able to mobilize local resources and gradually expand indigenous irrigation and scale of cash crops farming on lowlands. Irrigated off-season cultivation has expanded further in the 1990s when the Hausa merchants began to purchase from the Nupe farmers. Traditional land institutions have prevented lowland plots accumulation. The system surveyed is cultivated by farmers from multiple villages,

each have only a small area of plot. Informal collective effort of irrigation management began after the drought in mid-1980s. Irrigation management effectiveness is highly influenced by the involvement of landlords. There is no clear water right definition, but in time of water shortage, water is rotated and shared. Water scramble occasionally happens between top-enders and tail-enders, but through social obligation top-enders have to release water to tail-enders for an agreed period of time whenever there is a request.

Chapter five illustrates the second case of local agricultural initiative. The chapter explores how the Nupe farmers have incorporated yams, a high valued exotic crop, into their upland farming system and dietary habit. When ethnographer visited the Nupe in the 1930s, Nupe farmers was still unfamiliar with yams and their farming system was predominately grain-based. Through the spontaneous effort of farmers to pick up the early maturing cultivars, yam production has become possible in the Guinea savanna zone. Following the increasing demand for yams since the late 1980s, the middle-belt region of Nigeria has gradually replaced the southern states and become the new center of yam production of Africa. The study proves that the Nupe farmers have already taken the initiative to incorporate this high-valued crop into their farming system as a cash crop. Yams are already commonly cultivated, particularly for upland villages which possess no lowlands within their village boundary. Although in small-scale and with a short cultivation history, multiple varieties, and intercropping and mixed cropping practices of yams are recorded. Yams do not play any role in the traditional ritual of the Nupe, but with its high market value and palatable taste it is increasingly being used as gifts for important people and occasion.

Chapter six examines the reciprocal natural resource use relationship between the Nupe farmers and the pastoral Fulani. Following the establishment of the Bida Emirate in the 19th century, pastoral Fulani gradually began to settle in the Nupe region for long-term stay. Pastoral Fulani is a minority in the Bida Emirate and they maintain the nomadic cattle husbandry lifestyle. Under the traditional land ownership, pastoral Fulani in the Bida Emirate do not have guaranteed access to land. They secure their resources entitlement through enacting reciprocity, the “corralling contract”, with the Nupe farmers. Corralling contract refers to the reciprocal arrangement to maintain livestock on croplands for a specified time period. In return to the cattle manure, farmers often offer cash and gifts to herders and allow livestock to graze on uncultivated and harvested fields. Fieldwork findings suggest that pastoral Fulani groups in the research site have different strategies to maintain social ties with Nupe villages through the adoption of corralling contract. While some groups can well manipulate the relationships with various villages to their advantages, some groups prefer a more stable

situation and just get the minimum advantages out of the contract. Pastoral groups with higher social status and a good track record may enjoy a higher bargaining power when negotiating for the return for corralling contract. Even so, the social relationship with the Nupe farmers is always given weight when deciding which village to settle. They are willing to help needy farmers and they intentionally rotate among different farmers for avoiding the risk of conflict. Farmers commonly combine collective efforts to host a pastoral group and then share the manured fields. Land sharing and pastoral camp rotation enable multiple Nupe farmers to have access to manured fields.

Chapter seven presents the third case of local agricultural initiative, which is the indigenous herding practice of the pastoral Fulani in the Bida Emirate. With the failure of the government to provide grazing reserves for the nation's pastoralists, majority of Nigerian pastoralists rely on the customary arrangement with agricultural community for accessing to grazing resources. In the research site pastoral Fulani rely on the tolerance and acceptance of the greater Nupe community for accessing to uncultivated and harvested lands for pastures. Pastoral Fulani studied divide a year into six seasons, and they constantly adjust five elements in their herding system: herding ranges, camp location, grazing duration, herd size and herder number. Pastoral Fulani adjust the herding ranges and camp location for utilizing various types of pasture available in different season. When pasture availability is low, they extend the grazing duration and divide the cattle herd into a number of smaller sub-herds so that they can reach to every small pitch of remaining pastures. The harvesting period requires more cautions because farm encroachment by cattle can easily break the social tie with the Nupe community. They use more herders and divide the cattle herd into smaller sub-herds for careful grazing. By flexibly adjusting these elements in accordance to subsequent changes in natural and human environments, pastoral Fulani are able to utilize the limited resources available in every time and space niche.

The studies on the Nupe farmers and the pastoral Fulani in central Nigeria demonstrate how rural communities have developed local agricultural initiatives to diversify their production system and to secure their natural resources need. African peasants are often assumed to be irresponsive to new innovation and reluctant to change, but through the evidences obtained by the detailed fieldwork, they are proven to be capable of generating indigenous solutions in response to gradual changes in the natural and human environments. These local initiatives emerge out of the community base of the rural people. They reflect the indigenous knowledge that is created through years of careful observations and experience of interactions between humans and nature. As indicated in the resources allocation and the reciprocal arrangement of the Nupe farmers and the pastoral Fulani, local agricultural innovations are operating without threatening

the subsistence right of local people and the reciprocal relationships between communities. These disciplines are especially important to Nigerian peasants as they rarely get appropriate external help. At the end of the dissertation two policy recommendations are proposed. First, scientific research and extension provision should seek out changes already taking place within the peasant farming sector and build upon the best of the local initiatives. Second, development policy makers should take into account the diversity, flexibility and personal natures that characterized African community economy when deciding intervention strategies.

Chapter One

Introduction

1.1. Challenges for Africa

Sub-Saharan Africa¹ is a region where human security is the most fragile. It is the region that associates with the most challenges for development: poverty, food insecurity, environmental degradation, civil conflict, terrorism, political instability, erratic weather, HIV/AIDS and many other problems. Despite a wealth of natural resources, majority of African nations typically fall toward the bottom of any list measuring per capita national income and human development. In the 1990 world development report, it was documented that poverty populations have greatly been alleviated in East Asia. South Asia and Latin America and the Caribbean also went on the bright side and had made steady improvement. Sub-Saharan Africa, on the contrary, was the only region that went further into the negative direction: with a recessed economic growth but an uncontrollable population explosion, poverty was projected to be an increasingly rigorous problem for Africa (World Bank, 1990). Two decades have passed after the report, the projection remains to be accurate. Africa still has the highest number of people living in extreme poverty (UNDP, 2012). According to the latest human development report, the human development index (HDI) of sub-Saharan Africa is just 0.463, indicating it the worst performing region in the world (table 1-1). It scores the worst in all the dimensions of human development – its inhabitants have the shortest life expectancy at birth, shortest mean years of schooling, and lowest gross national income per capita (UNDP, 2011). It also has the highest infant mortality rate compared with all other regions (DESA, 2011). On the current list of least developed countries (LDCs) of the United Nations, 31 out of the total of 48 LDC countries are in Africa. Judging from these easily accessible publicized figures, Africa no doubt gets shoved to the poorest and weakest segment of the international community.

¹ Sub-Saharan Africa is a geographical term used to describe the area of the African continent which lies south of the Sahara or those African countries which are fully or partially located south of the Sahara. It contrasts with North Africa, which is part of the Arab world. The Sub-Saharan region is often referred to as Black Africa, in reference to its numerous black populations. In this dissertation, the discussion about Africa refers to sub-Saharan Africa.

Table 1-1. Human Development Index of 2011 by regions.

	Human Development Index (HDI) (value)	Life expectancy at birth (years)	Mean years of schooling (years)	Gross national income (GNI) per capita (constant 2005 PP \$1)
Arab States	0.641	70.5	5.9	8,554
East Asia and the Pacific	0.671	72.4	7.2	6,466
Europe and Central Asia	0.751	71.3	9.7	12,004
Latin America and the Caribbean	0.731	74.4	7.8	10,119
South Asia	0.548	65.9	4.6	3,435
<i>Sub-Saharan Africa</i>	<i>0.463</i>	<i>54.4</i>	<i>4.5</i>	<i>1,966</i>
World	0.682	69.8	7.4	10,082

Source: Human Development Report 2011. UNDP.

The current misfortunes of African countries are often charged to be intimately related to the stagnation of agriculture development and low productivity of the smallholding farmers. Agriculture² is the primary occupation of at least 70% of population in the region. It is the primary source of food and the only sustaining means for 90% of the rural population (UNECA, 2007). Getting agriculture moving is thus inevitably considered the most essential solution to the intractable problem of African poverty. However, many African countries have not yet met the requirements for a successful agricultural revolution, and factor productivity in African agriculture seriously lags behind the rest of the world. During the era of “green revolution” in the 1960s and 1970s, farmers in Southeast and South Asia achieved great success in rapidly enhancing the productivity of their agriculture, which brought about great changes in rural societies of these regions (Hirano, 2002). The situation of Africa is completely different. The green revolution has never succeeded in taking root in African countries, despite of the continuous interventions made by international institutions and donor countries. Many believe that the slow growing agricultural sector has led to the present, incomparably severe stagnation of rural Africa. It is the only continent where

² Agriculture is the cultivation of animals, plants, fungi, and other life forms for food, fiber, and other products used to sustain life. The discussion about agriculture in this chapter includes, but not limits to, production of crops and livestock. Both the Nupe farmers and the pastoral Fulani that we are studying in this thesis are producers of the agriculture sector.

agricultural production per capita has been decreasing in the last few decades (Sasson, 2012:10). While other regions of the developing world have seen increases in agricultural production per capita, Africa has seen a decline by 15% between 1969 and 2004 (FAOSTAT data cited by Wiggins, 2005). Another study shows that agricultural production per capita in Africa has fell by 5% between 1980 and 2001, while for other developing countries as a whole it has increased by 40% (Practical Action/PELUM, 2005:10). Throughout the continent, domestic food supply is failing to keep up with the fast population growth. Most African countries were food independent in the 1960s, but in the early 2000s, 25% of staple food cereals were imported (Graaff, 2011:195). Although a few recent studies have shown some lights of agricultural productivity recovery in Africa, much of the productivity growth has really been just catching up to previous levels of productivity (Block, 1995; Fulginiti et al, 2004).

1.2. Challenges of agriculture development for Nigeria

Nigeria is the giant of Sub-Saharan Africa in terms of its population (about 140 million estimates in the 2006 census count), natural resources, potential for development and its role in leadership in the West African sub-continent and African Union. Nigeria has a total land area of 98.3 million hectares, of which 71.2 million hectares are cultivable. Nigeria has a highly diversified agro-ecological condition, which make possible the production of a wide range of agricultural products. As a British colony from 1914 to 1960, Nigeria was used as a production base for agricultural export crops such as cocoa, cashew, rubber, kolanut, oil palm, cotton, among others. The exploitation of Nigerian agricultural potentials to feed British food and supply raw materials for agro-allied industries led to the early development of the country's agricultural sector. Agriculture was the core of Nigeria's national economy and foreign earnings in the late 1950s and early independence years between 1960s and 1970s. In the 1950s and 1960s, agriculture production grew at 2.5% per annum and accounted for 60-70% of total exports, despite of the reliance of peasant farmers on traditional tools and indigenous farming methods (Daramola et al, 2009). In those days, Nigerian farmers had two separate types of farms; one for cash crops (mainly plantation) and the other for stable crops. The production practices in the plantation

were more intensive thereby making it more productive than farm for staple food. Yet the small staple crop farms were still able to feed the nation sufficiency. Nevertheless agriculture production of Nigeria began to stagnate since the 1970s. Real agriculture output per capita over the period of 1970-1978 fell by 1.5% per annum, and food import grew by 700%. Per capita food production in 1981 was 18% below that of 1967-1970 (Hunt and D'Silva, 1981). In 1981-82, the import bill for food was US\$3 billion, roughly 17% of the total caloric supply (Watts and Bassett, 1986). Nigeria was self-sufficient in foodstuffs in the 1970s, but since the 1980s it has fallen into the largest food importer on the African continent.

Two reasons are often given for the insufficiency of domestic food production that commenced from mid-1970s: the increasing population which became high above the food production growth rate; and the swift shift of attention of the government from agriculture to oil in the wake of 1970s. The major cause of the decline in agricultural exports was the oil price shocks of 1973-74 and 1979, which resulted in large inflows of foreign exchange and neglect of the agricultural sectors. The consequence of this phenomenon was that, owing to the reduced competitiveness of agriculture, Nigeria began to import some of those agriculture products it formerly exported and other food crops that it had been self-sufficient in. For example, between 1970 and 1982, Nigeria lost over 96.6% of her exports in nominal terms. Domestic food production also declined substantially, causing the food import bill to attain a high of about \$4 billion in 1982. The astronomical increasing in imports was financed by oil revenues, which ensured positive current account balances in 1979 and 1980. By 1986, the situation had reached crisis stage, dramatizing the ineffectiveness of the policy of industrialization through import substitution (Daramola et al, 2008; Okueye, 2002).

Agriculture production of Nigeria began to pick up slightly during the 1990s mainly by acreage expansion of peasant farmers. Since 2000, agricultural growth has averaged 5.6 percent per year despite of the excessively low public spending (Daramola et al, 2008). Less than 2 percent of total federal expenditure was allotted to agriculture between 2001 and 2005, which was far under proportionate to the sector's importance to the national economy and far behind international standards (IFPRI, 2008). We can therefore imagine from this fact that the contribution to the pick-up of agriculture production in Nigeria is most probably made by the efforts of peasant farmers instead of

governmental investment. Nigeria is contributing the most to the improved performance of the agriculture sector of Africa in recent years (Pratt and Yu, 2008). However the country is still far away from being able to feed its rapidly increasing population. According to recent information, an average of US\$ 157 billion of food is still being imported annually, meaning Nigeria is one of the largest food importers in the world³.

1.3. Diagnoses of the agriculture stagnation of Africa

The puzzle of why is African agriculture stagnating is not new. Many have commented on the failures of an African “green revolution”, and many explanations have been suggested. Scoones et al (2005) point out that there are mainly three responses to the question: technical fixes, market and institutional fixes, and policy fixes. The most common diagnosis of the problems of African agriculture focuses on input constraints (ibid). Under the conventional production function modeling, the straightforward solutions are to provide more inputs, such as dams and irrigation schemes, improved seed varieties, subsidies fertilizer, microcredit, and extension and training. The technical fixes perspective has been dominating the center of agricultural support programs for decades and has produced desired outputs in many cases (Meinzen-Dick et al, 2004). But in Africa, the history of technical interventions is littered with discouraging and well-documented failures. Africa did not replicate the green revolution of Asia, and it did not progress through the same stages of development that Europe followed in past centuries (Cowan and Shenton, 1996). Technologies are often assumed to be neutral and that their benefits will somehow be realized, yet the reality is that technologies can result in different impacts and diverse political, social and environmental consequences under different settings. Africa is immensely diverse in geographical, agro-ecological, historical, political and cultural terms. Despite the richness of studies on the social dimensions of African agrarian settings (Peters, 2004; Pottier, 1999; Guyer, 1997; Nyerges, 1997; Berry, 1993), they have had relatively little impact on mainstream policy debates about Africa. Supported by mainstream institutions such as the World Bank and CGIAR (Consultative Group for International Agricultural Research), policy debates have been dominated by

³ According to a report of a Nigerian newspaper, *This Day*, dated 28th September, 2011.

agricultural scientists and technologists since the 1960s (Richards, 1985; Scoones et al, 2005). These experts have advocated input-focused intervention strategies, by addressing supply side constraints largely based on farm-level production function models. However, apart from overlooking the socio-political and institutional processes affecting outcomes, these approaches may also have difficulty to incorporate the broader patterns and longer term trends, such as climate and social changes, which affect the livelihoods of farmers and impinge on the farming input choices and output scenarios.

The second diagnosis of the problems of African agriculture focuses on market and institutional fixes. From the 1980s and 1990s, a uniform view dominated donor thinking about agriculture in Africa. Promoted aggressively by the international financial institutions, Washington Consensus policies stressed on “getting the state out” and “getting prices right”. These ideas translated into policies of market liberation and removal of input subsidies (Scoones et al, 2005). Agricultural reforms based on market liberation thinking were implemented across Africa (Ponte, 2002). The consequences of the reforms on rural livelihoods have been highly variable. Some places and export crops have enjoyed production and income gains, for example the horticulture of Kenya and cocoa of West Africa (Barrientos et al, 2005). However, the livelihoods of most African farmers have been worse off after agricultural liberation than before. Poorer farmers have lost the support once offered by parastatal marketing boards and government research and extension systems, but have rarely gained new support, markets or production opportunities (Devereux et al, 2005; White et al, 2005; Cromwell and Chintedza, 2005). The consequence of the market fix approach has been increased impoverishment for many, and growing inequalities between those who have gained and those who have been marginalized.

The third diagnosis stresses on policy fixes. African agricultural development policy has been dominated by technical experts and manipulated by political elites for the interests of international donors. In the 1960s, agricultural policy was led by a modernization perspective with technology and state-led planning. From the 1970s, the green revolution in Asia was iconic and widely seen as a model of Africa. High-yielding varieties, fertilizers and irrigation were believed to be the panaceas for African agricultural development. Farming system research flourished in the late 1970s and

early 1980s for adaptive research on technologies, and recommendations were delivered inefficiently through exclusively state-run extension (Collinson, 2000). Much of the investment in agricultural research and extension service went unraveled during the structural adjustment era of the 1980s and 1990s. After that African governments were in lack of capacity even in basic agricultural research and support. Many African farmers have not seen a government researcher or extension worker for years (Chema et al, 2003; Friis-Hansen, 2000). The Millennium Development Goals (MDGs) emerged in 2000 as a new policy architecture to provide a framework within which new ambitious targets of poverty reduction and human development were set. Nevertheless, Fall and Niang (2005) point out that participation of the poor in new poverty reduction strategies has been limited or tokenistic, and that cutbacks associated with structural adjustment reforms have undermined institutional capacity to design and implement effective strategies. Many poverty reduction strategies have failed to offer innovative approaches to agricultural support, because policy makers slipped back to the old expert-led decision making. Scoones et al (2005) argue for the need to shift focus of African agricultural development from technical policy content to an approach that brings political process into the front, so that policy can be influenced in favor of pro-poor outcomes.

1.4. The micro-macro gap in research on African agriculture

The generalized diagnoses of the agriculture stagnation of Africa, however, often undermine important stories of success, specially the gradual improvement initiated by peasant farmers. In spite of the typical negative storyline about African agriculture, many researchers, especially those from anthropology background, have been skeptical about the conventional analyses generated based mainly on secondary data released by African governments and international institutions. Commenting on the limit of existing research on African agriculture, Shimada (2007) and Ikeno (2010) point out that there is a “micro-macro gap”⁴ between the generalized analyses based on secondary data and the location specific analyses based on detailed field research. While the “macro” data

⁴ The idea of “micro-macro gap” of African agriculture research was also presented by Goran Hyden (1969:30). In his early work which analyzed the regional politics of northwest Tanzania, Hyden commented that the attempt to bridge the “micro-macro gap” was rarely seen in the field of social science.

of African country and the whole Sub-Saharan African region persistently present the pessimistic picture of severe food security threat, “micro” findings from ethnographical research often show the successful coping strategy of farmers and local community. In the optimistic story, African farmers and local communities are capable of flexibly adapt to economic, political, social and ecological changes and threats, by coping strategies such as mutual assistance, migrant labour, gathering of wild plants, hunting of wild animals, and so on. Ikeno (2010) asserts that after years of false promise of the government, African farmers have largely lost their trust and have given up depending on governmental induced development. They have developed their own survival strategy based on customary institutions and local practices.

The reliability of secondary data of African countries has long aroused strong suspicion. Having worked with material from the rural tropical world for decades, much of it collected at first hand in West Africa, Hill (1984; 1986) strongly provokes analysts of generalized diagnoses for basing their theoretical work on unreliable data and western-biased assumptions. In her view, misleading official statistics are often handled uncritically and the significance of innate rural inequality is consistently being ignored. It is not uncommon to find African countries keep publishing the same data year after year, or they simply process an unreliable old data by multiplying it with a casually decided growth rate (Blench, 1999). Data released by international institutions may also be subject to doubt as their data sources often come directly from African countries. Richards (1983) points out that the complexity of cultivation practices of African peasants poses special problems of quantification. Any farming systems survey requires meticulous records, and problems in labour, resources and logistical are enormous. Besides, scientists trained in the western countries are often unfamiliar with the unique ecological conditions and constraints of Africa.

In case of aggregated agricultural production of African countries, official statistics are often derived only from a few selected staple crops, which hardly cover a representable proportion of the whole crops that African peasant farmers usually plant. Data analysis methods are often formulated based on cereal crop cultivation practices of developed countries. Unlike cereal crops which are harvested once at a certain seasonal period, African farmers largely depend on tuber crops and tree crops, such as yams, cassava, plantain, banana and cocoyam, which are harvested at time of need throughout

a year. Data collection for these African crops is technically difficult and different analytical method ought to be developed peculiarly for them (Shimada, 2007). While parts of Africa are indeed disadvantaged by unfavorable natural, geographic and political conditions, the assumption of the generalized macro diagnoses that African farmers are incapable of producing sufficient food to feed themselves may not be totally true to every community. Intervention based on policy options generated only based on macro analyses may overlook important local ecological and social constraints and undermine the possibility of local initiatives. Imposing changes on rural African community basing on generalized approaches without knowing people's actual life may cause adverse consequences to local people (Suehara, 2009). A complete assessment of the interlocking sets of constraints of agricultural development of Africa should not be limited to the generalized macro analyses, but also be supplemented by location specific micro analyses that closely examine the diversity and variety of local contexts.

1.5. Local initiatives in agriculture development

In the mainstream discussion of agricultural development of Africa, little attention has been paid to the potential of local initiative of peasant farmers. Food production by smallholders tends to be assumed as “traditional”, and therefore “timeless” and “changeless”. But indeed, many of the most successful innovations in agricultural production in Africa have indigenous roots (Richards, 1985; Chambers et al, 1989). From time immemorial, farmers have not waited for the creation of research institutes before improving their farming system through innovation and local initiatives. When farmers are faced with problems that threaten their survival, they get courage and capacity to experiment and innovate and in so devising new solutions. Plough and domestication of plants and animals were innovation of farmers that invented agriculture date back over ten thousand years (O'Neil, 1995). The major nineteenth century production expansion in West Africa on groundnut, oil palm and cocoa was depended almost entirely on the indigenous initiatives of smallholder farmers (Berry, 1975; Crowder, 1962; Hill, 1963; Hogendorn, 1978). According to Richards (1985), a number of important exotic planting materials and techniques were indeed brought in by indigenous farmers. Cocoa was introduced to Ghana by migrant returning home from

Fernando Po, and Yoruba freed slaves returning to Lagos from Brazil introduced the technique for making the type of cassava meal known as *gari*. The latter was one of the most important innovations in African food-producing techniques in the nineteenth century, since it permitted the widespread cultivation of high-yielding “bitter” varieties of cassava, hitherto unfit for human consumption because of a high content of hydrocyanic acid (Agboola, 1968). Throughout the centuries, out of their inner urgings, African farmers have devised, developed, adopted and adapted ingenious technological ways and means of ensuring food security and economic welfare for their extensive households (O’Neil, 1995, Chinkhuntha, 2004).

Local innovation in agriculture is the process whereby farmers or other natural resource users develop new technologies or ways of doing things, without support from external entity. Local innovations make use of local resources. They are site-appropriate and address specific constraints, challenges or opportunities perceived at a local level. Local innovation grows primarily out of indigenous knowledge but can be stimulated also by ideas that local people have heard about or seen elsewhere (Wettasinha et al, 2008). Scott (1998) uses an ancient Greek concept, “*metis*”, to name indigenous knowledge and practical skill. *Metis* represents a wide array of practical skills and acquired intelligence in responding to a constantly changing natural and human environment. In Scott’s view, local farmers always have a large body of practical knowledge that assists them in making highly informed decisions about how to respond to environmental change and how to improve the yield and quality of their crops.

There are many examples of local initiative devised by farmers without outside help, for instance, improved crop varieties through careful selection of seed, rain water harvesting from roads and soil conservation measure (Reij and Water-Bayer, 2001; Mutunga and Critchley, 2002; Chinkhuntha, 2004). Indigenous traditional irrigation in Tanzania and Iran (Goldsmith and Kingsnorth, 1998), local knowledge on weather forecasting (Kihupi et al, 2003), biological control in soybean (O’Neil, 1995), production of new pesticide concoctions (Minja, 2003), use of different plants and roots for soil fertility improvement and cure for different animal and human ailments (Wickama and Mowa, 2001) are some of the documented farmers innovations. Crop rotation practices that involve a rotational and mixed cropping pattern of cereals, legumes, tubers and vegetables result in the availability of a wide variety of food crops.

They also reduce farmers' dependence on credit and external input supply (Altieri and Merrick, 1988). Intercropping as an indigenous practice reduces the risks and uncertainties due to fluctuations in market prices (Rajasekaran et al, 1991).

Indigenous innovations have been used for ages by local communities in the use and management of natural resources. Until very recently, conservationists and policymakers accord little credibility to indigenous resource management practices. This is often because many situations where a "Tragedy of the Commons" (Hardin, 1968) has resulted in overuse of resources are incorrectly viewed as communal resource systems, instead of being correctly viewed as situations of *de facto* open access (Berkes et al, 1989; Feeny et al, 1990). Recent research on indigenous natural resource management systems indicates that many of them are sophisticated and complex, reflecting generations of careful observations of the natural and physical environment. In the Amazonian region, indigenous natural resource management systems are ecologically sustainable and, at the same time, generate adequate level of income (Lovejoy, 1989).

Indigenous pasture management practices have important implications for soil and water conservation as well as for the continuous supply of cattle fodder. According to Barrow (1987), Pokot and Turkana pastoralists in the dry region of northern Kenya have developed rotational grazing patterns for cattle. Stock are grazed in the lower plains during the wet season and gradually moved into the wetter, higher hills in the dry season. Substantial areas of land use also are reserved for grazing in times of stress. This strategy helps to optimize fodder production and protect reserved areas for further use. The Turkana pastoralists also manage and conserve areas of woodland along the main watercourse. Niamir (1990) conducts an in-depth study among the pastoralists and agropastoralists of the arid and semi-arid regions of Africa. The study includes Zaghwa of Sudan, Tonga of Zambia, Fulani of Mauritania and Senegal, and Twareg of Niger. Though local knowledge systems of these pastoralists are highly heterogeneous, she observes four common features in their pasture management practices. Firstly, mobility is adapted by all pastoralists. The degree of mobility increases or decreases depending on the availability of land and the number of animals. Secondly, pastoral groups have many different and intricate forms of pastoral rotation. These rotations can be in the forms of seasonal transhumance, frequency of movements, length of stay in the same

pasture and rate of return to the same pasture. Thirdly, the pastoralists have developed a precise and holistic system of monitoring the productivity and conditions of range lands. Finally, pastoralists use a wide variety of range land improvement techniques such as water development, shrub clearing with goats, and selective lopping and bush firing. All these local innovations clearly play a significant role in the improvement of the rural communities and will continue to do so by evolution and adjustment to ecological and social changes.

1.6. Innovation and community heritage

In *Business Cycles* (1939), Schumpeter defines innovation as “the setting up of a new production function” that covers “the case of a new commodity, as well as those of a new form of organization such as merger, of the opening up of new markets, and so on.” Innovation in Schumpeter’s view consists of making “new combinations” that give rise to lower costs of production for the often newly established firms that use them. Economic development and transformation is an “evolutionary process” that is driven by the innovations and investments that the entrepreneurs make in anticipation of higher profits. This process of “creative destruction” revolutionizes the economic structure from within, “incessantly destroying the old one, incessantly creating a new one” (1943: 83). In Schumpeter’s vision this innovation-driven development is “spontaneous and discontinuous change ... which forever alters and displaces the equilibrium state previously existing” (1983:64). Barnett’s (1953) argument on innovation and diffusion is in line with that of Schumpeter. For Barnett, innovations are ideas or technologies which are continually adapted as they are adopted, and represent sequential socio-cultural change. He states, “when an innovation takes place, there is an intimate linkage or fusion of two or more elements that not have been previously joined in just this fashion, so that the result is a qualitatively distinct whole” (1953:181). Innovation is socio-culturally defined and stimulated, and thus innovation is essentially an overt act of socio-cultural creation. For reasons either materials or belief systems, each and every culture is necessarily and fundamentally different. Therefore, innovation which can be considered rational in one socio-cultural environment would not necessarily be considered rational in another.

Elaborating on Schumpeter's concept, Gudeman (2001: 110-120) emphasizes that innovations do not take place in a vacuum, but on the contrary, have to "emerge within a heritage that they revise", since the innovator is embedded in a communal context. The base of community is the heritage of knowledge and skills. It includes parts of the material world as well as accumulations gained through productive use of resources. To Gudeman, innovations consist mainly of learning by doing, trial and error, and adjusting and accommodation. Individual innovators depend on a community heritage, such as inherited knowledge and other information sources, for devising new ideas for value creation. Producers group is also a source of innovation through communal learning and learning-by-doing. Group members constantly innovate through adjusting and adapting to materials and one another. Finally, community supports innovation through extension of base across the boundaries. Through the sharing of information with another community, the knowledge base expands and quickens local innovation creation process. Because innovations often occur in series as one stimulates another, the sharing of knowledge will in turn benefit everyone, including the first innovator.

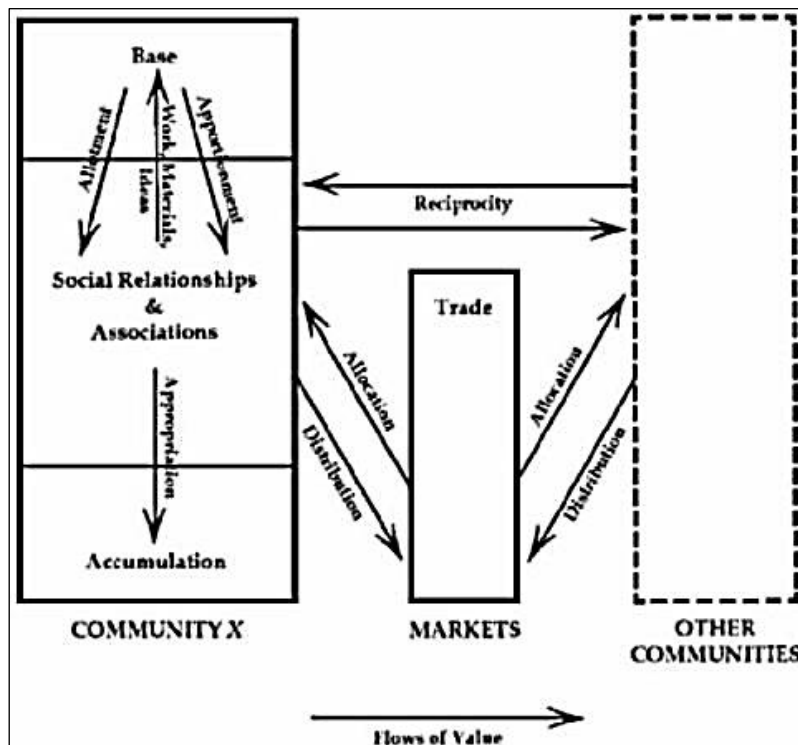
Local innovations in agriculture development rely largely on the indigenous knowledge processed by the local community. Indigenous knowledge is the information base for a community (Merton, 1957, [1942]). It is created through years of careful observations and experience of interactions between humans and the nature (Gadzirayi et al, 2006). It forms the basis for local-level decision making and guides local community members' use of land and natural resources. It is inherited, sustained and evolved by local community members as means to meet their needs for food, shelter, health, spirituality, and other activities. It is embedded in community practices, institutions, relationships and rituals (Warren et al, 1995). Indigenous knowledge is usually adapted and specific to local ecological conditions and to community members' social and economic situations and cultural beliefs. It is dynamic and continually evolves in response to changing ecological, economic, and sociopolitical circumstances. When changes occur, indigenous knowledge alters as they are continually produced and reproduced by internal creativity, experimentation and through contact with external systems (Behera and Nath, 2005). The unique characteristics of the African peasant economy set the socio-economic conditions of local community and guide the economic behaviors of smallholder farmers. The economic norms and moral principles are embedded in the indigenous knowledge system of local community. They set guides for

local innovation creation, and they influence the choice and content of the local agricultural development initiative adopted by local community.

1.7. Community realm of economy

The economy as domains of value model (figure 1-1) coined by Stephen Gudeman (2001, 2005) offers a lexicon for discussing contemporary economic issues. Some of his concepts are useful for understanding how economy is embedded in community for local people, and how the norm of reciprocity connects communities and facilitates the sharing of resources. Ethnographers have demonstrated for more than a century in historical, ethnographic and even industrial societies, that economy includes more than market exchange of goods and services. By sketching his model with the illustration of some fifty examples from around the world, Gudeman posits that every economy consists of two realms: the “community” and “market” (2001). This contrasts with views among neoclassical economists that market and economy are synonymous. Gudeman argues that both the market and the community realms make up economy, “for humans are motivated by social fulfillment, curiosity, and the pleasure of mastery, as well as instrumental purpose, competition, and the accumulation of gains” (2001: 1). In the community realm, economy is up-close, local, specific, and constituted through social relationships and contextually defined values. The individual is embedded in a web of dependencies, obligations, common plans, and creation of meaning. In the community realm, material goods are exchanged through relationship kept for their own sake, for example, as gifts, dowry, bridewealth and bloodwealth. Family and friendship relations are examples of such relations valued for its own sake (2001: 8, 36). Productive arrangements that comprise the base, such as the use rights to a reservoir or to an irrigation system, often involve a thick, frequently-used complex of local, kinship and work relationships. Through such community connections, things such as resources and goods are appropriated, created and possessed, which in turn sustain the relationships. The community realm offers security and a rampart against uncertainty. However, it can also turn to be the home to inequalities, the exercise of unconstrained power and exploitation (2005: 97).

Figure 1-1. Economy as domains of value.



Source: Gudeman, 2001:7.

Market refers to anonymous, instrumental exchange “abstract from social context” (2001:1). In the market realm, economy is far-distant and impersonal. In this, socially separated, independent agents interact, each motivated by their own expected benefits from trade. Self-interest of the unit, whether an individual, a family, or a corporation, is put in front as motive and value. Short-term material relationships are undertaken for the sake of achieving a project or securing a good (2001: 10). Market offers the space for making new connections to materials things and services. It allows freedom and can enhance the standard of living. However, it also has been proven to be a powerful solvent of community, because it breaks the bonds among people and it enforces inequality (2005:97).

Although the community realm and the market realm have divergent motives and behaviors, they are coexisting in all economy. No trade or market system exists without the support of communal agreements, such as shared language and implicit understandings. Meanwhile, communities also are inside markets, as households, corporations, unions, guilds and so on. Larger community as nation-state provides the legal structure for contracts and material infrastructure for market activity (2001: 11).

The dialectic of the community and market realms exists in all economies. The two realms are complexly intertwined, and the border between them is often indistinct. They appears in many variations, and the balance of the two realms varies over time depends on people and situation. Sometimes they are separated, at other time they are mutually dependent, opposed or interactive (2001: 9-13, 2005: 94-97).

For the definition of “community”, Gudeman uses the word in a broad sense. He defines community as small, intimated groups, such as households, bands or tribal organizations, and also imagined groupings that may never meet yet hold some interests in common. Communities are hierarchically arranged, embedded one within another, overlap, and differ in importance, duration, interests and internal structure, with firm or porous borders (2001: 25; 2005:95). Gregory (2002) interprets that Gudeman chooses to use the label “community” to capture the localization side of the globalizing tendency. It opposes to the “market-centric” thinking of mainstream economics and advances the anthropological view point of economic agents. Gudeman’s use of the term “community” can be linked to the sympathies that Ferdinand Toennies has with the *Gemeinschaft*. As opposed to the impersonalness of *Gesellschaft*, community represents the intimacy of people, which is what should be restored by advancing into a higher form that corresponds to the present civilization.

In the long discourse on economy, community and market have been invoked in complex ways. Aristotle presents that man, like any other animal, is naturally self-sufficient. The human economy therefore does not stem from the boundlessness of man’s wants and scarcity of subsistence in nature (Polanyi, 1957a:66, 80; Aristotle, 2013). Aristotle is the initiator to distinguish two economic terrains through his opposition of use and exchange. He offers the example of a shoe, which can be worn (used) or traded (exchanged). In the first case, its particulate features distinguish its value from all non-shoes; whereas in the second case, the shoe is compared to other commensurate goods for which it can be exchanged. The two uses are morally distinct for Aristotle. The insight is that activities done for their own sake and activities done for the sake of something else are separate yet confounded in practice. Aristotle’s division is later subtly used by Thorstein Veblen (Veblen, 1919; Aristotle, 2013). Veblen shows how the commercial world is divided between “the captains of finance”: the businessmen who want to accumulate monetary wealth; and “the captains of industry”:

the engineers who develop technology and make things. By applying metaphoric thinking, he shows that there are double meanings of capital. On the one hand, capital means equipment for making things. On the other hand, capital is a monetary accumulation used to secure a gain. Veblen makes extensive use of the division to display the cycles and contradictions of capitalism as well as the ways one form of wealth dominates the other through the instinct of predation.

The concept of value is elevated to one of the core elements of Gudeman's model. For the mainstream economists, market and community have only one value. In the Marxist approaches this single value is in terms of labour, whereas in the neoclassical approaches it is utility (Löfving, 2005:19). Gudeman argues that neither of the approaches is able to get to the core of economic activities. He therefore proposes a more complex division of value into four domains. The first value domain, "base", consists of a community's shared interests, which includes lasting resources, produced things, and ideational constructs such as knowledge, technology, laws, practices, skills and customs. These locally-defined values express identity in the community. The second domain of value, "social relationships and associations," is the connections maintained for their own sake, not for the sake of profit, like household and nation-state. Through "social relationships and associations," the base is created, allotted, and apportioned to people in the community. Allotment is defined as the way a stock or permanent fund, such as land, is parted for use. Apportionment refers to dividing a flow, such as a harvest. The third domain is "goods and services" that individuals and groups impersonally trade for production or saving and consumption. The fourth and final domain is "appropriation and accumulation of wealth", which is the collection of value (Gudeman, 2001: 1-24).

It is necessary to explain more on the value domain of "base" as it is an important concept for understanding the foundation of local community. Gudeman (2001:7-51) draws the term base from his experience in Latin America. Base is the commons made and shared by a community. It is the patrimony or legacy of a community and refers to anything that contributes to the material and social sustenance of people with a shared identity, such as water, land, building, seed stock, knowledge of practices, social networks, agreed rules and rituals. Often, the base has central symbols that signify its power and continuance. Gudeman calls them as "sacra"; examples include the

Constitution of the United State, the traditional chieftaincy of rural African community, and the ancestral temple of the traditional Chinese lineages. The base also serves as people's heritage of indigenous knowledge and practical skills which often developed in relations to the material space that people occupied. For example, skilled navigators in Polynesia may use the night sky or ocean currents to orient themselves and guide their vessels, African pastoralists may use the presence of specific insects as the guide to estimate the timing of season change, and African farmers may use soil color and texture to estimate soil fertility and decide which types of crop can produce well on a land. Gudeman argues that taking away the base destroys the community as well as the complex of relationships that demolishes the base. Likewise, denying others access to the common base denies community with them (2001:27).

Concerning the protection of a social and resource base, Gudeman (2001:38-42) sketches the idea of "situated reason", which refers to know-how and practical problem-solving skill for the maintenance of communal life. It is the improvement of things and tools through adjustments and inventions, finding ways to handle everyday problems in a more convenient way, and thereby increasing security and well-being. Examples given are knowledge and development of ways to harvest potatoes, pick maize, cook food, and farm. Coping by adaptation, adjustment, and step-by-step improvement is stressed as an important aspect of this "situated reason" rationality.

Between communities, Gudeman (2001: 81-93) proposes that "reciprocity" is the mode that forges and disconnects relationships through the extension of base. Enacting reciprocity is a tactical act to extend the base to persons outside a community, offering temporary participation or even permanent inclusion. Reciprocity changes a community's boundary by including new people as users of the base. The reciprocal extension of communality suggests the possibility of forming a larger, encompassing community. On the other hand, refusal to reciprocate can indicate lack of desire to create mutuality, or it may signal inability to do so. Even if reciprocate, the unhinging of the tension between distance and closeness may convert reciprocity into the trigger to separate communities, and reciprocity may turn into commercial trade or even to war. Examples given for reciprocity are the sister exchange and the badge of society.

1.8. The substantive economy

Gudeman (2001)'s assertion of the dialectic existence of the community and market realms in every economy resembles the "substantivists" view of Karl Polanyi. Polanyi draws on Menger and Weber's distinction between formal and substantive rationality to explore the main cleavage in social science approaches to economy (Löfving, 2005:11). Polanyi (1957b) considers that the term "economic" has two meanings. The formal meaning refers to the economy as the logic of rational action and decision-making, as rational choice between the alternative uses of scarce means. Formal economy (or market economy) is for Polanyi the same how the classics of economics define it, which concerns the economic man making choices from scarce resources.

The substantive meaning, however, derives from man's dependence for his living upon nature and his fellows. The substantive meaning of "economic" is seen in the broader sense of "economizing" or "provisioning". The economy, in the substantive sense, is "an instituted process of interaction between man and his environment, which results in a continuous supply of want-satisfying material means." The institutionalized process is governed by social relations and habits (Polanyi, 1957b). Substantive economy is a wider concept than formal economy. It includes all activities by which man utilizes the nature. In the substantive economy, man is a social creatures whose "economy, as a rule, is submerged in his social relationships (2001:46)." Essential in Polanyi's thinking is that substantive economy does not necessarily require any competition (Muukkonen, 2009).

The roots of market society are, according to Polanyi (2001), in the Tudor England, where open fields were conserved to enclosures. In this process, land became a commodity. The actual emergence of market society can be dated to the end of the first third of the nineteenth century when the English Parliament accepted two laws: Reform Bill (1832) and Poor Law Amendment (1834). These laws turned labour a commodity that could be bought and sold. For Polanyi, the commoditization of land and labour implies the destruction of the basic social order that had existed throughout all earlier history. This, Polanyi argues, results in massive social dislocation and disintegration of

existing social structures. To protect itself from the destabilization effects of the market movement, society spontaneously reacts by a “counter-movement” to reverse the process and re-introduce the social control into the economy. When the livelihood of men becomes ruled by the fluctuations of the market, individual well-being and ultimately survival, becomes market-conditioned. The counter-movement is seen by Polanyi as a necessary reaction for individuals and society to protect themselves from the fluctuations and price-shifts inherent of markets. Polanyi insists that it is impossible for substantive economy to be completely subsumed by the market economy (Maruyama, 2006).

Another key contribution of Polanyi to social thought is that of “embeddedness” (Polanyi, 2001 [1944]; 1957b). The term “embeddedness” expresses the idea that the economy is not autonomous as it must be in economic theory, but subordinated to politics, religions and social relations. In the “embedded economy”, land, labour and money itself are not regarded chiefly as commodities to be bought and sold. They are “embedded” in social relationships, and subject to the moral consideration, religious beliefs and community management. A fully self-regulating market economy requires these factors to be turned into fictitious commodities, but this process assures the destruction of both society and the natural environment. Polanyi is often misread to have said that with the rise of capitalism in the nineteenth century, the economy has successfully “disembedded” from society and came to dominate over it (such as Braudel, 1992 cited by Block, 2001; Watts, 2010:276). But as a matter of fact, Polanyi does emphasize repeatedly that the goal of a “disembedded”, fully self-regulating market economy is a utopian project which it is something that can never exist (Block, 2001). Polanyi believes that market society is unsustainable because it is fatally destructive to the human and natural contexts it inhabits.

The misunderstanding, however, causes some scholars to interpret Polanyi’s original theory as a dichotomy between traditional economy and market economy. This obscures its application to the research on the current African agricultural society, because the infiltration of capitalist economy, although far from a full scale, has gradually reached even to the most remote region of the continent (Sugimura, 2004: 97-98). Kanoka (2006) makes an attempt to overcome this obstacle by merging Polanyi’s concept with the concept of “dual economy” created by Boeke (1953). Based

on his research on peasant society in Indonesia, Boeke observes the coexistence of modern and traditional economic sectors in a same economy. The separate economic sectors can be divided by different levels of development, technology, and different patterns of demands. Lewis (1954)'s labour supply theory of rural-urban migration is one of the most recognized demonstration of the dual economy concept. Kanoka (2006) rephrases traditional sector into subsistence economy, and modern sector into market economy, and he performs a detailed ethnographical analysis on the coexisted, intertwined subsistence economy and market economy of the pastoral Samburu society in Kenya. Gudeman's (2001) model also offers a new conception to move away from the old dichotomy between traditional and market economy.

1.9. The economy of peasants

The term "peasant" has often been used of African rural farmers, particularly when distinguishing them from political and religious elites in the larger and more complex societies. Different definitions have been used by scholars for peasants. They are defined as smallholders or tenant cultivators who have some control over production (Waters, 2007). They are also categorized as rural cultivators who produce for use value rather than exchange value (Kasfir, 1986: 340). It is widely agreed among scholars that there is no perfectly self-sufficient peasant economy or peasant society: peasant households reproduce themselves through their interaction with a wider capitalist economy. Peasants provide for their own subsistence needs partly from their own produce, and also by selling crops, as well as labour-power and other commodities (Firth, 1951; Williams, 1988). Kroeber (1948) and Fallers (1961) consider the peasant society as semi-autonomous local communities with semi-autonomous culture. Redfield (1955) and Fester (1961) name it as "half-society" for it is a part of a larger social unit, like nation, which is vertically and horizontally structured.

Russian agricultural economist Chayanov (1925) develops an influential theory of peasant economy, derived from detailed studies of peasant farming systems, in which emphasis was placed on both the durability of the peasantry as a social grouping and the "non-capitalist" rationality of many peasant decision-making procedures. Where

agricultural labour is organized predominantly on the basis of household units, the age of farmer and the age and number of dependents crucially affects labour inputs and productivities. A peasant household will work more or less hard, and will require more or less land, to meet its subsistence requirements according to whether the children are young and dependent or older and able to contribute fully to farm work. In the absence of market imperatives, Chayanov assumes the household maximizes “leisure” once subsistence requirements are met. Thus, for example, an old farmer without dependents might shed land acquired when family commitments are at a maximum. Thus, according to Chayanov, differences in peasant land holdings reflect differences in position on the cycle of development of the domestic group rather than an irreversible process of socioeconomic differentiation (Harriss, 1982).

Due to the features of the Chayanov model such as flexibility of access to land and limited engagement in the labour market, it has been found more useful for explanatory purposes in the African context than elsewhere (Massing, 1980; Levi and Havinden, 1982). Binswanger and McIntire (1987) propose a model of the African agrarian economy which replicates and extends the main Chayanovian conditions. Hunt (1979), Low (1986) and Shapiro (1990) provide evidence from African peasant communities in Kenya, southern Africa and Zaire respectively, which corroborates one or more of the demographic predictions of the Chayanov model. The implication of such studies is that peasant households vary in their economic performance according to household size and structure, especially with respect to family size and area cultivated. For example, under shifting cultivation, the area cultivated tends to vary from season to season according to the size of work groups (Massing, 1980). Hyden (2008) asserts that the inner logic of the rural household in Africa is powerful and capable of preempting the role that external forces play in the rural areas. In his argument, African agriculture is driven not by state policy or market incentives but by the internal needs of the household. With increasingly heavy household dependence, there has been a tendency for members of rural households to diversify their incomes off the farm. They work as artisans, transporters, or for other informal occupations for short-term incomes. However, rural households do not abandon agriculture all together even under this trend. There is indeed evidence that rural households have become even more concerned about securing their own food from the farm for reducing costs on food purchasing (Bryceson, 2002). The subsistence ethic is still strong in rural African households.

1.10. Moral economy of African peasants

Goran Hyden (2008:18) identifies the production characteristics of peasants as small land holdings, predominant use of family labour and subsistence orientation. In an attempt to identify the problem peculiar to the African peasantry, Hyden (1980, 1983) formulates the concept of “economy of affection,” a moral economy theory that focuses on the behavioral characteristics of African peasants. The moral economy, as Sayer (2000:1) puts it, “embodies norms and sentiments regarding the responsibilities and rights of individuals and institutions with respect to others.” In examining the peasant uprisings in Burma and Vietnam that broke out right after the Great Depression, James Scott (1976) focuses on two moral principles embedded in peasant life: the norm of reciprocity and the right to subsistence. In the moral economy perspective, peasants, particularly those on the verge of subsistence, have an aversion to the unstable and fluctuating environment. Their foremost concern is whether they can sustain themselves in a reliable way; therefore they tend to be risk-avoiding and hesitant to adopt technological innovation which is likely to bring them a considerable risk. In time of subsistence crisis, peasants are accessible to a number of options which help them to deal with the circumstance. They can manage their subsistent level of life even in bad years from direct assistance from relatives and friends, village community, patrons, landlords and even the state. Behind such social arrangement lie the moral principles of subsistence and the norm of reciprocity. Scott (ibid:3) writes, “patterns of reciprocity, forced generosity, communal land, and work-sharing help to even out the inevitable troughs in a family’s resources which might otherwise have thrown them below subsistence.” Peasant choice and values in regard to subsistence security are displayed in a variety of reciprocal relations, ranging from mutual help mechanism at the village level, patron-client relationships, to state-peasants relations. These social safety institutions of the Southeast Asian peasant society, however, have been disrupted by colonial state and capitalism since the late nineteenth century. In particular during the era of the green revolution, rural society of Southeast Asia has undergone a dramatic change, and the subsistence question has gradually moved away from the rural economy.

Characteristic of moral economy is also discerned in the African peasantry society,

but what make the situation different here is that, the African peasants are not yet effectively captured by the state and the market. Hyden (2008:16) describes the African peasants as “being subsistence-oriented and at best having only one foot in the market.” He argues that Africa is the only continent where the peasants have not yet been captured by other social classes. By being the owners of their own means of production, African peasants enjoy a degree of independence from formal institutions (Hyden, 1980). He calls the unique moral economy of the African peasants as the “economy of affection”, and he describes it as “a network of support, communications and interaction among structurally defined groups connected by blood, kin, community or other affinities such as religion” (Hyden, 1983:8). African peasants have close emotional ties with their relatives and friends, who are ready to help them materially in times of dearth and on occasion of rituals. This social relation based on reciprocal exchange, or economic of affection, helps the peasants to secure their own subsistence.

Hyden’s notion of the “uncapturedness” of African peasants, however, has become a controversial topic during the “debate on the African peasantry” in the mid-1980s. Kasfir (1986) and Cliffe (1987) emphasize that even African peasants are by nature rational “*homo economicus*” and are thus actually responsive to price fluctuations in the market. Kasfir asserts that social differentiation between rich and poor peasants does exist in rural Africa. And the peasantry as a whole has been effectively subordinated to, and exploited by, the upper class and the state. William (1987) criticizes Hyden for overlooking the dynamics in African societies over time and the adaptability of peasants to ever-changing socioeconomic circumstances. Hyden (1986, 1987) nevertheless, reassumes that despite of the penetration of capitalism, the African rural producers still retain the ability to exit from market vicissitudes and incessant demands from the state by moving back and forth between subsistence and market economy. The peasant mode of production, he insisted, still forms an active part of the political economy in Africa.

1.11. Reciprocity in the African peasant economy

The principle of reciprocity is one of the most important guides for social and economic behavior of peasant society. Most of the anthropological theorizing on

reciprocity is set in motion by Marcel Mauss in his classic, *The Gift* (1990 [1925]). Mauss finds out from the Maori concept of *hau*, a mystic power, that gift recipients are forced to make a return. He calls this force as “the spirit of the gift”. The bounds created by gifts, the inalienable objects, are thus the mutually dependent tie between persons. Prior to Mauss, Bronislaw Malinowski (1922 [1984]) publishes an ethnographic account of exchange in Melanesian society, describing in detail the local system of transactions, ranging from the “pure gift” to “real barter”. In a later book Malinowski (1926) articulates the principle of reciprocity to explain the local system of economic transactions. He argues that the binding force of economic obligations lies in the sanction either side may invoke to sever the bonds of reciprocity. One gives because of the expectation of return, and one returns because of the threat that one’s partner may stop giving. All rights and obligations are “arranged into well-balanced chains of reciprocal services” (1926: 46). Reciprocity, or the principle of give-and-take, is the foundation of local social order. Lévi-Strauss (1969) views social life as a system of transactions between groups and individuals. He develops a theory of cousin marriage based on the distinction between the restricted exchanged and the generalized exchange of women. For Lévi-Strauss, reciprocity is the kernel of the social constructions and the foundation of all human institution (Lévi-Strauss, 1969:76).

Karl Polanyi (1944, 1968) has also made great contribution to the theorizing of the concept of reciprocity. He argues that there are three dominant principles of distribution of “want-satisfying material means” in the socially embedded economies: reciprocity, redistribution and householding. Reciprocity has family and kinship as its basis. Exchange between groups of kin is facilitated by the symmetry inherent in the principle of duality upon which many tribal societies are based. Through the expressions of the duality principle, exchange partnerships are created which personalize the relation of reciprocity and make long-term exchanges possible. Redistribution is built on the principle of centrality, and it is encountered in systems where political or religious institutions are dominant. Redistribution refers to the process by which a substantial part of the annual produce of a society is delivered to a central figure of authority, who keeps it in storage for subsequent disposal on special occasions such as annual feasts, the ceremonial visit of neighboring tribes, and so on. The third principle, householding is built on the principle of autarky, and it is found in family, settlement or manor which produces for one’s own needs for achieving self-sufficient. The principle of

householding is producing and storing for the satisfaction of the wants of the members of the group. Polanyi argues that these three principles of distribution are not mutually exclusive. They are combined in every socially embedded economy although one of the three principles may take the dominance.

Influenced by the ideas of Polanyi, Marshall Sahlins (1972) constructs a model that reinforces the accountability of reciprocity. He identifies three variables as critical to determining the general nature of gift giving and exchange: kinship distance, sociability and generosity. He presents a scale that correlate reciprocity and trade with close and distant social relations. Generalized reciprocity and negative reciprocity are defined, respectively, as the “solidary” and “unsociable” extremes in a spectrum of reciprocities (figure 1-2). Generalized reciprocity “refers to transactions that are putatively altruistic, transactions on the line of assistance given and, if possible and necessary, assistance returned” (1972:194). With generalized reciprocity, people offer their goods and services without the expectation of an immediate return. Nevertheless, the offerings are often expected to be balanced out over time based on trust and social consequences. Examples of generalized reciprocity include food-sharing, suckling of children, help, generosity and other kinship obligations.

Figure 1-2. Sahlins Typology of Reciprocity.

<u>Generalized Reciprocity</u>	<u>Balanced Reciprocity</u>	<u>Negative Reciprocity</u>
Solidarity extreme	The midpoint	Extreme unsociable
Least economic	More economic	Most economic
Personal	Less personal	Impersonal
Close social tie	Medium social tie	No social tie

Source: Modified based on Sugimura, 2007.

“Negative reciprocity” is “the attempt to get something for nothing with impunity (1972:195). In a negative reciprocity, one, if not both, of the groups involved in the trade of goods are attempting to exploit the other for individual profits. People engaged in negative reciprocity are motivated by personal gains rather than creating

interpersonal ties with those that they are trading with. Haggling, chicanery, coercion warfare and other varieties of seizure are examples. While generalized reciprocity is based on a close kinship or social relations such as mutual friendship, negative reciprocity reflects the extreme of mutual hostility.

Sahlins places generalized and negative reciprocity at the two end of a continuum. “Balanced reciprocity” is the third type of reciprocity that place in the mid-point of the continuum. Balanced reciprocity is “less personal” than generalized reciprocity and “more economic” (1972:195). With balanced reciprocity, there is an explicit expectation that goods and services of equivalent value will be returned within a specified period of time. In contrast to generalized reciprocity, balanced reciprocity involved more formal relationships, greater social distance, and a strong obligation to repay the original gift. Examples of balanced reciprocity include gift exchange, marital exchange, peace agreement and friendship compacts.

The norm of reciprocity is a fundamental principle of the African peasant economy. Observation of labour exchange (Moore, 1975; Shiraishi, 2006; Sugimura, 2006), common consumption through ceremonial rituals, commensality (inter-household group eating) (Sugimura, 2004a) and food sharing (Matsumura, 2008) have been reported in a large number of rural communities. Sugimura (2004b) argues that reciprocal social exchange in the African context is different from that of Southeast Asia. According to him, the former is characterized by the principle of “generalized reciprocity,” in which counter-obligation is not always necessary. Contrary to this, Southeast Asia is dominated by “balanced reciprocity,” in which each party reciprocates equivalents within a narrow time frame. Tsuruta (2008:47) seconds to Sugimura’s view and comments that the difference between the two regions is stemmed from the different degrees to which reciprocity and subsistence are connected. Peasant livelihood in Southeast Asia has been deeply incorporated into the capitalized market and the state system after the green revolution, thus the role of reciprocal relations among rural dwellers has considerably been reduced. In Africa, the norm of reciprocity is more tightly connected with people’s subsistence needs, and equivalence in exchange is a less important consideration compared with getting something necessary to sustain people’s lives. Tsuruta also points out that supernatural belief, such as the fear for being penalized by evil curses, is sometimes the driving force for African peasants to

reciprocal. Kakeya (1986)'s illustration on Tongwe society where peasants are compelled to exchange subsistence food across families and village due to the fear for witchcraft is a case in point. Another important principle underlining the reciprocal activities of African peasants is the religious belief of Islam. Otsuka (1989) highlights that *zakat*, the practice of charitable giving by Muslims based on accumulated wealth, implies a kind of reciprocity between a Muslim and Allah. *Zakat* does not merely mean a material donation to the poor and the dispossessed Muslims, but a display of the devotion and faith to Allah. A Muslim gives *zakat* to the poor for the sake of his own salvation, therefore the real recipient of the *zakat* is not the poor, but Allah. Basing on Otsuka's observation, Matsumura (2008) argues that the ideology of Islam has influenced the discipline of sharing activities in African peasant society, because it provides people with the strategy to prevent from indebtedness by referring to Allah for any blessing he receives. This argument is in line with Sugimura's observation that African is dominated by "generalized reciprocity", in which gift receivers do not have the strong obligation to immediately repay debt and provide counter-service.

1.12. The Nigerian peasant economy

The earlier anthropological studies of peasant economy in Nigeria were conducted primarily by British scholars during the protectorate. Forde, originally a geographer, wrote on ecology and society (1934) and on Yako economy (1964), and with Scott (Forde and Scott, 1946) he undertook a survey of Nigerian small-scale farming. Smith (1955) examined the effect of political structure on economic life among the Hausa. Paul Bohannon wrote a description on Tiv farm life in central Nigeria (1954), and then with Laura Bohannon (1958), they published on the subsistence, technology and economy of the Tiv. In two influential articles, Paul Bohannon introduced to Africa the notion of "spheres of exchange" from Oceania. Most of this was brought together and elaborated in Bohannon and Bohannon (1968), making Tiv perhaps the best-known case in economic anthropology. They argued that the Tiv pre-colonial economy was organized through three spheres of exchange arranged in a hierarchy, and commodity could normally only be exchanged with another commodity within each sphere. At the bottom there were subsistence items like foodstuffs and household goods traded in small

amounts at local markets. Then it came to a limited range of prestige goods (cloth, cattle, slave, copper bars) linked to long-distance trade and largely controlled by Tiv elders. The highest category was rights in persons, above all women, ideally sisters, exchanged in marriage between male-dominated kin groups. On the Nupe of central-north Nigeria, Siefried Frederick Nadel produced *A Black Byzantium* (1942), a comprehensive ethnography based on intensive field research carried out in 1934 and 1935-6. The economic and political complexity of the Nupe kingdom evoked comparison with the civilization of Byzantium. Nadel offered a detailed description on the Nupe economic life and political institution, not only on capital town, Bida, but also on several rural districts. Nadel later wrote a book, *Nupe religion* (1954 [1970]), which provided an account of the Nupe indigenous beliefs and the influence of Islam to the kingdom.

Polly Hill (1972[2009], 1977, 1982) conducted detailed fieldwork in Hausaland in Northern Nigeria between 1965 and 1973 and she published several informative books. In *Rural Hausa* (1972[2009]), she examines the socio-economic life of a Hausa village and the way of life of the rural Hausa generally. According to her, rural producers in northern Nigeria in general have not been separated from the land. A landless proletariat labouring for a landed rich has not emerged. Hill also writes on the traditional institution of *gandu*, which is a family farming unit whereby members of a kinship group combined their farming operations under a common leadership and organization. She claims that agricultural wage labour is insignificant in the countryside. Farmers only work as wage labour after they have met their responsibility to the *gandu*, hence wage labour is “seldom undertaken at the expense of own farming” (1972: 106). However, she points out that poverty is undermining *gandu*, because poor farmers are unable to provide return, such as welfare and marriage expenses, to the labour of their sons, and their sons therefore lack the necessary incentive to stay in *gandu*.

In Southern Nigeria, Sara Berry carried out fieldwork in the Yoruba country in the 1970s. Her book, *Fathers Work for Their Sons* (1985), won her the Herskovits Award from the African Studies Association. Through a study of the use of the surplus by cocoa farmers, Berry explores strategies of capital accumulation, class mobility and collective action in urban and rural Yoruba communities. She argues that principles of descent and seniority shape access to land and labour, and so influence the organization of production in ways that reduce the effectiveness of management and diminish the

productivity of labour. In the individual and collective struggle for power, wealth and access to the state, a substantial part of the surplus is diverted into the form of social investment which maintains and advances seniority, acknowledges obligations to kin and dependents, and promotes the home community. These strategies of accumulation, which focus on power over resources rather than the productivity of resources, retard the development of the forces of production. The title of the book, "*Fathers work for their Sons*", is a quote from a Yoruba farmer interviewed, who said, "formerly sons worked for their fathers, but today we have schools and civilization, and now fathers worked for their sons" (1985: 193). Berry observes that when cocoa farms are started, junior kinsmen are the principal source of labour in exchange for assistance later. Since education has replaced age as the route to respect in Nigeria, farmers are obligated to finance the schooling of their junior kinsmen, who later dominate them in political and economic arenas.

Another important work of Berry is "*No condition is permanent* (1993)". The book offers a comparative study of agrarian change in four rural economies in Africa: Nigeria, Ghana, Kenya and Zambia. The central argument of the book is that the nature of both social institutions and individual network on resources acquisition and usage are in flux and highly variable in African peasantry. Interpersonal interactions characterized by negotiation and manipulation of kin, economic, political and social networks are the fundamental nature of indigenous African societies. The outcome of any negotiation, especially concerning usufruct land rights, is a product of the interplay of these varied factors and contemporary alliances and power struggles. The optimal strategy for African rural people is to increase the diversity of their social networks and clientage to cope with the instability of resource allocation, labour availability and pricing. Berry concludes that possibilities for successful economic development hinges on planners appreciation on this diversity, flexibility and change that characterized African communities.

Regarding development of agrarian capitalism in Nigeria, Williams (1988) argues that although commodity production prevails, peasant production of Nigeria has not been transformed into the capitalist forms of production. Plantations, capitalist farms and state farms have been established since the colonial era. However, British imperialism in Nigeria did not entail a radical transformation of the production relations

in the countryside. Rather, the colonial state employed a series of blunt political and commercial instructions, for example direct taxation, forced cultivation, expanded operations by European merchant firms, to induce peasant producers to expand their output of those export commodities required by British industrial capital (Watts, 1983). Land has been “nationalized” in 1907, thereby effectively blocking land accumulation or large-scale plantation agriculture either by Nigerian farmers or European settlers. Rural landless class is historically absent, and the household remains the fundamental unit of production (Williams, 1988).

After independence, the oil boom in the 1970s brought the growth of a petrolic capitalism and the agrarian collapse (ibid). With the oil rents from the oil-boom, the Nigerian state interventions generated a construction boom on an enormous scale. The urban construction boom and the growth of the informal sector siphoned labour, especially young men, from the rural economy, and this complicates patterns of seasonal labour shortage and wet-season bottlenecks. The outflow of young labour from villages caused heavy dependence of hired labour in agricultural work, but the supply of hired labour was highly inelastic during critical periods of growing season. This caused farmers to turn to adopt extensive cultivation method which required less labour and less farming skill. As stressed by Richards (1986a), the rural-urban drift in the oil boom era absorbed young men in the prime of their farming lives who, for cultural or technical reasons, were not easily substituted. After the oil boom has ended, Nigerian government was imposed of the structural adjustment programmes by international financial institutions. Market liberalization appeared to have boosted food production. Shimada (1999) conducted field research in southeast Nigeria in 1985 and 1989. He observed that the increase in production was merely achieved by the expansion of extensive cultivation of cassava in the expense of soil erosion. The structural adjustment programmes removed the little help that farmers formerly got, and put them into the situation that more cash income was needed. Many young farmers were tempted to become less engaged in farming activity, but to curtail their time and labour for job-seeking activity for higher income in town. The failure of government policy has led to the further impoverished of the rural poor by deteriorating their motivation for dedicated farming and degrading their environment.

Williams (1988) examines the conditions under which agrarian capitalism has been

established in Africa. He points out that the condition needed for agrarian capitalism is a powerful and effective state which has the capacity to coerce and to direct the allocation of labour-power, to subsidize production costs and to guarantee prices and market for agricultural product. The Nigerian state, however, is weak and does not have the capacity so far to establish a solid agrarian capitalism in the nation. State support in Nigeria has provided niches for capitalist farming, but both capitalist and the state have found it difficult to subordinate peasant producers to their direction. There is no significant class of landless rural labourers in Nigeria. There is also no evidence of a secular trend towards greater inequality among peasant farmers in access to land. Similar view is shared by Watts and Bassett (1986), who point out that commoditization of land and labour proceed unevenly in Nigeria, and the rural life remain stubbornly intact. Capitalist farming has been initiated in Nigeria, usually as a part-time activity by traders, civil servants and army officers. Government with commercial banks has provided them with cheap credit and subsidized inputs. However, their contribution to agricultural production, especially of export crops and staple foods, is marginal. For food supply to feed its huge population, Nigeria must continue to rely on peasant producers who still direct their own production and maintain a degree of control over the disposal of their produce.

The preceding review of the literature on Nigerian peasant society reveals several important points. Although under the pressure of globalization of capitalism, the community realm still remains as a dominant portion of the Nigerian peasant economy. Nigerian peasants tend to be subsistence orientated and they still have some control over their factor of production: land and labour. Social institutions such as kinship, community, social networks and the norms of reciprocity are still playing important role in resources acquisition and agricultural production. At the same time, subsequent political and social changes as well as market fluctuation have certainly affected the life of Nigerian peasants. They probably do have “an exit option, to keep the market and state at arm’s length by virtue of their direct control of land and labour” as described by Hyden (1980). But still, they are already “having one foot in the market”. The traditional life may not be washed away in a deluge, but the proceeding commoditization of land and labour is bringing along the ongoing erosion of the traditional system.

1.13. Perspectives and objectives of the study

Improving performance of the agricultural sector is considered the most essential solution to the intractable poverty challenge of Africa. The standard storyline about African agriculture is pessimistic. In most countries, the sector is stagnant, held back by low productivity of smallholder farmers and over-exploited environmental resources. Contrary to Southeast Asia which has achieved the green revolution in agriculture in the 1970s, in many African countries the domestic food supply is reported to have failed to keep up with the rapidly growing population. There are three main approaches that have been taken to tackle the problem of agriculture stagnation of Africa. The main approach focus on the technical fixes, which is to provide more exogenous material inputs, such as improved seeds, chemical fertilizers and irrigation schemes. The second approach is to liberalize the market following the structural adjustment programmes imposed by international financial institutions since the 1980s. The third approach is to rely on technical experts-led policy making. These conventional diagnoses, however, often undermine the potential of local initiatives of smallholder farmers. The existence of the “micro-macro” gap between the fieldwork based analyses and the generalized analyses suggest the need to put more focus on the African agricultural community for a better comprehension of what is actually happening on the ground and to identify the local socio-economic circumstances that guide the behaviors of peasant farmers.

Agriculture production by the African peasants tends to be assumed as “primitive”, “rudimentary”, “timeless” and “changeless.” In the western-biased perception, African farmers are often linked to the image of being stubborn, ignorance, lazy, short-sighted, and unwilling to invest and accept change. Generic scientists assume that technologies are neutral and that their benefits will somehow be realized anywhere. Backing by the conventional diagnoses, the transfer-of-technology (ToT) model has been dominating the intervention strategies in most African countries (Bauer et al, 1998). This model implies that scientists generate new or improved technologies which are then transferred by extension agents to farmers. However, many of the technologies generated and promoted in this way are too expensive for the hundreds of millions of smallholder farmers who cannot afford to invest in the packages of required inputs. Moreover, these packages are often standardized and promoted countrywide, without regard to

agro-ecological differences, and poorly suited to the diverse and variable conditions of smallholders in semi-arid and other marginal area (Howard et al, 1998). Many African farmers have therefore been reluctant to adopt the technologies offered by conventional research and extension. This in turn reinforced the bias that African farmers are narrow-minded and irresponsive to change.

Contrary to the scientific universal perspective, African farmers are indeed capable of innovating and devising indigenous initiatives to adapt to change and to improve their farming systems, natural resources management and community livelihood. Ethnographic researches have shown many examples of local initiatives generated by smallholder farmers, such as seed selection to improve variety, experimentation of new crops production, soil conservation measure, indigenous irrigation, crop rotation and intercropping practices. Indigenous initiatives are particularly important for pastoralists to optimize fodder production in the arid and semi-arid regions of Africa. Local initiatives grow primarily out of indigenous knowledge which is developed from experience gained over years of intimate interaction between natures and humans in the locality. It assists farmers to make informed decisions and to respond to continuous changes happened in the natural and human environments. Local initiatives are adaptive to the local agro-ecological, historical, political, socio-economic and cultural conditions.

Local initiatives emerge within a community heritage that they revise, because innovators are embedded in the communal context. The unique characteristics of the African peasant economy set the socio-economic principles that guide the behaviors of peasant farmers and influence the creation and adaptation process of indigenous initiatives. In the African peasant society, social arrangements are made based on the moral principles of subsistence security and the norm of reciprocity. The strong social tie created and sustained through reciprocal exchange provides predictability and help African farmers to secure subsistence even in time of crisis. In the economic anthropology perspective, economy consists of both the market and the community. African economy is dominated by the community realm as it is yet totally captured by the market and the state. In the community realm, individual depends upon nature and his fellows for his living. Community members get access to material goods and resources through a complex of social relationships. The foundation of a community is the shared base, which comprises of things such as natural resources like land and water,

the history and cultural legacy, the indigenous knowledge and practical skills, as well as social networks. Through reciprocity, the base of a community is extended to another community by including it to be the user of the base. Through enacting reciprocity, the knowledge and information base of a community expand, which can in turn quicken the innovation process and result in the stimulation of new idea and initiative.

This dissertation enquires into the community livelihood and the indigenous agricultural development initiatives adopted by Nigerian peasants. Nigerian smallholder farmers may be “resource-poor” with respect to capital and natural resource endowments, but they are rich in community heritage and ingenuity. Although they have been viewed as irresponsible to modern technology introduced to them (Fu et al, 2010), they are indeed capable of mobilizing local resources and devise indigenous innovation out of their community base in response to changes in the natural and human environments. The people studied in this dissertation are the Nupe farmers and their cohabiter, the pastoral Fulani. They reside in the middle-belt region of central Nigeria, which is characterized by the coexistence of multiple ethno-linguistic groups. Nigerian peasant society still maintains a strong community economy and traditional institutions are still powerful in governing people’s life and natural resources use. Under growing infiltration of cash economy, Nigerian peasants are faced with higher cash demand for modern lifestyle, for education, medication and social activity. In this study, the local initiatives of Nupe farmers to alter and improve their farming system in order to expand and diversify agricultural production are demonstrated. The middle-belt region is reported to be increasingly prone to ethnical conflicts in recent years due to growing pressure of resources competition particularly between farmers and herders. In this study, the local initiatives of pastoral Fulani to secure resource access and to maintain a peaceful cohabitation with their hosting community are also illustrated.

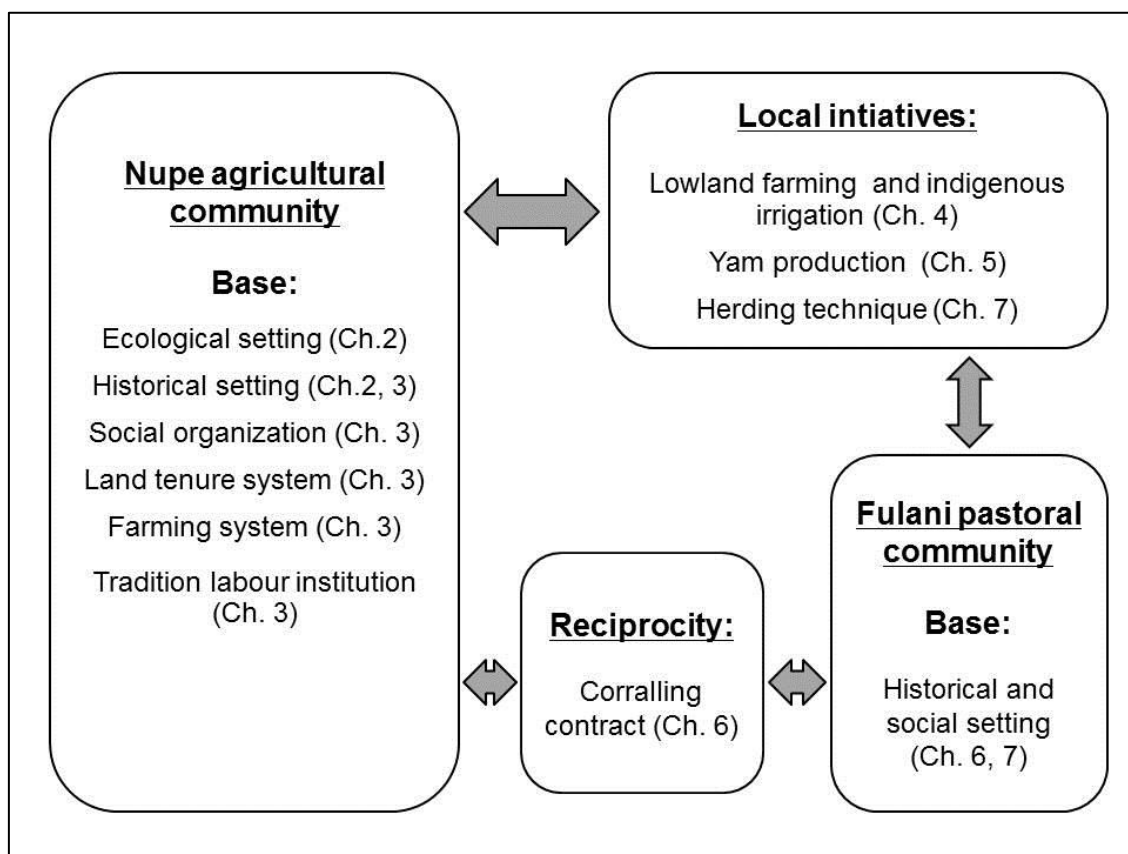
The framework of the dissertation is summarized in figure 1-3. In brief, the objectives of this study can be simplified into the following themes.

1. To understand the ecological and institutional contexts in which central Nigerian communities conduct their agricultural activity. Lasting resources and historical legacy form the core of the base of the rural communities.
2. To identify the characteristics of community economy of the Nupe farming society. The social organization, natural resource management institution and production

system of the rural community will be examined in order to interpret the socio-economic backgrounds that shape the behaviors of Nupe farmers.

3. To investigate the local initiatives that Nupe farmers have adopted to expand and diversify their farming production. On the uplands the characteristics of yam cultivation will be studied, while on the lowlands the farmer-managed irrigation will be assessed.
4. To examine the local initiatives that pastoral Fulani have taken in order to secure access to resources and sustain the peaceful cohabitation with the Nupe farmers. The reciprocal arrangement of corralling contract and the indigenous herding techniques of the pastoral Fulani will be inspected.

Figure 1-3. Framework of the dissertation.



1.14. Organization of the dissertation

This dissertation is conceived as an effort to examine the community economy and the indigenous agricultural development initiatives of Nigerian peasants.

Comprehensive study on the Nigerian peasantry society has become rare since the late 1980s due to increasing political instability and deteriorating social environment after the oil boom. After Nadel's (1942) research in the 1930s, the Nupe society have not been studied again over half a century until the Japanese scholars conducted research on them in the mid-1990s. Decades have passed since Nadel's research and the Nupe society have undergone some changes. As a part of a research project to identify the possibility for inland valley farming intensification, a Nupe village called Gadza has been selected for socio-economic observation. Hirose (2002) analyzed its farming system and Masuda (2002) studied its land tenure system and tree distribution. Under the same project, Shikano (2002) conducted the first ethnographic research on the pastoral Fulani in the Nupe country. Their findings provide important background information for this present study, but their researches were limited to a selected village/pastoral group and their researches were conducted in a short period of time. My research attempts to go beyond their works through a spatial breadth by covering multiple villages/groups, and an analytical depth by covering a wider range of topics. A rich amount of materials have been obtained through a much prolonged period of fieldwork.

This dissertation is based on a substantial amount of first hand materials obtained through a prolonged period of anthropological fieldwork. This dissertation contains of three major sections. The first section, chapter two and three, concerns with the base of the Nupe community. Chapter two provides a description of the research site – the Cis-Kaduna region of the Bida Emirate in Central Nigeria. The ecological and demographical information as well as the political history of the region will be presented. Chapter three presents an ethnographic record of the rural livelihood of the Nupe farmers. It begins with an analysis of the general village formation, traditional land tenancy and agriculture activity of the Nupe, and then follows a case study of a Nupe village with additional details on social organization.

The second section illustrates the local agricultural initiatives taken by the Nupe farmers in response to changes in the market condition. Chapter four examines the characteristics of lowland farming system and indigenous farmer-managed irrigation system of the Nupe farmers. Following increasing demand for irrigated crops, Nupe farmers mobilize local resources and gradually expand their indigenous irrigation and

cash crops production scale on lowlands. For upland farming, chapter five explores how the Nupe farmers incorporate yams, a high valued exotic crop, into their farming system and dietary habit. Nupe farmers were originally unfamiliar with yams, but through spontaneous effort they are able to incorporate the high-valued crop into their farming system as a cash crop.

The third section of the dissertation turns to the pastoral Fulani. The practice of corralling contract, which is an indigenous resource exchange system between the Nupe farmers and the pastoral Fulani, is examined in chapter six. The reciprocity through corralling contract enables pastoral Fulani to secure resource entitlement and maintain a collaborative relationship with the Nupe. The indigenous herding techniques of the pastoral Fulani are investigated in chapter seven. The herding activity of a selected pastoral group has been recorded and analyzed. Through flexibly adjusting to the change of seasons and the progress of farming activity of the Nupe, pastoral Fulani are able to utilize the limited resources available in every niche and to sustain the cordial cohabitation with the Nupe. The research results will be summarized and concluded in the last chapter.

Chapter Two

The Field Site - The Bida Emirate

2.1. The fieldwork

The fieldwork of this study was conducted in the rural area surrounding Bida town (9°05'N 6°01'E) in the Niger State of Nigeria, a place I started visiting since the summer of 2004. Before I first went to the research site in Niger State, the most recent information about the research site that I have got was the reports written by a few Japanese scholars. They studied in the mid-1990s on the farming system and land tenure system of a selected agricultural village, as well as the livelihood of a group of pastoral Fulani. Another information source was the ethnographic study done by Nadel in the 1930s. Information about the research area has been inadequate and outdated, and research planning has been difficult. It was not until my first visit in 2004 that I could obtain some basic updated information on Nupe villages, confirm the existence of Fulani pastoralists in the region and establish some contacts with local people. Like many other researches on African community, much time has been required for establishing linkages with local people, in particular the pastoral Fulani who are conservative and not easily open to outsiders. A total of fourteen months have been spent on fieldwork for this study. The fieldwork has been conducted in the following periods: August to October 2004, December 2004 to February 2005, September to October 2005, August to September 2006, January to February 2009, August 2011 and January 2012.

Multiple methods have been used to obtain materials for this study, including direct observation, participant observation, unstructured and semi-structured interviews, questionnaire, diary recording by informants, farmland surveying, and geographical mapping. Different combination of methods has been adopted according to the nature of each subtopic and the type of data that are needed for analyses. Political history of the Bida Emirate and the early development of rural communities in the research area were also reviewed so as to obtain a full understanding of the historical background that shaped the current local systems and practices. Fieldwork has been conducted with the assistance of local Nupe and Fulani interpreters. A number of official data were also

obtained from local farming extension office, local administration entity, and the state and the federal government.

Nigeria is a difficult country for fieldwork even among experienced Africanist researchers. Official information and documentation is very limited. Even if available, the data are often extrapolated from unreliable old data and are prone to error, bias and manipulation. Hill (1986) complained over the scantiness of Nigeria statistics. Population data for example, which are essential for even basic economic analysis, are hopelessly untrue and are never based on creditable censuses (Hill, 1984:64, 172). A few official statistics are used and quoted in this study. Some of these data requires a lot of efforts in order to access them and to process them from the very raw form. They are used to provide an idea of the background and tendency, although a skeptical view is maintained on the reliability and accuracy of these data. Blench (1999) encountered great difficulty when conducting the large-scale World Bank funded Nigerian National Livestock Resource Survey between 1989 and 1991. He pointed out that because numerical data in Nigeria are used to justify budget allocation, they are often manipulated and exaggerated. There is a general lack of commitment to accurate numerical data, and enumerators and local consultants are used to fraud and falsified data sheets. In Blench's research, they ended up using entirely of female enumerators with no related professional skills, for they carried out their work more honestly and accurately. Political intervention is also a problem. Research results can be eased when they offend the interests of politicians. Government officials also tend to be reluctant to release information.

Apart from these problems, massive failure of national development, deterioration of research institutions, widening social inequality and increasing political and religious conflicts are presenting new logistical, practical and institutional challenges for field research. Nigeria in the 1970s and 1980s was the site of some of the most exciting and critical social science work on development. But since the 1990s, the number of foreign researchers conducting field-based research in Nigeria has considerably shrunk (Watts, 2010). In recent years, with the emergence of the so called Nigerian Taliban "Boko Haram" which brings horrifying bloodletting, foreign researchers doing fieldwork in Nigeria are facing higher security threat. Many regions of the northern part of the country have become no-go zone for researchers. Fieldwork in Nigeria has also become

more costly as higher charge is often needed to ensure the security of foreign researchers. Throughout the fourteen months of my fieldwork, I have encountered all these dispiriting challenges that are also faced by the experienced Africanists. Research efficiency is often affected and more time is needed, but I have tried every endeavor to collect valuable field-based materials from all reachable sources. Updated and detailed fieldwork base research on Nigeria has been limited. The findings of this study will certainly contribute to the understanding of this most populous and dynamic country of Africa.

2.2. The field site

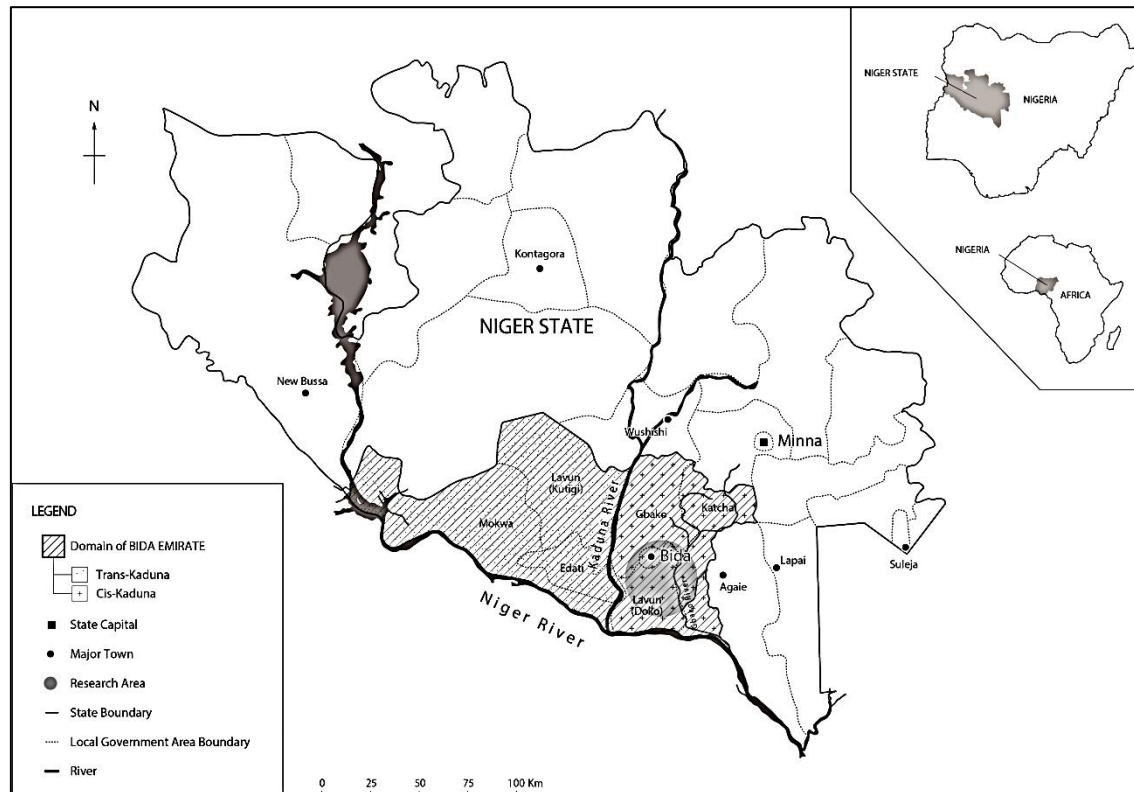
The area in which I conducted the fieldwork was the “Cis-Kaduna” region of the Bida Emirate of the Niger State. Niger State locates on the central-north geopolitical zone of Nigeria¹. The drainage of the state is dominated by the Niger River which forms its southern boundary. Bida Emirate is one of the eight tradition authorities of the Niger State, a successor to the old Nupe Kingdom established in the fifteenth century. Figure 2-1 indicates the location of the research area covered by this study. The term “Cis-Kaduna” was found in the Gazetteer of Nupe province published in 1920 (Dupigny, 1920: 6). It is a geographical term used to describe the districts east of Kaduna River (Nadel, 1942, 181). The river is the largest tributary of the Niger in the state. It runs in the middle of the Bida Emirate from north to south. On the opposite side of the Cis-Kaduna is the “Trans-Kaduna” region. These two terms originated from the Nupe name of the Kaduna River, *Lavun*. Cis-Kaduna is the districts east of Kaduna River, and Trans-Kaduna² is the districts west of Kaduna River. The domain of the current Bida Emirate covers territory of six Local Government Area (LGA)³, which are Katcha, Gbako, Bida, Lavun, Edati and Mokwa.

¹ Niger State came into existence in 1976. The State was carved out of the former North Western State and comprises most of what was before then known as Niger Province. During the British protectorate from 1900 to 1960, the region where the Nupe people lived was called the Nupe Province which was put under Northern Nigeria. While the Niger State is now officially recognized as locating at central Nigeria, historical literatures referred the state as a section of the northern region.

² A few villages on the Trans-Kaduna region have also been studied for questionnaire on yam production.

³ The modern public administration of Nigeria operates at a three tiers structure. The first tier is the Federal Government, the second tier is the State Government and the third tier is the Local Government (LG). There are 25 Local Government Area (LGA) in the Niger State.

Figure 2-1. Location of the research area, Cis-Kaduna, Bida Emirate, Central Nigeria⁴.



Source: Fieldwork.

The rural communities studied in the fieldwork scatter on four LGAs east to Kaduna River, namely Katcha, Gbako, Bida, and Lavun. I thus borrow the term “Cis-Kaduna” for the general naming of the research area. It has to point out here that the Lavun LGA is actually divided into two parts: one northwest to the Kaduna River, which I mark “Lavun (Kutigi)” on figure 2-1; and another one southeast to the Kaduna River, which I mark “Lavun (Doko)”⁵. The two parts are a few kilometer away from each other and do not share a common boundary. The unusual shape of the Lavun LGA

⁴ It should be mentioned here that multiple sources of information have been combined in order to produce this map. First of all, official map indicating the boundary of all local government area of the state was almost inaccessible. What I could get was only a poor quality copy of the map produced in 1997 by the Survey Division, Ministry of Works, Transport and Housing of the Niger State Government. Over the past years more Local Government Area has been created, from 9 in 1976 to 42 in 2002. However, some new LGAs have been dissolved because they were not gazette by the National Assembly. The LGA number then went back to 25. This history leads to some confusion of the boundary of LGAs. Second, there is no available map showing the current domain of the Bida Emirate. I draw the boundary by referring to a few maps showing the ancient kingdom of Nigeria, as well as information provided by the Secretary of the Bida Emirate Council.

⁵ Lavun (Doko) is unofficially called Doko LGA. There was an attempt to create the Doko LGA in 2002, but it has never been gazette and was dissolved. Kutigi which locates west of Kaduna River it is the headquarters of Lavun LGA.

is due to the history of LGA division over the past decades. The territory of the Bida Emirate for example, has only two LGA, Gbako and Lavun, in 1976, but now it has turned into six LGAs. Many of the rural communities studied in this work locate on the “Lavan (Doko)” LGA.

The largest town in this area is Bida. It is the headquarters of the Bida Emirate ruled by Bida *Emir* (who also possesses the title of *Etsu Nupe* (king of Nupe)), and it is also the second largest city in the Niger State. The dominant ethnic group of the research area is Nupe, with an absolute majority of them being subsistence farmers. It is estimated that there are close to 1.5 million of Nupe in Nigeria, with majority of them reside in Niger State⁶. Table 2-1 indicates the population and population density of Bida Emirate and Niger State. The figures are taken from the 1963 and 2006 population censuses. Population and population density of the Niger State and the Bida Emirate has multiplied by three folds in four decades. The Bida Emirate takes up for 19% of the land area of the Niger State, and in 2006, 27% of the Niger State population inhabit in the Bida Emirate. It has a higher population density compared with other parts of the Niger State. Within the Emirate, the Cis-Kaduna region is especially dense. The difference in density of population east and west of the Kaduna River lies in the historical fact of the Fulani conquest of Nupe and the immigration of the Fulani rulers and their huge army or warriors, slaves, courtiers, and other dependents into the area east of the Kaduna, where they settled, occupied the land, and built their capital and numerous villages (Adeniyi, 1972a). The history of the conquest will be described later in more detail.

The study area locates on the so-called “Middle Belt” which stretches across central Nigeria longitudinally between the 8th and the 12th parallels north. The Middle Belt is populated largely by minority ethnic groups and is characterized by a heterogeneity and diversity of peoples and cultures. The eminence of manifold minority groups in the region constitutes an ethno-linguistic barrier in Nigeria, drawing a separation between the principally Islamic North and the more secular, Christian/animist south. Ethnical conflicts have been increasing over the past years in

⁶ The Nigerian official census in 1991 placed the population of Nupe at 1,062,000. The most recent estimation made by the US Center for World Mission, a Christian organization, is 1,472,000. <http://www.uscwm.org/index.php/about/>. (Accessed on 30 August 2012). The World Christian Database estimates that 92% of Nupe are Muslims, 5.2% are Animists and 2.8% are Christians. <http://worldchristiandatabase.org/wcd/>. (Accessed on 1 April 2008). Nupe account for about 1% of the total population of Nigeria.

places like Kaduna, Bauchi and particularly Jos, where followers of Islam and Christian live relatively close to one another. In the Niger State, the other major ethnic groups apart from the Nupe, are the Hausa, the Gwari, the Fulani and the Kumuka. However, little is known about their actual number because the Nigerian population censuses do not provide any details on tribal distribution.

Table 2-1. Population and Population Density of Bida Emirate and Niger State.

Locality	Population (2006)	Population Density per km ² (2006)	Population (1963)	Population Density per km ² (1963)
Bida Emirate	1,052,998 (27%)	80	385,093 (32%)	28
Cis-Kaduna ⁷	542,781.5 (14%)	94	196,963 (16%)	43
Trans-Kaduna	510,216.5 (13%)	69	188,130 (16%)	21
Niger State	3,950,249 (100%)	52	1,194,508 (100%)	16
Niger State (Excludes Bida Emirate)	2,897,251 (73%)	46	809,415 (68%)	14

Source: Data derived by author based on 1963 and 2006 population censuses.

Bida town locates about 40 km north to the river course of the Niger River. Situated in the Middle Belt, the research area does not experience extreme seasonal climatic changes. Figure 2-2 shows the monthly temperature and rainfall of the research area. Meteorological data over the period of 1994 to 2010 has been collected from the Niger State Agricultural Development Project, Bida Zonal office. The data were recorded in the National Cereals Research Institute (NCRI) station in Badeggi, a small town in Cis-Kaduna which is about 6km east of Bida town. Average maximum temperatures were highest between February and April, reaching 38.7°C in March. It was the most modest in July and September. Average minimum temperatures were lowest in December and January, which was recorded as 16.8°C in December. The mean average monthly temperature throughout the year was 28.1°C, with the average minimum and maximum temperatures ranged from 21.9°C to 34.2°C. The research area

⁷ For figures of 2006, population of new Lavun LGA is evenly divided into two and allocate to Cis-Kaduna and Trans-Kaduna. For figures of 1963, data of the old Lavun LGA is used for Trans-Kaduna, and data of Gbako is used for Cis-Kaduna. Number and boundary of LGAs have substantially changed from 1963 to 2006.

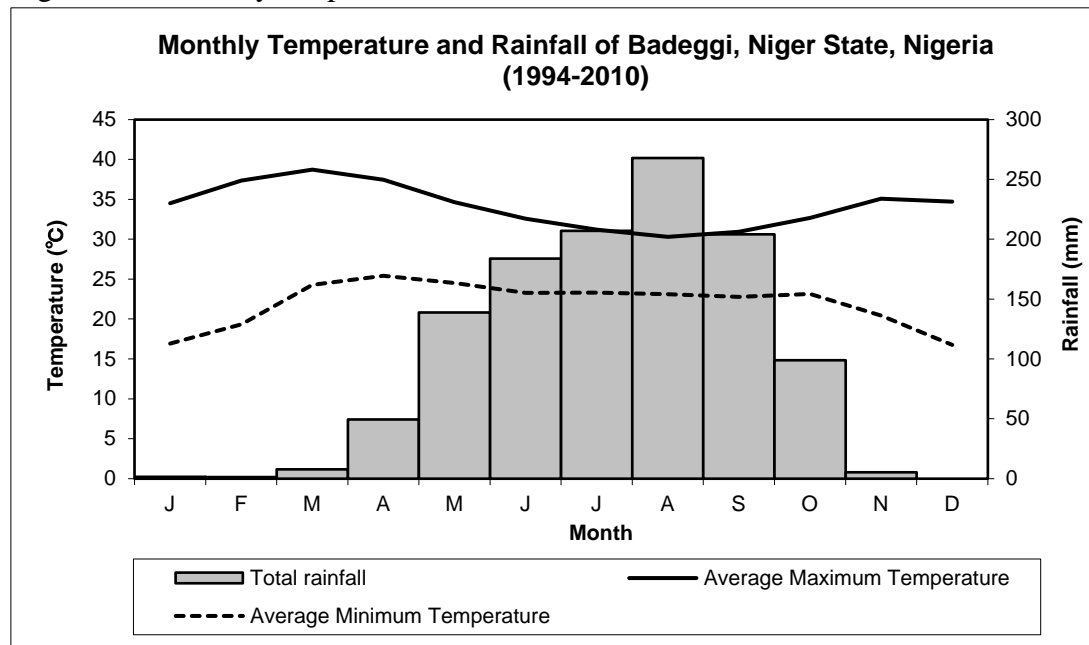
has two distinct seasons in the year – the rainy and dry seasons. The rainy season lasts from May to October while the dry season occurs between November and April. The average highest rainfall is recorded as 267.7mm in August. In most cases over one third of the total annual rainfall concentrates within August and September. The early rains in April are characterized by short, sharp showers accompanied by thunder storms, while the later rains are characterized by short, heavy down-pours. It therefore means that rains are concentrated in only limited days in a year.

From 1994 to 2010, the average number of days of rain was 83.6 (ranged from 74 days in 2010 to 105 days in 1999), which was less than one fourth of the total number of days in a year. The average annual precipitation from 1994 to 2010 was 1,165mm. It was, however, highly variable. The highest annual precipitation reached 1,523mm in 2009, but in 1998, it was lowest as 948mm. Figure 2-3 illustrates the historical record of annual precipitation of research area. Three data sources are combined to produce the graph. Annual precipitation of the study area mostly lies between the ranges of 1,000 to 1,200 mm. A very low annual rainfall was recorded in 1983 (only 807mm). Data from 1984 to 1993 were not available, but the record of 1983 matched with the history of drought that attacked Nigeria in 1983-85. Agriculture was severely damaged and huge numbers of livestock were killed during this drought. The irregularity and concentrated pattern of rainfall constitute major challenge to agriculture in the research area.

The vegetation of the research area belongs to the Guinea savanna zone. The typical vegetation is open woodland, and it is greatly modified by bush burnings. Local variations in soil condition tend to modify the general pattern of vegetation. In the rocky and hilly areas the surface vegetation is sparse and irregular, while relatively dense gallery forests occur along some of the streams and the flood plains. Soil in the study area is generally low in nutrient and fertility (Smaling, et al., 1985; Abe, et al., 2009; Ishida, 1998). The study area is equipped with multiple river inland valleys and has a relatively low altitude. The study area can be divided roughly into uplands and lowlands by the contour line of 250 feet (76 meter). The uplands are not flooded even in the rainy season, while in this season the lowlands turn into floodplains. The wet season is dominated by the cultivation of staple food crops like millet and sorghum, primarily for household consumption, whereas dry season irrigated cultivation is usually given to the production of cash crops. Most of the populations are subsistence-level farmers, whose

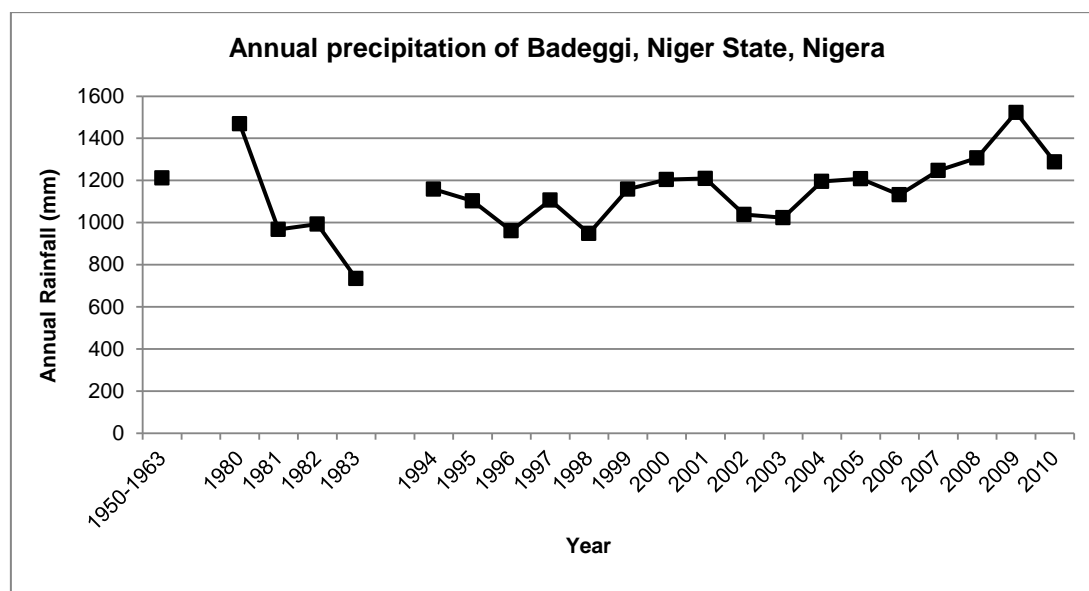
primary household activities consist of rain-fed farming, small-scale irrigated production, animal husbandry, and some fishing from the rivers.

Figure 2-2. Monthly temperature and rainfall of research area.



Source: Arranged by author based on data obtained from the Niger State Agricultural Development Project.

Figure 2-3. Time-series annual precipitation of research area.



Sources: Arranged by author based on data of the following sources.

- 1) 1950-1963: Adeniyi, 1972b.
- 2) 1980-1983: Federal Ministry of Agriculture and Natural Resources, Meteorological Department, Lagos
- 3) 1994-2010: Niger State Agricultural Development Project.

2.3. Political history of Bida Emirate

2.3.1. History of the Nupe Kingdom before the Fulani conquest (14th century to early 19th century)

The origin of the Nupe tribe was uncertain. According to some traditions the Nupe have always lived where they are today, but other traditions refer to migration from other areas such as the Hausa and the Yoruba countries (Nadel, 1942: 18-22) and even the North-East Africa (Ibrahim, 1992: 1). Before the fifteenth century, what was known as the Nupe country had been made up of several different independent states such as the Beni confederacy, the Kyedye and Batachi riverine polities and other independent village political systems (Ismaila, 2002:1). The Beni was the main nucleus of the old Nupe kingdom. They became a political unit in the fourteenth century when the twelve towns of the Beni confederacy recognized the supremacy of one of the towns, Tafien, and gave allegiance and tribute to its chief. They were bound to fight together and support each other in time of war (Forde, 1955:18) ⁸. At that time the Beni confederacy was subject to Igala, which itself was under the overlordship of the Benin kingdom. The Beni paid annual tributes to the Igala king at Idah in the form of slaves (Ismalia, 2002: 11-36).

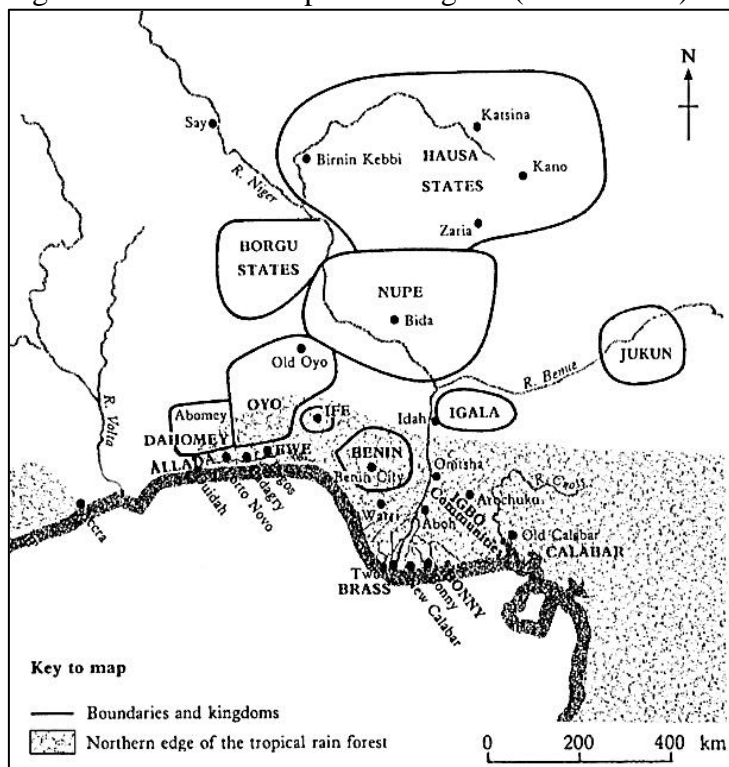
Tsoede (or Edegi in Hausa) was the cultural hero who, according to the Nupe legends, was the mythical founder of the Nupe kingdom. Mason (1981: 13) suspected that the Tsoede myth may have expanded in the colonial period to inflate certain political claims, but he also pointed out that the central elements in Tsoede's story may have been infused in Nupe political culture possibly even before the nineteenth century. According to the myth, Tsoede was born in 1465 (Yahaya, 2003: 95). His mother was the daughter of the Tafien chief, while his father was an Igala prince who met his mother during a hunting expedition. When Tsoede was 30 years old, he was included among the slaves to be sent to the Igala king, whom was actually his father. Tsoede was recognized by his father and became the most beloved prince. However, his half-brothers got very jealous of him so his dying father advised him to return to his maternal home (Ibrahim, 1992:2-3). The Igala king bequeathed Tsoede with magical

⁸ According to Nadel (1942:25) the twelve towns were Bida, Tafie, Esa, Doko, Towagi, Egbe, Gaba, Nupeko, Eda, Panjuru, Ewu and Yesa. Some of these towns have already vanished.

and symbolic regalia. On his return, Tsoede not only gained control over parts of Nupe but also conquered the lands of neighboring peoples as well, notably northeastern Yoruba, Kamaberi and Kamuku (Mason, 1981:13).

In 1531 Tsoede declared himself in Nupeko, the first capital of the Nupe kingdom, *Etsu Nupe*, the king of all Nupe. The capital was later shifted to Gbara on River Kaduna. Tsoede further extended his kingdom by conquering the lands of other tribes and died in 1591 at the reputed age of 127. With the creation of the Nupe kingdom, dominance in middle Niger shifted from Igala to Nupe (Ibid, Yahaya, 2003). Figure 2-4 shows the location of the Nupe, Igala and Benin kingdoms. The Nupe dynasty established by Tsoede ruled for some 300 years before the coming of the Fulani and the establishment of the Fulani dynasty. From 1796, the Nupe dynasty split into two halves as internal insurrection happened among the ruling family. The eastern branch of the kingdom based in the ancient capital Gbara on the River Kaduna while the western branch based in the newly built capital Raba on the River Niger (Ibrahim, 1992:3-5, Forde, 1955: 22) (figure 2-7 shows the location of the two capitals).

Figure 2-4. Ancient empires of Nigeria (1600 - 1800)



Source: Adjusted based on Kwamena-Poh et al, 1982: 15.

2.3.2. The Fulani Empire in the 19th century

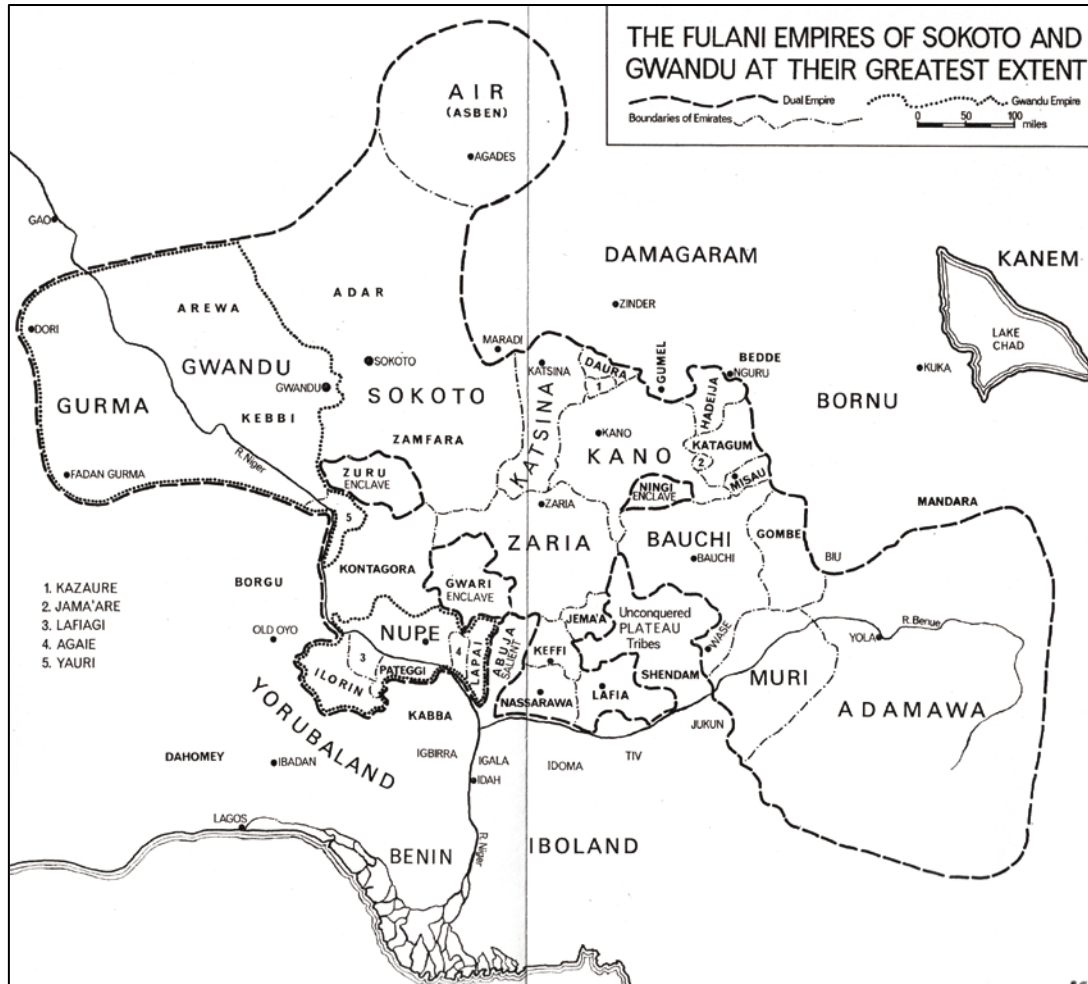
In the first decades of the nineteenth century, northern Nigeria was blasted by tempests of political changes. The history of this period has been written by Johnston (1967), Hogben and Greene (1966), Hogben (1967) and Imoagene (1990). The most dominant event in this period was the Fulani *jihad* that finally created the most powerful empire in sub-Saharan Africa prior to European conquest and colonization. The Fulani conquest was achieved in two phases and by two methods: a gradual infiltration of the foreign country by Mohammedan Fulani, and then ultimately, a military conquest. It was believed that the Fulani penetrated into the Hausa States since about thirteenth century. Usman dan Fodio was the leader of the military *jihad* and the founder of the Fulani Empire.

Usman dan Fodio was an urbanized ethnic Fulani who lived in the Gobir city-state of the Hausa state. He was an Islamic religious teacher and writer. Motivated by his reformist ideas and under increased repression by local authorities, he led the *jihad* against the Hausa kings from 1804. The uprising was joined by large numbers of Fulani and also many Hausa peasantry who felt over-taxed and oppressed by their rulers. The Fulani communication during the war was carried along trade routes and rivers draining to the Niger-Benue valley, as well as the delta and the lagoons. The call for *jihad* did not only reach other Hausa states such as Kano, Katsina and Zaria but also Borno, Gombe, Adamawa, Nupe and Ilorin. With the powerful cavalry the *jihad* rapidly spread throughout the region. After only a few short years, Usman was in command of the largest state in Africa: the Fulani Empire which stretched from what is today Burkina Faso to Cameroon (figure 2-5).

The new empire was organized into a series of emirates that were loosely controlled by Usman. Under him the empire was split into two divisions, one ruled by his brother, the other by his son. In 1815 Usman retired from the Sultanate and the empire was passed to his son, Muhammed Bello who later built up the new capital at Sokoto and turned it into a major center. The Fulani Empire in the nineteenth century was thus often referred to as the Sokoto Caliphate. Usman 's brother Abdullahi dan Fodio continued to rule in the west as the *Emir* of Gwandu. The position was passed to his heirs but remained subordinated to Sokoto. The Nupe Emirates conquered by the

Fulani belonged to the western division of the decentralized dual empire and was under the supremacy of Gwandu until the British colonization in the early twentieth century.

Figure 2-5. The Fulani Empires of Sokoto and Gwandu at their greatest extent.



Source: Johnson, 1967. Map 2.

2.3.3. The Fulani conquest of the Nupeland

We enter now a period of Nupe history which is directly relevant to the present traditional administration of the Bida Emirate and the interethnic relationship between the Nupe and the Fulani. The history of the Fulani conquest and the Fulani dynasty of the Nupe Emirate were recorded in detail in Dupigny (1920), Nadel (1942), Mason (1981), Ibrahim (1992) and Ismaila (2002).

2.3.3.1. Mallam Dendo – founder of the Fulani dynasty

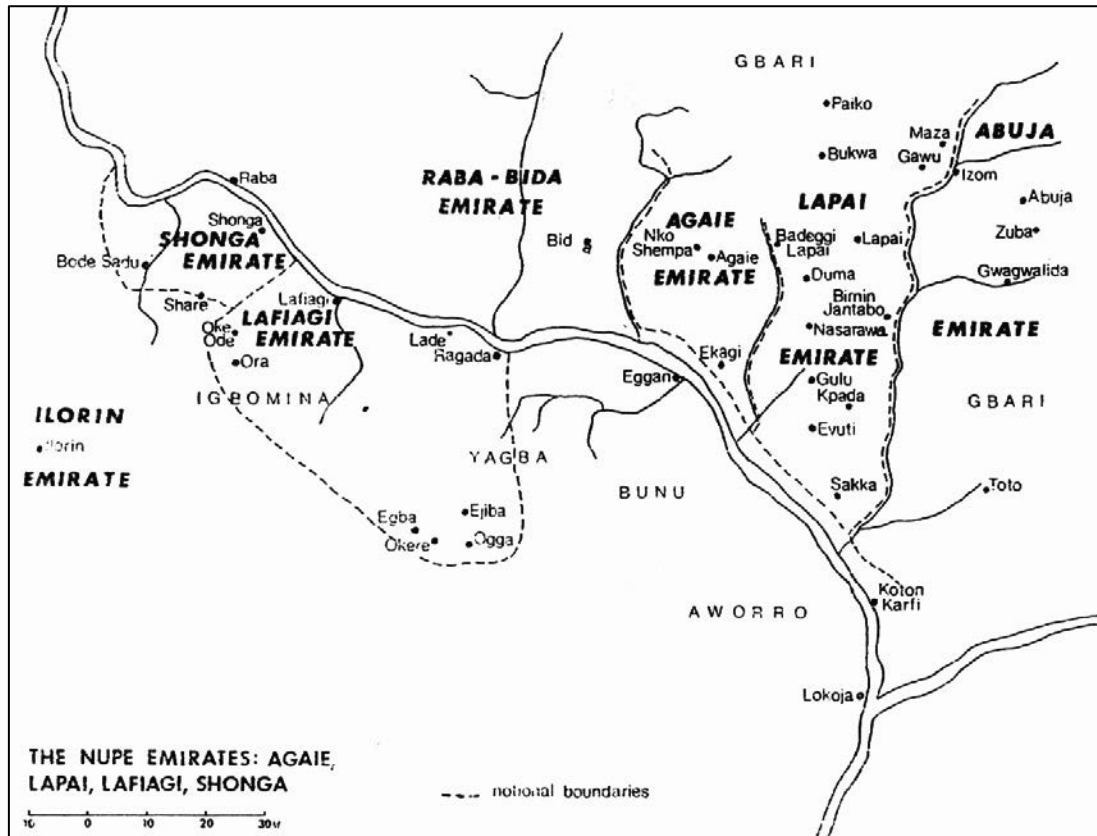
The date when the Fulani first reached the Nupeland was unknown. The country has been generally unsuitable for the inhabitant of cattle during the rainy season because of the prevalence of tsetse fly which was the primary biological vectors of trypanosomes. However with the possession of numerous river basins, the country provided good grazing resources for cattle during the dry season. It was thus possible that small scale Fulani herds appeared in the country during the dry season in a much earlier stage before they finally succeeded to penetrate into the country for long-term stay. Ismaila (2002:49) estimated that Fulani preachers and cattle owners began to settle in the Nupeland around the end of eighteenth century. Among them the most important person was Mallam Dendo⁹, a Mohammedan preacher and emissary who later conquered the Nupeland and founded the Fulani dynasty. He collected an ever-increasing group of followers as the nucleus of future conquest. Nadel (1942:77) estimated that his followers included cattle Fulani, Fulani and Hausa mercenary soldiers, merchants from northern towns and Mohammedan priests and missionaries, that their number at the time of the conquest was not more than 1,000 or 1,500. When Mallam Dendo became strong enough to venture the decisive blow, he applied to the *Emir* of Gwandu, his overlord, for military help and for a *tuta*, flag, which signified his official recognition as a leader and accepted feudal chief of the Fulani Empire.

At that time the Nupe kingdom has split into two: the eastern ruling branch and the western ruling branch, due to internal trouble within the Nupe royal family. Mallam Dendo and his followers first allied with the western ruling branch to fight against the eastern ruling branch. However, feeling threatened by the growing influence of Mallam Dendo, the *Etsu* of the western branch betrayed him. Mallam Dendo fled to Ilorin where Fulani rulership has already been established, and joined forces with the eastern branch to take his revenge. He defeated the western branch, conquered the capital Raba and installed himself as the real ruler while letting the two *Etsu* of the two ruling branches remained as puppet kings. The major portion of the Nupe kingdom conquered by Mallam Dendo was often referred as Nupe Emirate. On the other hand, some parts of the original Nupe kingdom were divided by other Fulani elites and a number of small

⁹ The real name of Mallam Dendo was Mallam Muhammadu Bangana. He was also named as Manko, meaning the great Islamic scholar with supernatural power (Ibrahim, 1992:6-7).

emirates, such as the Lafiagi, Shonga, Agaie and Lapai, were set up (figure 2-6). These Nupe Emirates were incorporated into the Fulani Empire and put under the overlordship of the *Emir* of Gwandu.

Figure 2-6. The Nupe Emirates in the 19th century.



Source: Mason, 1981. P. 24.

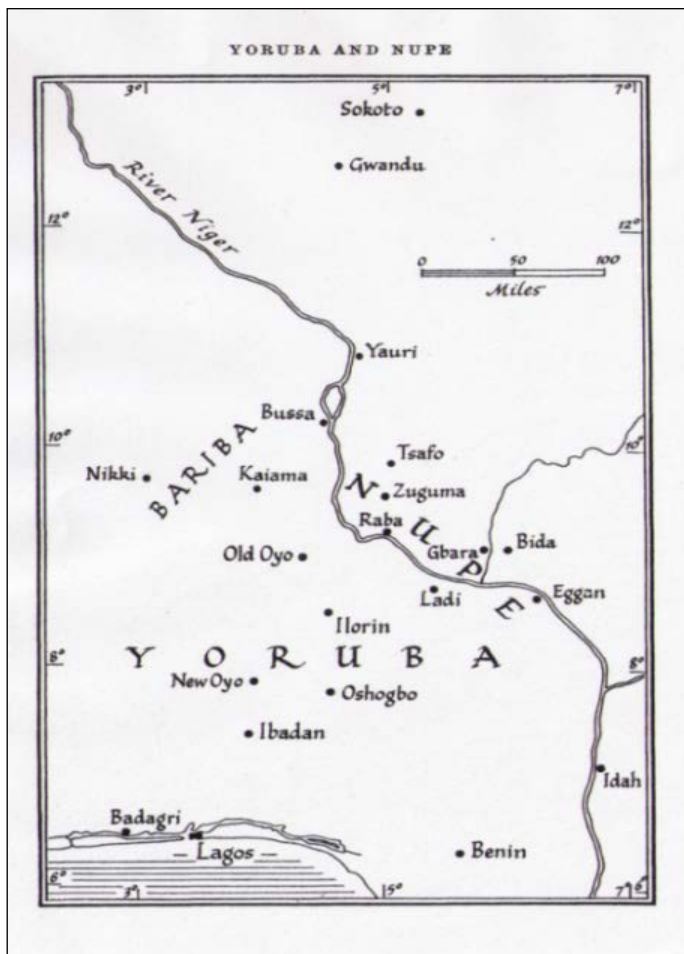
2.3.3.2. Rivalry among the sons of Mallam Dendo – the establishment of the three royal houses

Mallam Dendo died in September 1833 leaving four sons and two daughters. The sons being Abdu Gboy, Usman Zaki, Mamudu Gwogi, and Masaba, the daughters being Gogo Sabaci and Gogo Wodiko. When establishing the Raba regime, Mallam Dendo has appointed Usman Zaki as *Sarkin Fulani* (head of Fulani). After his death, Abdu Gboy became the *Alkali* (Islamic judge) of the kingdom. Though Usman Zaki was nominally only the spiritual head, the real rulership fell on him. Shortly after October 1833, the delegation from Gwandu officially accepted his position as *Emir* of

Nupe within the Caliphate. The puppet *Etsu Nupe* of the western branch revolted but was defeated and killed. Thereafter in 1836 Usman Zaki adopted the title of *Etsu Nupe* himself, demanding the ancient regalia from the exiled shadow king and making Rada again the official capital of the kingdom. From this time the legitimate dynasty of Nupe abandoned all legal claims to the rulership over the country, and the new Fulani dynasty assumed full powers. Since the traditions of the previous Nupe dynasty were mostly preserved, the kings of the Fulani dynasty retained the title of *Etsu Nupe* while also being called *Emir*. It is the background of how the traditional ruler of the Bida Emirate possesses the two titles of Bida *Emir* and *Etsu Nupe*. The history of Nupe kingdom from this time was the history of constant intrigues, fights, war and rebellions. Masaba, the ambitious and most popular youngest son of Mallam Dendo, born of a Nupe mother and educated at the court of the Nupe *Etsu Majiya*, claimed that the throne on the ground that he was a real Nupe and not, like Usman Zaki, a Fulani by descent. Masaba won the supports from the shadow kings of Nupe, and finally even the support of the *Emir* of Gwandu. He led two revolts against Usman Zaki, the first from Raba, shortly after the latter has assumed power, and the second from exile in Lade, south of River Niger, in 1814. It was successful and forced Usman Zaki to leave Nupe kingdom together with Umaru, the son of his eldest brother Majigi, and to return to the home of his ancestors, Gwandu. Masaba became the *Emir* and established the capital at Lade (figure 2-7).

In 1847 Masaba ordered his mercenary general, Umar Bahaushe, to wage war on the two Nupe rival leaders. Nevertheless, Umar joined the enemies and revolted. Masaba was forced to flee Lade to Ilorin. Umar, for some time undisputed master of Nupe, attempted to make himself the king. All Fulani rallied against him, Usman Zaki and Umaru Majigi returned from Gwandu and joined forces with Masaba against the usurper. For three years the usurper defeated the Fulani armies battle after battle. At last the luck turned in 1856. The Fulani army under Umaru Majigi, fleeing from the usurper's army across the Kaduna River, found protection in the walled town of Bida (figure 2-7). With the arrival of Masaba's troops from the south, and with the assistance of the town-king of Bida and the twelve Beni towns whose confederacy was brought into play for the last time in Nupe history, Umar's army was defeated after a three months' siege of Bida.

Figure 2-7. Important cities of Nupe and Yoruba countries in the 19th century.



Source: Morton-Williams, 1968, p. 2.

From this war the Fulani in the Nupe land were united. The rulership of the kingdom has also been determined to be circulative among Usman Zaki, Masaba and Umaru Majigi. Usman Zaki was first reinstated as *Emir* with Bida as the new capital. He died in 1859, and was succeeded by Masaba, whose second reign lasted till 1873. During Masaba's reign Nupe kingdom grew extensively. Under his rule Bida was transformed from a huge war-camp into a capital worthy of the most powerful kingdom of Central Nigeria. The three royal palaces, the night market and the central mosque were constructed. Umaru Majigi succeeded Masaba and reigned from 1873 till 1884. He was said to have been a fanatic Mohammedan, and he helped to extend the boundaries of the kingdom too. He was the first Bida *Emir* who used gunpowder in battles that he bought from the Niger Company trading-post newly been established in Egga on River Niger.

It should be noted that the Fulani conquerors of Nupe, numerically an insignificant minority, were absorbed completely by the culture of the people whom they subjugated (Nadel, 1942: 71). Majority of the Fulani conquerors were ‘town Fulani’¹⁰ who had long been settled in the northern Hausa states and whose culture had become identical with that of Hausa. In Nupe country the ‘town Fulani’ conquerors lost their language and the last characteristics of their race and original culture. After generations of intermarriage, racially they were indistinguishable from their subjects. The Fulani conquerors have been totally “Nupe-ized” that nowadays they regard themselves as Nupe rather than Fulani, and that many Nupe are not even conscious of the alien origin of their rulers.

2.3.4. The British colonization from 1897

Between 1870 and 1980 the Royal Niger Company had established trading-posts all along River Niger and its northernmost posts being situated on Nupe territory. The Nupe kingdom established trade relations with the Company in 1871. During the reign of the fifth Bida *Emir*, Abubakai, trouble broke out in the south of the kingdom that some tribes revolted against Bida suppression. In order to protect the important trading-posts in this part of the country, and also for the disputes over trade and slave dealing, the Company allied with the revolted forces and launched the campaign against Bida (Nadel, 1942: 83; Idree, 1989). The Company conquered Bida in January 1897. They deposed *Emir* Abubakari and appointed the more pliable Mohamadu as the sixth Bida *Emir* (Mason, 1981: 141-159). The exiled Nupe king of the eastern branch was given the territory on the southern bank of the River Niger to set up the Pategi Emirate in 1898 (Ibrahim, 1992: 32-36)¹¹.

The Niger Company and later its successor, the Government of Northern Nigeria, continued for some time this policy of breaking up the too dangerous big Nupe kingdom. Regions of some tribes became independent districts and provinces immediately after the conquest of Bida. The Nupe possessions on the southern and western bank of the

¹⁰ “Town Fulani” is *Fulbe siire* in *fulfulde*. It refers to Fulani urban dwellers who may or may not own cattle. It opposes to the term *Fulbe ladde*, “bush Fulani” who are nomadic in nature and live in bush.

¹¹ Pategi Emirate was much smaller than Bida Emirate that it could not bring any threat to the Fulani dynasty. At the present day the Pategi Emirate still exists under Kwara State. The current *Emir* of Patigi is the 27th *Etsu* by direct descent from Tsoede.

River Niger were also taken away and placed in Ilorin province and shared by other Emirates. Of the ancient Nupe kingdom that had reached from the Benue in the south to Gbagede in the north, only Bida division remained (Nadel, 1942: 83-86). Under British rule, Nupe Emirate became known as Bida Emirate. On the 1st January 1900 the British Imperial Government took over the administration from the Niger Company. The Bida Emirate was incorporated in the newly created Niger Province of Northern Nigeria Protectorate¹² in 1908 (Dupigny, 1920: 6-7). Frederick Lugard, the High Commissioner of the Protectorate of Northern Nigeria from 1899 to 1906 and Governor-General of Nigeria from 1914 to 1919, developed the colony policy of indirect rule in which the traditional local power structure was incorporated into the colonial administrative structure (Metz, 1992: 31-33). Lugard (1965) reasoned that black Africans were inherently different from white Europeans and they would be more likely to follow someone who looked like them, spoke their languages, and shared their customs. He considered conventional direct methods of ruling inappropriate but with African appointed officials acting as a sort of middle manager in colonial governance revolt could be avoided. Under the indirect rule system, external, military, and tax control was operated by the British, while most every other aspect of life was left to local pre-colonial aristocracies who had sided with the British during their conquest. As a result of the indirect rule, the power structure of the Fulani dynasty of the Bida Emirate was retained and it continues to function even to date.

2.3.5. The current Fulani dynasty of Bida Emirate

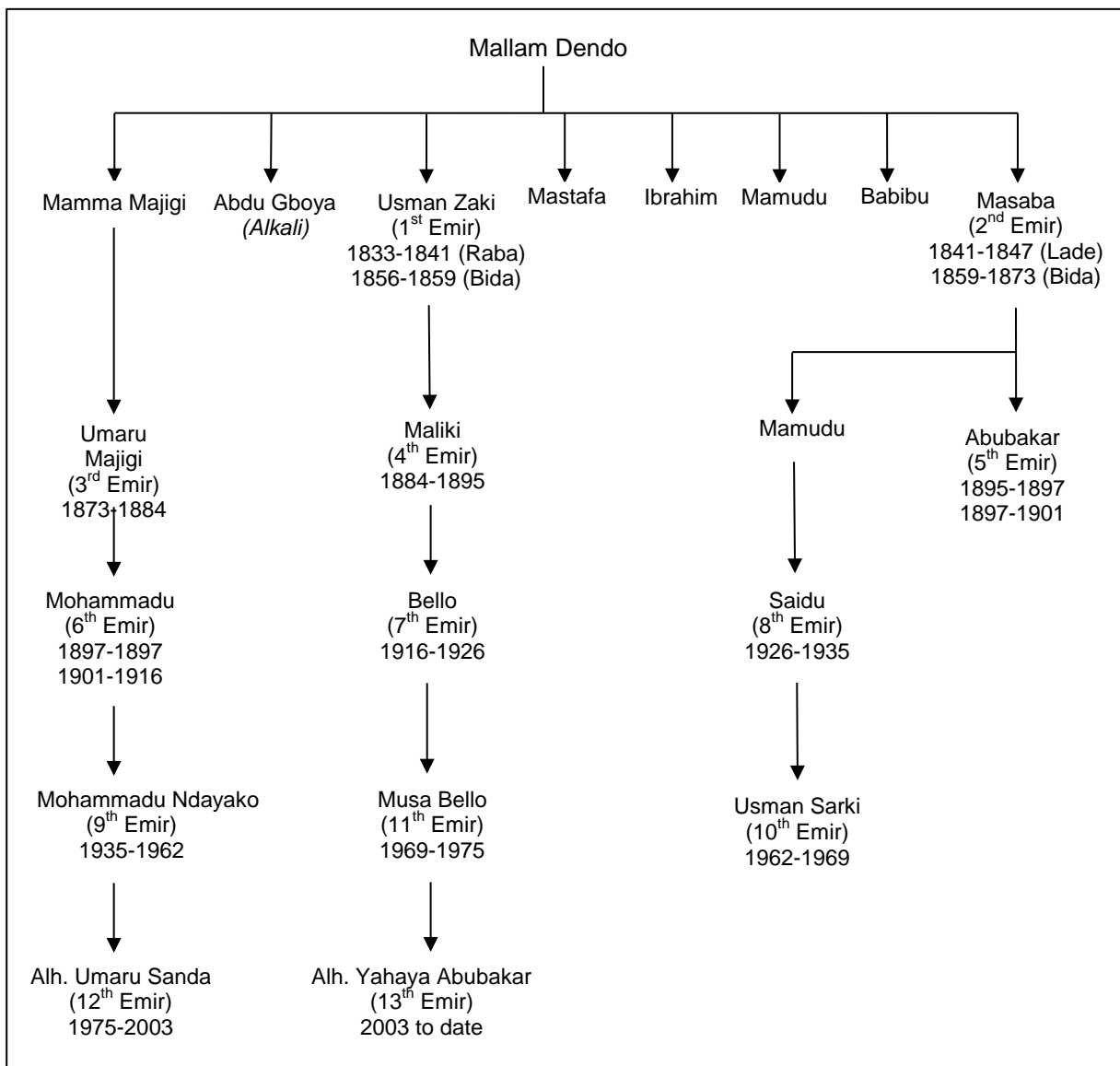
On October 1, 1960, Nigeria gained its independence from the British. Modern administration has been created, and the traditional rulers came increasingly influenced by the military and civilian governments. Although formal powers of traditional authorities have been reduced, they continue to provide leadership to unite people by enforcing ethnic identity and religious belief. They still exert considerable authority in the issues such as natural resources allocation and dispute resolution. The Bida Emirate is today one of the eight emirate councils of the Niger State¹³ and is the most powerful one. The Fulani dynasty founded by Mallam Dendo continues to be the ruler of Bida

¹² Northern Nigeria was combined with the Southern Nigeria colony to form Nigeria in 1914 due to the increase in international tensions and the threat of war.

¹³ The eight emirates are Agaie, Bida, Borgu, Kagara, Kontagora, Lapai, Minna and Suleja.

Emirate and Bida *Emir* still possesses the title of *Etsu Nupe*. In Niger State *Etsu Nupe* is the highest ranked traditional ruler and by tradition always the chairman of the Niger State Council of Chiefs. From the time of Usman Zaki until today, the rulership of Bida Emirate has been circulating among the three royal houses of the Fulani dynasty originated from Usman Zaki, Masaba and Majigi. The current regime is the thirteenth Bida *Emir*, Alhaji Yahaya Abubakar, who was crowned on 11 September 2003. The genealogy of Fulani rulers of the Bida Emirate is illustrated in figure 2-8.

Figure 2-8. Genealogy of the Fulani *Emir* of the Bida Emirate.



Source: Modified and updated by author based on Ismaila (2002:98).

2.4. Public administrative systems of Bida Emirate

2.4.1. Dual public administrations

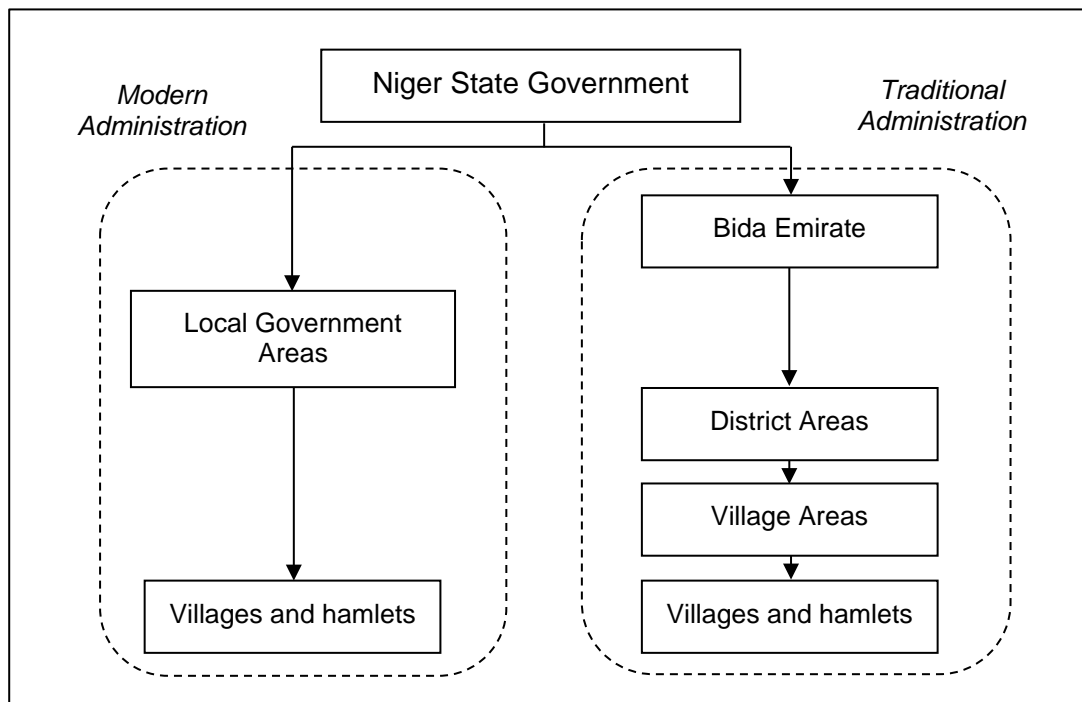
Both modern and traditional public administrative systems simultaneously prevail in the Bida Emirate. The layout of the two public administrative systems of the study area is presented in figure 2-9. The modern administration of the Niger State was founded in 1976. Under the Niger State government, there are twenty-five Local Government Areas (LGA) which are grouped into five administrative zones. Each LGA is administered by a Local Government Council consisting of a chairman who is the Chief Executive of the LGA, and other elected members who are referred to as Councilors. The Bida Emirate covers the territories of 6 LGAs¹⁴, which are divided into 25 Districts and further into 173 Village Areas. The LGAs were created by the modern administration after the independence for the purpose of replacing the Districts which were the third tier administrative unit under the Native Administration of the British rule. Nevertheless, the attempt of the modern administration to dissolve the traditional authority was unsuccessful. In the Bida Emirate the traditional administrative units have largely remained and embodied in the modern system. The LGAs have not replaced the Districts but have become the extra administrative units. Although the modern administration is supposed to be independent from the traditional administration, in reality the two systems largely overlap. It is not uncommon to find traditional title holders also occupying the positions in LGA Executive Councils.

The Bida Emirate has been divided into a number of districts for the purpose of administration under the British rule (Nadel, 1942:159). The number of district has increased overtime that there are now 25 districts in the Emirate, at the head of each is a District Head appointed by the Bida *Emir* as a rule from the ranks of the higher royal nobility. The District Heads are supposed to live in the headquarters of their districts to be close to their people. They are responsible to the Bida *Emir* for the law and order in

¹⁴ Based on the information provided by the Emirate Secretary (a modern position created by the State Government), it is indicated that four more small LGAs are created within the domain of the Bida Emirate, namely Kede, Doko, Edozhigi and Badeggi. Nevertheless, these new LGAs are not officially recognized by the State Government (<http://www.nigerstate.gov.ng/>, accessed on 13 November 2009). They are traditional Districts which are providing public services and recognized by local people as Local Government.

their districts. They have to make frequent tours of inspection of their area, and at regular intervals visit Bida to report to Bida *Emir*. The general title of District Head is “*Hakimi*”, in addition every District Head is glorified his own unique traditional title, for example the title of Jima District Head is *Sonturaki* and of Gaba District Head is *Dokoji*. Each District Head manages a number of Village Areas. Based on the information I got from the Emirate Secretary, the smallest District consists of four, while the largest District consists of eleven, Village Areas. District Heads periodically meet with the Village Area Heads to be informed of the local conditions and to deliver instructions of the LGAs and the Emirate.

Figure 2-9. Modern and traditional public administration of the Niger State and the Bida Emirate.



Source: By author

The Village Areas are headed by the *Etsu Nyenkpa*. This position was created during the colonial era that in the reorganization of the Emirate under British rule only the larger villages have been created seats of official village heads. The number did not comprise all the places which were villages in traditional native conception. Therefore, people created the terminology to address those Village Area Heads as *Etsu Nyenkpa*, which meant “Money Chief” or “Tax Chief”, because the *Etsu Eyenkpa* was responsible

for tax collection from people in his ward for the administration. On the other hand, people called their traditional, official unrecognized chiefs as “*Zitsu*”, which meant “town-king” (Ibid: 52). Every *Etsu Nyenkpa* is the Village Head of his own village, and he manages a few dozen of villages in his Village Area¹⁵. The *Etsu Nyenkpa* are the lowest level chiefs in the Emirate which officially receive salary from the modern administration. They are usually assisted by some elders who are heads of families of the same villages. These elders are not paid, but they voluntarily offer their help because of the respect that people give them for the tradition. The positions of *Etsu Nyenkpa* are bounded to designated villages and do not normally shift from one village to another village. But same as Districts, the Emirate has increased the number of Village Areas over the past¹⁶. New Village Areas have been created and new *Etsu Nyenkpa* has been appointed. For example, the Eyagi Village Area was created by the late 12th Bida *Emir*¹⁷.

Olowu and Erero (1995) revealed that in Nigeria, urban and rural communities are organized for self-governance by indigenous institutions due to the failure of the formal structures of government. In Bida Emirate, the traditional administrative system is more relevant to ordinary Nupe farmers living in rural villages than the modern system. Nowadays, *Etsu Nyenkpa* still collect the poll tax, which is 100 Naira per head, from the people in his Village Area for the Local Government every year¹⁸. The LG Councils are responsible for the development of the LGAs, to provide education and health services and to assist farmers in agricultural development. However, public services delivered to ordinary Nupe farmers from the LG are very limited. Villages in the Nupe Emirate are still very primitive with almost no infrastructure built by the government. There was only very few villages that I visited got certain degree of electricity. Most of the villages

¹⁵ The lists of villages of the Kuchigbako Village Area and Eyagi Village Area are attached to Appendix 2-1 to serve as examples.

¹⁶ By increasing the number of Districts and Village Areas, the Emirate was able to raise the number of title holders.

¹⁷ The mother of the late 12th Bida *Emir* was from Eyagi Village. It was said that the village became influential due to the matrimonial relation with the royal family. When the late *Emir* was in power, he made the LG build a primary school in the village. He also donated a mosque, a borehole and a generator to the village. The construction cost of the borehole was about 200, 000 Naira. Eyagi villagers submitted ten bundles of sorghum to the late *Emir* as gift every year to express their gratitude. In return he used to give them kola nut and money as counter-gift. After his death, following the tradition the seat of *Emir* rotated to another royal house, but Eyagi villagers kept sending ten bundles of sorghum annually to the son of the late *Emir* so as to maintain the relationship.

¹⁸ The Kuchigbako *Etsu Nyenkpa* reflected that he only has the list of tax payers based on the 1991 census; therefore many people are not actually paying the tax as their names are not on the list.

I know have only mud constructions built by villagers, there is no electricity supply, villagers mostly depend on wells and streams for water, not to mention about sewage, road and clinic. The most important service that ordinary Nupe farmers could benefit from the modern administration is perhaps the primary school in some of the Village Wards. The LGs appear to be handicapped in answering the requests of people. An *Etsu Nyenkpa* told me that when people need serious help, they usually resort to the traditional system and try to appeal to the Bida *Emir* so that the Emirate can help them to pressure the LGs. The *Etsu Nyenkpa* described that it is easier for them to pass through the Emirate for doing anything than to “sit and wait” for the response of the LGs. On the other hand, the LGs are unable to execute any rule and order without the approval and cooperation of the Emirate although they are supposed to be independent from the traditional structure. When the LGs need anything from the Nupe people, they need to first connect with the Emirate and then the *Emir* would pass the instruction through the traditional system to the people. The boundary between the traditional and the modern administrative system, as a matter of fact, does not really exist at local level.

2.4.2. Functions of *Etsu Nyenkpa*

The traditional administration system is more essential for ordinary Nupe farmers, largely because of its traditional dispute settlement and arbitative function. There are three Districts, which are Doko, Jima and Gaba, within the Lavun (Doko) LGA¹⁹. Many of the villages that I have researched located in the Kuchigbako Village Area of the Jima District and the Eyagi Village Area of the Gaba District. *Etsu Nyenkpa* are the important elders at village level who connect ordinary Nupe farmers to both the modern and the traditional administrations. They are responsible to maintain peace in their wards and supervise the traditional aspect of life of people. Traditional events such as the death and appointment of Village Heads and religious leaders, mosque construction, wedding and naming ceremony, funeral and so on must be communicated to *Etsu Nyenkpa*. They also advise people on their personal matters, such as to help them to resolve family problems and interpersonal conflicts. When the Emirate needs to mobilize labour from their Wards, for example to have people work on *Etsu Nupe's* farm and for the activity of the Emirate, *Etsu Nyenkpa* are responsible to organize the

¹⁹ There are six Village Areas in the Doko District, five Village Areas in the Jima District, and seven Village Areas in the Gaba District.

cooperation and concerted action of the community. They are also entitled to mobilize people in their wards to work for their own farms occasionally.

Etsu Nyenkpa arbitrate in minor litigation and wield a limited informal judicial power. When disputes occur, ordinary Nupe farmers usually try first to resolve the dispute within their own villages by their elders and Village Heads. When litigants and supplicants are not satisfied with the discussion of their own chiefs, and when the cases involve another village or another ethnic group, such as the Fulani herdsmen, they can bring their cases before the *Etsu Nyenkpa*. They are also free to bring their cases directly to higher level title holders, but for ordinary Nupe farmers they normally bring the cases to *Etsu Nyenkpa* first before they want to process further. The cases that being brought to *Etsu Nyenkpa* are usually interpersonal conflicts caused by some misunderstandings or even by women, family problems between husbands and wives, farmland boundary dispute and crop damages caused by Fulani herdsmen. Interestingly, an *Etsu Nyenkpa* told me that there are far more cases being brought to him during the dry season because people are free from farm work and they have more time to interact and quarrel frequently with others. In the rainy season farmers are busy with their own farms and do not have time to fight. When a case is brought to an *Etsu Nyenkpa*, he will summon his assistances and some other elders. He would ask them for opinions, and for there is no written record, to serve as witnesses. Let me present two examples here to illustrate the judicial function of *Etsu Nyenkpa*.

Farmer A of village X and farmer B of village Y both claimed the usufructuary right over one same farm plot. Farmer B was actually the Village Head of Y village and was also the secondary landowner (a point to which we shall return later) of that farm plot. Since this case involved two villages, farmer B brought the case before *Etsu Nyenkpa*. The two farmers involved, the elders and the Village Head of farmer A, the assistances of the *Etsu Nyenkpa* and some other elders were summoned for the informal discussion. After a long discussion, *Etsu Nyenkpa* advised that as farmer B was wealthier and farmer A was poor, farmer B should let farmer A continue to cultivate the plot to help him out. Farmer B accepted the advice of *Etsu Nyenkpa*.

The cattle of Fulani herdsman C entered the farm of farmer D and ate up the sorghum one night while Fulani C was asleep. Farmer D appealed to *Etsu Nyenkpa* for

justice. *Etsu Nyenkpa* requested the Fulani to come for discussion. Fulani C admitted that his cattle caused the damage and begged for forgiveness since he did not intentionally cause the trouble. He agreed to compensate farmer D, however farmer D requested for 10,000 Naira which he could not agree. *Etsu Nyenkpa* also thought the amount was set too high. He therefore sent his subordinate to the damaged farm to investigate the degree of destruction. After listening to the report, *Etsu Nyenkpa* commented that the right amount of compensation should be 3,000 Naira. The two parties followed the advice of *Etsu Nyenkpa* to settle the dispute at 3,000 Naira.

In the first case, one of the litigants was a Village Head. It was therefore necessary for them to seek for justice from chiefs above the Village Head. The traditional land tenure system of the region is stratified and complicated. We will discuss more about the system in later chapter, but to put it brief, there is a three-layered ownership structure in which the *Etsu Nupe* at the top, the primary landlords who are mostly noble title holders in the middle, and the secondary landlords who are often the village chiefs at the bottom. A Village Area of the region often covers a few dozens of villages, and there is no surprise for the land of one Village Area to be divided and owned by a few dozens of primary landlords. *Etsu Nyenkpa* do not directly related to the land tenure system, but they are often involved in land related dispute because of their positions as the chiefs of Village Heads who are often the secondary landlords. When a primary landlord thinks a secondary landlord under him does not perform his duty to manage the land well and to fulfill his responsibility to submit the right quantity of tribute in a timely manner, he might present his complaint to the *Etsu Nyenkpa* who could then warn and monitor the secondary landlord for him. In the extreme case the primary landlord could exercise his right and to re-call the land from the secondary landlord, *Etsu Nyenkpa* is often involved to help the secondary landlord to beg for mercy. In more ordinary circumstances, when a secondary landlord fails to resolve a land dispute, the case is often brought to *Etsu Nyenkpa* instead of the primary landlord because it is assumed that disputes at village level should be resolved by the secondary landlords. Therefore, *Etsu Nyenkpa* should assist his subordinates to reach for resolution.

The second case involved another ethnic group, the Fulani herders, and the farmers demanded high amount of cash compensation. For most of the minor crop destructions caused by cattle, farmers and herdsman are usually able to reach for the resolution by

themselves, or with the assistance of their community elders and chiefs. However, because village elders usually prefer to maintain a harmonious relationship with the herdsmen, they do not allow younger farmers to request for much compensation for minor case. When the destruction is serious or when the herdsmen are not cooperative, some younger farmers may prefer to seek for justice from *Etsu Nyenkpa* so as to better present their interests²⁰.

The police force and the formal judicial system are rarely utilized by ordinary Nupe farmers. They are indeed free to resort to these formal institutions, but high cost and a heavy loss of time are usually resulted because of severe problem of corruption and police brutality. Litigants and supplicants are often requested to pay much money to the police even though it is a common sense in the study area that efficient procedure and fair justice are usually not guaranteed. An *Etsu Nyenkpa* described that it is “dangerous” to call police so people rather settle the problem by traditional institutions. The jurisdiction of *Etsu Nyenkpa* covers a large range of issues. The *Etsu Nyenkpa* whom I have met told me that so far they have not handled any case that they do not have the power to judge. It is necessary, however when there is serious bloodshed that they have to call the police. In case human life is lost, *Etsu Nyenkpa* must immediately communicate the case to District Heads and the case can only be handled directly by *Etsu Nupe*.

²⁰ Fulani herdsmen and Nupe farmers can also bring their case to *Dikko Bida*, the Fulani chief. Indeed because Fulani are more obedient to their own chief, more cases of such are settled by *Dikko Bida*.



Photo 2-1. A view of the field site (taken on top of a small hill in January 2005)



Photo 2-2. The Bida Emir (*Etsu Nupe*) (under the blue umbrella) in the annual Maulud festival (January 2005)

Chapter Three

The rural livelihood and farming system of Nupe farmers

3.1. Introduction

This chapter is an ethnographic record of the rural livelihood and farming system of the Nupe farmers. The social organization, customary land tenure and agriculture activity of the Nupe farmers are illustrated. Village is the area of common life for Nupe farmers. It provides the basic resources for ordinary Nupe farmers to live with their family, to acquire the skill and land to farm, to get basic security for survival and to participate as a community member. Literatures concerning the rural Nupe community are very rare (Nadel, 1942; Forde, 1955; Masuda, 2002). The ethnography by Nadel provided the most detailed descriptions on the Nupe society, but a few decades have passed since his research and a lot of changes have occurred. I have made various attempts to obtain official information on Nupe villages in the Bida Emirate, such as the list of villages, their locations and population. However information of such was unavailable, and even if the administrations have a little bit of information they were reluctant to release them to the public. A general overview of the Nupe rural society derived from official data was therefore unavailable.

Based on my observation, Nupe villages in the Cis-Kaduna region of Bida Emirate were generally small in scale and backward in development. I have visited over thirty Nupe villages in the Bida Emirate from 2004 to 2009, most of the villages did not have any modern infrastructure like borehole and electricity. Except for villages located along motor roads, often people could find only simple structures of living huts, storages and mosque in a Nupe hamlet, and most of the time there was not even a small shop selling food. This chapter provides the description of the livelihood and community life of rural Nupe farmers. The contents are mainly based on the information gathered by direct observation and unstructured interviews with farmers during fieldwork conducted in January and February 2009. In order to acquire a better

understanding of the subject matter within the limited time available, Emitsundadan village (later shortened as EN village) and the MS house-group of the village were selected for case study.

3.2. Historical origin and customary land tenancy

3.2.1. Founding of new villages by migrants

Bida was the original habitation of the Beni sub-tribe of the ancient Nupe. Before the Fulani conquest in the early nineteenth century, Bida was just a small walled town of the Beni. It was after 1856 that the Fulani conquerors made Bida the new capital of the kingdom, after they had restored to power with the protection and help of Bida inhabitants to fight against the usurper (Ismaila, 2002: 58-61). In 1857 when the British delegation visited Bida, it was still a temporary war camp with an estimated population of 12,000 and most of the people lived in grass houses (Mason, 1981:73). From about 1860 during the reign of the second *Emir*, Masaba, Bida was transformed from a war camp into a fine capital city, and since then had become the political and cultural center of the Nupe even until today.

Changes brought by the Fulani conquerors have shaped the history of the rural communities in Cis-Kaduna region of the Bida Emirate. As one of the most intense battle-fields, there was serious bloodshed in Bida and its surrounding regions. After years of wars and rebellions, many indigenes were displaced, captured and killed. In order to hide from the warriors, some indigenes moved their settlements to different places, and some even hid on top of hills where living condition was very harsh (Masuda, 2002: 255). On the other hand, many new villages were established by new comers brought by the Fulani conquerors. In the conquest of Nupe country the Fulani royal family appropriated three categories of tribal land: all no-man's land between villages, all village land which had been lying fallow for long, and finally the land reserve of some villages. These lands were basically divided up geographically between the three royal houses. Of the land owned by the royal houses by the right of conquest, the *Emir* or royal princes of highest rank bestowed parcels of land as fiefs on their

followers, such as military leaders, members of the nobility, mallams or servants of high status, for the services rendered. These fief holders mostly lived in the capital and never worked their land themselves. They settled their slaves on it, and had it worked by their labour (Nadel, 1942: 195-199).

During the reigns of early Fulani *Emirs*, slave was the dominant force of production and slave raiding expeditions were carried out frequently. Slaves were captured from anywhere most importantly for the annual tribute to be submitted to the overlord in Gwandu¹, and when there were excesses they could be traded to the coast from the ports on River Niger (Mason, 1981, 71-113). Many slaves were also put to farm and work for the Fulani aristocrats. They were settled by fiefholders on their lands surrounding Bida and made to farm. These slave villages were called *tunga* (Nadel, 1942: 36, 196). Under slavery crops produced in *tunga* were mostly extracted by fiefholders, and a portion was in turn to be submitted to the Fulani royal houses as tribute. There were a lot of *tunga* villages being established especially during the reign of Masaba. In order to pay the British for the guns and powders traded, Masaba imposed taxes on his vassals, mostly in the form of Shea butter obtained from *tunga*. In addition, as other emirates exchanged slaves for the guns and powders re-exported from Bida, these slaves were also made to fill newly founded *tunga*. It was recorded that Masaba had established 694 *tunga* during his reign (Mason, 1981, 85-94). In Umaru Majigi's reign the slave population settled in *tunga* still increased in a high annual rate (Ibid: 113). It was uncertain when slavery was actually abolished in the Nupe kingdom, but it was probably during the British colonization that slavery gradually ended.

There was another type of *tunga* villages which were founded by dependents of fiefholders. When fiefholders no longer needed soldiers for their private armies, and when they could no longer support a large household of henchmen and hangers-on in the town, they offered their lands to their followers. In some cases they even settled some of their family members. These new settlers went out into the fiefs of their patrons and founded new farm settlements. These settlements scattered all over Cis-Kaduna and many of them were named after their landlords. The economic arrangement between fiefholder and dependents whom he settled on his land was on metayer system which

¹ Masaba had to send 300 slaves to Gwandu as annual tributes. By 1867 the number of slaves requested increased to 400 (Mason, 1981: 90).

also regulated the tenantry of the free peasant who accepted clientship in order to obtain land (Nadel, 1942: 195-199; Adeniyi, 1972b). The history of the Fulani conquest and the founding of many settlements by migrants, either by slaves captured somewhere or by new coming dependents of fiefholders, explained the background for the higher population density of the Cis-Kaduna region as compared with the rest of the Emirate.

3.2.2. Customary land tenure of rural community in Cis-Kaduna

Land ownership in the Cis-Kaduna region is complicated due to the history of the Fulani conquest. Nadel (1942: 180-256) offers a detailed description on the traditional land possession and distribution in the Nupe kingdom. The Cis-Kaduna region is mostly a “conquered territory”, except some scattered islands of land that have not been taken away from the Nupe indigence. On the land that has been appropriated by the conquerors, multiple layers of ownership would exist as land got divided among the royal families, distributed to men high on the hierarchical scale, redistributed to dependents and slaves, sublet to settlement heads, and so on. The common situation can be simplified into a three-layered structure of land ownership (Masuda, 2002).

On the top level there are the *Bida Emir* and the three royal families. During the process of conquest, the lands were appropriated and divided between the three royal houses. The *Bida Emir* and the three royal families are the ultimate land owners of the territory of the Bida Emirate. There are three royal estates situated immediately outside the Bida town, which used to be overseen by the royal head slaves. In the past, the first cultivation in the year was always done by large-scale communal labour of slaves, dependents and farmers from the neighborhood. To-day the use of communal labour of farmers from the neighborhood still occasionally happens when intensive work is needed for the royal farm. Following the tradition, the *Emir* has to arrange for good food for the people who contribute to the communal work. By being the ultimate land owner, the *Bida Emir* has the right to control activity on the territory of the Emirate and has the judicial power over any land related dispute. The second layer of land ownership is the primary landlords which consist of absentee or sometimes resident landlords. The absentee landlords form the privileged class of town Fulani in Bida. They get bestowed permanent right to their fiefs and traditional title from the royal houses. Powerful absentee landlord would own large parcel of land that covers multiple farming

settlements. The resident landlord probably originated from old slaves or dependents of the noble class, and they lead the life as land holding farmers.

On the third layer there are the secondary landlords who manage land at community level. They are the lineal descendants of the village founders and often also the village chiefs. In some cases they can be the descendants of head slaves or dependents of former *tunga* villages that we have described in the former section. Following the abolishment of slavery and a century of political change, the economic relationship between *tunga* and fiefholders has changed. Unlike in the time of slavery when most of the crops produced were extracted by the landlords, former slaves were freed and allowed to remain on the land and to farm for their own. The right of secondary landlords to the land is bounded by the clientship under the primary landlord. Annual tribute in kind must be paid by a secondary landlord to show the acknowledgement of the dependence of the community on the patron.

The power of secondary landlords over the community land is restricted to allocation of farmland and management of vacant land. His power, however, can be overridden by the primary landlord. When a primary landlord wants to take back the land for his own use, or to shift the secondary landownership to another person, the secondary landlord can do nothing but to obey. This lack of exclusive right to the land can sometimes lead to hardship to farmers of the community. To ordinary farmers, it is the secondary landlord that they have to deal with when acquiring farmland. Secondary landlords enjoy the economic privilege, although nothing big, to receive land rent in kind from tenant farmers. The land rent is known as *dzanka*, an Arabic-Hausa word meaning tithe, a religious obligation for a Muslim to give out of his wealth or farm products in a prescribed portion with sincere and pious intention of giving. In principle, a tenant farmer in the Cis-Kaduna region is supposed to submit one tenth of his production, in terms of bundles of sorghum or millet, or tins of rice, to the secondary landlord of his farmland. The secondary landlords can also derive income from some fruit-bearing trees on the land.

Table 3-1 lists the population, origin and primary land ownership of some of the Nupe villages I have visited. These twenty-five villages scatter over the Cis-Kaduna region and are about 10 to 30km away from Bida town. Villages in Cis-Kaduna are

often small in scale, with an estimated population not more than two hundreds. Out of these twenty-five villages, sixteen are founded by migrants. I will quote some examples here. When Shabamaliki village was founded, a hundred young men and a hundred young women captured as slaves were brought to settle in a virgin forest which later turned into Shabamaliki. Ancestor of Nassarafu was an Islamic preacher from Borno who followed the Fulani warriors down to the Nupeland. Similarly ancestors of Kpatagi were originally from Sokoto. Today it is difficult to tell whether these villages are founded by former slaves or by dependents of the Fulani conquerors, because nowadays there is almost no difference among villages regardless of their background. Most of the young farmers do not even know the origin of their ancestors. As Adeniyi (1980) has pointed out, there is the tendency for smaller tribes to be absorbed by larger or ruling tribes. After the passage of a century of time, decedents of the former migrants have already been “Nupe-ized” and embraced the Nupe language and culture. The process of islamization brought by the Fulani conquerors should have accelerated the abandonment of their original cultural traits. It is only when you dig deep into the oral history and the land ownership that you can find hints on the origin of the village ancestors. These villages are not very far away from each other, but within a rather limited area of land, numerous primary landlords exist. It reflects the history of land division resulted from the land appropriation and distribution brought by the conquerors. Powerful title holders like *Natsu* and *Tsoyida* own large parcel of land that cover the boundary of multiple villages.

For the villages with Nupe indigence originality, the founders of these villages were usually chased to be the hunters that when wandered around seeking for animals found the unoccupied lands and then settled down. During the Fulani conquest, some indigenes moved into the protection of the hill-side in order to escape from the Fulani raiders. The tradition of Kuchiworo village can be an interesting case as it is a typical instance at first but an unusual instance later. According to the oral history of the village head, the great ancestor of Kuchiworo was a hunter originally lived in Rotso, a place nearby Lokoja which was about 300km away from Bida. He wandered around hunting and as he moved he settled in a number of places and founded hamlets. From Rotso he moved to Gbanguba, then to Fitigi and finally reached Kuchiyabata. When the Fulani conquerors came, some inhabitants of Kuchiyabata moved onto the hill to hide from the warriors. They endured the harsh living environment there for some decades and finally

moved away from the hill when Christian missionary came to them, probably in the late nineteenth century. However as they were Christianized they could not return to the original village as it has been Islamized after the conquest. They therefore needed to beg for land from a Fulani landlord and established a new village called Kucuiworo, in which “*woro*” meant new in Nupe language. Meanwhile some other inhabitants of Kuchiyabata moved to another place and founded another new village called Kuchigbako, in which “*gbako*” meant old in Nupe language. It is the history of how one village has splatted into three due to the war.

Table 3-1. Population, origin and primary land ownership of Nupe villages visited.

	Village	Population*	Origin	Primary Landlord	Traditional title of primary landlord
1	Alukusu Tako	150	Migrant	Fulani absentee landlord	Tsoyida
2	Alukusu Tifin	50	Migrant	Fulani absentee landlord	Tsoyida
3	Ejeti	200	Migrant	Fulani absentee landlord	Shabama Mamudu
4	Emicheche	100	Indigene	Nupe landlord in another community	Kuchiyabata
5	Emigbari	50	Migrant	Fulani absentee landlord	Tutiginba
6	Emigilali	100	Migrant	Fulani absentee landlord	Natsu
7	Emisheshe Natsu	60	Migrant	Fulani absentee landlord	Natsu
8	Emisheshikacha	50	Migrant	Fulani absentee landlord	Nynadalu
9	Emitete	100	Migrant	Fulani absentee landlord	Nakordi
10	Emitsundadan	177	Migrant	Fulani absentee landlord	Daniya
11	Eyagi	86	Indigene	Nupe indigene	
12	Fikin	200	Indigene	Nupe indigene	
13	Fitigi	100	Indigene	Nupe indigene	
14	Gadza	303	Migrant	Fulani absentee landlords	Tsoyida/Natsu
15	Gbranchitako	100	Migrant	Fulani absentee landlords	Etsu Umaru
16	Kpatagi	200	Migrant	Absentee landlord in Bida	
17	Kuchigbako	100	Indigene	Nupe indigene	
18	Kuchiworo	200	Indigene	Fulani absentee landlord	Ejiko
19	Lemuta	80	Migrant	Fulani absentee landlords	Gbate
20	Mokwagi	100	Indigene	Nupe indigene	
21	Nassarafu	500	Migrant	Absentee landlord in Bida	
22	Patinda	200	Migrant	Fulani absentee landlord	Rani
23	Shabamaliki	400	Migrant	Fulani absentee landlord	Nagenu
24	Takunkabagi	100	Migrant	Fulani absentee landlord	Ejiko
25	Tswatagi	100	Migrant	Fulani absentee landlord	Rani
	<i>Average</i>	<i>152</i>			

* Numbers of population were given by village heads or villagers interviewed. Most of the figures were rough estimations which seemed to be higher than the real figures could be. The population of Emigbari, Emitsundadan and Gadza were carefully counted by the author through detailed interviews.

Source: Fieldwork.

3.3. Agriculture of Nupe farmers

3.3.1. Crops planted in the field site

Farming for Nupe farmers is primarily for self-subsistence. They cultivate various crops to supply food to satisfy the consumption needs of household members. By cultivating diverse crops and cultivars which adapt to the varying hydrological and meteorological environments, farmers can harvest different crops in different time period to ensure sufficient food supply throughout the year. Selling crops for cash income is only of secondary importance. The physical environment of the region enables the production of a large variety of crops. Being on the ecological transitional zone Nupe farmers can cultivate root crops from the forest and grain crops from the savanna. The *fadama*, lowland or marshland of inland valley bottom and river floodplain, provides farmers with a particularly productive land where two crops in a year, firstly for rice, and later for root crops and a large variety of vegetables, can be planted. During the rainy season, Nupe farmers cultivate cereal grains and legumes on upland fields and rice on lowland marshy areas. During the dry season, they cultivate tubers, vegetables and other off-season crops on irrigated lowland fields. Listed in table 3-2 are the major crops being cultivated in Nupe villages that have been observed in the fieldwork². The large variety of crops cultivated by Nupe farmers are of course not of equal importance. The staple crops, the crops on which the food supply of the Nupe primarily depend, are millet, sorghum, and to a lesser extent, rice. From the point of

² As a reference the total value of output realized by a typical farming household in North-Central geopolitical zone, the zone where the Niger State belongs to, is listed in the table below.

Total value of output realized by a typical farming household in North-Central geopolitical zone (in naira).

Crop/Year	1999	2000	2001	2002
Maize	5,594	36,615	3,300	69,600
Millet	1,236	-	35,200	31,500
Sorghum	13,154	46,287	32,750	81,600
Rice	21,924	99,000	51,800	255,000
Cowpea	-	-	2,400	15,000
Yam	71,497	193,600	57,800	340,400
Cassava	389,480	73,164	11,400	112,200
Groundnut	18,499	-	2,995	24,500
Soya Beans	-	46,150	16,000	16,800
Total value	170,853	474,586	213,645	946,600

Source: Organized by author based on NAMRP-AGRIC Survey of NISER.

view of trade, the most important crops are rice, groundnut and other off-season crops like red pepper.

Table 3-2. Major crops being cultivated by Nupe farmers in Cis-Kaduna.

Crop	Nupe name	Cultivation environment		
		Home garden (<i>kpesa</i>)	Upland field (<i>lati</i>)	Lowland field (<i>fadama</i>)
Millet	<i>Mayi / Kpayi</i>	-	+++	-
Sorghum	<i>Eyikpan</i>	-	+++	-
Maize	<i>Kaba</i>	+	+	-
Rice	<i>Cenkafa</i>	-	+	+++
Cowpea/Bean	<i>Ezo</i>	-	+++	+
Groundnut	<i>Guzia</i>	-	+++	+
Bambara groundnut	<i>Edzu</i>	-	+++	-
Yam	<i>Eci</i>	-	+	-
Cassava	<i>Rogo</i>	-	+	+++
Sweet potato	<i>Duku</i>	+	+	+++
Esugi Melon	<i>Paragi</i>	-	+++	-
Tomato	<i>Tomato</i>	+	-	+
Eggplant	<i>Yengi</i>	+	-	+
Red pepper	<i>Yaka</i>	+	+	+++
Okra	<i>Kpanmi</i>	+	+	+++
Spinach	<i>Tsunfiannia</i>	-	-	+++
Roselle	<i>Emagi</i>	+	-	+
Henna	<i>Lali</i>	+	-	-
Sugar cane	<i>Kpansanako</i>	-	-	+

Note: +++: frequently planted; +: planted; -: not planted.

Source: Fieldwork.

Millet and sorghum are by far the most extensively cultivated cereals grains in the region. Maize is much less cultivated because the soils in the region are not fertile enough to support it. A number of millet and sorghum cultivars are indigenous to Africa and they are adaptive to the adverse agroecological condition. The Nupe cultivate a large variety of millet and sorghum, not just the indigenous species but also the new varieties infiltrated. Both millet and sorghum produce small seeds which are usually processed in similar ways and prepared into similar foods. Perhaps because of the similarity of the two crops, the Nupe recognize them belong to the same category of

cereal which they called “*eyi*”. *Eyi* is considered an absolute necessity in every Nupe family. It is the responsibility of every married Nupe man to bring sufficient *eyi* back home to feed the family. If a man is unable to get enough *eyi* from his farms, he would need to buy them from the market or get them by any other means.

Rice is the most dominant crop in the lowland marshy areas. With the high market value, it is among the most important cash crop for Nupe farmers. Rice is considered as a superior food which has an important position in the Nupe culture. It is often consumed for traditional rituals and used as gifts. The Nupe consider both cowpea and bean as “*ezo*”, which is the most important category of legume, followed by groundnut and Bambara groundnut. *Ezo* has an important position in the Nupe dietary life because it can be made into various kinds of food and is consumed very often. Groundnut is another important cash crop for Nupe farmers. Apart from the necessary portion that is kept for the women of the household to be processed into oil and snack, most part is sold to merchants for cash. Yam is a relatively minor crop in the region because of land scarcity and infertile soil. It is rarely consumed by farmers that do not produce yam because they can hardly afford buying yam in the market. Cassava and sweet potato are often consumed as afternoon food, but they are of secondary importance only and their trade values are low. Cassava is mainly planted during off-season on lowland fields and is harvested before the beginning of rice farming. Sweet potato is mostly for self-consumption but cassava is sometimes sold to merchants in bulk. Cassava can be processed into a large variety of food and it provides a useful stopgap for the time between the harvests of the main crops. However the preference for cassava food is low because of the less delicious taste and low nutritive value.

Egusi melon is often mixed cropped with other crops like sorghum and millet. Only the seed of the small gourd is edible and it is used as an ingredient for stew. Tomato and eggplant are planted in home gardens and lowland fields. Tomato is an important ingredient for stew and eggplant is sometimes eaten as fruit. Nupe farmers cultivate various kinds of red pepper. The most dominant variety is the bell pepper (*tatase*) which is an indispensable ingredient in the Nupe stew and is often used as a substitute for tomato. Some farmers also produce bird pepper which is smaller and spicier. The red pepper cultivated during dry season has very high market value so it is the most important off-season cash crop for Nupe farmers who have access to irrigated

lowland fields. Many farmers have expanded their red pepper production in recent years because of the attractive income. However the cultivation of red pepper requires much time and care for nursery and higher skill of farmers. I have witnessed the occasion when a farmer discovered on his lowland field that his red pepper nursery has being stolen at night. Okra, spinach and roselle are important greens and supplements in the Nupe stew. Okra and spinach are often planted during dry season on irrigated fields and their market values are high. The flower of roselle can be used for cooking stew and for making domestic sweet drink called “*sobo*”. The henna plant is less commonly planted. It is used as traditional “cosmetic” to blacken the hands and feet of Nupe women. Sugar cane is consumed as snack and it is planted in very small scale in the region.

3.3.2. Annual farming activity of Nupe farmers

Although modern agricultural equipment like tractor and power tiller has been introduced to Africa for decades, the Nupe farmers still get no benefit from machinery but keep practicing primitive hoe-agriculture even today. They also do not use animal tractor because of barrier brought by the vegetation and the fact that normal Nupe farmers can hardly afford to own a cattle. The Nupe have two kinds of hoes, a large heavy type called *zuku*, and a small type called *dugba*. The *zuku* is fitted with a broad shovel-like blade and bends like a hook. It is used for throwing up mounds and ridges. The *dugba* is fitted with a smaller and slightly bent reserved triangle-shaped blade. It is used for weeding and other less heavy work. The Nupe also use a long cutlass, *gada*, which is mainly for cutting grain stalks, and a sickle, *lenzhe*, for the cutting of rice plants.

The simplified farming activity calendar of Nupe farmers of the study area is presented in table 3-3. Rainy season usually begins from early to mid-April and ends at late October based on the meteorological records presented in chapter two. For simplicity rainfall and planting cycle are assumed to start at early April. Needless to say in practice the farming activity of Nupe farmers change according to ecological circumstances and may shift forward or backward. There is particularly more diversity for farming activity on lowlands due to difference of hydrological conditions. Moreover, local conditions and the varying efforts and preference of individual farmers also bring variations in activity and time sequence.

Table 3-3. Simplified farming activity calendar of Nupe farmers.

Month	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Season		Rainy Season						Dry Season				
	Upland crops											
<div>Major operations</div>	Land prep- aration	Sow- ing	Weeding, insecticide and fertilization application. harvesting of early maturing crops						Harv- esting			Slash- and- burn
Major crops												
Egusi melon												
Cowpea												
Sorghum												
Early millet												
Late millet												
Maize												
Groundnut												
Bambara Groundnut												
Yam												
	Lowland crops											
<div>Major operations</div>	Water- ing	Harvesting of off-season crops		Land level- ing	Sow- ing of rice	Weeding, insecticide and fertilization application.			Harv- esting of rice	Mound marking & planting for off- season crops		Water- ing
Major crops												
Rice												
Red pepper												
Okra												
Sweet potato												
Spinach												
Eggplant												
Cassava												

Note: Shaded cells indicate cultivating season of crop.

Source: Fieldwork.

Before the beginning of rainy season, some of the Nupe farmers put fire and burn their farms. It is mainly for applying “green manure” to enrich the fertility of soil and some of them do it also for hunting small animals in the farm. This process reduces the workload for land clearing when they begin farming in the rainy season. The first light showers by the end of dry season are ignored. Nupe farmers consider the rainy season begins after the first heavy rain, which should at least last for several hours and thoroughly softened the soil. Nupe farmers generally intercrop two to four crops in one lot. Egusi melon and cowpea are sowed first, then about three weeks later, millet, maize,

sorghum and other crops are gradually sowed. For farmers who plant yam, if they have not finished making yam mound by the end of the previous rainy season, they would start preparing their yam fields once the rainy season begin. On the lowland, farmers plant eggplant and cassava. After all the major sowings on upland fields are done, farmers begin weeding for egusi melon and then for other crops. The first weeding is to clear ridges for the growing plant and to remove roots, leaves and undergrowth which the burning has not destroyed. By June there is a “little dry season” in which rainfall is low and farmers can take a short break. Egusi melon starts to get matured by this time. Farmers first let the gourds decay on the field, and then women go pick them and do all the processing. When the millet and sorghum have established, farmers carry out the second weeding to clear the plants of the newly grown grass. In July farmers can start harvesting some of the cowpea. On the lowlands fields, the vegetables and tubers which have been planted in last February will be harvested. Farmers will transplant some surviving red pepper plants to upland fields to produce for the consumption of the household.

August and September is the peak of rain and farm work on both uplands and lowlands will fully occupy the time of farmers. Early-maturing millet and legumes will be harvested in this period. On yam farms the first yam crop is dug up. There are two yam harvests. In late August the farmers dig out yam for the first time, cutting one tuber from the plant and leaving the rest in the ground to sprout further. This young yam is an important supply of staple food because food supply is generally low in this period. The tubers are also sold for farmers to get money to prepare for lowland rice cultivation. Groundnut is also harvested twice. The first groundnut is dug out around late August, which is softer and used mostly for food. The second groundnut crop is dug out in December, which is much drier and mostly sold for cash. On the lowlands the preparing for rice plantation begins. The mounds and ridges which were used for off-season cultivation will be broken down and leveled. This task is absolutely tough and tedious because Nupe farmers do not have machinery but can use only their hands and simple tools like *zugu*. Most of the farmers will sow the rice seeds directly on the fields, but some will make rice nursery and then transplant rice onto the fields about three weeks later. For farmers who involve less in rice cultivation but more in yam cultivation, they will begin making yam mounds for the production of next year. They may even put the seed yams inside the mounds so that the yams will have longer time to grow. By

October rainfall drops. It is the time for farmers to carry out weeding for their rice fields and the irrigational canals. They also have to remove the soils that accumulated at the bottom of the furrow and ditch and to repair any part which has been destroyed by cattle or water flow. When they are able to manage the water level of their paddy fields, they then apply fertilizers. On uplands, it is the time for another weeding which is a delicate operation because it may easily damage the growing plants. But for farmers who are occupied by rice farming, they usually do not have sufficient time and labour for this task.

Rain usually stops around late October which marks the beginning of dry season. All the upland crops get matured and are harvested from late November. The millet and sorghum plants should have grown up to about two meters high. To reap the corn, the stalks are broken and cut close to the ground, and then laid in bundles in the furrows, where they are left for about a week to dry in the sun. Afterwards the heads of the plants are cut off with the cutlass and carried home in large bundles, while the stalks are left on the fields. On inland valley lowlands, rice will be harvested in December. Before harvesting the rice, farmers will choose a plot of land which is slightly higher and dry, and then clear the vegetation on it and level it into a flat land. This piece of land will be used for drying and threshing rice. The rice plants will be cut close to the ground with a sickle, and then tied into stubbles and moved to that drying plot. Rice stubbles will be piled up to form hollow cylinder with the ears inside. This method is to avoid rice grains from being blown away by wind and to prevent cattle from eating them. After a period of sun-drying, farmers thresh the rice by beating the rice stubbles with hands. Afterwards the rice grains will be picked up and winnowed by women. The rice straws will be left on the fields for cattle of the Fulani to feed on them. The first operation of dry season cultivation is to make small plots of nursery for red pepper in December because it will take two months until the crops can be transplanted. In January all farmers will be busy threshing their rice and those of their fellow villagers. They may enjoy a short break after all the crops are harvested, but soon they have to do weeding for the irrigation canals and make mounds and ridges on their lowland fields again for off-season cultivation. It is a highly laborious task because the soils will be totally wet and heavy. Farmers will first let water stay inside the basin for a period to ensure that the soils are thoroughly moisturized and softened. They then turn the soils with their *zugu* and heap them up. This task is essential for off-season cultivation because the

moisture that stays inside the mounds and ridges will sustain the crops throughout the dry season. They will transplant red pepper; grow okra, sweet potato and other crops. For lowland fields which have less access to water, farmers usually plant cassava. Fruiting of okra and red pepper starts in April and last until June. Farmers harvest them about once in a week but the frequency and quantity harvested will drop gradually. A large proportion of off-season crops will be sold for farmers to get the money to buy sorghum and other food for the household.

3.4. Transmission of property

Nadel (1942: 30-33) reveals that the Nupe family is the bilateral unit that transmission of rights and duties follows both the paternal and maternal line, although rights and duties which are transmitted through the father greatly outweigh in scope and importance than those transmitted through the mother. The personal property of the Nupe women is inherited by their daughters, while the personal property of the men is inherited by their sons. However, as women in Nupe generally neither own nor work land, this most important property is inherited through the father, even though the inheritance of land is merely transfer of use, not of property. This rule is the same as the principle of ancient Dahomey pointed out by Polanyi (1966:76), that the rule is an extension of the principle that only the king (the *Emir* in this case) alone possesses the fullness of property rights over land or people.

Regarding the transmission of wealth through the maternal line, in the Nupe culture the marriage gifts is the biggest transmission of wealth from a mother to her daughter. The most important purpose of the wedding gift is to assist the daughter to fulfill the duty as a wife in the new family; therefore one of the biggest items that the mother will buy is the cooking tools and utensils. The mother will buy a lot of bowls and dishes, cooking pots of various sizes, mortar and pestle, various kinds of food and water containers and everything that the girl will need for cooking in the new family. The mother will also buy clothes, accessories, cosmetics, daily items such as hair brush, tooth brush, soap and furniture such as a cupboard and storage boxes. The amount of marriage gifts that a girl takes with her to the new family is an index of wealth and

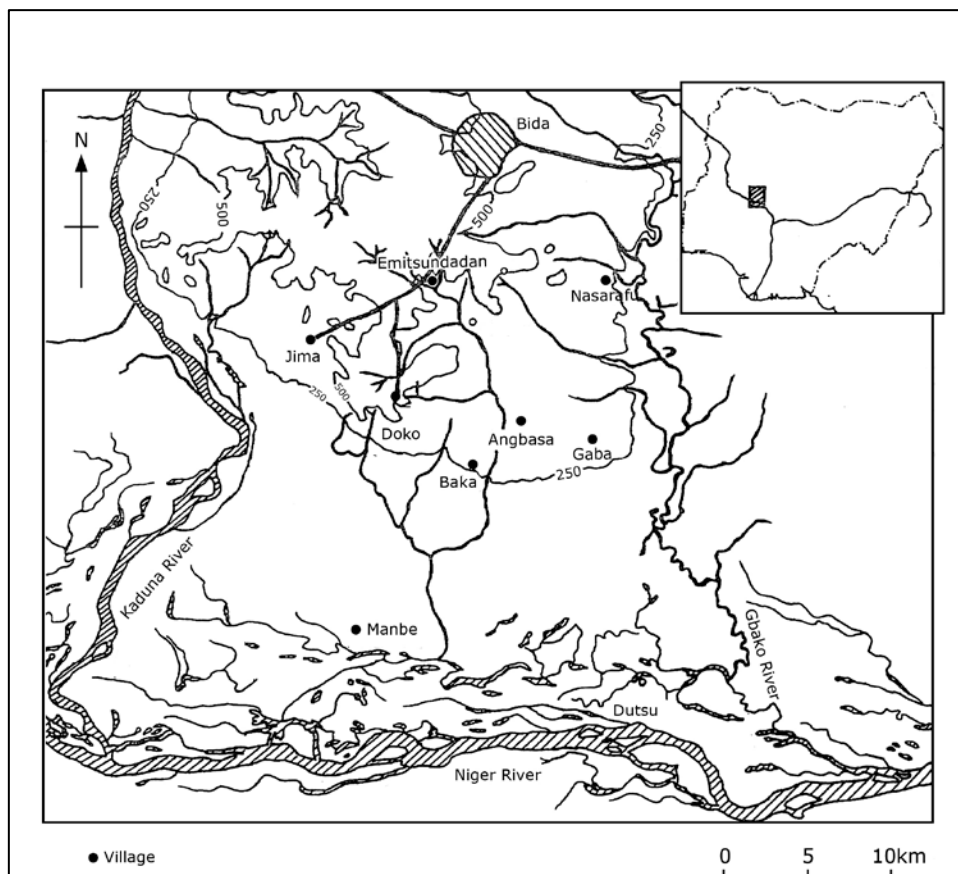
status of her maternal family. She will display the gifts all over her new room to demonstrate how much she is treasured by her maternal family. The spending on wedding gifts is a huge expense for an ordinary Nupe village woman. She may get part of the bride-price to finance the gifts, but she still has to spend a lot more money which she may have gathered bit by bit by selling little food and firewood for quite some years. The wedding gift from mother is usually the biggest wealth transfer that a Nupe village girl can get in her entire life.

In the Nupe agricultural villages, the most substantial transmission of wealth through the paternal line happens when a man dies. In the Nupe Muslim community the division of inheritance can only be performed by highly ranked *Immas* (Islamic priest). The division of inheritance is called “*Egun*” in Nupe. In the area surrounding EN village only the chief *Immas* of EN can divide the property of a dead man to his descendants. The property that a man possesses can be divided into two categories: the family property that he inherited from the older generation of the house-group, and the personal property that he created by his own effort. When a household head dies, the farmlands, huts and economic trees that he has obtained from the older generation will be once returned in trust to the family head. The family head has the right to reallocate these “family resources” to the young generation of the house-group, but the sons of the dead man always have the first priority to be reallocated these properties. Regarding the personal properties of a dead man, for example the new economic trees that he planted, the new houses that he constructed and other personal belongings that he gained in his life, they would be divided among his wives and children with the help of the *Immas*. There are some examples happened in the MS house-group of EN village. A boy called MM inherited a young mango tree, 800 naira cash, some clothes and a cap from his father who died in 1996. Another boy, AU, inherited some clothes, a radio player, some cassette tapes, some books, 500 naira cash and a bicycle when his father died in 1999. His father has built a hut and planted some trees on his own. These things were regarded as personal property and could be divided directly by the household. AU got his father’s hut with his twin brother and he also shared a big mango tree with all his brothers and sisters. These examples tell how little private property a poor farmer can leave for his children.

Inheritance of land only restrict to the transferal of use right, not the ownership of the property. Similarly the inheritance of economic tree is also limited to the right to derive economic benefit, not the ownership of the tree. The person who inherits the land and tree does not have the right to re-sell them. The exception for people to sell economic tree is that the tree is dying because of sickness, or when consensus has been reached from all owners and elders that the tree can be sold as wood for money for the whole group. Because of the unalienable nature of valuable properties such as land, tree and house, the transmission of wealth through the paternal line in Nupe villages appears to bring less immediate impact to inheritors compared with that through the maternal line. But the importance of these properties for an agricultural society makes the inheritance through the paternal line far more important than that of the maternal line in Nupe villages.

3.5. The case study of Emitsundadan village

Figure 3-1. Location and environs of Emitsundadan (EN) village.



Emitsundadan village (shortened as EN village below) locates at 9°01' N and at Long. 6°99' E, which is about 12 kilometers south away from Bida town (figure 3-1). It is a typical Nupe village in the region that it has the common characteristics which can be found in any surrounding villages. Therefore the case study of EN village can be regarded as the representative of the general situation in the area. Under the formal administration, EN village is governed by the Lavun Local Government; whereas under the traditional administration EN village is under the custody of the *Etsu Nyenkapa* of Kuchigbako Village Area under the Jima District Head. EN village has an unpaved road constructed and maintained by the young men association of the village. This unpaved road joins the village with other surrounding villages and about 2km north it joins the paved road leading to Bida. The road leading to Bida is a minor road with little maintenance so the transportation condition of the village is rather unfavorable but it should not be particularly inferior compared with other villages of the nation. EN village locates in the inland valley of River Emikpata and is about 1km away from the valley bottom. It possesses both upland and wetland topography within the village boundary, so its inhabitants combines both upland cereal and leguminous crops farming and lowland rice cultivation in their agriculture activities. The village has a population of 177 people, which as refer to table 3-1 can be considered to be of average scale among surrounding villages.

3.5.1. History and the two founders of EN village

According to the oral history provided by village elders of EN village, the first settler of the village was a slave named Ndadan originally from the Igboland. He was hunted and was settled as a farm slave on the land which was to-day EN village by a Fulani master titled *Daniya*. EN village was named after the first settler, Ndadan. In the Nupe language *Emitsu* means owner of the house, Emitsundadan thus means the house which owned by Ndadan. There were many legends about the second settler of the EN village, Audu Maikudi, who came from the Hausaland. Maikudi was an Islamic preacher and a slave trader. During the Fulani *Jihad*, Maikudi served the Fulani army and was awarded a lot of slaves. Maikudi traded his slaves in a place called Lade, which was a port on the River Niger for slaves to be brought south to the coast. Maikudi married a female slave who happened to be the sister of Ndadan. As the siblings found each other, Maikudi was convinced to settle in the EN village. He was earnestly

welcomed by people of surrounding villages as they had been longing for an Islamic preacher to teach them Koran. There were other villages in the region, such as Nassarafu and Kpatagi, whose early settlers were also Islamic preachers migrated from the Hausaland. This history reflected the infiltration of Islam into the rural communities of the area. The compound which villagers built for Maikudi was called *Emiman*, which meant the “house of teacher”. Immediately after settling down, Maikudi made his first two sons with Hausa origin to marry with the indigene Nupe women from nearby villages so that he and his family was no alien any more. Inter-marriage was an effective instrument for alien groups to be assimilated with local people rapidly. The history of EN village can be considered as a representation of how a *tunga* village was set up and how migrants became localized. Considering that Lade was the old base town of *Etsu* Masaba, it could be estimated that EN village was founded in 1860s, thus has a history of no more than 150 years. The current family heads of the village (who were all about 60 to 70 years of age in 2009) are the fourth generation after Ndadan and Maikudi. Both of the founders were not Nupe indigenes, but new generations of EN village have been perfectly assimilated by the Nupe culture and have no difference compared with people in the surrounding. Indeed although a few elders know about the background of their ancestors, none of the EN villagers doubt about their Nupe identity. Because of the history that the village was founded by two settlers, the EN village therefore originated from two patrilineal groups: the “Emitsudadan” group of the first settler Ndadan and the “Emiman” group of the second settler Maikudi.

Village head and village priest are the two important leaders of a Nupe village. Every Nupe village is headed by a “*Zitsu*”, the “owner” of the village. By the right of “possession” he controls the lives of inhabitants and the resources of the community. He has certain informal judicial powers over inhabitants of his community that allows him to arbitrate in disputes. *Zitsu* is always assisted by heads of families that compose the village, since no family should be excluded from the decision of important village affair. Chieftainship of Nupe villages is often hereditary and the position of *Zitsu* is often bound up with one or a few designated family groups, which are related to the history of the first settlers of the village. In case of the EN village the chieftainship of the village is always bounded to the Emitsundadan lineage group, that the position of *Zitsu* is hereditary by the oldest man of this group. He is also the secondary landowner of the village land because of the linkage that Ndadan had with the Fulani lord *Daniya*.

Most of the Nupe villages in the study area have been Islamized. They possess a local mosque and have at least one religious head. The Nupe call the people who are knowledgeable in Islam as “*Mallam*” and Islamic priests as “*Liman*” or “*Immas*”. The religious head of a village is responsible for providing Koranic education to children of the community and spiritual support and guidance for his fellow villagers. He leads the ritual prayer and performs religious rituals for the community during ceremonies and important occasions. There is a separated hierarchical system that exists among *Immas* which is independent from the local political system. In every specific area, there is a chief *Immas* who heads all the *Immas* of villages of that area. The chief *Immas* is supposed to be the most knowledgeable about the Koran and have the largest religious power. In some important occasions, it is only the chief *Immas* who can lead the prayers and perform certain religious rituals. It is also only the chief *Immas* who can perform the “*Egun*”, the partition of the estate of the death persons. In EN village, the religious head is always generated from the “Emiman” group with the strong religious background brought by Maikudi. The current *Immas* of EN village also possesses the position of chief *Immas* of the area. He receives high respect from people, and farmers of surrounding villages often send their children to study Koran under him.

3.5.2. House-group and household

A typical Nupe village is formed by several extended families which the Nupe referred to as “house”, *emi* in the local language. The Nupe reckon relationship in “house”, saying for example that people belong or do not belong to the same “house”, that is, are or are not related (Nadel, 1942:27-33). Technically, the “house” is a compound of a number of houses enclosed by a common wall and sharing a common gateway or entrance hall, called *katamba*. The term “*katamba*” is frequently used synonymously with “house”. In enumerating the extended families of a village, the Nupe often tell you that the village numbers so many *katamba*. In this study the term “house-group” is used to represent *emi* and the term “family head” is used for its head. A house-group usually consists of family members of three generations. Figure 3-2 presents the genealogy of EN villagers. After 150 years since the first two settlers, the EN village to-day has seven house-groups. The position of the family head falls to the most senior male member of the house-group, who is succeeded by his younger brother

in the classificatory sense, i.e. the man next in seniority of the same generation, and when the generation is exhausted, by the oldest son of the eldest brother. Among all the house-groups of the village, apart from the family head of YB, all other family heads are the only man of the most senior generation of the house-group. According to the Nupe tradition, the family head can be regarded as the father, while all the men of the next generation can be regarded as his sons and their children as his grandchildren.

Table 3-4 lists the composition of each house-group of EN village. The average house-group size is 25 people but there is great variation; the smallest group has only 10 members whereas the biggest group is over 4 times larger. All of the house-groups consist of members of three generations, despite of the smallest house-group – the NK group. As mentioned the village originated from two patrilineal groups. The only house-group that is descent from the first settler Nadan is the AC group. As a matter of fact the last descendent of Ndadan did not have any children. The current AC family head and his late older brother were actually adopted children from a nearby village. They were raised as the sons of the only descendent of Ndadan and their relation with their original village has been totally cut off. This history appears to be a kind of taboo because the new generations of the house-group do not know much about the background of their fathers. Although the AC family head and his family are not related to Ndadan by blood principally speaking, the house still inherits the land of the village and the position of *Zitsu*. The other six house-groups all trace their descent to the second settler Maikudi. All these six house-groups are generated from the four sons of Maikudi. The family heads of YU and NG are the third generation since Maikudi and the rest are all the fourth generation. Each house-group is an independent unit, the family head takes care of his own family members and members are supposed to obey the decision set by the family head. Important resources such as land and economic tree of a house-group is managed and allocated by the family head. He farms together with all his sons and brothers who are dependent on him. The genealogy (figure 3-2) displays the expansion of the village and the relationships among house-groups. The family history of AC house-group is omitted because the family head as an adopted child was unfamiliar with the family history of the descendants of Ndadan.

Figure 3-2. Genealogy of EN villagers

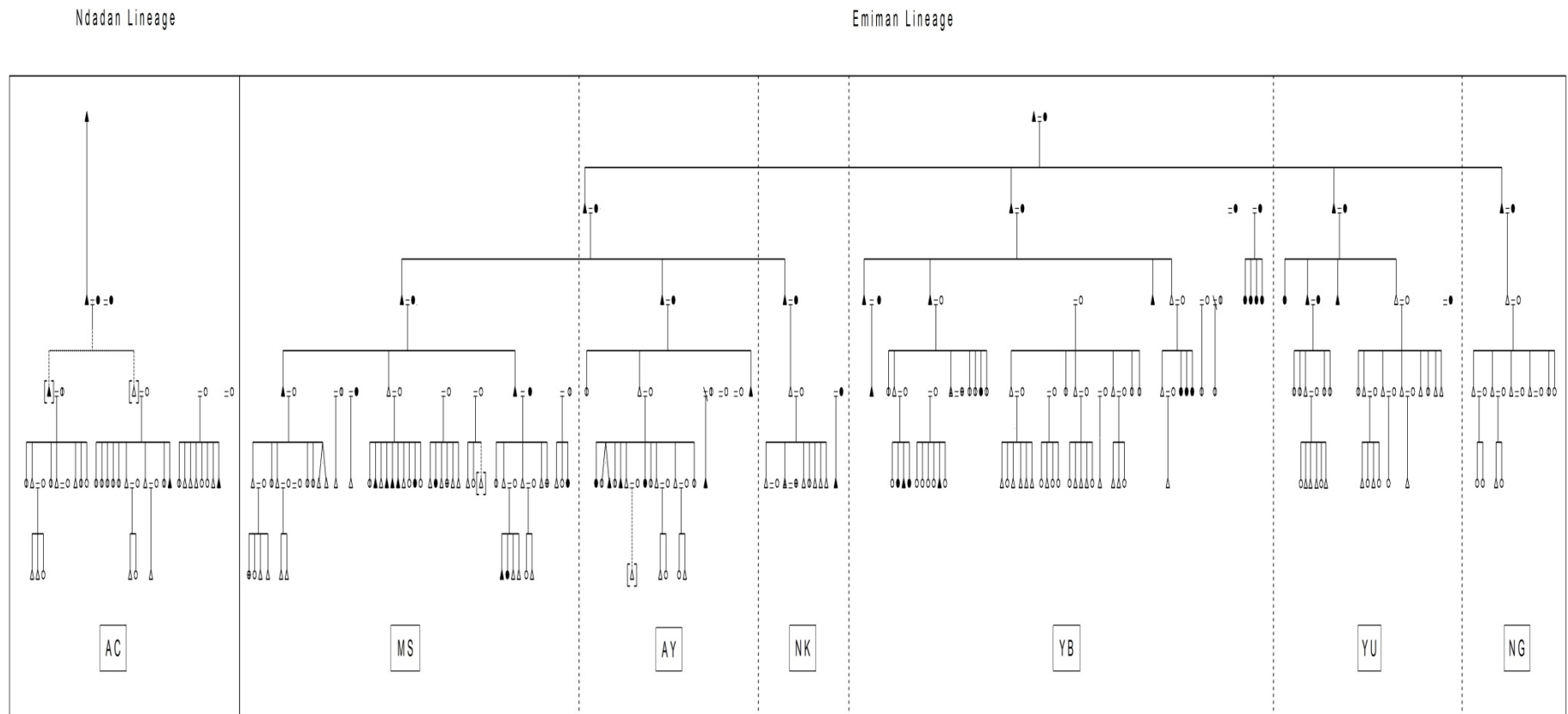


Table 3-4. Number of population by house-group at EN village (2009).

House-group	Lineage	Generation	Male	Female	Total	Married man	Married woman
AC	Ndadan	3	14	12	26	5	7
MS	Emiman	3	25	18	43	5	9
AY	Emiman	3	6	7	13	4	5
NK	Emiman	2	7	3	10	3	3
YB	Emiman	3	20	25	45	7	13
YU	Emiman	3	15	10	25	5	5
NG	Emiman	3	6	9	15	5	5
<i>Total</i>		-	93	84	177	34	47
<i>Average</i>		2.86	13.29	12.00	25.29	4.86	6.71

Source: Fieldwork.

The house-group is subdivided into a number of household sections. The single section represents an even more effective unit than the house-group and its members enter a more intensive cooperation; they keep house together, they eat together, and also form a common productive or labour-unit. A household unit in the Nupe society nowadays is often reduced to the small individual family consists of a father, his wives and his unmarried children. Under the traditional conditions of the agricultural community, the household unit may embrace a number of brothers and sisters of the household head, the wives and children of the brothers if they are married, and the old-aged mothers and father. Household head is normally the eldest man of the household. It is unusual to have female as household head. In the Nupe culture widow would remarry to the brothers of her late husband, so she and her children would join the new household. If the widow is too old she would be taken care of by the households of her children. Each household forms an independent economic unit, but it still remains as a part of the house-group economic unit. A matured man would get independent from his father or elder brothers after he gets married. He would farm independently from the family head and he would be given more lands for him to support his own family. He has to manage the production and consumption of his own household, but whenever he cannot satisfy the need of his own household the family head is bounded to assist him. He would need to continuously make certain degree of contribution to the production of

the house-group by occasionally working on the family farm, and by supplying food to the family head.



Photo 3-1. A full-dressed elder in front of a *katamba* (January 2009)

3.5.3. The MS house-group

The example of the MS house-group is presented here to illustrate how a house-group is subdivided into a number of household. The MS group is the second biggest house-group of the village which consists of five households with forty-three members in total. The genealogy of the house-group in figure 3-3 shows the grouping of members of each household. The family head MS is the only alive man among his brothers. His family burden is exceptionally heavy because he has to take care of the wives and children not only of his own but also of his two dead brothers. Following the tradition widow has to re-marry to the brother of her late husband. Therefore it is not uncommon to find a woman having children of different fathers. There are two ladies in the MS house-group who have re-married because of this reason, one even re-married twice. MS has a large household of twenty-one members, having three wives, eleven children of his own, and also six unmarried children of his two dead brothers. Probably because of the heavy economic burden, MS has yet let his sons get married and independent. The married sons of his late brothers have formed small independent household units.

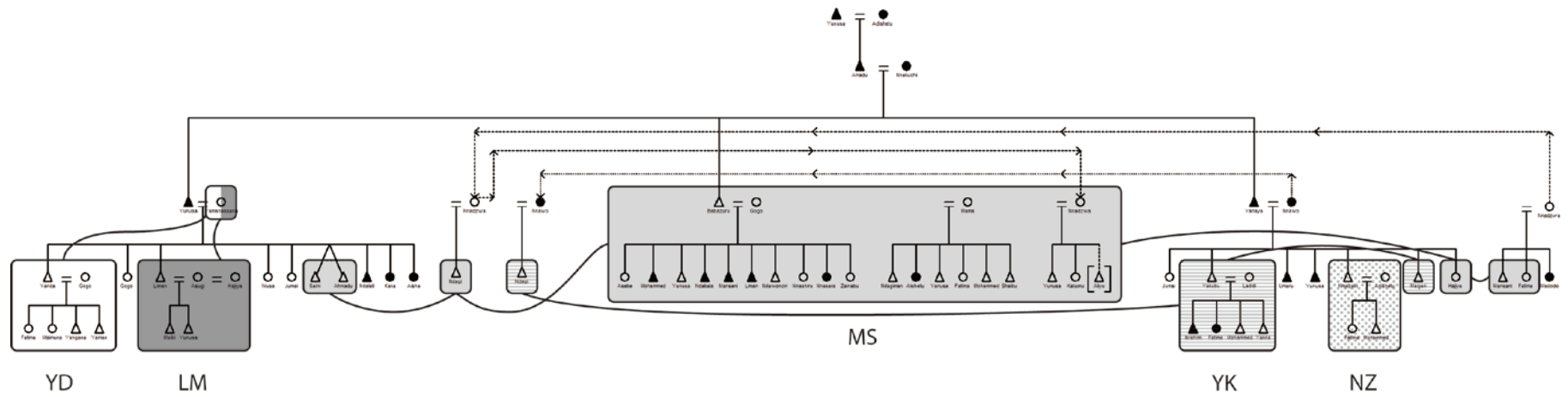
They are largely economically independent, but they are obligated to provide support to MS for food, labour for the family farm and monetary help in time of need.

Independent household unit often has limited farming population. The household of YK is a bit bigger because he is given the custody of his two unmarried brothers since the rainy season of 2007. In Nupe agricultural community, small boys begin to assist in the farming of their fathers as soon as they can hold a hoe with their small hands. Boys of ten years old or even younger would be given small plot of land for them to begin their own farming. However, they can only work on their own plots after they have finished their work for the household and the family. For the eight boys farming under MS and the two boys farming under YK, they all have their own farms and the areas of their farms increase as they grow up and gain more strength in farming. These boys usually give half or more of their farm produce to their mothers and sell part of it for their own money. The farm work of these unmarried boys is supervised by their household heads. They are only allowed to expand the scale of their own farming after they have worked satisfactorily for the household and the family. These boys continue to farm under their household heads until they get married and are able to support their own individual family independently.



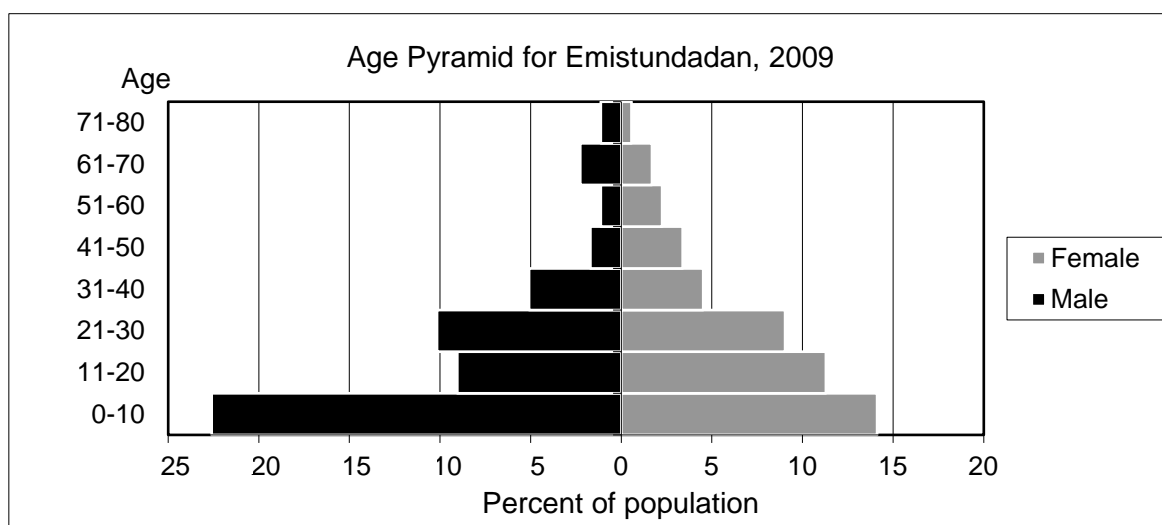
Photo 3-2. The compound of MS house-group (January 2009)

Figure 3-3. Household unit of the MS House-group of EN village



3.5.4. Age and sex structure

Figure 3-4. Age-sex structure for EN village.



Source: by author.

The average age of the total 177 EN village inhabitants is 22.08. The percentage age-sex structure of the EN village is given in figure 3-4. The data reveal clearly a very young age distribution with a large proportion of children, especially boys, and a small proportion of adult. Children and teenagers less than 20 years of age make up 57% of the population, while 6% of the population comes under the category of persons usually referred to as old persons – those above age of sixty, thus leaving only 37% of the age brackets which usually supply the labour force. Similar situation has been observed also in other Nupe villages in the area. The study of Katcha (1978) on the Sakpe village of the Nupe of Niger State showed a similar age-sex structure that the village had a large proportion of children but small proportion of adult. This tendency has not changed over the last four decades. Nupe villages generally have a high fertility but childhood mortality is also high. Emigration to city and town as migrant worker is not widespread in the region so the reduction of population is mostly caused by death. The life expectancy at birth of overall Nigerian is 48 years³ and the study of EN village also shows a sharp decrease of population from the age group of 41-50. High fertility and short life of village members bring a heavy economy burden to the productive age groups.

³ Data from UNICEF webpage - At a glance: Nigeria.
http://www.unicef.org/infobycountry/nigeria_statistics.html (accessed on 9 October 2010).

3.5.5. Marriage arrangement

The Nupe is basically a polygynous society that the number of wives a man possesses becomes an infallible index of wealth and status. Apart from the Christian minority, a Nupe man by the Mohammedan rule may have as many as four wives. In the agricultural districts however, not many men can afford to have more than one wife, especially for the younger generation. Genealogies which I collected in EN village demonstrate the range of polygyny shows in table 3-5. The figures of the number of wives refer to the cases of living men, the cases of widows and widowers are not included. The men of EN village have 1.29 wives per man on average, which reflects the inferior economic status of EN farmers.

In the traditional communities when a young woman unfortunately becomes a widow, the brother of her late husband is responsible to remarry her and take care of her and her children. In the EN village there are two cases of such. There is a woman (actually one more but she has already died) who has re-married even twice because the husband of her second marriage also died. If the widow is too old to get re-married she remains in her family and be taken care of by her sons. The three widows in the village are all in very old age. Social status of woman is low so it is uncommon for a Nupe woman to take the initiative to divorce with her husband. If a woman decides to do so she may be requested to pay back her bride-price and any property that she has once given by her husband. She also has no right to take her children. Thinking of divorce is not a natural thing for the Nupe women, many would rather tolerate the bad husbands. Anyhow two women have been divorced by EN village men.

Marriage in the Nupe rural society is to a large extent endogamous. Inter-marriages among people of the same village, and among people of closely related villages, are widely prevalent. Moreover, parallel cousin marriage and cross-cousin marriage are encouraged by the Mohammedan practice. This kind of “family marriage” is especially common between descendants in the male line. Free love is still not widespread among the younger generation of Nupe farmers. When a Nupe boy becomes mature his father has the responsibility to find him the first wife. The tradition of endogamous marriage

thus allows the father to find the bride with lower cost and lower bride-price⁴. He may also look for bride through any connections that he has with other villages, for example the matrimonial villages of his wives, the villages where he rents farmlands or where he has friends. Bride-price of Nupe village women generally ranges from a few thousands to ten thousands naira. The amount is not really big but together with the burden to build new house and other expenses for the wedding, many farmers have difficulties to finance the marriage of their sons. Many young farmers are putting off marriage until their late twenty. Girls usually get married and leave the family when they are about 15 years of age. The cases of marriage recorded in the EN village are categorized and listed in table 3-6. The figures refer to the women who were born in EN village and have left after getting married as well as the women who married into the EN village.

Table 3-5. Number of wives of EN village's men.

No. of wives	1	2	3	4	Re-married	Widow	Divorced
No. of case	27	4	3	0	2	3	2

Source: Fieldwork.

⁴ The bridegroom has to give the bride-price in cash to the father of the bride one year in advance as an engagement gift. The cash is usually passed to the mother of the bride for her to buy marriage gifts for the bride. In the Nupe culture the mother usually spend a large sum of money to buy the wedding gifts for her daughter. It is the largest wealth transfer from the mother to the daughter and is usually the biggest sum of gifts that a Nupe village woman can get in her entire life. The amount that the bride's mother spends is often a few times over the bride-price. The bridegroom has to give some extra marriage gifts to the bride one day before the wedding, but the amount is usually not much. An example was observed in EN village. Listed in the table below are the bride-price and marriage gifts that a girl of MS house-group received from her bridegroom.

Bride-price and marriage gift from a bride-groom.

	Item	Estimated value (in naira)
1.	Bride-price: cash	N 10, 000
2.	One set of traditional dress	N 1,000
3.	One sleeping matt	N 500
4.	Three sets of plate for taking food	N 300
5.	Two cooking pots	N 600
6.	One lantern	N 1, 000
7.	20 mudu ⁴ of sorghum grain	N 300
8.	20 nnaiyan ⁴ of rice paddy	N 3, 000
9.	200 piece of kola nut	N 800
	Total	N 17, 500

Source: Fieldwork.

Table 3-6. Marriage of the women of EN village.

Category	No. of case
1. Married within the village	14
a) With man of other lineage group	3
b) With man of the same lineage group	11
2. Married into EN from other villages	30
a) From surrounding villages	17
b) Others (Bida and unidentified)	13
3. Married out from EN village	20
c) To surrounding villages	14
d) Others (Bida and unidentified)	6

Source: Fieldwork.

There are 14 cases of inter-house-groups marriage in EN village, which is 32% of the total “married in” and 41% of total women “married out”. As the Ndadan lineage group only remains one house-group, most of the inter-house-group marriages are within the Emiman lineage group. Marriage among members of the same house-group is traditionally prohibited. Marriage among members who have the same grandfather is also avoided, but there is one case of such between the MS and AY house-groups. The reason of this marriage was unknown but it should be related to the fact that the woman was physically disabled. For the women who do not marry within the same village, most of them get married with someone in nearby villages. The total of 15 villages has been recorded and none of them is far away. There are six villages in particular which totally have 12 women “married in” and 10 women “married out”. This example also reflects the endogamous nature of the marriage of Nupe farmers as women are kind of “exchanged” among villages, mostly because farmers cannot afford high bride price for women from outside. The residence pattern of the Nupe marriage is patrilocal, so a wife joins her husband’s compound where they raise their children. Their children will follow the same pattern so only sons will stay and daughters will go. Even so, the endogenous marriage enables the women to maintain the relation with her origin family. She can still occasionally take care of her mother and members of her origin family.

3.5.6. Village settlement

The settlement style of Nupe villages is usually a cluster of compounds standing on a narrow space like a labyrinthine. Each compound, consists with a number of small houses and surrounded by a mud wall, stands close together and is separated only by narrow thoroughfares between walls of neighboring compounds. The Nupe have chosen this concentrated type of settlement, instead of the loosely scattered homesteads, probably because of the history of war fare as a concentrated population meant comparative security from raids and other unsafe times (Nadel, 1942: 34-35). This style has not changed until today despite of decades of peace. In the past when the population of a village became too large, small groups would move into the uninhabited bush, to occupy virgin land and to found new settlements. Indeed from the name of some villages, people can find their historically connection with other related settlements, for example Kuchiyabata was the mother-settlement of Kuchigbako and Kuchiworo. Nevertheless this pattern of village diffusion is no longer possible today because uninhabited and unoccupied lands are hardly available. Nupe villages are getting denser and new houses are built pressing upon old houses. Houses in Nupe villages are often built by red clay soils mixed with rice stalks or grasses. In some villages houses of women are decorated with ornaments worked in relief into the clay. For important structure like mosque better material such as cement and gravel are used. Basically a compound consists of an entrance-hall *katamba*, rooms for family members, rooms for animals, granaries, storerooms, a hidden area for lavatory and shower, cooking courts and one or more small court for post-harvesting processing. Most of the houses are rectangular in shape and roofed by modern galvanized corrugated roofing sheets. Granary is often in interesting egg shape and thatched with grass.

Figure 3-5 shows the settlement layout of EN village. Houses are grouped and marked in different patterns according to house-groups. Each of the seven house-groups possesses a separated section in the village. But with the expansion of family size, new houses are being built adjacent to old houses and on the outer area of the main settlement. Compounds are no longer organizedly surrounded by walls that separate a family from the others. Men and women are traditionally supposed to live in separated houses. The ideal room arrangement is that the partition of women should be separated

from and stands behind the partition of men. This tradition is no longer strictly followed particularly for young couples when the young men cannot afford to build new rooms for their wives⁵. The EN villagers do not have much furniture in their sleeping rooms, most of them just have a bed and some bags or cases to put clothes, some women may also have a cupboard for the plates and utensils that she received when she got married. For young boys they often just have a mat for them to sleep on it.

Regarding the community facilities of the village, there is a mosque which is currently under used, four wells, one borehole donated by the grassroots assistance program of the Japanese Embassy in 2006, a new mosque which is under construction, and a community clinic sponsored by the local government. The clinic has been abandoned and used as sleeping hut because the nurse of the clinic has just come for a few times at the beginning but never come again. Apart from the borehole, all these facilities are constructed and financed by the young men association of the village. The four wells of the village do not have much water so villagers mostly utilize a stream which is about 5 minutes on foot away from the village for washing, laundry and sometimes even drinking in time of water shortage before the construction of the borehole. This stream is also utilized by the Fulani women settling around. At all hours

⁵ An example is provided here to briefly demonstrate how the Nupe satisfy their need of accommodation with limited resource. During the fieldwork in 2009 the MS house-group was building three new rooms for three young men in the exterior area of the village. Although soil and wood are available locally, the building material costs and the labor costs are never easily affordable for resource-poor farmers. In order to finance the construction, the three men have saved money for two years. Their father was unable to totally pay for their new rooms, but he assisted them by requesting service from the village young men association and provided feast for the construction work helped by the community. Some costs spent by the three men for huts construction are listed in the table below.

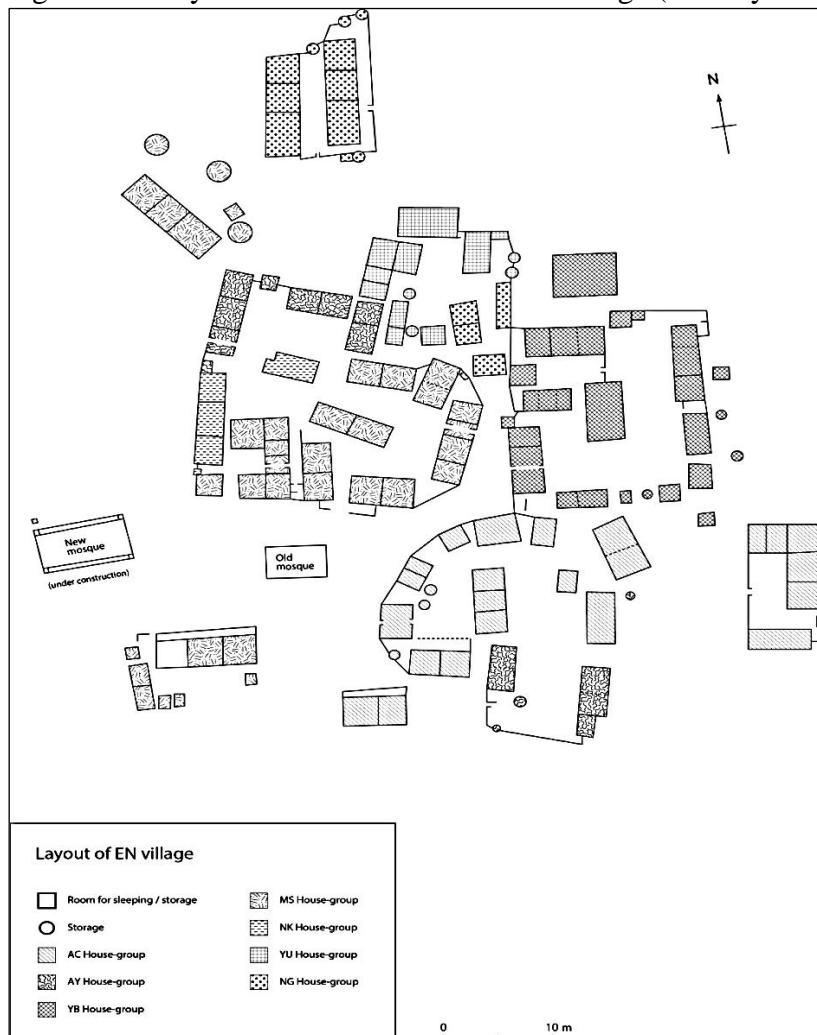
Construction costs for the new huts of the three men of MS house-group.

Item	Amount	Remarks
Galvanized corrugated roofing sheet	N 45000	
Other construction materials	N 5000	
Carpenter to cut and slice the palm tree	N 4000	
Labor to transport the clay soil	N 2000	
Red clay soil	N 0	Available in village
Palm tree	N 0	Permission from landowner
Old bicycle chain	N 0	Collected from people
Food for young men association	Unknown	Food for at least 40 adult men

Source: Fieldwork.

of the day you may see women washing dishes and calabashes, laundering their clothes or even bathing. The borehole is managed by the Islamic leader, who is the family head of YB house-group. He locks up the borehole every day from the evening in order to prevent it from being overused and spoiled. On the outskirts of the village settlement there are some facilities especially for women. Every Nupe village possesses a number of big roasting-ovens for women to dry bulrush millet, shea-nuts, baobab tree leaf and so on. These ovens are built of clay, of roughly cylindrical shape, and are divided into half horizontally by a sieve-like grill. The bottom part of the oven takes the firewood, the upper half, which is open at the top, is the receptacle for the stuff to be dried or roasted. These ovens are built by the men of the village in collective work and used by the women. There are also threshing spots with many big mortars and pestles provided by the women association of the village for women to thresh grains.

Figure 3-5. Layout of the settlement of EN village (January 2009).



Source: Fieldwork.



Photo 3-3. A view of the EN village (January 2009)

3.5.7. Village territory and farmland

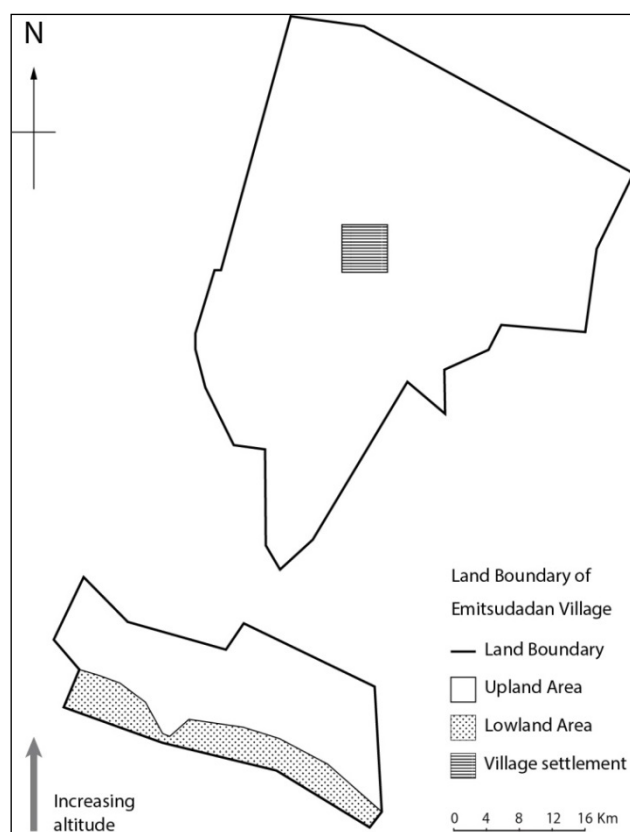
EN village has limited area of farmland (figure 3-6) which is in two portions. The first one is a large flat upland of 19.4ha which was the original land allocated by the landlord *Daniya* to Ndadan, the first settler of the village. This land contains the residential section of the village. The second portion of land is a piece of upland fringe conjunct with lowland which is about 5.3ha and 1.5ha in area respectively. Villagers did not know the reason why and when this portion of land was additionally allocated to them. Perhaps as population grew and as ancestors of the village opened lowland area for new farm, *Daniya* then granted them the additional land. The total farmland area of the village is thus 26.2ha. If we assume each married man of the village owns a household, it means the average area of farmland available for each household is only 0.8ha. AICAF (1994) reported that the cultivated area per household in a nearby village called Gadza was about 4.2ha (2.2ha of upland fields and 2ha of lowland fields). Considering these figures of Gadza village, the land of EN village does not seem to be adequate to satisfy the farming need of its inhabitants. The farmlands of all the farming members of the MS house-group have been measured. In table 3-7 it shows that married men of MS house-group cultivate about 3.3ha of land, which is a lot larger than single men whose average total farm size is about 0.9ha. In Nupe villages when a boy reaches the age to have enough strength to hold a hoe, he would be given a small plot of land for

him to practice farming. As he grows and gets bigger economic needs, he would be given more lands for him to farm. Young boys who have the luck to be given the chance of education naturally farm a lot lesser than boys who shoulder the family burden and specialize in farming. In table 3-7 we can see the differences in farmland area among family members. The family head MS alone cultivates about 8ha of land, in which about one-third is for the economically more important lowland farms. MS has a very large family to feed and his farming burden is huge compared with other household heads of the house-group. It is also noted that younger members of the family have far less allocation of lowland fields. Only two female of the family own farm but their plots are of very small size. In table 3-8 the figures are grouped into household. The average total farmlands size of the five household is 4.7ha, which does not have a large deviance from the case of Gadza village reported by AICAF (1994). However a far higher portion of farmland account for upland fields, the average area of lowland fields cultivated by the households of the MS house-group is not much.

Because of the limited land area of EN village, its inhabitants apparently have a great need to seek for farmland in surrounding villages. As an example the details of all the farms of MS are listed in table 3-9. Only one out of the total of twelve farms of MS locates on the land territory of EN village. None of the lowland farm locates on the land territory of EN village. The example clearly indicates the fact that EN villagers largely depend on land in other villages for accessing to farmland. Acquiring farmland from surrounding villages is a common practice in the region. When a farmer is in need of land but no land is available for him in his village, he can seek for a landlord who has land abandoned and make arrangement with him. The land lease can be for a definite period, says some years, but more commonly the lease is for an indefinite period. Tenant may be asked for an initial payment when making the arrangement, and he would need to pay an annual land rent in kind, *dzanka*, which is supposed to be one-tenth of the crop produced on the land leased, to the landlord. Often there is no difference in the amount of land rent between the land obtained within village and the land leased from landlord of surrounding villages. Therefore matured farmers like MS with well-established social connection may even prefer to acquire more fertile land in other villages when the land of his own village is not good enough. According to the custom a tenant can continue working on the land as long as he keeps paying *dzanka* to the landlord. Nevertheless, a landlord does not have the obligation never to recall the

land before the lease has lapsed. He may, although atypically, cancel the lease and recall the land when he needs the land back for his own use. There is an unfortunate case recorded that the landlord recalled one plot in a convenient location back from MS. In MS's case most of the farmlands have been continuously cultivated for years, for some lowland fields it is even for two to three decades. Once a tenant stop working the land and stop paying the *dzanka*, the landlord has the right to quickly recall the land and reallocate it to another farmer. As population grows and land availability reduces, the insecurity created by the customary land tenancy has become a constraint that make farmers hesitate to practice frequent fallow to let soil retrieve its natural fertility. When a tenant dies, his sons would often be given the priority to continue the lease. But this custom is getting more uncertain especially for lowland fields as land availability on lowlands has become scarcer and scarcer. For young farmers, accessibility to upland fields is not yet a problem as long as they are willing to travel for certain distance. However the accessibility to economically more important lowland fields has already been limited. This explains why single men of MS house-group cultivated much less lowland fields compared with the matured members.

Figure 3-6. Land territory of EN village (January 2009).



Source: Fieldwork.

Table 3-7. Farmlands of MS house-group members.

Member	No. of lowland farm	Size of total lowland farms (m ²)	No. of upland farm	Size of total upland farms (m ²)	Total no. of farmland	Size of total farms (m ²)
<u>Married men</u>						
MS (family head)	7	27,356	5	53,806	12	81,162
YD	8	889	1	23,417	9	24,306
LM	1	831	6	25,960	7	26,791
YK	1	627	7	13,580	8	14,207
NZ	4	1,628	6	16,020	10	17,648
Average		6,266		26,557		32,823
<u>Single men</u>						
SI	0	0	5	11,904	5	11,904
AU	0	0	2	6,737	2	6,737
NY	0	0	2	1,684	2	1,684
BY	2	178	5	11,964	7	12,142
NW	2	479	2	17,497	4	17,976
NM	1	130	2	1,421	3	1,551
MM	0	0	1	1,687	1	1,687
MI	2	221	4	17,112	6	17,333
Average		126		8,751		8,877
<u>Female</u>						
MS-2	0	0	1	174	1	174
YD-1	0	0	1	204	1	204

Source: Fieldwork.

Table 3-8. Farmlands of households in MS house-group.

	No. of household member	No. of farming population	Size of lowland farms (m ²)	Size of upland farms (m ²)	Size of total farms (m ²)	Size of land per farming Member (m ²)
Whole house-group	43	15	32,339	204,801	237,140	15,809
MS Household	21	9	28,364	122,455	150,819	16,758
YD Household	6.5	1	889	25,099	25,988	25,988
LM Household	5.5	1	831	25,960	26,791	26,791
YK Household	6	3	627	15,267	15,894	5,298
NZ Household	4	1	1,628	16,020	17,648	17,648
Average	8.6	3	6,468	40,960	47,428	34,306

Source: Fieldwork.

Table 3-9. List of farmlands of MS.

Farmland	Size (m ²)	Major crops	Cropping period	Fallow	Landlord village	Land rent needed
Lowland 1	2,998	Rice, vegetables	30 yrs	No	Emisheshinatsu	Yes
Lowland 2	514	Rice, tubers	30 yrs	No	Emigilali	Yes
Lowland 3	442	Rice, cassava	30 yrs	No	Emigilali	Yes
Lowland 4	2,417	Rice, vegetables	25 yrs	No	Mokwagi	Yes
Lowland 5	1,118	Rice, tubers	14 yrs	No	Mokwagi	Yes
Lowland 6	2,576	Rice, tubers	14 yrs	No	Mokwagi	Yes
Lowland 7	17,291	Rice, vegetables	10 yrs	No	Emigilali	Yes
Upland 1	1,714	Sorghum, millet	7 yrs	No	EN	Yes
Upland 2	4,016	Sorghum, millet	8 yrs	No	Mokwagi	Yes
Upland 3	39,128	Sorghum, millet	4 yrs	No	Alukusu Tifin	Yes
Upland 4	7,331	Fallow	7yrs	Yes	Emigilali	Yes
Upland 5	1,617	Landlord occupied currently	19 yrs	No	Fikin	Yes

Source: Fieldwork.

3.5.8. Village community

3.5.8.1. The association of the young men

Nupe villagers usually form themselves into communities that work for the common good of the members and the village. The most common and important community of Nupe villages is the association of the young men, *ena gbarufuzi*, which is an age-grade association. Although nearly every Nupe boy or young man belongs to one or the other age-grade association, the age-grades are not compulsory associations. No coercion is used to induce individuals to join the association, but failure to do so would be regarded as unusual, and under certain circumstances even suspicious. Nadel (1942: 384) mentioned that age-grade system of Nupe is complicated by the large number of variations that occur. Generally speaking, there is at least one young men association in every Nupe village. For villages with large young man population, their young men are grouped into a few associations. The common ways of grouping are by age-grade or by house-groups, but as the Nupe do not have rigid rule for *ena gbarufuzi*, the organization of young men association in each village can vary a lot. Generally

every young man of a Nupe village belongs to one or the other association and they are supposed to contribute their physical labour to the collective work of the association. A young boy in his early teens naturally becomes a member of the *ena gbarufuzi* once he is equipped with the physical strength and skill to farm. There is no fix rule regarding the age when a member can retire from the *ena gbarufuzi*. When a matured man becomes old enough to be regarded as an elder he does not need to provide physical labour to the association anymore, but he may still need to make contribution in some other ways.

Nupe call community work as “*communti*”, a new word created after the influence of western civilization, but the institution of collective labour has been there in the original Nupe culture. There are two categories of *communti* work that are performed by the young men association to-day, the first type is “*egbe*” and the second type is “*enuna*”. *Egbe* is the Nupe word for communal work, thus it represents the original function of *ena gbarufuzi*. *Egbe* is the general type of collective labour. It is not limited to farm work, but is organized for every kind of work which demands large-scale cooperation. The basic *egbe* of the young men association is to provide collective labour for the village community farm, for example the association of EN village works four times annually for the community farm: first time for land preparation and direct sowing, second and third time for weeding and the fourth time for harvesting. The produce and income derived from the community farm are used for the common good of the whole village, mainly for the financing of the construction of village infrastructure such as well, mosque, road and any other facility which they give up on expecting from the government. In Gadza village the young men association is even gathering money for the construction of a primary school which is supposed to be built by the local government. The collective work for the construction and maintenance of irrigation canal and motor road, and the building and roofing of important village structures such as mosque and school are also typical *egbe* work of the young men association.

Besides the large-scale work for the whole village at large, the association also provides *egbe* to village members who have special needs. Village elders can request for *egbe* for their farms when they no longer have enough physical strength and cannot command a large body of co-workers. The farms that *egbe* work on have to be the family farm of a house-group, but not any farm for any individual person. *Egbe* is

particularly important for the rice cultivation of Nupe farmers. In many villages the tradition that the young men association offers the help of *egbe* for the leveling and preparation of the family paddy field to each house-group is still being preserved. In the harvesting season, the young men association also does the threshing for rice as *egbe* for each house-group. Panicle of paddy will first be cut and gathered on the farm by family labour for sun-drying. The family head of each house-group then decide the date for his children and the young men association to do the threshing together. All the young men of the village will beat the grain from farm to farm for all the house-groups. Another important demand for *egbe* from village elders is to assist them to build houses for their young sons. Population growth rate of Nupe villages is high and it is not easy for older family heads to fulfill the responsibility to build houses for all of their sons for them to establish independent households. *Egbe* is thus a highly important institution that assures social assistances can be available for the older generation of the village.

The other aspect of *egbe* is that it is a service to be provided from bottom to top in the traditional hierarchy of the Nupe society. Although in a much lesser extent comparing with the past, the young men association on behalf of the village has to do the *egbe* work for their primary landlords, *Etsu Nyenkpa*, District Head and the Bida ruling class whenever there is request coming from people of the higher hierarchy. The higher class people have the right to demand collective labour from farmers living on the land they managed or owned, mostly for farm work on their farms and occasionally for large-scale work, for example to repair the royal palace for the Bida Emir. However with the abolishment of slavery and availability of wage labour, this type of *egbe* is less utilized by the higher class aristocrats today.

The young men association cannot take any cash payment for *egbe*, and apart from the *egbe* work that done for people of the higher hierarchy, the help of *egbe* is only limited to the older village members. When the young men offer their *egbe*, the hosts have to provide food and drink for the feast with which the *egbe* invariably comes to an end. Therefore even though the labours are free, the cost to prepare food and drink for a large number of young men cannot be avoided. When it is *egbe* for village elders, people are considerate to accept simple meal so to help the elders to save cost. However when it is *egbe* for higher class aristocrats, people inevitably expect better food and drink otherwise they may feel being abused, and the cost for the feast may become

higher than hiring wage labour. The cost for the feast is one of the main factors that do not allow people to regularly request for the help of *egbe*.

The second type of *communti* work performed by the young men association is “*enuna*”. *Enuna* differs from *egbe* that it is a kind of on-demand service in which cash payment is required and the service is not limited to older village members. *Enuna* can be regarded as the monetized version of *egbe* and there is less social restriction so the chance to be hired is much extended. The young men association can take the demand for *enuna* from people of any village. But still the people have to be elders; younger people are not usually entitled to hire *enuna*. The price of the work would be negotiated and agreed before the work is performed. Incomes derived from *enuna* work are not taken by the young men, but will be preserved and used for the common good of the community and the village. For this point *enuna* shares the same purpose with *egbe*. With the infiltration of capitalism, cash is needed in almost every aspect of village development and the institution of *enuna* allows the chance and flexibility for the young men association to obtain cash which can be spent for the community at large. *Enuna* provides an option of collective labour for people who cannot command the *egbe* of their own villages. Besides as the help of *egbe* is not supposed to be requested regularly, *enuna* provides an extra access of collective labour for people who have large-scale farms. *Enuna* is enlisted mostly for tilling, mound making and the first and second weeding. The charge of *enuna* depends on the nature of the work and the time and number of person that the job would need. There is no need for the hosts to supply food and drink. Given the efficiency of collective work, to hire *enuna* service is a lot cheaper than hiring wage labour. For villages which have well-managed young men associations, their *enuna* services receives high demand. Nevertheless, because young men only allocate limited time for *communti* and also the demand for *egbe* must be satisfied first, the supply of *enuna* service is rather limited.

The leader of the young men association is titled *Etsunu* or *Mayakinu*, which means head of farmers. *Etsunu* is chosen from the capable senior members of the association. From *egbe* to *egbe* every year, the performance and personality of young farmers are watched, compared and judged by the older people. *Etsunu* must have achieved good skill and techniques in farming. With his strong knowledge in farming, he can monitor and advise the farming activities and resource use of young farmers.

Etsunu must also be assiduous, dedicated and reliable that he can be the role model for younger farmers also in private life. The main duty of *Etsunu* is to mobilize village young men and coordinate collective work for every collective work. He has to schedule all the tasks for *egbe* and make sure that all the needs of village elders are satisfied. He is the manager of the community farm of the association that he has to constantly work on it and manage the sale of the produce. For any demand for *enuna* service, *Etsunu* lookouts for the negotiation process and make all the decisions. When there is young man who misbehaves or repeatedly absent from *communti* work, *Etsunu* has the right to warn him and punish him.

EN village has only one young men association which has over 40 members. All the young men of the village, besides those who have occupations other than farming, are supposed to join the association and spare their time on every Sunday for the collective work of the association. An operation of collective work usually lasts for two to three hours. On Sunday the association can allocate work for two shifts: the morning shift from about 9 a.m. to 12 p.m. and the evening shift from about 4 p.m. to 6 p.m. The young men association of EN village is managed by seven young men from five house-groups.

Whenever there is demand for *egbe* and *enuna*, the requests have to be brought to *Etsunu*. Coordinators will be sent to inspect the nature of the task and to estimate the time and labour that will be needed. For *enuna* service, coordinators are responsible for price negotiation with the hosts. I was told that the typical charge for *enuna* task of one work shift would be about 2000 naira. Individual wage labour in the region would charge for 250 naira on average and only work a few hours a day. Therefore the cost to hire *enuna* is far more economical than hiring a few wage labours for farmers who have large farms. The *enuna* provided by EN villagers receives the demands from a numerous surrounding villages every year, for examples Fikin, Patinda, Ndarubu, Ekota, Emigilali, Madodo and so forth. After *Etsunu* has decided to take the task of *egbe* or *enuna*, the content and schedule of the task will be communicated to all the members of the association. All the members are supposed to attend to the task. When a member has to be absent, he must explain the reason to *Etsunu* and asks for permission to take leave. If he fails to do so, he will be fined 100 naira penalty for every shift of task that he absents himself from. EN village is a cohesive community so it allows better

organization of the young men association. It is unusual for members to be absent without reason frequently. If a young man absents himself from the collective work continuously and rejects to pay the fines, he will be warned and insulated by other villagers. Some young men describe that it is a very painful punishment so no member would dare to behave very badly. Nevertheless, for villages which do not have strong solidity, their young men association may not be as well organized and effective as that of EN village.

3.5.8.2. The association of the women

On the female side, Nupe women also form themselves into association that provides assistance to women in the village. The purpose of the women association is different from the young men association that it is not for collective physical work but for the assistance that women need in their daily life and when preparing for ceremonial occasion of the village. In EN all the married women automatically become members of the association. They are bonded to make contribution to the association and when they have need they are entitled for the service and assistance. The head of women is the first wife of the Village Head.

Food preparation is one of the most important roles of Nupe women. To assist women to prepare food for the daily consumption of their families and for the feast in festival and ceremony is one of the major functions of the women association. The women association of EN provides a number of special utensils for the use of village women. There are two spots on the outer edge of the residential section of the village where big mortars and pestles are provided for village women to thresh cereal grains. There are six mortars and ten pestles which are provided in one spot for the threshing of sorghum and millet grains, and in the other spot there are four mortars and six pestles for the threshing of rice grains. The association also has bowls, cooking pots, spoons, sitting mats and so forth, all of them in large size which are used specially for festival and ceremony in the village. Whenever there is celebration, regardless being held by which family, the association has to supply two sacks of egusi melon seed, a high value ingredient, which will be used by the hosts to cook sauce for the feast of the celebration. Each married woman is also obligated to donate two mudu of milled rice (about 2kg) to

the hosts for them to supply food to the guests. They as well assist the hosts to gather enough firewood for cooking in the ceremony.

In addition to these functions, the association also provides assistance to women when they have special needs, for example to assist a woman to cook and take care of her children when she gets very sick. EN women told me that for example if the husband of a woman does not feed the family and put them in miserable situation, the association would provide some little loans to assist the woman to start small business so that she could feed herself and her children. Divorce is not a common practice for Nupe women therefore if they are unfortunate to have a bad husband the assistance from the women association will be important. However, the source of finance of the women association is very limited. Nupe women do not have to custom to do collective work that earns money for the association. The source of finance is mostly from the donation from village men and sometimes from women who have money. The main event for women to get donation is the annual Mohammedan festival, the Great Salah, which takes place one month after the Ramadan fasting period. In EN village women dance and sing on the Great Salah. They will visit all the families in the village and gather donation from every village men. Each village men would donate the amount like 10, 20 or 50 naira. The limited source of finance in fact does not allow the association to provide much assistance to village women.



Photo 3-4. Women threshing millet with shared mortars and pestles (January 2009)

Chapter Four

Lowland farming system and indigenous irrigation management of Nupe farmers

4.1. Introduction

This chapter examines the characteristics of lowland farming system and indigenous farmer-managed irrigation system of the Nupe farmers. A detailed case study is carried out to document the development, operation and management of an indigenous irrigation system in an inland valley in the Cis-Kaduna region. Lowland ecosystem is an important resource for Nupe farmers and tradition of lowland cultivation has been established. There is a wide variety of lowland environments in West Africa. The lowlands are classified into coastal swamps, inland basins, flood plains and inland valleys. Most of them support substantial communities of people who depend on their natural resources and the ecology and hydrological patterns that maintain them. Inland valleys are the upper reaches of river systems. They comprise valley bottoms which may be submerged for part of the years, their hydromorphic fringes, and the contiguous upland slopes and crests extending over the area that contributes runoff and seepage to the valley bottom. Windmeijer and Andriesse (1993) estimated that there are 21 to 51 million hectares of inland valleys in West Africa. The valley bottoms show the greatest potential for highly productive intensification and diversification for food crop in the rainy season as well as in the dry season. They can be intensively used without the risk of introducing irreversible degradation as is the case in the uplands (Hirose and Wakatsuki, 2002; IITA, 1990; WARDA, 1992). Effective utilization and sustainable development of lowlands is regarded as one of the keys to enhance agriculture productivity in Africa (JICA, 2003; WARDA, 2003). Indeed lowlands have already replaced uplands as the largest rice production ecology in West Africa. In the last 30 years, the increase of paddy production in West Africa was brought about mainly by rainfed lowland rice ecology, especially the inland valleys (Wakatsuki et al., 2007; Wakatsuki, 2008).

Irrigated rice cultivation in Nigeria has a long history dating back to the colonial era, but it was not until droughts of the early-to-mid seventies that concerted efforts were paid to irrigation development in the country. A substantial government investment of more than US\$ 200 million was put into irrigation development between 1976 and 1990 (Kebbe et al, 2003). Nevertheless, some of these large-scale irrigation schemes have totally collapsed mainly due to lack of proper maintenance while others are functioning far below full capacity. Contrary to the failure of large-scale irrigation systems, indigenous small-scale irrigation systems are long established and are of growing economic significance. FAO and World Bank estimated that the area of informal irrigation developed spontaneously by farmers has increased from 120, 000 ha to 800, 000 ha from 1958 to 1978. These experiences have led to an increased emphasis on small-scale irrigation schemes (Akpokodje et al., 2001; Baba, 1993). Most traditional and indigenous irrigation systems in West Africa are characteristically single-source, single-user systems, therefore the focus of aid donors in Nigeria has also been put on well-boring and subsidized petrol pumps provision (Kimmage, 1991). However, amplifying water scarcity and unchecked population growth will increasingly necessitate the use of shared water sources for irrigated production. Market development has also been stimulating the spontaneous development of such single-source, multiple-users irrigated production systems (Norman, 1997). In the inland valleys of Cis-Kaduna region, the farmer-managed indigenous irrigation systems widely exist. These systems are initiated and community managed by farmers without any external assistance.

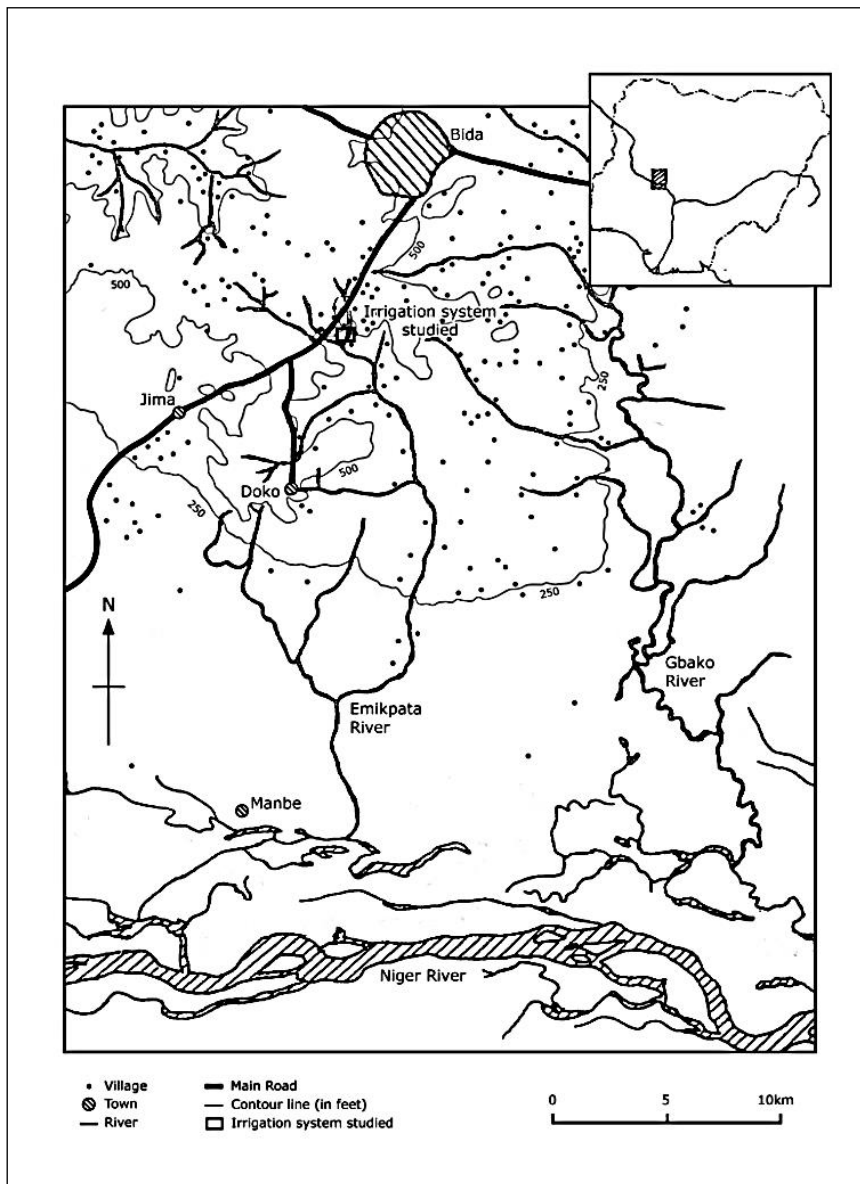
4.2. Site description and methodology

The farmer-managed irrigation system selected for surveying was located in the upstream basin of River Emikpata (figure 4-1), a tributary of the River Niger¹. The river provides a large inland valley in the region. The valley bottom along the river ranges from 20 m to 300 m in width with the slope of 0.3 to 1% (Kubota, 2002). There is much discharge in the rainy season when rainfall is high, but when the rainy season ends and

¹ Besides the system chosen for survey, other systems located in Nasarafu village, Emisheshinatsu village, Gadza village, Kpatagi village and Makwa villages are also briefly studied for the purpose of comparison. It is confirmed that characteristics of community management of these systems are mostly similar.

the dry season begins river discharge rapidly decreases. Most parts of the River Emikpata dry up between late January and April. The river begins to flow again in May or June after several big showers at the beginning of the rainy season. The runoff reaches the peak in September and then gradually reduces from late October.

Figure 4-1. Location of the indigenous irrigation system surveyed.



The site is an intensively used, productive system of irrigated farms which has developed autonomously under local initiative with no external assistance. Initial reconnaissance visits were carried out from August to September 2004. The basic organizational structure and management of several indigenous irrigation systems in the

region were initially accessed by informal interviews with farmers and village heads. A list of questions for farmers who farm along the irrigation system was developed which addressed a broad range of issues related to community organization, land tenure, channel development and maintenance, water allocation and farm production and marketing. The list of questions for farmer interview is attached in appendix 4-1. Forty farmers were interviewed with the survey form between January and February 2005. The irrigation channels and the irrigated farm plots of the selected site were physically surveyed and measured by a simple total station and measuring tape. Finding out the land ownership of each of the farm plot along the irrigation canals has been a difficult task. It was only after repeated interviews with farmers and landlords that the accurate information be eventually confirmed. The subsequent exchange rate of US dollar to Nigerian Naira between 2004 and 2005 was around 132:1 based on the data obtained from the Central Bank of Nigeria.

4.3. Inland valley farming system of Nupe farmers

Table 4-1. Annual lowland farm work calendar of farmers in the research site.

Rainy season							Dry season					
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Off-season irrigated production												
Plantation of eggplant and harvesting of okra, red pepper			Harvesting of cassava, sweet potato, cowpea and other off-season crops						Mound making	Plantation of cassava, eggplant, okra, sweet potato, red pepper, cowpea and etc		
Irrigated rice cultivation												
		Leveling of mounds and preparation of rice fields	.....	Sowing	.....	Weeding	.....	Harvesting	.....	Threshing and processing		
Irrigation system management												
					Collective weeding	.....	Individual maintenance	.....	Collective weeding	.....	Water rotation

Source: Fieldwork.

Irrigation systems in the inland valleys of Cis-Kaduna area are used for rice cultivation and some off-season irrigated production. Table 4-1 illustrates the annual farm work calendar of farmers in the research site. Rainfall usually begins in late April, but it takes two to three months until the valley bottom is inundated with sufficient water for rice cultivation. Land preparation for rice farming is carried out from late July to early August. Farmers level the mounds they made in the last dry season and then make small basins for rice. The rice cultivated in the site is mostly Asian rice (*Oryza sativa*) with a growth period of 150 days or more. After harvesting rice, farmers make mounds and ridges again in January for off-season crop cultivation. Cassava, eggplant, okra, sweet pepper and other vegetables are grown on the mounds and the ridges.

Table 4-2. Rice production of interviewed Nupe farmers.

	No. of Entry	Average	Minimum	Maximum	Standard Deviation
No. of rice plot farmed	27	2.11	1	4	0.89
Paddy selling price per a sack of 75kg (in Naira)	22	N 2,539	N 1,800	N 3,800	N 593
Gross production of rice (in Naira) *	27	N 32,330	N 5,000	N 87,500	N 21,176
Percentage of harvested rice sold	26	57%	0%	100%	31%

Source: Fieldwork.

*Include the amount for self-consumption and for sell.

Bida, the capital town in Cis-Kaduna region, is one of the largest markets for domestic rice in Nigeria (Ezedinma, 2005). Interviewed farmers sold about 57% of the rice they harvested and kept the rest for self-consumption and seeding (table 4-2). Paddy is sold to village women who specialize in processing and trading and is later resold in the markets in Bida and Doko, another nearby town. Merchants from surrounding local markets also come to buy directly from farmers. Just after harvesting in December and January the price of rice is usually the lowest for the year. It becomes higher during the rainy season when supply is low. Figure 4-2 shows the retail market prices of local dehusked rice in Bida from January 2004 to August 2006. The average price was NGN 79 (~ US\$0.60) per kg in 2005. The figure shows a steady increasing trend in rice price. From January 2004 to January 2006, the price has increased by 47%. Based on the

estimation of twenty-two interviewed farmers (table 4-2), the average price that they sold a 75 kg sack of paddy was NGN 2, 539 (~ US\$19). They farmed two rice plots on average and they generated NGN 32, 330 (~ US\$245) gross production of rice.

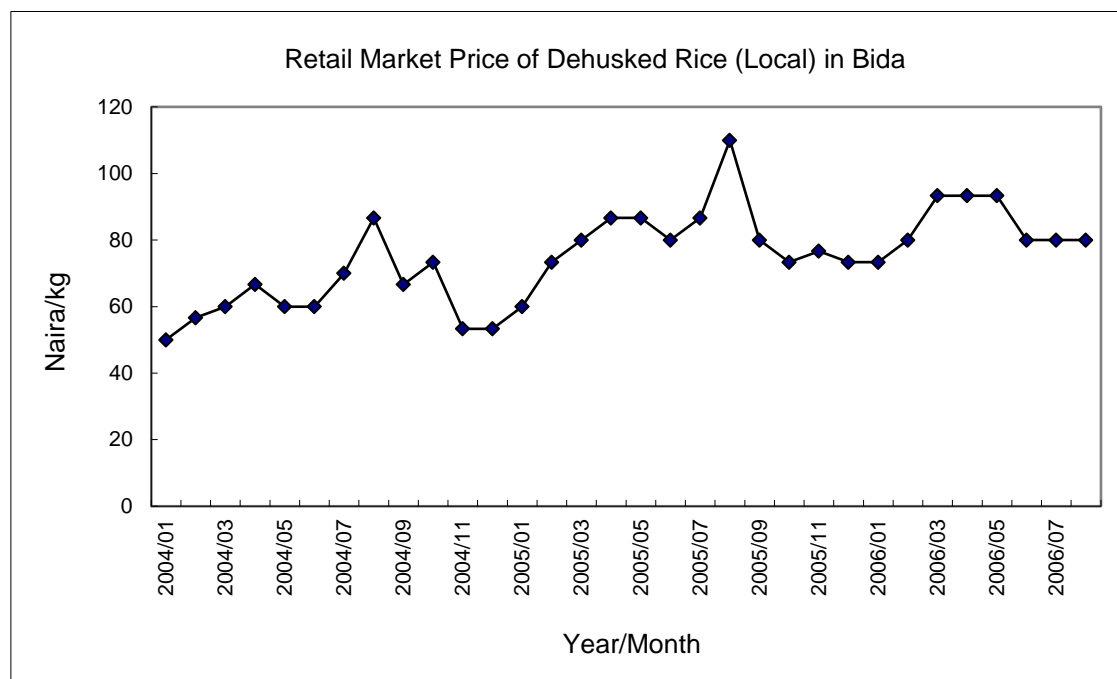
The cultivation of off-season crops provides considerable supplementary cash income for farmers who have access to irrigable land. Off-season irrigated crop production in the region used to be of a much smaller scale in that farmers mainly produced vegetables and tubers for self-consumption. About ten years ago, however, Hausa merchants from northern Nigeria began to come and purchased off-season crops from Nupe farmers and then resold them in Kano and Sokoto. It led to the massive expansion of off-season crop cultivation in the region. Most of the interviewed farmers plant 2 to 4 types of off-season crops (table 4-3). The twenty-four interviewed farmers plant cassava (96% of informants), sweet pepper (88%), okra (54%), sweet potato (42%), eggplant (25%), cowpea (21%), spinach (8%), sorrel (8%), sugar cane (4%) and tomato (4%) during the dry season. Most of the harvested off-season crops are for sale, especially okra, red pepper and cassava, which very often are almost all sold to merchants. Apart from Hausa merchants, local Nupe merchants also buy off-season crops from farmers and then resell them in the markets in Bida and neighboring towns like Mokwa, Lapai and Agaie. Based on the estimation of the twenty-four interviewed farmers, it is anticipated that they could obtain NGN 83, 577 (~US\$633) gross seasonal incomes from off-season crops cultivation on average. These twenty-four farmers cultivated 2.08 plots of irrigated field on average and the gross seasonal income per plot was NGN 40, 181 (~US\$304), which is a considerable sum for resource poor Nupe farmers. Contrary to upland crops cultivated in the rainy season, off-season crop production is more elastic in response to changes in market conditions. Farmers indicated that they always altered the type and the quantity of off-season crops they planted in response to changes in market prices. As shown in figure 4-3 the prices of major off-season crops fluctuated greatly over time, but in general prices are lower during the early rainy season when these crops are being harvested. During the time of this research the prices of sweet pepper and okra were higher than previous year and it had induced farmers to increase the production of these crops.

Table 4-3. Off-season crops production of interviewed Nupe farmers.

	No. of Entry	Average	Minimum	Maximum	Standard Deviation	% of total gross income
No. of plot farmed	24	2.08	1	5	0.88	
Gross Income from off-season crops (in Naira)	24	N 83,577	N 1,600	N 234,600	N 68,653	
Income from each type of crop (in Naria):						
Okra	13	N 29,546	N 5,000	N 161,000	N 41,431	19%
Sweet Pepper	21	N 52,763	N 4,800	N 225,000	N 54,168	55%
Sweet Potato	10	N 5,400	N 1,500	N 18,000	N 4,927	3%
Cassava	23	N 7,316	N 800	N 64,000	N 13,063	8%
Garden Egg	6	N 32,200	N 800	N 160,000	N 63,001	10%
Cowpea	5	N 3,470	N 250	N 10,500	N 4,111	1%
Spinach	2	N 1,200	N 1,000	N 1,400	N 283	0%
Sorrel	2	N 6,750	N 1,500	N 12,000	N 7,425	1%
Sugar Cane	1	N 5,000	N 5,000	N 5,000	-	0%
Tomato	1	N 60,000	N 60,000	N 60,000	-	3%

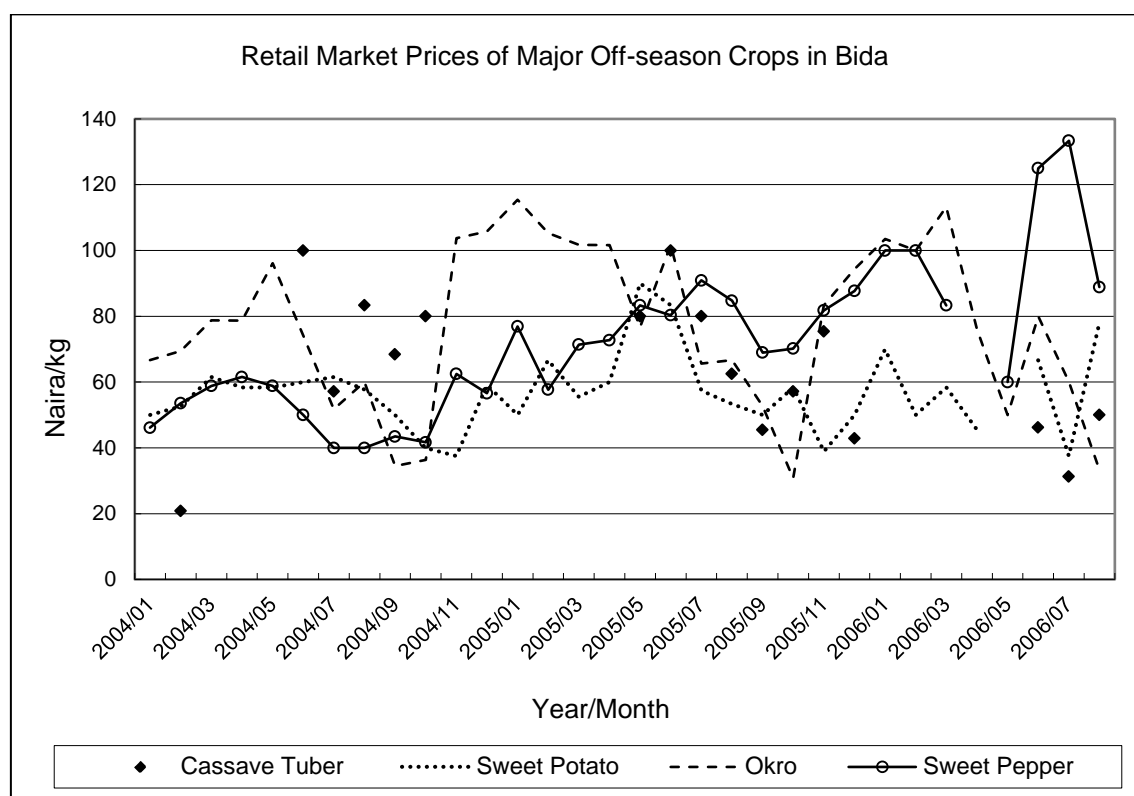
Source: Fieldwork.

Figure 4-2. Retail market price of local dehusked rice in Bida, Niger State.



Source: Arranged by author based on data obtained from the Niger State Agricultural Development Project.

Figure 4-3. Retail market prices of major off-season crops in Bida, Niger State.



Source: Arranged by author based on data obtained from the Niger State Agricultural Development Project.

4.4. Land tenure system of lowlands

Nupe is the major rice producer in Nigeria, but not all the Nupe villages have lowlands within their village boundaries. In the Nupe culture, no one who did not plant rice would be regarded as a real farmer. When a community does not possess any lowlands, farmers need to acquire lowland fields from other villages. The Nupe call the lowland fields *bata*. Competition over possession of *bata* has always been severe in the location of this research project. Nadel (1942:181) described that *bata* was especially valuable and the Nupe fought for it with special bitterness. Disputes related to *bata* occurred more often than for other lands, even in land-rich areas.

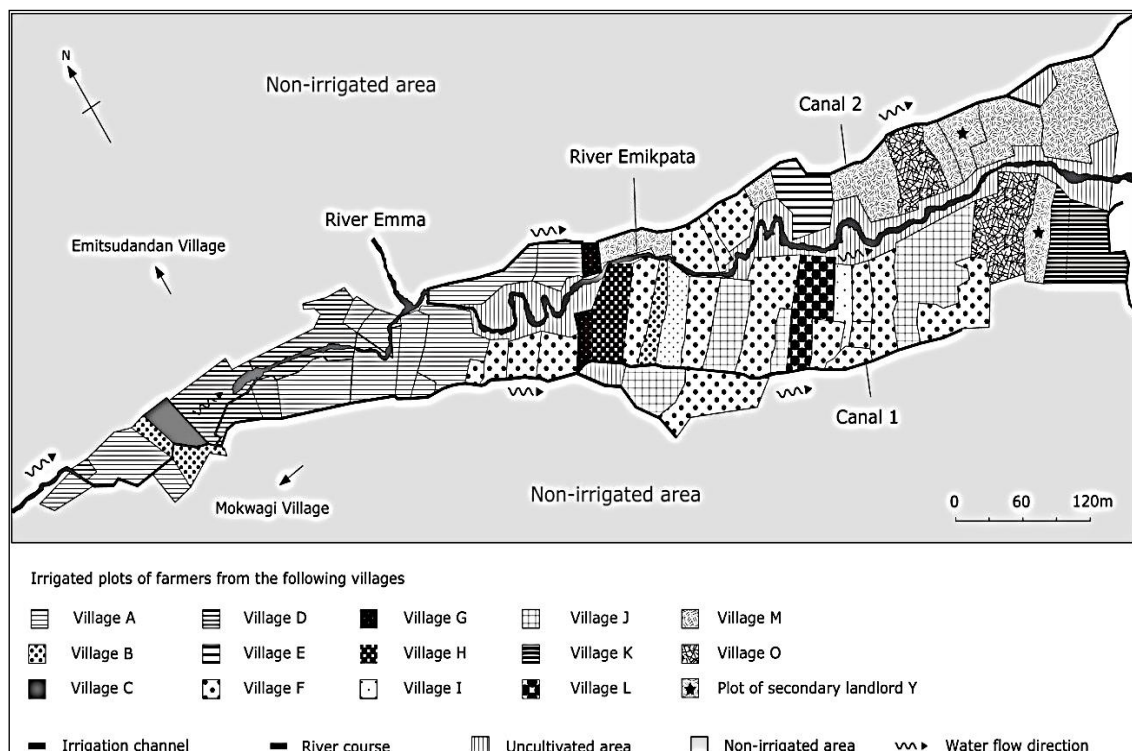
Nadel (ibid) concluded that there are five methods of land acquisition in the old Nupe country. These methods are: 1) request from chief by exercising one's right as a community member; 2) lease temporarily for an annual rent in kind with an individual

landlord; 3) lease for life or for an indefinite period with an initial payment plus an annual rent in kind; 4) secondary tenantry by appointment from primary landlords; and 5) primary tenantry by conquest or appropriation. The land system for *bata* in the research area can be very complicated and ambiguous because all these five methods of land acquisition can coexist within a very small area. Basically, all the *bata* are owned by primary landlords and are managed by secondary landlords. Ordinary farmers may gain access to a plot by the first three methods. If the *bata* is within the village boundary and is managed by the village chief, the farmer can gain access to a plot by exercising his right as a member of the village. The second method is by far the most common in the region of this research project. Every landowner who has enough land is ready to “lend” the *bata* to villagers as well as non-villagers. Although the lease is supposed to be temporary, it is the norm in the area that as long as the tenant is cultivating the land and keeps submitting annual rent to the landowner, the tenant would not be evicted normally and the lease would last for a lifetime.

After the tenant has passed away, his heirs are supposed to have the first priority to be granted the usufructuary right of the land. This norm is applicable even to the most valuable irrigated plot, which is called *dife* in the Nupe language. *Dife* is highly significant economically as double cropping is possible. However, *dife* is not easily accessible to new farmers nowadays in the research area even if they are willing to pay. Fifty-five percent of the forty interviewed farmers indicated that they “inherited” their *dife* plots from their fathers. Because of this norm, village chiefs cannot just take over the plot leased to non-villager and then reallocate it as he wishes even though he no longer has enough land to satisfy his own relatives and fellow villagers. All of the interviewed farmers are cultivating all or part of the *dife* plots outside their own villages. The norm makes the reallocation of *dife* plots inflexible. However, it must be noted that in practice there is no guarantee for tenant that the lease will never be recalled suddenly. Indeed a few cases of secondary landlords and even primary landlords recalling the leases from farmers suddenly have come to the author’s knowledge. Landlords very often take over the lands from farmers when they feel their ownership is being challenged. Farmers are not supposed to plant any economic tree nor build any permanent structure on the lands. Thirty-nine percent of the informants revealed that they cannot assume the “inheritance” of their sons nor they can request that the land be passed to their sons before they die. This uncertainty created by the contradiction

between the lease and the norm does not provide farmers, especially the young farmers, with enough incentive to invest and improve their *dife* plots for the long term so it becomes an obstacle for the development of sawah based rice production. Method three is relatively more secure for tenants but the annual rent reveals that landlords still have the right to recall the lease at any time. Further, it is only possible for wealthy or prestigious farmers to “purchase” lands from landlords. There was just one case of such that the author noticed during the study.

Figure 4-4. Layout of the farmer-managed irrigation system studied.



Source: Fieldwork.

Figure 4-4 shows the layout of the surveyed plots along the irrigation canals studied. Sixty-one plots were surveyed along the selected 1km river course of River Emikpata. Within such a small area, there are forty-nine farmers coming from fourteen villages cultivating their *dife* plots. The area belongs to two primary landlords, and is managed by seven secondary landlords. The fact that there are so many landlords within such a small area becomes an obstacle for project that aims at improving the infrastructure of the area as a whole as cooperation and coordination among landlords is difficult. The average area for the 61 plots is just 2, 973m² and it is impossible for

farmers to expand their plots (table 4-4). In the past, most farmers had extra land that could be cleared for interested family members, but this is no longer the case. Increasingly, older farmers may subdivide their plot among younger family members. Some of these may not be physically subdivided, but may be simply “shared” by those inheriting the plot. Therefore, the actual number of farmers working in the system may well exceed forty-nine. In the research site, it is acceptable for farmers to sublet part of their plots to other farmers for limited periods. It is particularly common during dry season that a farmer may sublet a portion of his plot just for a season to another farmer who cannot access to irrigable land and is in need of cash income. The transaction is regarded as a friendly act, a “helping out”, quite natural between relatives or friends. The farmer normally does not request any rent from the sub-tenant but some produce after harvest to express gratitude is always appreciated.

Table 4-4. Area of plots surveyed.

No. of Entry	Average	Minimum	Maximum	Standard Deviation
61	2,973 m ²	377 m ²	9, 652 m ²	1989 m ²

Source: Survey conducted by author



Photo 4-1. Traditional lowland rice farming of Nupe (September 2004).

4.5. Indigenous irrigation system management

4.5.1. Physical structure and development

Small-scale irrigation system accounts for 94% of the total irrigated areas in Nigeria (Kay, 2001:36) and surface (gravity) irrigation method is the most predominant (Nwa, 2003: 89). In northern Nigeria, the traditional shaduf system and modern motor pump are predominant, while in central Nigeria small weirs and channels are widely constructed to divert natural drainage water around inland valley swamps. In the Cis-Kaduna area, such small scale irrigation systems developed and maintained by farmers are commonly seen. These systems share the same principle of water flow distribution with the Subaks system on the Island of Bali in Indonesia (Mase 1994). Water is diverted from river courses and streams by simple semi-permeable diversion dams made largely of brushwood and earth, and it is then directed into irrigation canals. Dams are sometimes not constructed in order to avoid conflict in water allocation. Irrigation canals are connected directly to river courses and simple diversion modules are made to adjust water flow so that water can be shared in proportion among irrigation canals.

The irrigation system surveyed (figure 4-4) is a typical indigenous irrigation system commonly seen in Cis-Kaduna area. Simple semi-permeable diversion modules were built by brushwood and earth to divert water from River Emikpata and River Emma into the two canals that irrigate the plots along the two sides of the river course. The system was dug and maintained completely by farmers without any external assistance. Canal 1 was initiated by farmers over 80 years ago. It was gradually extended and reached its present end at about 30 years ago. Canal 2 was dug by farmers about 60 to 70 years ago. The canals were constructed initially for irrigated rice cultivation. The valley bottom was marginally used and rice was not the main crop before the construction of the canals. Informants indicated that about 28 years ago farmers began collectively to weed and maintain the canals. Before that time, individual farmers just took care of the part running adjacent to their plots. The initiation of the community effort is related to the drought that occurred in the early to mid-1980s when farmers realized that individual effort was not enough to secure enough water. The

expanding demand for off-season crops in the last decade also provides a higher incentive for farmers to improve the efficiency of water delivery of the canals. Irrigation has become so important that some farmers even revealed that they sometimes needed to sleep in their fields at night to secure water, which could never happen in the past when off-season crop cultivation was less common. The dimensions of the two canals surveyed were about 0.5 m in depth and 0.5 m in width at the ground surface. Canals gradually become narrower and shallower as they get longer. Farmers described that the strength of water becomes very weak at the later part of the canals so there is no incentive to lengthen the canals further.

4.5.2. Irrigation management and water allocation

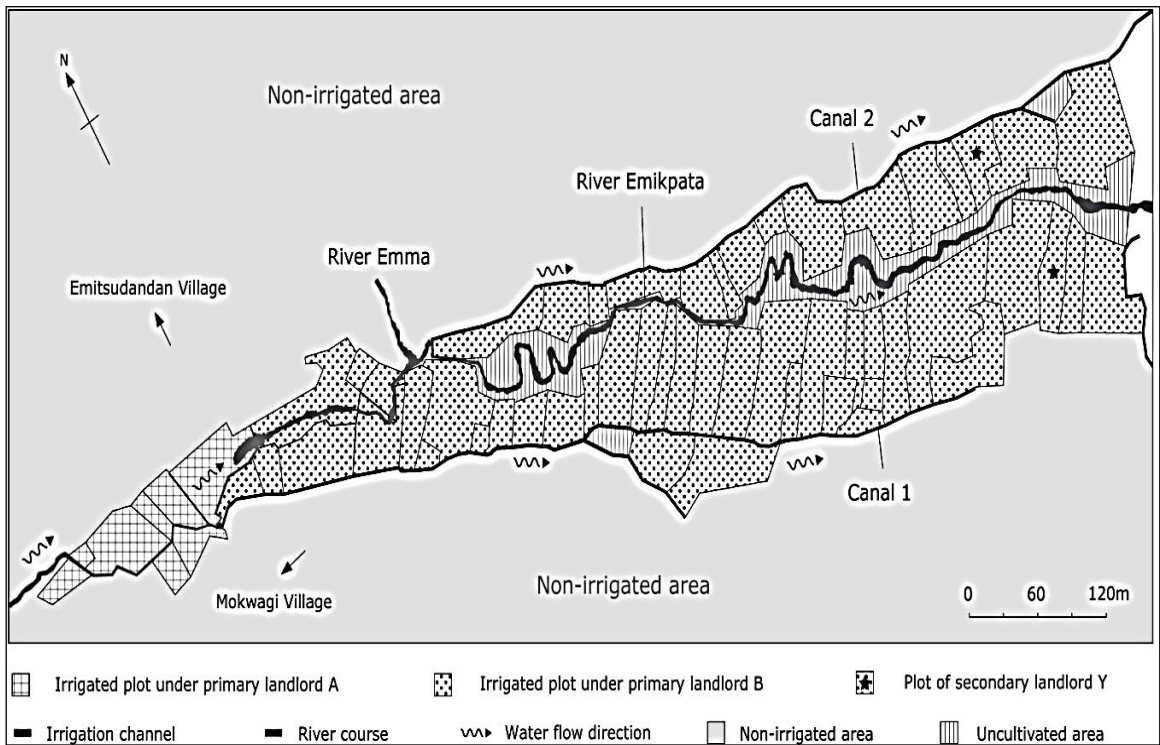
The fundamental tasks for irrigation system management are the organization of water allocation; physical maintenance activities; and conflict management (Coward, 1979; Hung and Hunt, 1976). Some general features of how farmers organize these tasks for irrigation management are discerned. First of all, there is a high degree of embeddedness of irrigation system roles in other powerful roles in the local society. Traditionally each village has a farmer's leader, *Etsunu* or *Etsu Enunuchizhi*, who facilitates farming activities and coordinates community work of the villagers, including management of agricultural water. However, his influence on irrigation management is minor because a canal is usually utilized by farmers of various villages (as shown in figure 4-4) whom he is not entitled to monitor. He cannot easily mobilize farmers of other villages for communal maintenance work.

The legitimate leaders of irrigation communities are usually the secondary landlords. The institutional and organizational arrangements, which have been established among farmers to manage the irrigation systems, have been developed within the context of local land management structure. As presented in chapter 3, there is a multi-layered structure of land ownership in the region. The *Bida Emir* and the royal families are the ultimate land owners of the territory of the whole *Bida Emirate*. Under the *Emir* there are the primary landlords which were created by the feudalists system of the kingdom. Secondary landlords are the "land managers" at community level. They have always been charged with the responsibility of settling minor land tenure disputes within the communities. Therefore, it is perhaps natural that they would come to play

the important roles in the management of irrigation systems as they developed into important economic entities. The construction and extension of any irrigation canal should be approved beforehand by the secondary landlords. In time of water shortage, secondary landlords normally play the important role to facilitate water rotation among system users. They are the only persons at the community level who have the right to evict farmers from their plots when they seriously misbehave. Figures 4-5 and 4-6 indicate the landownership of the system surveyed.

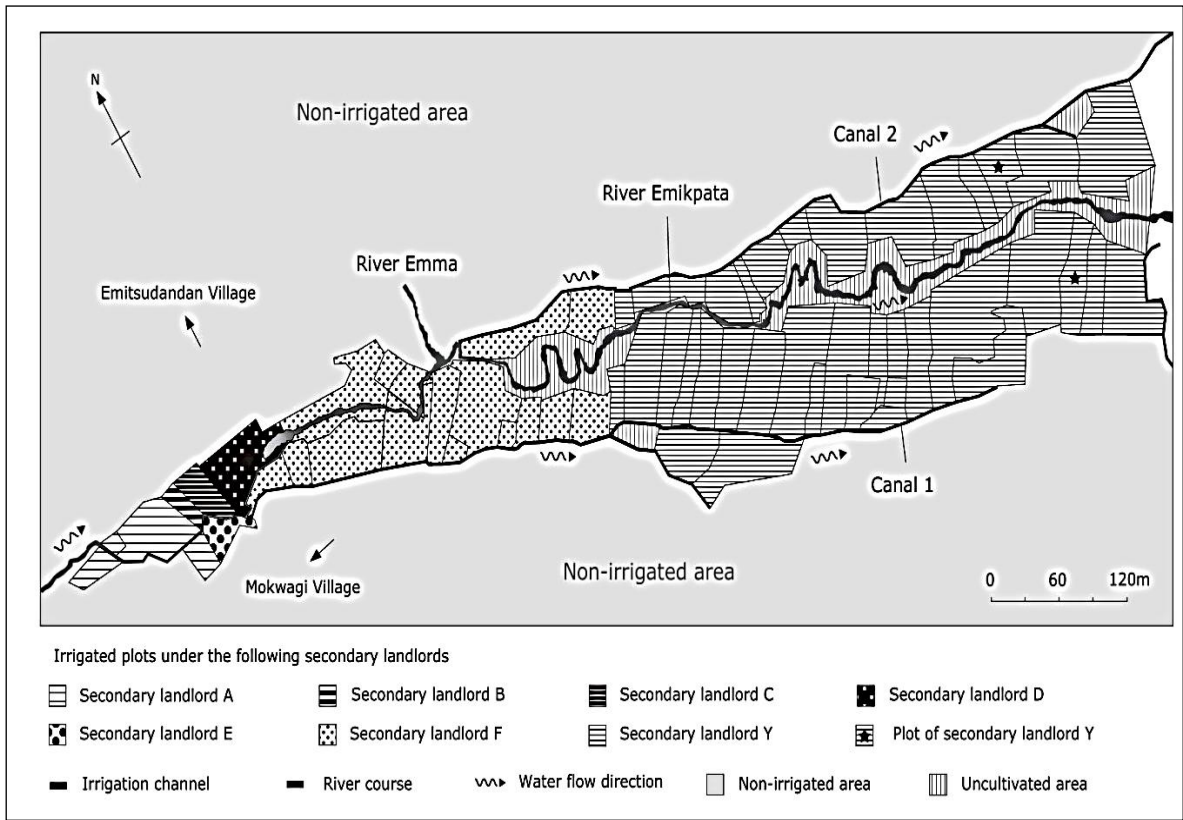
Irrigation communities in the research area are organized informally and are not organized into tiers of nested organizations. There is no formal rigid organizational structure for irrigation community, and formal positions for community leaders and system monitor do not exist. Even so, Nupe farmers are able to organize themselves for collective maintenance of canals. Each canal is managed by at least one community, and farmers are further divided into a few work teams by zoning. In the region, farmers belong to the same village usually farm close to each other. This tendency is clearly validated in figure 4-4. It is natural that farmers from the same village form a work team to maintain the portion of the canal adjoining to their fields together. Neighboring work teams cooperate occasionally for maintenance tasks that cannot be handled by a few farmers and for water rotation during period of water shortage. Respectful elders who farm bigger plots along the canals are generally assumed of the power to lead and to monitor system users who farm near them. If a secondary landlord is farming along a canal, he naturally is assumed of the leading role of irrigation management. These elders do not hold any formal position nor get any financial benefit or water use privilege for their service of irrigation management, but because they are highly respected they usually have the priority to get water in time of shortage.

Figure 4-5. Primary landownership of the system surveyed.



Source: Fieldwork.

Figure 4-6. Secondary landownership of the system surveyed.



Source: Fieldwork.

Although the physical structures of irrigation systems in the area are relatively simple, they still require considerable labour to keep them in safe and effective condition. This work involves both piecemeal local maintenance and repair, and short periods of organized intensive work and major repair. All interviewed farmers will repair small leaks as they are noticed, and all will have the necessary skills and knowledge to tackle the job. The major community work for the two canals studied is the cleaning out at the start of each irrigation season, which is around September for the irrigation of rice and January for the irrigation of off-season crops production. The collective weeding usually requires work for at least few days, and farmers gather once a week to clean out the canals and/or river course together for at least a month. The weeding in September is the most tedious collective work of the year and is compulsory for all the farmers using the canals. If a farmer repeatedly absent from the community work, it is supposed that he could be deprived from irrigation water and even his plots. However no farmer has ever been punished severely in reality despite some violators may need to beg for forgiveness from community leaders. Short-term intensive repair is sometimes necessary when there is damage but more often a few neighboring farmers just work together to carry out the repair task by themselves if the scale of damage is not big. The chief maintenance problems reported in the survey were channel damage caused by encroachment of Fulani cattle and destruction of diversion modules due to flooding. The financial burden of canal maintenance is minimal because construction materials such as rocks, branches and vegetation are available locally. Community members will share the burden cases where money is needed to buy materials.

There is no clear water right definition in the region. The right to water basically accompanies the right in land. Farmers who have farm plots adjacent to river course and irrigation canal are entitled to the water flowing in it. The Water Resource Decree promulgated in 1993 approved the “riparian rights” for all Nigeria, in which anyone whose land is alongside a river or a stream owns half the riverbed and is entitled to use half of the water on his land. Nevertheless, this concept is not well acknowledged by Nigerian (Nwa, 2003:139-140). Cis-Kaduna area is dominated by Islamic value so farmers regard water as a gift from god, so farmers are supposed to share it and never take “too much” of it. The main concept is that a farmer can use as much water as he needs when water is abundant, provided that he let the extra amount return to the flow for the use of others. Community leaders have the right to monitor water use of farmers.

They walk along the canals to inspect water use of farmers from time to time. When they find a farmer utilizing more water than others, they can adjust the size of the inlet and release water. In time of water shortage, water should be shared although in practice it is always difficult to prevent farmers from scrambling for water. All informants mentioned that water is only available to those who participate in community maintenance of the canal, especially the big clearing out in September for the irrigation of rice. When a farmer participates in the community maintenance of the system, he is obligated to have a claim of the water and nobody should block his inlet without consulting him.

Water is distributed continuously during the rainy season, but it is rotated during the dry season. In the rainy season when water is abundant, water is allowed to flow in all canals, and farmers can take as much water as they want, whenever they want. Water rotation during the dry season is decided usually and in an informal and impromptu manner. Farmers constantly negotiate for water with neighboring farmers and with top-enders of the canals. Everyone knows what everyone else is growing, how much water they need, how much water they have been allocated in the recent past, how much maintenance and other community work they have done - in other words - how much they deserve. People who work hard are thought of favorably. Before the planting of off-season crops, farmers take turns to divert water into their plots. Farmers need to notify neighboring farmers of their use of water so that the water flow will not be disturbed. Soil is softened by water before a farmer can make mounds and ridges. Farmers will keep water stagnant inside their basins for a period so that water will be absorbed by soil. The residue moisture retained inside the mounds is essential for the crops to survive the latter half of the dry season. As water availability decreases, the period that farmers can keep water inside their basins also decreases. Farmers are not supposed to keep water inside their basins for a period that is significantly longer than others do. Water distribution is based mainly on self-restraint exercised by farmers. In a time of extraordinary drought, community leaders facilitate special water allocation and attempt to send water evenly to every plot. Work groups along the canal take turn to get water in sequence. A farmer may get water for just a few hours for a day or even for a few days. Nevertheless, farmers expressed that it is difficult to stop water scrambling and to avoid top-enders from taking more natural advantages, especially for canal 1. Some farmers obtain water by breaking the bunds and blocking the inlets of others'

plots. Although it is regarded as an offensive action, 36% of informants admitted that they have obtained water by these two ways. Sixty-nine percent of informants revealed that their water had ever been “stolen”.

Communities with different canals rarely coordinate for water allocation. This makes water management for the whole site difficult. Fifty percent of the informants revealed that they have encountered the problem of flooding such that rice hills and soils have been washed away. Flooding water does not allow effective fertilizer application, and this problem is particularly serious for the plots adjacent to diversion module and/or river course. Indeed the demarcation line between rice field and river course is very ambiguous in some parts of the site. Some farmers whose plots were adjoining the River Emikapta expanded their cultivating area simply by sowing directly on the riverbed. On the other hand, 39% of informants indicated that they could not obtain sufficient water to irrigate their rice after the end of rain. The traditional basin does not store water and thus creates difficulties for rice farmers when the water runoff decreases more rapidly than expected. The lack of coordination also creates conflicts between top-enders and tail-enders. Indeed it happens almost every year that farmers in the lower part of canals and river courses organize themselves to block all the inlets in the upper sections secretly at night when they fail to get enough water. Although farmers of the upper section are irritated by the blockage, in most cases they negotiate with the offenders and allow water to flow to their fields for an agreed period. Farmers in the upper section regarded this action as a sign of the need to adjust water allocation so that water can be shared. Top-enders enjoy the natural advantages and can obtain more benefits from off-season crops productions. Most tail-enders choose to grow cassava and sweet potato, which do not need much water.

4.5.3. Irrigation management community

Elinor (1992) emphasized the importance of institutional arrangement for long-enduring, self-organized irrigation systems. Through farmer survey and interviews, it was identified that management of the irrigation canals studied is carried out by four farmer work groups (Group 1, 2, 3 and 4 as marked in figure 4-7). These groups often composed of farmers from various villages; therefore it is difficult to regulate the

behavior of members when the secondary landlord, the only person who has power over land at community level, does not directly participate in the community. When the time for community work approaches, community leaders would fix a schedule and deliver messages to request system users to join. In case of group 3, farmers indicated that it is less easy to mobilize all users as the community is composed of farmers of eight villages while the secondary landlord is not involved. Bardhan & Dayton-Johnson (2000) demonstrated that heterogeneity among users of a community-based natural resource is associated with poor commons performance and it may partially explain this situation. In addition, although leaders of groups 3 are highly respected elders for their diligent and commitment in canal management, they are in lack of legitimacy to impose any graduated sanctions to confronters as they are not the landlords. This factor largely weakens their leadership and the performance of the community.

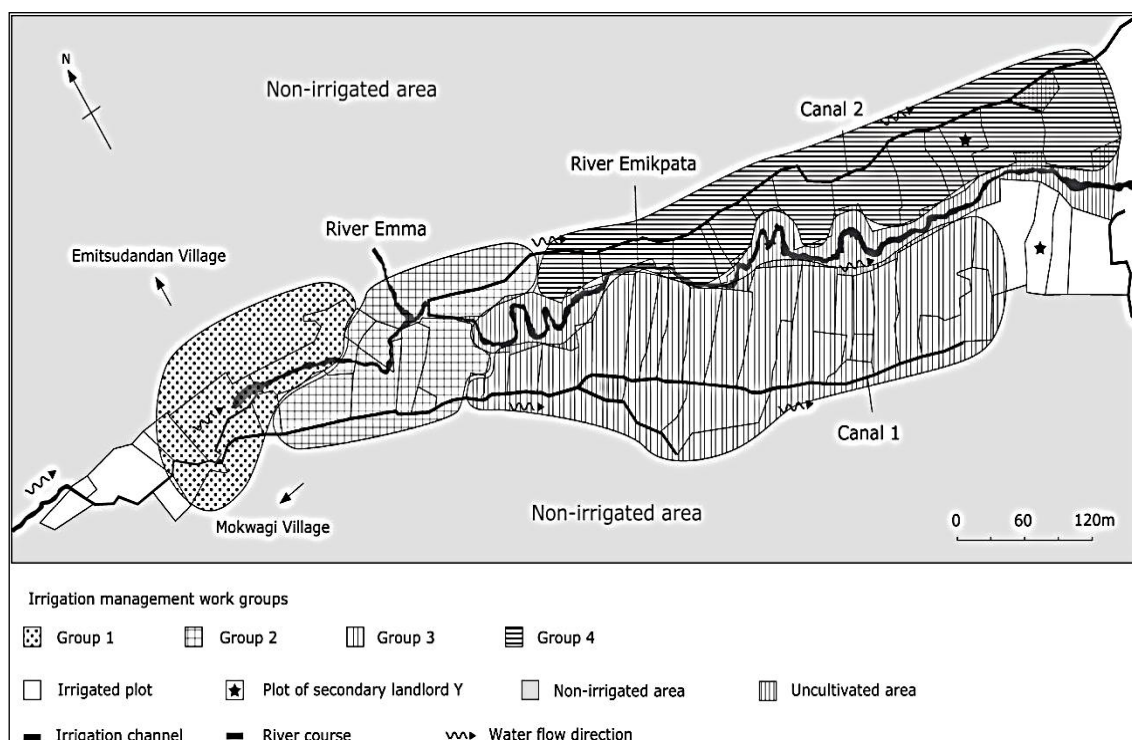
On the contrary, informants reviewed that the leadership of group 4 is much stronger as the group leader is the secondary landlord Y. All interviewed farmers of canal 2 mentioned that they are fear of his power to take over their lands so they do not absent in community work. The role of secondary landlord is important that his presence largely increases the sense of obligation of community members which lead to better management of the canal. Nevertheless, secondary landlord Y does not concern about the management of canal 1 which he does not benefit from and his absence adversely affects the performance of group 4. He also does not have power over farmers whose plots are not under his management therefore he cannot stop the free-riding of group 1 and 2 of the upstream.

The conflict between farmers with plots nearer to the head of canals, the top-enders, and farmers with plots at the end of the canals, the tail-enders, has always been the concern of irrigation management. In this research, the correlation coefficient between the distance of plot to water source and the gross incomes were derived from all available samples. It is -0.33 for gross production of rice and -0.03 for gross income from off-season crops. The results show sign that the further distance from water source has a negative impact on farmers' gross income. Top-enders enjoy natural advantage in water distribution and obtain higher benefits compared with tail-enders. The impact on gross income from off-season crops is weaker. It is probably because during the dry season the amount of water that a farmer can get depends mostly on how early he begins

the off-season plantation and how hard he works to derive water into his basin. Farmers with other occupations during the dry season also involve less in off-season plantation. Table 4-5 shows the degree of participation in community maintenance of farmers of the four groups. The participation rate is the highest for group 4 under the strong leadership of secondary landlord Y. The result indicates that top-enders tend to contribute less to the community maintenance of the system while farmers with plots on the later part of the system have to work harder in order to secure water. As shown in figure 4-6, most of the top-enders of the system surveyed are themselves the secondary landlords, their incentive to contribute to irrigation management is low because even if they do not participate in the community management of the canals they can still benefit from the water and they are not going to be punished. For tail-enders to secure water, they have to better organize themselves and contribute more in community weeding so that water can flow to their plots. This unfairness between top-enders and tail-enders cannot be solved unless there are higher layers of organizations and institutions that coordinate management tasks and water distribution among different communities of a more extensive area².

² According to Tamaki (1979a:24-44; 1979b), conflict over water allocation among top-enders and tail-enders also happened in Japan, in particular between the sixteenth and the eighteenth century when development of irrigated rice cultivation was in its peak. Water distribution along an aqueduct water system could hardly be fair because villages located in the upstream of a water channel enjoyed the natural advantages of water flow and could easily get more water for rice irrigation. Upstream villages naturally enjoyed a higher position in the power relation of water distribution in contrast to the downstream villages. Through the irrigation channels, agricultural communities were vertically linked. Some customary practices were developed to assist downstream villages to secure sufficient irrigation water. "Bansui", meaning the rules of water rotation, were set up to decide the sequence and the time for villages along an irrigation system to be allocated water. In the ancient time when time measuring equipment was not yet invented, the burning time of an incense stick was often used as the time unit to indicate the duration of water rotation. Gifts such as rice and wine were given annually and in time of water shortage by downstream villages to upstream villages, in the purpose of building up the reciprocal bond so that upstream villages would have the obligation to follow the water allocation rules. Following the agriculture intensification after the Meiji Restoration, modern irrigation management institution, the "yousui kumiai" water user association, was installed to coordinate communal use of irrigation system. One of the important characteristics of the Japanese water user association was that the unit of membership was village, meaning that individual farmers could only access to irrigation water through the village where he belonged. This has led to the dominance of collectivism over individualism in the Japanese agricultural society. Coordination of water allocation among villages and dispute resolution became reliance on external authority rather than on spontaneous arrangement of individual farmers. In the past it was the fief holders, whereas in the modern time it was the prefectural and central administrations, which formed the higher layers of irrigation management institutions to coordinate water use among villages along an irrigation system. The small farmer-managed irrigation system presented in this chapter has only about three decades of history of collective maintenance. Sophisticated community management practices had not yet been developed like that of the pre-modern Japan. While formal structural organization of irrigation management might exist for large-scale government made irrigation systems in some parts of Nigeria, there was no formal irrigation management structure that was observed during the fieldwork for the small farmer-made irrigation channels in the research site.

Figure 4-7. Four work groups of irrigation management for the system surveyed.



Source: Fieldwork.

Table 4-5. Degree of participation of the 4 work groups of the irrigation system surveyed.

Work group	Count	Degree of participation in community tasks*
1	12	0.83
2	6	1.17
3	18	1.61
4	5	2

* Degree of participation is categorized into No=0, Low=1 and High=2, based on the number of community meeting and weeding that an informant attended, and his sense of involvement in the irrigation community.

Source: Fieldwork.

4.6. Conclusion

The indigenous irrigation system presented is an important case study in that it exhibits characteristics typical of many spontaneously developed systems in the region. Farmers are able to organize themselves for the collective maintenance of irrigation system without any external assistance although formal organizational structure does

not exist. Water allocation is flexible as farmers can constantly adjust and negotiate for water in accordance to different circumstances. Cost of maintenance is low as materials are available locally. On the other hand, the management of irrigation system in the region is highly linked to the local land tenure system. The multi-layered and fragmented land ownership is the major obstacle to improve efficiency of irrigation system management. In the absence of a higher layer of organization for irrigation management, it is difficult to avoid free-riding of top-enders with natural advantages. Tail-enders have the higher incentive to contribute more in collective maintenance in order to secure water. With higher competition for water due to increasing demand for off-season crops, dispute over water distribution between top-enders and tail-enders may increase. Moreover, coordination for large-scale maintenance work and water distribution for broader area among various groups is difficult. Community leaders apart from those who are also landlords are in lack of legitimacy to impose graduated sanction to confronters and it is adversely affecting the effectiveness of community management. For the further agricultural development of inland valley bottoms in the region, the institutional arrangements for irrigation management should be enhanced otherwise existing management capacity may not be able to meet the higher water demand in the future. At this moment no one can predict whether this enhancement is best done externally by governments or endogenously by local people. Nonetheless, it is at least apposite to point out that without the cooperation of the local people any attempt for implementing new management system will be in vein



Photo 4-2. Farmer diverting water for dry season irrigated farming (January 2005)



Photo 4-3. Irrigated off-season farming of Nupe (March 2013)



Photo 4-3. Irrigated sweet pepper field of Nupe (March 2013)

Chapter Five

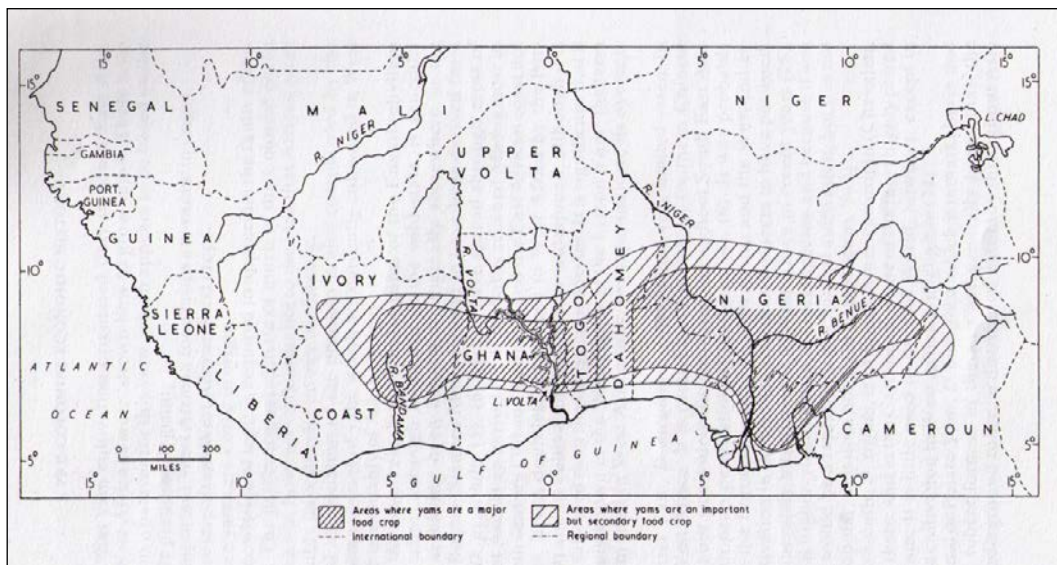
Yams cultivation of Nupe farmers

5.1. Introduction

This chapter explores how the Nupe farmers have incorporated yams into their farming system. The Nupe have been traditionally unfamiliar with yams (Nadel, 1942; Hirose, 2002). Due to the conquest of the Fulani from the north in the nineteenth century, grain-using culture has been dominating the Nupe country. With the tendency of the extension of yam production into the Guinea savanna belt in recent time, the Nupe have spontaneously incorporated this high-valued nutritious new crop into their farming activity. Research has been done to investigate into the current practices of yam production, marketing and consumption of Nupe farmers.

Yams (*Dioscorea species*) constitute the predominant starchy staple in sub-Saharan Africa where food security for a growing population is a critical issue. Yams are annual or perennial tuber-bearing and climbing plants. The major edible species of African origin are white Guinea yam (*D. rotundata* Poir.), yellow Guinea yam (*D. cayenensis* Lam.), and bitter yam (*D. dumetorum* Kunth). Edible species from Asia include water yam (*D. alata* L.) and lesser yam (*D. esculenta* (Lour.) Burk.). Cush-cush yam (*D. trifida* L.) originated from the Americas. The tubers are the only edible part of the food yams, which have both the tremendous capacity to store food reserve and the ability to grow into the deeper layers of the soil. The cultivation and use as food of yam should have arisen independently in different parts of the world, with different species being used (Burkill, 1960; Coursey, 1967; Alexander and Coursey, 1969). Yam cultivation in West Africa is extremely ancient from the Paleolithic era. The white Guinea yam (shorten as white yam below) and the yellow Guinea yam (shorten as yellow yam below) are indigenous to the region. Water yam is thought to have reached Madagascar in the eleventh century and then introduced to West Africa by the Portuguese (Coursey, 1977). It is less favored than the indigenous species but has the widest geographic distribution (Ekanayake and Asiedu, 2003).

Figure 5-1. Map of the Yam Zone of West Africa.



Source: Coursey (1967, pp 23).

The region between the Bandama River of central Côte d'Ivoire and eastern Cameroon, above the swampy areas of the Gulf of Guinea and south to the 10°N of West Africa, was titled as the “Yam Zone” (figure 5-1) by the famous biologist Coursey (1965, 1967, 1971, 1977) ¹. The northern and southern boundaries of the Yam Zone were of natural and climatic origins, whereas the eastern and western boundaries were of humane and artificial origins. The zone covered the territories of five West Africa countries, namely Côte d'Ivoire, Ghana, Togo, Benin and Nigeria. This area depended for its staple food supplies on root and tuber crops, especially yam. By contrast sorghum and millet provided the major staples in the areas to the north, and upland rice was dominant in the areas to the west. The Yam Zone based on yam not only in a material sense, but the crop was also fundamental to the sociocultural life of the people. The area was the home of the highest cultures of the forest regions of Africa in ancient times, with empire-states Ashanti, Dahomey, Ife and Benin all based on yam as their major crop plant. With the introduction of crop plants such as banana, maize, groundnut, several legumes, several varieties of rice and, most importantly, the ubiquitous cassava, through the European traders in the sixteenth and seventeenth century and the Arabic and Sudanese migrations, many indigenous food crops of West Africa are now neglected

¹ Another similar term, “Yam Belt” was proposed by anthropologist Murdock (1959), but the geographical coverage of the two terms differed largely.

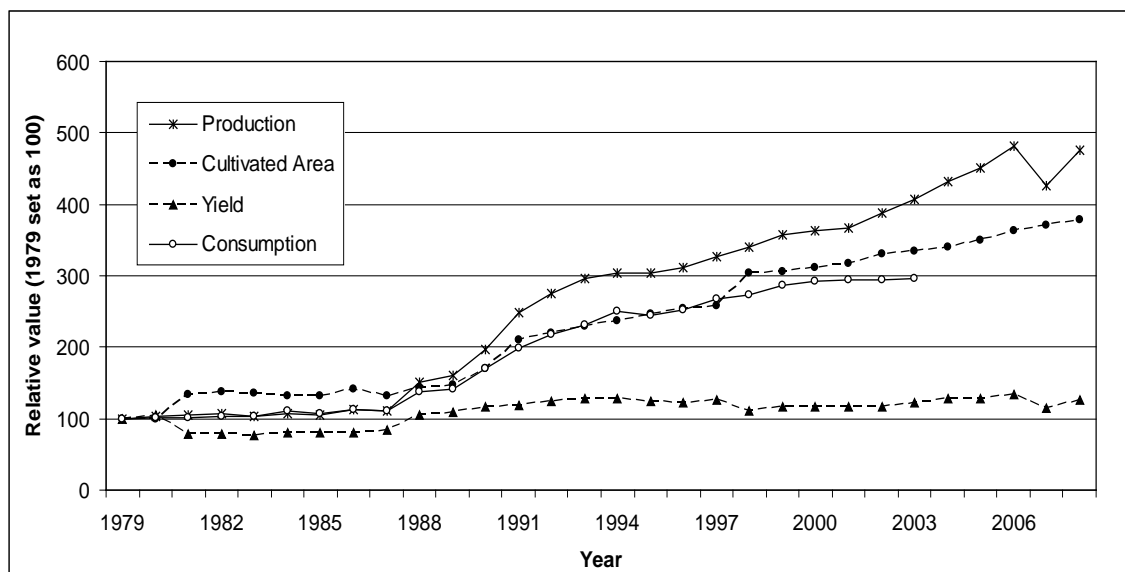
entirely. Yam and oil palm, are the only two exceptional indigenous food plants which are still of the greatest importance of the region (Coursey, 1977).

Yams are produced on 5 million hectares in 59 countries in tropical and subtropical regions of the world. Out of the 46.2 million tonnes of yams produced globally in 2007, 93% was produced by the five West African countries of the Yam Zone (FAOSTAT). Yams were originally cultivated in the forest areas and the forest fringes of the savanna belts in West Africa. With the invention of new varieties by research institutions, improvement of farming methods and environmental changes, yam production has extended into the Guinea savanna belt where disease problems are less acute and where land is available in recent times (Manyong et al., 1996; Manyong and Oyewole, 1997). The Yam Zone is believed to have extended. Cultivated area of yam of the five West African countries has multiplied by 489% from 1961 to 2007.

5.2. Yam production of Africa

Figure 5-2 illustrates the trend of yam production, cultivated area, yield and consumption of Africa in the last three decades. Although with fewer exogenous supports, yam production and consumption of Africa has substantially increased, which reflects the irreplaceable popularity of the crop over the continent. Cultivated area increased in a similar pattern following production, but only little improvement in yield was observed. It shows that increase in yam production of Africa has been achieved dominantly through expansion in cultivated area but little advancement in productivity (Nakasone et al, 2006). The traditional production systems of the region are under growing pressure to adapt short fallow periods owing to limited availability of new lands to support shifting cultivation. Global annual yam production is probably reaching the plateau of growth as estimated by Manyong et al (1996) and it decreased by 11.5% in 2007 (FAO, 2010). Majority of yam farmers in Africa are smallholder farmers with limited resources to struggle further with their traditional methods and new technologies are unreachable them. Low soil fertility, increased pest problems and backward farming technology of the top yam producing countries are attributed to the slump.

Figure 5-2. Change of yam production, cultivated area, yield and consumption of Africa.



Source: Organized by author based on FAOSTAT 2009.

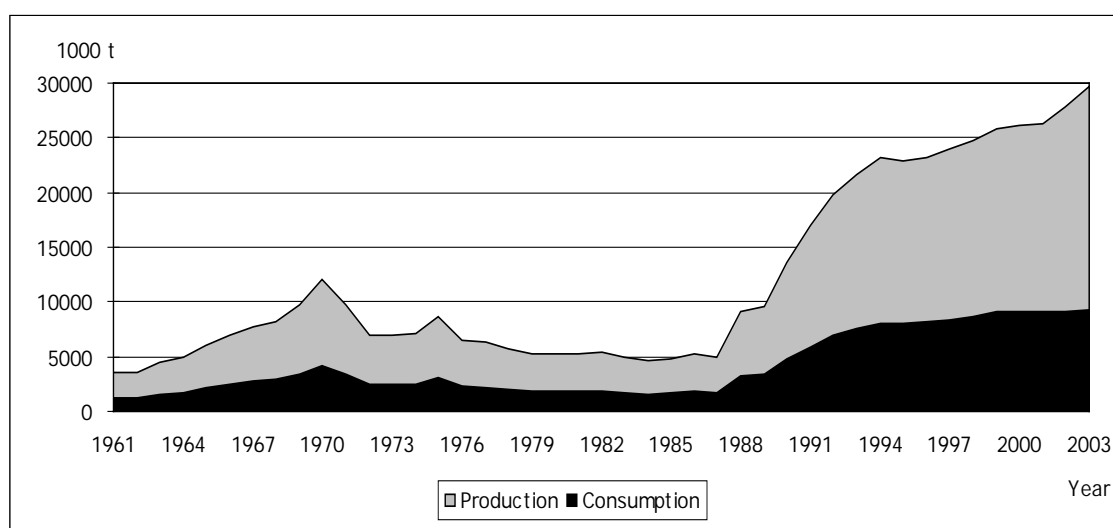
5.3. Yam production of Nigeria

5.3.1. Yam production increase of Nigeria

From 1961 to 2003, yam production and consumption of Nigeria has multiplied by 848% and 652% respectively (figure 5-3). Nigeria experienced a rapid expansion in yam production from the late-80s. This tendency was indeed also applicable on other crops such as cassava and rice. Nigeria was imposed the Structural Adjustment Programs (S.A.P.) by the World Bank and the IMF during the mid-80s. The government officially applied the policies of S.A.P. from 1986: Naira, the Nigerian currency, was devaluated; subsidies for agriculture were substantially cut; and price controls on crops were abolished. Although agriculture subsidies were cut, the effect on farmers was small as they originally did not really benefit from those subsidies before. The combined effects of the S.A.P. led to higher demand for domestic food and the increase in food crops production since the late 80s (Shimada, 1999; Shimada, 2007). Yam consumption of the nation thus also exploded from late 80s. In 2003 an average Nigerian consumed 74 kg of yams per capita per year, which was 139% more than that of 1961. Yam has become the second most consumed staple food of Nigerian after cassava (114

kg/capita/year) that it supplied 203 Kcal per capita per day. Although the per capita consumption of Nigeria only ranked the forth in the world, in aggregate it was the largest yam consumer in the world². Yam production of the country has always exceeded yam consumption, suggesting that Nigeria has always been a yam exporting country. The gap between yam production and consumption reached 20 million tonnes in 2003. FAO data of 2003 recorded 2,000 tonnes of yams exported from Nigeria, but in reality I believe there were probably a lot more export that were not recorded. During my visit in the Gwada market of Niger state in 2006, I encountered merchants speaking French came to buy yams in big trucks from Niger. The yam market leaders also told me that there were a lot of yam merchants who came to buy yams in huge quantity not only from Niger but also from Benin, Ghana and some other countries³.

Figure 5-3. Yam production and consumption of Nigeria from 1961 to 2007.



Source: Organized by author based on FAOSTAT 2009.

Yam was the important traditional crop and staple food for many ethnic groups of Nigeria, in particular the Igbo and the Yoruba. Coursey and Coursey (1971) commented that no other peoples of West Africa so devoted to the cultivation of the yam as the Igbo. The New Yam Festival was a very important traditional event for many ethnic groups across West Africa. In the past, people were prohibited from eating new yams before the

² In 2003, Benin has the highest per capita consumption of yam per year (144 kg), then followed by Côte d'Ivoire (119 kg) and Ghana (116 kg).

³ Interview with the leader of yam market of Gwada market on 22nd January 2009.

festival, which usually took place at the end of the rainy season. The newly harvested yams would be honored in the festival and offered firstly to gods and ancestors. Then a particular person or persons, usually the priest or chief, would eat the first new yams. Various other groups would then, in strict social sequence, allowed to consume new yams (Coursey, 1971). Although the importance of the festival has been greatly eroded under the influences of modern culture and new religions, the New Yam Festival has transformed and is still celebrated by many ethnic groups in Nigeria. The ethnocentric attachment to yam is still very strong for some ethnic groups that yam still plays vital role in traditional culture, rituals, religions and local commerce. For instance, large tubers (5-10kg) are used as gifts for marriages; special white yams are required to appease gods; rich people use yams to set standard of social status to which the poor to aspire; and yams is the totem of maleness of the Igbo (Hahn et al, 1987). Yam has once lost its dominant importance after many new crops such as cassava, sweet potato, and other crops of American origin, have been introduced to the region (Coursey, 1972). But the boom of yam production and consumption since the late 80s revealed that the crop has retrieved its popularity. Yam is still one of the most important staple crops for countries on the Yam Zone at the present day, especially for Nigeria.

5.3.2. Northward expansion of the yam production area

Figure 5-4 and 5-5 illustrate the ranking of Nigerian state in terms of yam production quantity and yam cultivated area of year 2007⁴. The figures visualize the geographical discrepancy of production and cultivated area of yam of the whole nation. A very large portion of Nigeria was producing yam. There were 30 out of 37 states, which was over 3/4 of the nation, were producing yam in 2007. Yam production has extended northward not just to the Guinea savanna zone, but even to the Sudan savanna zone. Although in relatively small quantity, some northwestern states, such as the Kebbi, Zamafara and Katsina States, began yam production in recent years⁵. These states used to belong to the northern savannah domain where grains such as sorghum and millets were grown⁶ and were not included in the Yam Zone. Scale of yam production was the

⁴ Data on yam production, cultivated area and productivity of Nigerian states are attached to appendix 5-1.

⁵ Another data obtained from the same ministry showed that there was very small scale of yam production also in Kano State in some years.

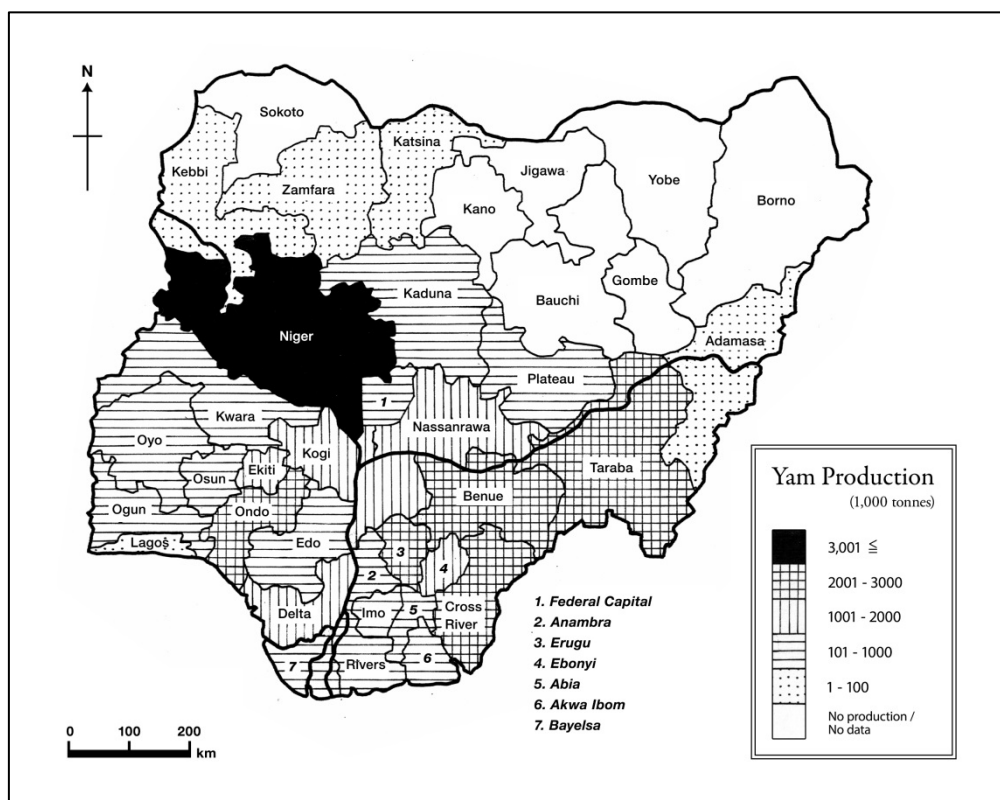
⁶ West Africa was thought to be divided into three main agricultural domains: the eastern domain of root

highest along the middle-belt of the nation. In particular, the Niger State produced the highest quantity of yam and owned the largest yam cultivated area. Yam cultivation of the Niger State has been expanding substantially over time. In 1978 the estimated production was 230,107 tonnes and cultivated area was 28,861 ha (Adeniyi, 1980) and they increased to 4,685,810 tonnes and 299,550 ha in 2007. The scale of yam production of Niger State has excessively expanded over the last three decades that production and cultivated area of yam have enlarged by 1936% and 938% respectively. The national rate of increase during the same period for production was 488% and for cultivated area was 528%. These figures suggest that yam production of the Niger State has expanded in an over double rate higher than the whole nation. The Niger State together with the Benue and Taraba States far outweighed the traditional yam regions in the southern forest zone in both production quantity and cultivated area. It was also reported that the Nassarawa State was ambitious for further increasing yam production by launching a scheme to export yams to the UK⁷. Data obtained for the annual monitoring research project conducted by the Nigerian Institute of Social and Economic Research (NISER) are presented in table 5-1 and 5-2. Although the data are inconsistent, they provide the evident to confirm the trend that the southern states have lost the dominance in yam production in terms of per household cultivated area and yam yield. The north-central part of the nation, where Niger and Benue States belong to, is getting more important in yam production. The Igboland in southern Nigeria used to be the supreme yam production center. Nevertheless, many Igbo farmers were unable to rebuild their yam production as seed yams were unavailable after the Biafra-Nigeria civil war (Korieh, 2007). Some of the Igbo states today still maintain relatively high yam productivity, in particular for Abia and Imo states where the strong tradition of yam remains and the National Root Crops Research Institute (NRCRI) locates.

and tuber based economies; the western domain where upland rice was the traditional staple crop; and the northern savannah domain where grains were grown, in association with cattle-rearing economies (Church, 1957; Johnston, 1958; Coursey, 1971, 1992).

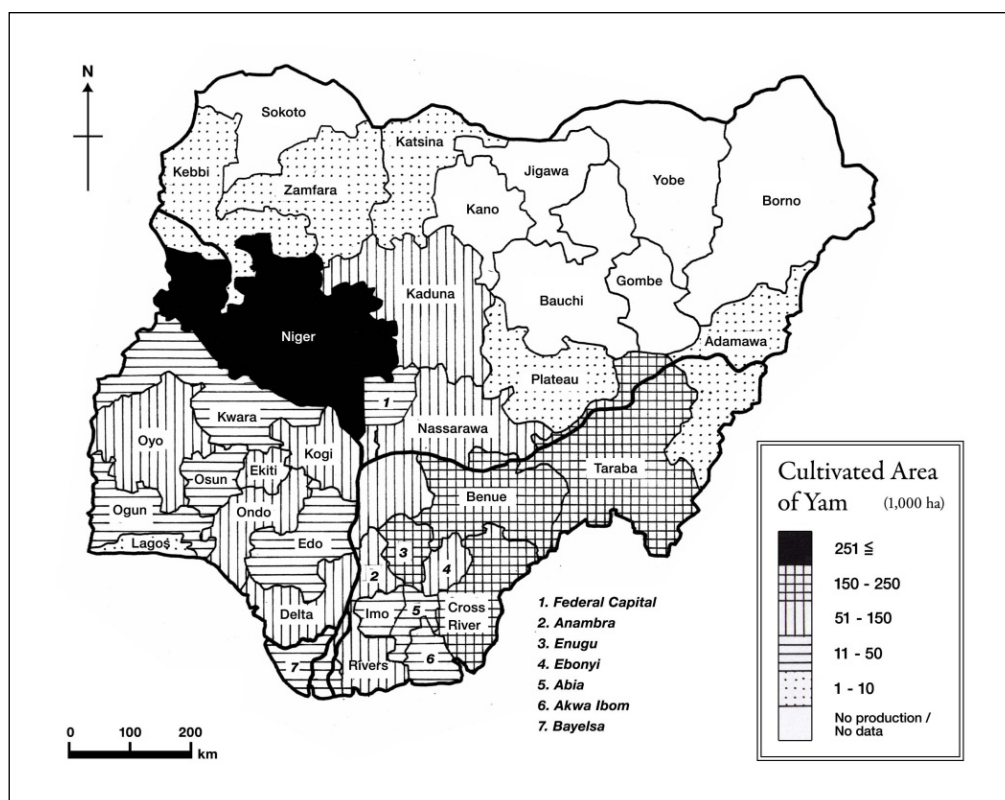
⁷ It was reported by the Nigerian newspaper, Daily Trust, on 28th August 2009 that the state has just launched a scheme to export yams to the United Kingdom.

Figure 5-4. Yam production of Nigeria by states of 2007.



Source: Produced by author based on data of NFRA.

Figure 5-5. Cultivated area of yam of Nigeria by states of 2007.



Source: Produced by author based on data of NFRA.

Table 5-1. Area cultivated of yam per household by geopolitical zone (ha.).

Year	North-Central	North-East	North-West	South-East	South-West	South-South	Average
1999	0.9	-	-	-	0.3	0.9	0.7
2000	2.9	-	-	-	1.4	0.9	1.7
2001	0.3	-	-	1.3	1.7	1.6	1.2
2002	1.2	-	0.2	0.6	0.8	0.4	0.6

Source: Organized by author based on NAMRP-AGRIC Survey of NISER.

Table 5-2. Yield of yam per household by geopolitical zone (tonnes/ha.).

Year	North-Central	North-East	North-West	South-East	South-West	South-South	Average
1999	15.2	-	-		14.4	17.5	15.7
2000	22.4	-	-		13.3	15.1	16.9
2001	19.5	-	-	17	15.9	18.1	17.6
2002	12.3	-	12.0	11.2	12.1	10.3	11.6

Source: Organized by author based on NAMRP-AGRIC Survey of NISER.

The northern boundary of the Yam Zone used to be climate, as yams generally required a fairly long, moist growing season, which did not occur in West Africa north of about 10° N (Coursey, 1965, 1976). This constraint was overcome by the spontaneous effort of farmers to pick out the early maturing cultivars, and thus yam production became possible in the Guinea savanna zone and even the Sudan savanna zone where rainfall period was short (Orkwor and Asadu, 1998). Cultivated area of yam was thought to have extended over 100km northward toward to the Sahara compared with the late 60s when Coursey defined the Yam Zone (Nakasone et al, 2006). Manyong et al. (1996) pointed out that in Nigeria, yam production has moved from the humid forest area into the Guinea savanna zones, where disease problems were less acute and where land was available. In addition, since smaller tubers of 1-2 kg were becoming more accepted for the table by urban population, the savanna zones got the opportunity to extend yam production (Hahn et al., 1987). Farmers in the Guinea Savanna zone indicated that profitable cropping systems must always include yam (Anchirinah et al., 1996). Indeed, a few studies reflected that the cost of yam production in the savanna zones would be lower than that of the humid forest zones. Less cost incurred for weed management and mulching in the savanna zone would be possible than in the forest zone. Moreover, smaller tubers of the savanna zone allowed smaller mound, less staking

and smaller setts for planting, which could largely reduce labour costs and planting material costs (Hahn et al., 1987; Ekanayake and Asiedu, 2003). With the increasing demand for yam of the nation since the late 80s, cultivated area of yam largely expanded and extended beyond the original boundary of Yam Zone. The middle-belt states of Nigeria have thus replaced the southern states and become the new center of yam production of Africa.

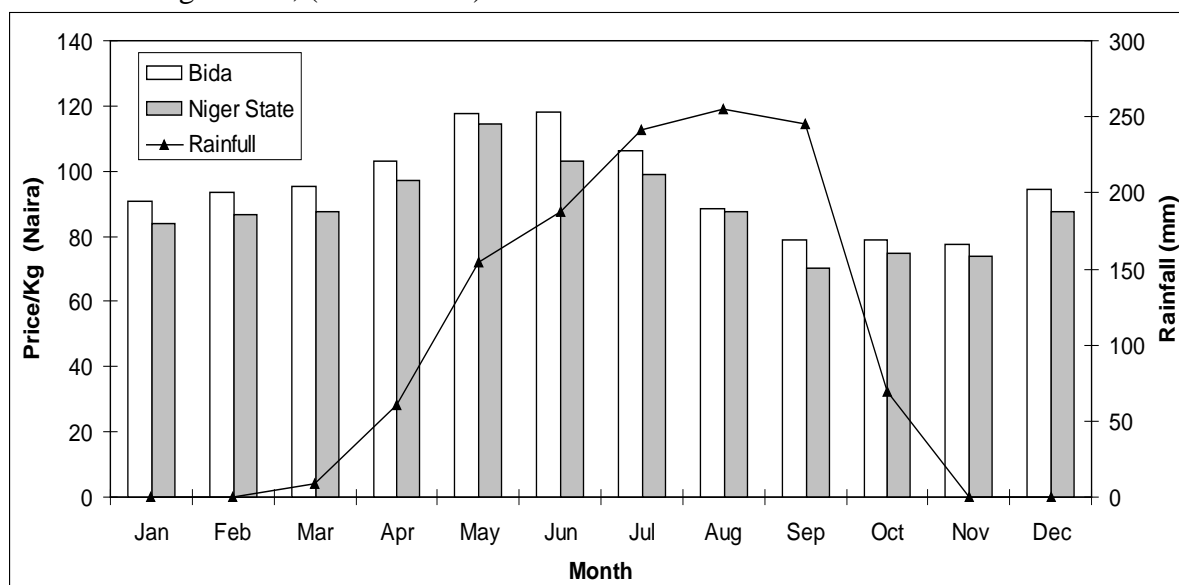
5.4. Yam tradition of the Nupe

The Niger State consists of three major ethnic groups: the Bussawa in the west; the Nupe in the middle and the Gwari in the east. The Nupe is the most dominant ethnic group in the state⁸. Under different ecological settings, these ethnic groups have diverse specification in the major crops they traditionally produced. The Gwari country is gifted with fertile soil that yams are largely produced. The Nupe country is rich in wetland resources and is famous for rice production (NSADP; Nadel, 1942; Hirose, 2002). Indeed the Niger State is the top rice producer of the country which always produces much more rice than other states (NFRA). The Nupe call the yam as “*echi*”. There are very few literatures which documented the yam plantation of the Nupe. Yams have already infiltrated into the Nupe country before Nadel visited in the early 20th century (Nadel, 1942:2). However Nadel described Nupe as the ethnic group that was not familiar with yam and that yam was not original in the Nupe culture. The Nupe country lies on the transition zone between the grain-using civilization and the yam civilization. The subsistence of Nupe traditionally depended on cereals and legumes cultivation on the uplands and rice cultivation and fishery on the lowlands. Contrary to their Yoruba neighbor in the south, the Nupe consumed much less yams but far more sorghum, millet and rice. They also did not celebrate any new yam festival nor use yam in any ritual meal. In the old Ilorin Emirate, yam was not at all regarded as a Nupe crop (Forde, 1955). The most important cultural crop for the Nupe is in fact rice. It is always predominantly consumed in all festivals and traditional rituals, and is also the most common gift among Nupe farmers.

⁸ The Nupe constituted over 40% of the population of the Niger State in the 1931 census.

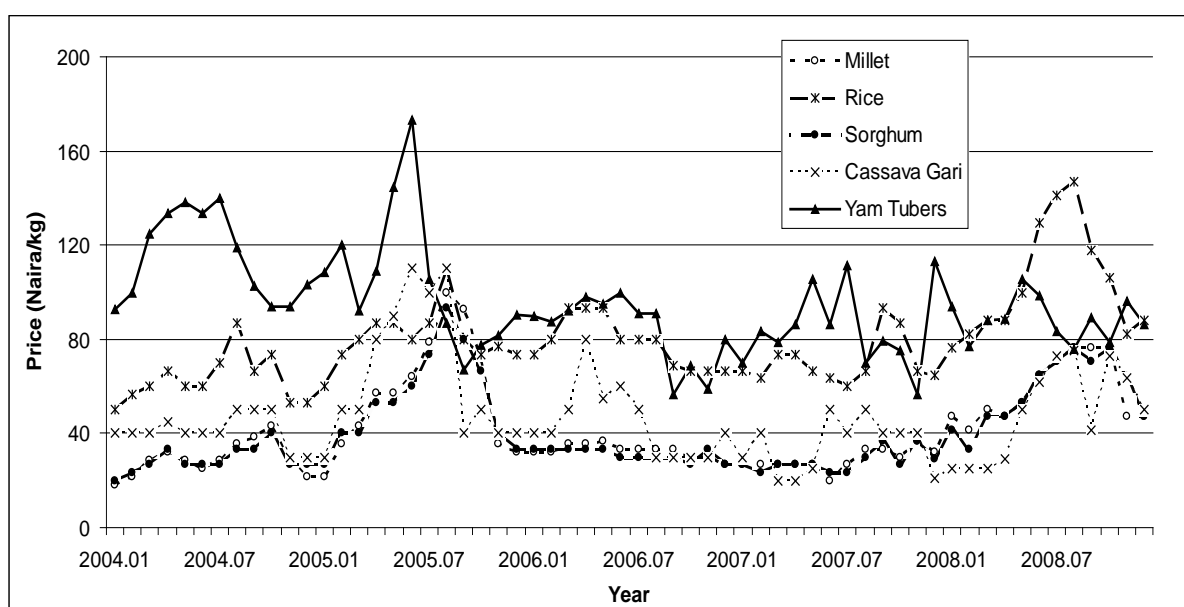
5.5. Yam market prices in Niger State

Figure 5-6. Average monthly retail market prices of yam tubers in Bida and Niger State, (2004 - 2008)



Source: Arranged by author based on data obtained from Niger State Agricultural Development Project, Nigeria.

Figure 5-7. Retail market prices of major crops in Bida (2004 – 2008).



Source: Arranged by author based on data obtained from Niger State Agricultural Development Project, Nigeria.

Data on market prices of food crops in markets of Niger State were obtained from

the Niger State Agricultural Development Project, Bida division. Figure 5-6 presents the average monthly retail market prices of yam tubers in Bida and Niger State from 2004 to 2008. The retail market prices fluctuate following the supply of yam tuber in the markets. Prices grow from April and reach the peak in May and June. Yam tuber supply at this period is the lowest because most of the stock have been consumed and used as planting materials. Prices are the lowest in September, probably because of the massive supply from early harvest, the milking of tubers. Prices remain low from October to November, and then go up from December.

Figure 5-7 compares the retail market prices of five major agricultural products, namely millet, local rice, sorghum, cassava gari and yam tubers, of Bida from 2004 to 2008. Agricultural product prices fluctuated severely between 2004 and 2008, particularly in the latter half of 2005 and in 2008. The fluctuation was not only related to the supply and demand of products, but also highly related to other macro-economic factors, such as exchange rate, petroleum price and national politics. It is impossible for ordinary local farmers to predict such unstable market fluctuation before they make their farming decisions, but unfortunately even some minor price changes can greatly affected their livelihoods. Yam tuber was the most privilege product which had higher price than all other products in most of the periods during the four year. The international rice crisis in 2008 pushed up the local rice price so rice replaced yam tuber as the most expensive product in Bida market. But by the end of 2008 rice price dropped and yam tuber price retrieved the first place. Although market prices of agricultural products have been highly fluctuating in recent years, the market prices of yam tuber are overall still higher than all other crops.

5.6. Method of the research

5.6.1. Sampling and village selection

The findings of this study are based on a questionnaire survey conducted in Nupe villages in the Niger State between January and February 2009. A questionnaire was designed to obtain information on a wide range of questions regarding yam production, consumption and marketing of farmers. The questionnaire is attached in Appendix 5-2.

Seven villages in the Lavun Local Government Area under the Bida Emirate were studied (table 5-3) ⁹. 20 farmers were randomly selected for interview in each village, despite of a village that only 11 questionnaires could be filled. A total of 131 questionnaires have been obtained for this study. The seven villages are divided into two categories based on topography for the purpose of comparison. The two village categories are: (1) Complex village: with both upland and wetland within village territory, and (2) Upland village: with only upland within village territory.

Table 5-3. Villages selected for questionnaire survey.

	Village	Village Category	No. of Respondent	Latitude	Longitude	Elevation
1	BM	Complex	20	N09.07370	E006.07318	74m
2	NS	Complex	20	N09.00182	E006.04466	99m
3	NK	Complex	11	N09.05175	E006.06234	82m
4	EN	Complex	20	N09.00328	E005.59171	161m
5	SM	Complex	20	N09.01125	E006.04251	98m
6	CF	Upland	20	N09.13060	E005.44031	125m
7	BT	Upland	20	N09.12197	E005.43415	137m
			131			

Source: Fieldwork.

The study area is rich in lowland watershed resources that many rivers and streams are surrounding and going through. The Nupe are subsistence farmers and their means of livelihood slightly differ according to ecological division. In the uplands, they depend on shift cultivation during the rainy season. In the lowland watersheds that are floodplains of small rivers, they depend on rice farming in the rainy season and off-season vegetable cultivation during the dry season. According to Masuda (2002), villages with complex topography of both upland and wetland are the most numerous in the region. With random village selection, naturally more villages of category (1) were selected. BM, NS and NK enjoy large floodplains within their village boundaries. Despite of the high altitude of the village, farmers of EN highly utilize the inland valley bottom which is about 1-2 km away to cultivate rice in the rainy season and vegetables

⁹ Originally twelve villages were selected and 254 questionnaires have been filled. However, it was very unfortunate that the enumerators were discovered to have committed deception and faked up some questionnaire answers. All the questionnaires were checked and the problematic ones were excluded from the analysis.

in the dry season. SM has limited wetland area but most of the farmers obtained wetland farms from NS village. CF and BT have no wetland available within their village boundaries and thus mainly depend on upland farming. The enumerators first greeted and interviewed the village heads when they arrived at the selected villages. After obtaining the permission for survey, another nineteen farmers would then be introduced to the enumerators for the questionnaire survey. Twenty respondents were interviewed per village, but for NK village only eleven questionnaires were used for the study.

5.6.2. Socio-economic characteristics of respondents

Descriptive statistics are used to analyze the socio-economic features of respondents (table 5-4). All respondents were Muslim men as Nupe women in the region play limited role in cultivation. Correlations between each characteristic and number of yam heap are derived to identify how these characteristics are related to scale of yam production. Household size, farming population, and age and household head status of farmers have statistically significant positive relations with scale of yam production. Yam production requires more inputs in land, labour and capital compared with other upland crops. Availability of family labour certainly is necessary for large scale of yam production in the region. Younger farmers with less access to land and labour may not have the resources for large scale yam production. The survey tried to determine the wealth level of respondents by the number livestock unit that they owned. Livestock unit was calculated based on the scheme of FAO on Sub-Saharan Africa in which cattle=1, sheep/goat=0.1 and Poultry=0.01. Pigeon was assumed to be half of a chicken so the value was set to be 0.005. A higher livestock unit indicates that the farmer has more valuable livestock and thus wealthier. The average livestock unit of all respondents was 1.3. Goat and chicken were the two most common livestock of respondents. Livestock unit was positively related to yam production scale, but the correlation was statistically insignificant. Most of the respondents were married; about half of them were household heads and formally education. The correlation between formal education and number of yam heap showed a negative sign. Yam is a traditional crop so formal education may make no contribution to large scale plantation. Majority of respondents also received other sources of income besides farming, mainly from their second occupation such as motorbike taxi drivers, construction labour, and food trader and so on.

Table 5-4. Socio-economic characteristics of respondents.

Characteristics	Mean (<i>Std. Deviation</i>), %	Correlation Coefficient
Age (Years)	39.2 (14.1)	0.19**
Year of farming experience	28.7 (13.4)	0.09
Household size (no)	11.9 (10.6)	0.28***
Farming population (no)	3.6 (4.3)	0.24**
Total farm (no)	6.0 (3.3)	0.53
Total livestock unit ² (no)	1.3 (2.3)	0.63
Married (%)	94.7%	0.12
Household head (%)	56.5%	0.18**
Formally educated (%)	43.5%	-0.12
With other source of income (%)	74.0%	-0.014

Note: N=131; *** Correlation is significant at the 0.01 level; ** at the 0.05 level.

Source: Fieldwork.

5.6.3. Basic comparison between complex village and upland village

Table 5-5. Comparison between the two village categories.

	Upland village %, (N=40)	Complex village %, (N=91)	Total %, (N=131)	Test statistic
Farmers planting yams	100% (40)	83.5% (76)	88.5% (116)	5.909**
Farmers selling yams	82.5% (33)	58.2% (53)	65.6% (86)	6.215***
At least half production for marketing	70.0% (28)	28.6% (26)	41.2% (54)	18.010***
Farmers consuming yam	100% (40)	100% (91)	100% (131)	-

Note: Actual numbers in parentheses; *** Chi-square statistic is significant at the 0.01 level; ** at the 0.05 level.

Source: Fieldwork.

There were 88.5% of respondents who produced yam. Basic findings of respondents are primarily analyzed by village category and summarized in table 5-5. Chi-square tests are conducted to identify disparity between upland village and complex village. All respondents consumed yams and majority of them produced yams, however the chi-square statistics indicate that proportionally more farmers of upland villages produced and marketed yams as compared with complex villages. There were also relatively more farmers who sold at least half of their yams, thus more market oriented, in upland villages than in complex villages. Regarding the 15 (11.5%) of

respondents who did not cultivate yams, 12 of them indeed did plant yams before. The major reasons for them to give up yam production were old age and loss of yam seed due to diseases and bugs. All of them were from complex villages.

5.7. Yam production of Nupe farmers

5.7.1. Scale of yam production

The seedbeds for yams in West Africa are mostly mounds, the small hills make out of topsoil gathered where yams are planted at the top. Making yam mounds are laborious that incurs high labour cost. There are various factors that determine the size of mounds and the space between mounds, such as soil fertility, precipitation, variety and potential market value of yams and local custom (Nakasone et al., 2006). In the traditional yam producing districts of West Africa, the preference for large tubers imposes heavy demand on the production system as big mounds are needed and high costs incurs for hiring labours to make big mounds. In well-drained area where hydromorphy is not critical, small mounds are made which associated with lower labour costs (Nweke et al., 1991). In the study area small mounds were observed.

Table 5-6. Number of yam heap of respondents by village.

Village	Mean	Count	Std. Deviation	Min.	Max.	Test statistic
BM	947.5	20	560.4	300	3000	34.272***
NS	585.0	20	438.0	100	2000	
NK	655.0	10	483.3	100	1500	
EN	130.8	13	107.6	25	400	
SM	800.1	13	660.5	100	2000	
CF	945.0	20	834.4	300	4000	
BT	1105.0	20	1466.6	100	6000	
Total	778.5	116	838.2	25	6000	

Note: *** Chi-square statistic is significant at the 0.01 level.

Source: Fieldwork.

Nupe people call yam mound as yam heap. The number of yam heap is used as the indicator of production scale of respondents. Ekanayake and Asiedu (2003) counted that a hectare of yam farm was put about 5,000 to 6,000 heaps. In the Guinea savanna zone where size of yam heap is smaller, Nweke et al. (1991) reported up to 13,000 yam heaps in a hectare. Referring to table 5-1, the average cultivated area of yam per household from 1999 to 2002 was 1.05ha for the whole Nigeria and 1.33ha for the North-Central geopolitical zone. The study area locates in the Guinea savanna zone and belongs to the North-Central geopolitical zone. Under these two conditions a yam farm of average size per household should have 17,225 yam heaps, because based on the information of Nweke et al a yam heap was 0.77m^2 in space in the Guinea savanna zone, and the average cultivated area of yam per household in the North-Central geopolitical zone was 1.33ha. The scale of yam production of respondents was overall small and with great variation. The smallest yam plot of respondents had just 25 heaps, while the biggest yam plot had 6,000 heaps (table 5-6). The average number of yam heap of respondents was 778.5, which could be converted to 598.79m^2 in farm size. The scale of yam production of respondents went far below the zonal average as well as the national average.

Table 5-7. Number of yam heap of respondents by village category.

	Mean	Std. Deviation	Min.	Max.	Test statistic
Upland village	1025.0	1180.5	100	6000	- 2.343**
Complex village	648.7	550.7	25	3000	
Total	778.5	838.2	25	6000	

Note: ** T statistic is significant at 0.05 level; N=40 for Upland village; N=76 for Complex village.

Source: Fieldwork.

The mean number of yam heap among respondents of the seven villages studied greatly varied. The mean for BT village was 1105 heaps, but for EN village it was just 130.77 heaps. Kruskal-Wallis test is conducted to verify the difference among the seven villages. The chi-square value is 34.272 and is significant at 0.00 level as shown in table 5-9. The obvious difference among the seven villages in terms of yam production scale is verified statistically. There was also a gap in scale of yam production between villages of different topographies. The mean number of heap was 648.7 for complex

villages, but was 1025.0, which was over double, for upland villages (table 5-7). T-test is conducted to verify the difference between the two village categories. The t-value is -2.343 and is significant at 0.05 level. Average scale of yam production of respondents was larger in upland village as verified by the t-test.

5.7.2. Characteristics of yam farm

Table 5-8. Characteristics of yam farm of respondents.

Characteristics	%, (N=116)	Test statistic
<i>Tenancy of yam farm</i>		
Inherited	58.6% (68)	-1.27*
Leased/Rented	41.4% (48)	1.87***
<i>Land for yam farm</i>		
Virgin land	34.5% (40)	-2.27***
Land after fallow	8.6% (10)	0.23
Ordinary fertile land	64.7% (75)	3.44***
<i>Fertilizer application</i>		
Applied fertilizer	49.1% (57)	0.76

Note: Actual numbers in parentheses; *** T statistic is significant at the 0.01 level;

** at the 0.05 level; * at the 0.1 level.

Source: Fieldwork.

T-tests are conducted in this section to identify if there is difference in mean number of yam heap between respondents with and without each characteristic. The average number of yam plots of respondents was 1.36 (SD=0.60). Slightly above half of the respondents obtained the land for their yam plots by inheritance. Inheritance of farmland in the Nupe country usually just refers to the inheritance of use right, but not the real ownership with the right of alienation. Inherited tenancy normally allows greater sense of security for continuous usage and less burden of land rent to landlords. Leasing/renting is also a common way to obtain farmland in the study area. Farmers usually submit land rent, which is normally about 5 to 10% of their produce to the landlords at community level. The arrangement of the lease/rent varies case by case, but often tenants are allowed to farm continuously on the same plot until they want to leave, usually because the land gets infertile due to continuous utilization. Leased/rented farmlands provide the chance for farmers to access to more fertile land for their yam

plots. 41.4% of respondents obtained their yam plots by leased/rented arrangement. Most of them (18 respondents) paid land rent to the landlords in terms of yam tubers, 14 respondents paid in cash, and 10 respondents paid in sorghum. There was nearly no difference between respondents of the two categories in terms of tenancy of yam farm.

Yams require rich soils with high organic matter content. They extract large quantity of nutrients from soil so virgin land or land after long fallow are good for them (Ekanayake and Asiedu, 2003). In Africa and Papua New Guinea, the bush-fallow system is traditionally practiced. In rotation system which includes yams, the crop is grown as the first course of the rotation. Nupe farmers well acknowledge this requirement of yams, but only 34.5% of respondents could get virgin land, and only 8.6% of respondents could utilize land long after fallow, for their yam farms. Masuda (2002) reported that unused land was limited in the region due to population pressure, and the bush-fallow system was also shifting to longer cultivation and shorter fallow period. Based on the available samples, the average years of fallow before the land was turned into yam farm was 7.17 years. Most of the respondents comprised with ordinary fertile land for their yam farms. A few farmers revealed that they only chose the lands which were suitable for maize and sorghum as these two crops indicated that the lands were relatively fertile. Land in the study area is generally low in fertility (Smaling, et al., 1985; Abe, et al., 2009; Ishida, F., 1998). Yams respond to high nutrient levels and fertilizer applications under various agronomic conditions (Irizarry, Goenaga and Chardon, 1995). However surveys have shown that farmers in West Africa often do not apply chemical fertilizers to yam as they believe these have detrimental effects on cooking (Anchirinah et al., 1996) and storage quality of tubers (Vernier et al., 2001). 49.1% of respondents applied various forms of fertilizer on their yam farms. However, resource-poor farmers could hardly afford sufficient fertilizer application. The most common types of chemical fertilizer were N.P.K. compost and Urea¹⁰. Only 3 respondents indicated that they applied herbicide for weeding.

¹⁰ N.P.K. fertilizer is primarily composed of three main elements: Nitrogen (N), Phosphorus (P), and Potassium (K), each of these being essential in plant nutrition. The agriculture industry nowadays relies heavily on the use of N.P.K. fertilizer. Urea fertilizer is a nitrogenous, white crystalline organic chemical compound. It is used as a fertilizer as well as an animal feed additive.

5.7.3. Yam variety planted by Nupe

Table 5-9. Yam variety planted by respondents.

Yam variety	%, (N=116)
White yam	100% (116)
Yellow yam	43.1% (50)
Water yam	5.2% (6)
Bitter yam	0% (0)

Note: Actual numbers in parentheses.

Source: Fieldwork.

Table 5-10. Local name of yam variety collected from respondents.

Yam variety	Percentage of respondent	Yam variety	Percentage of respondent
Kpakogi	113 (97%)	Agibe	3 (3%)
Malagbagi	58 (50%)	Efiagi	2 (2%)
Badiza	31 (26%)	Kpanshianagi	2 (2%)
Furu	30 (22%)	Adoci	1 (1%)
Gigada*	26 (22%)	Bisan	1 (1%)
Kpepe	20 (17%)	Egagi	1 (1%)
Wura*	20 (17%)	Eyagikin	1 (1%)
Suba	15 (13%)	Gbayanpogi	1 (1%)
Egbogi	14 (12%)	Kadnnachi*	1 (1%)
Kandu*	12 (10%)	Korokuma	1 (1%)
Ehzhikogi	9 (8%)	Mariachi	1 (1%)
Giwa	8 (7%)	Mene	1 (1%)
Wutsu*	7 (6%)	Sudan	1 (1%)
Jigada	7 (6%)	Suru*	1 (1%)
Bassaci**	5 (4%)	Yagba	1 (1%)
Achibiri	3 (3%)		

Note: N=116; Percentage in parentheses.

* Yellow yam based on the classification of some farmers.

** Water yam based on the classification of some farmers.

Source: Fieldwork.

Table 5-11. Number of yam variety of respondents by village category

Characteristics	Mean	Std. Deviation	Min.	Max.	Test statistic
Upland village	4.5	1.5	2	8	-6.35***
Complex village	2.9	1.1	1	6	
Total	3.4	1.5	1	8	

T statistic is significant at the ***= 0.01 level. N=40 for Upland village; N=76 for Complex village.

Source: Fieldwork.

Nupe respondents cultivated a large variety of yams. The white yam was the most common variety and was followed by yellow yam (table 5-9). Water yam was less popular and bitter yam was not planted. As farmers differentiated yams roughly by the whiteness of the flesh and the textures, but not the official classification, probably more yellow and water yams were cultivated in reality. The mean number of yam variety cultivated by respondents was 3.4, but the deviation among respondents was large. The local names of yam variety were collected from respondents and listed in table 5-10. Thirty one names of yam variety have been collected; the proportions of them being planted were listed as well. Based on information from respondents, 24 varieties were white yam, 6 were yellow yam and only 1 was water yam. By growing early harvesting and late harvesting cultivars in the same season, farmers ensure steady food supply for a prolonged period. Growing several varieties in the same season also allows more efficient labour allocation and less risk of crop failure (Adachi, et al., 2006). Kpakogi was the most popular yam variety which was planted by almost all of the respondents and in all villages. Apart from the few most popular varieties, yam varieties of each village varied. Yam is a location specific crop so one variety can grow well in one village may not grow well in another village. Respondents of upland village planted more yam varieties compared with respondents of complex village (table 5-11). The total number of yam variety recorded in the two upland villages far exceeded that of the five complex villages. Respondents of upland villages did not only tend to have larger scale of yam production, but also tend to grow more varieties for different market needs. Six respondents from the upland villages had experienced wild yam domestication. The motivation for them to domesticate yams was to obtain new seed yams and to get new yams for food. Domestication of wild yams requires in-depth knowledge on yams and great skills in yam cultivation. Most of the cultivated yams in West Africa have been originated from a process of domestication of wild yams (Burkill, 1939; Miège, 1952 and Terauchi et al., 1992) and it is still an active process of indigenous farmers in West Africa (Dumont and Vernier, 2000; Vernier, et al., 2003).

5.7.4. Cropping system of yams

Sole cropping system is reported to yield more yams than intercropping and mixed cropping systems. Nevertheless, same as cassava, intercropping and mixed cropping systems are more widely adopted in yam cultivation although yields would be

substantially reduced (Nakasone et al., 2006; Coursry, 1967). As shown in table 5-12, most of the respondents adopted intercropping (81.0%) and mixed cropping (79.3%) for yam cultivation. There were only 25% of respondents who mono-cropped yam. Table 5-13 and 5-14 list the crops relayed to and combined with yams. Sorghum and Egusi melon were the most common crops to be intercropped with yams. On the other hand, cowpea and okra were the most common crops to be mixed with yams. They were planted in the sides of mounds to keep down the weeds.

Table 5-12. Yam cropping system adoption of respondents.

Cropping system	%, (N=116)
Sole cropping system	25.0% (29)
Intercropping system	81.0% (94)
Mixed cropping system	79.3% (92)

Note: Actual number in parentheses.

Source: Fieldwork.

Table 5-13. Crops for intercropping system.

<i>Crop</i>	<i>Count</i>	<i>Crop</i>	<i>Count</i>	<i>Crop</i>	<i>Count</i>
Sorghum	94% (88)	Cowpea	3% (3)	Sweet potato	1% (1)
Egusi melon	64% (60)	Groundnut	2% (2)	Cassava	1% (1)
Maize	10% (9)	Rice	2% (2)		
Yam	3% (3)	Millet	1% (1)		

Note: N=94, Actual number in parentheses.

Source: Fieldwork.

Table 5-14. Crops for mixed cropping system.

<i>Crop</i>	<i>Count</i>	<i>Crop</i>	<i>Count</i>	<i>Crop</i>	<i>Count</i>
Cowpea	44% (44)	Kandu (Yam)	7% (6)	Cassava	1% (1)
Okra	38% (35)	Sorghum	7% (6)	Garden Egg	1% (1)
Maize	26% (24)	Bambara nut	3% (3)	Roselle	1% (1)
Bean	7% (6)	Tomato	2% (2)	Vegetable	1% (1)

Note: N=94, Actual number in parentheses.

Source: Fieldwork.

5.7.5. Cultivating calendar of yams

The farming cycle of yam is determined primarily by the times at which the rainy season begins and ends, as these times coincide approximately with the beginning and the end of the growing period of the crop. Yams are not grown under irrigated

conditions, and so depend for their development entirely on natural rainfall, aided, in the early stages of the growth, by the moisture reserves of the tubers (Coursey, 1967). Rainy season of the study area usually starts from mid-April and ends in late October. Generally speaking, Nupe farmers begin planting yams when rains begin to fall, and they start harvesting yams after rains stop. Nevertheless, villages of the two categories have slightly different cultivating calendars for yam as presented in table 5-15. Respondents of upland villages began land preparation and mound making in August and September of the previous year. Because these respondents did not involve in lowland farming (or they involved, but usually in relatively minor scale), labour were available after they have finished planting the upland crops of that season, therefore they could begin preparing the land for their yam farm of the consecutive year when soil was soft in the rainy season. These respondents usually have larger scale of yam production, so longer time was needed for land preparation and mound making. They stopped making mounds during dry season when soil was hard, and then they continued to make the remaining mounds again in April and May when soil was softened by rain. They began to put yam setts or seed yams into the mounds from February. By contrast, respondents of villages with wetland only began land preparation and mound making in April and May. They did not get the time like other respondents because labours were shifted to lowland rice farming from August. They also got shorter time for planting the seeds or setts into the mounds. Less time was a factor that hindered them from expanding their yam farms. In June, Nupe farmers put stakes onto the mounds to support the growing vines. Cereal stakes of previous crop were commonly used in the study area which helps farmers to lower cost for staking materials. Staking improves photosynthesis of plants, prevents foliar diseases, and allows the cultivation of interim crops (Eknayake and Asiedu, 2003). Respondents weeded their yam farms for two to four times between June and September, depending on the devotion of respondents. Most of the respondents weeded for three times, the first time in June, second time in July, and the third time in August. Researches showed that weed competition during the first four months of yam growth might reduce yields by as much as 43% (Ibid, 2003). Weeding was manually carried out with cutlass and hoes therefore, required a lot of labour inputs due to the complexity of the task. There were only eight respondents revealed that they applied herbicide on yam farms. Herbicide was applied in July and August.

Table 5-15. Yam cultivating calendar of respondents by village category.

Month	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
Upland village	L	M					P	P	P /M	M /P	S /W	W	W /K	W /K			H	H
Complex village									L /M	M /P	S /W	W	W /K	W /K			H	H

Note: L=land preparation; M=mound making; P=plantation; W=weeding; S=staking; K= early harvest (milking); H=main harvest.

Source: Fieldwork.

Yam tuber development is complete at about the end of the rain. In the study area, harvesting of yams usually takes places from December to January. It is desirable to delay the harvest for as long as possible, as the tubers continue to develop to some extent so long as any part of the vine remains alive. In addition to the main crop, it is common to take an early harvest for some varieties during August in the study area. This practice is referred as milking, in which a first crop of immature tubers are harvested during the rainy season while keeping the plant intact. The milked plants are left to grow on until the natural end of the growing season. By then, new tubers will have developed, which may be used either for edible purposes, or as seeds for the next year (Coursey, 1967). 99% of the yam growing respondents performed milking, mostly in late August. Respondents indicated that they only milked some varieties which provided larger tubers, such as Baidza, Egbogi, Ehzhikogi, Furu, Gigada, Kpakogi, Kpepa, Wutsu, and Yagba. The yams obtained by milking are one of the earliest harvested crops in the midst of rainy season when there is always shortage of food. Retail market price of yams in the region is generally low in August and September, but farmers have to rely on the sale of the early harvested yams for the money to buy sorghum and millet for food. They also needed that money to buy planting materials and fertilizer for rice plantation that usually began in August.

5.7.6. Labour used for yam farming

Many aspects of yam production: land preparation, planting, weeding, staking and harvesting require considerable amounts of manual labour. Studies indicated that labour accounted for over 40% of yam production costs (Eknayake and Asiedu, 2003). Yam farmers in the study area depended largely on hoe-cutlass labour. There was no any

mechanization. Respondents indicated that land preparation and mound making were the most tedious tasks of yam farming that required the highest labour input. Weeding was the second most laborious task. Various types of labour forces were used by respondents as shown in table 5-16. Apart from self-efforts, respondents relied the most on hired labour (79.3%) and reciprocal assistance (79.3%), usually for mound making. Labour price in the area was about N150 to N300 per person per shift depending on the body strength of the labour. A shift referred to about 3 hours of farm work in the morning or in the evening. For respondents who hired labour for yam production, majority of them hired labour for mound making. They hired labour as the supplementary labour force when family labour and reciprocal assistance were inadequate to complete the number of mound they wanted to make. Weeding was another task that required hired labour. From the 59 respondents who provided the figures for hired labour, the average cost that they spent was N8,110, which was for hiring 17.23 labours for 2.32 work shift for the making of 810 yam heaps.

Table 5-16. Type of labour used for yam farming by respondents.

Option	%, (N=116)
Family labour	50.9% (59)
Hired labour	79.3% (92)
Village community	30.2% (35)
Reciprocal assistance	79.3% (92)
Wives	14.7% (17)

Note: Actual number in parentheses.

Source: Fieldwork.

The most common form of reciprocal assistance that respondents used for yam production was “*dzoro*”. About five or six farmers of similar ages and body sizes were grouped together and they worked on the farms of each other on rotation. “*Dzoro*” greatly assisted younger farmers as they were usually in lack of family labours but did not have resources to hire labours. Apart from the formal *dzoro*, some farmers cooperated with other one or two farmers whom they were familiar with for yam plantation. Mound making of yam farm was a very tedious task, so it was reasonable that some *dzoro* farmers who did not grow yam might feel reluctant to work on other’s yam farms as they could not expect the return of the task with similar hardship. Reciprocal assistance was mostly used for mound making and weeding. As a farmer got

mature and had his own sons work for him, he graduated from *dzoro* and farmed on his own with his children. Elderly yam farmers enjoyed the privilege to hire village community with relatively lower cost when they could not afford to hire adequate labours. In the study area, there was a tradition that village community worked for the elderly and needy at relatively low cost as a kind of assistance. The income gained by community work would be used for common good of the village. It was utilized by just 30.2% of yam producing respondents.

There were 14.7% of yam producing respondents whose wives worked for their yam farms. Some respondents mentioned that it was in fact very common in the area for women to assist in yam production. Some respondents reflected that Nupe wives usually assisted in carrying yam setts to the farm and placing them on heaps. They also mulched yam mounds by grasses and leaf, trained vines on stalks staked by men, collected harvested yams and carried them from the farms to the yam barns. Marketing of yams was mainly the job of Nupe wives. Nweke et al. (1991) and Baudoin and Lutaladio (1998) identified similar gender division of labour in yam production. In their works, women also assisted in purchasing and selecting of seed yams, cutting of yam tuber setts and weeding. It was common that Nupe women supplied labour to yam production, however, as most of their husbands did not consider their contributions as “labour”, probably because their work required less physical strength, so they did not mention it during the interview.

5.8. Yam marketing of Nupe farmers

Harvested yams were mostly for self-consumption of respondents. Most of the respondents (83.6%) sold no more than half of their harvested yam tubers. There were 19.8% of respondents who kept all their yams for self-consumption while no respondent planted yams only for marketing. Loss of yam caused by pest and disease problem is generally high under primitive harvesting and storage systems. Respondents reported 10% of yam decay on average ($SD=7\%$). Although much less prevails compared with rice paddy, yam tubers are occasionally used as gifts among Nupe farmers. Almost all the respondents (97%) stated that they have ever given yam tubers to their friends and

relatives as gifts. Big yam tubers in good shape are considered as prestige gift and some respondents have ever given them to noble and political important people. In Nupe agricultural society, it is common that when a farmer wants to sell his crops, he requests his wives to bring the crops to nearby towns and markets to sell on his behalf. As shown in table 5-17, it was the most common way among respondents to let their wives market the tubers.

Table 5-17. Yam tuber marketers and buyers of respondents.

Option	N=87, %
<i>Yam tuber marketers</i>	
Wives of famers	50.6% (44)
Farmers	42.5% (37)
Household heads of farmers	9.2% (8)
<i>Yam tuber consumers</i>	
Merchants in surrounding market	47.1% (41)
Ordinary household users, food vendors, etc.	40.7% (36)
Merchants coming directly to village	24.1% (21)
Other villagers	20.7% (18)

Note: Actual number in parentheses.

Source: Fieldwork.

The most dominant yam tuber consumers of respondents were merchants in surrounding markets (47.1%). There are several markets in the area where yams are traded, such as the markets in Bida and Doko towns and some village markets which operate once in every few days. The second dominant consumers were food vendors and ordinary housewives in towns (40.7%). In this case it was often the wives of farmers who bought the tubers to towns and sold in small quantity. There were merchants coming from other regions who went directly to three of the selected villages (BM, CF and BT) to purchase tubers directly from farmers (24.1%). These merchants come from Minna, Mokwa, Mambe, and also distant cities Ibadan and Ilorin. Finally, 20.7 % of respondents sold to village merchants, often village women who specialize in crop trading. These village merchants often re-sold the tubers to other merchants in surrounding markets.

Table 5-18. Estimated gross sale of yam (tuber and seed) in naira by village.

Village	Mean	Frequency	Std. Deviation	Min.	Max.
BM	84,632	19	121,629	0	500,000
BT	39,895	19	122,066	0	540,000
CF	24,000	16	18,468	8,000	65,000
EN	4,885	13	5,774	0	20,000
NK	9,600	10	6,467	2,000	20,000
NS	18,658	19	12,563	0	32,000
SM	2,429	7	5,593	0	15,000
Total	31,854	103	78,110	0	540,000

Source: Fieldwork.

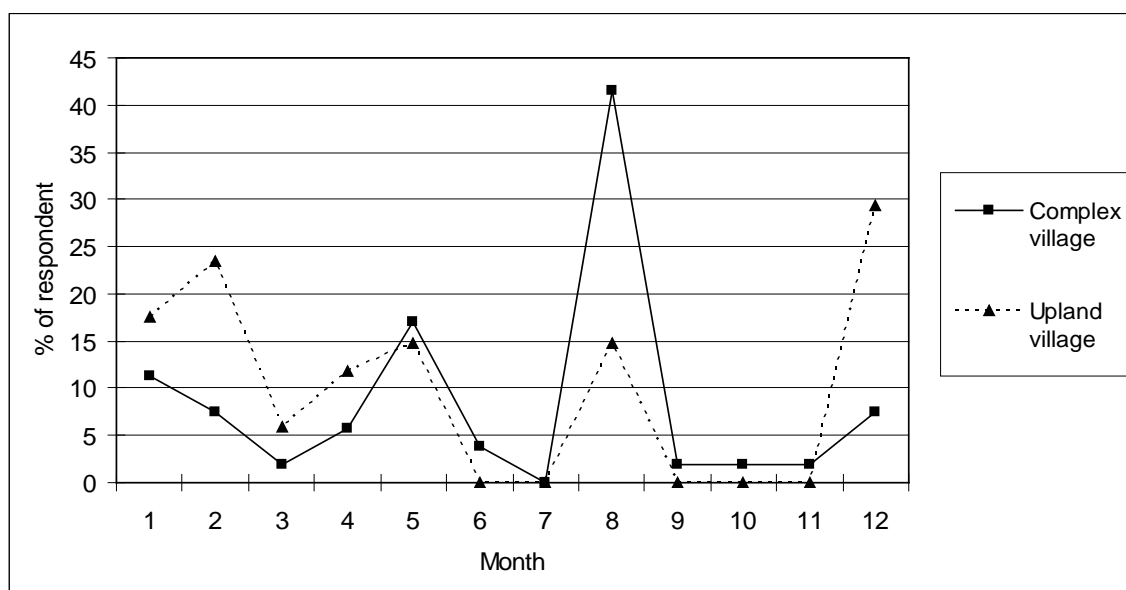
Table 5-19. Details of yam tuber sale of some respondents.

	Average	Frequency	Std. Deviation	Min.	Max.
Quantity of yam tuber sold	806	74	2,265	30	18,000
Gross sale of yam (in naira)	41,486	74	90,002	1,500	540,000
Average value of tuber (in naira)	84	74	97	7	667

Source: Fieldwork.

Respondents were asked to estimate the amount of gross income obtained from the sale of yam. The amounts they estimated included the sale of tubers and seeds and were listed in table 5-18. The average estimated gross income was 31,854 naira, but there were huge deviations amongst respondents and villages. There were 74 respondents who provided more details of their sale of yam. From their information, the average price per yam tuber was 84 naira (table 5-19). The retail market price in Bida for a 1kg of yam tuber was 95.8 naira during the time of this research. During the interviews, many respondents revealed that they sold seed yams in May to other farmers. Some respondents mentioned that the money they got from the sale of seed yams were used for farming activity in the beginning of rainy season. From the six cases available, sale of seed yams accounted for about 20% of the total yam sale. From the information provided by eleven respondents, they derived about 5,455 naira on average from the sale of seed yam. The income from the sale of seed yam was in fact of great importance for resource-poor respondents as they might otherwise have difficulty to get necessary capital for the farming activity of the new season.

Figure 5-8. Month for major yam sale of respondents (by village category).



Source: Fieldwork.

Figure 5-8 presents the months when respondents sold their yams. In this part, findings were presented by village category because the cultivating calendar of the villages with different topography differed slightly as mentioned before. The peak month of yam sale of respondents was August. May, the month for sale of seed yams, and December, the month for yam harvesting, followed as second. Respondents of different village topography showed different pattern in the time period for peak yam sale. There were far more respondents of complex villages that sold most of their yams in August. The main reason was that these respondents needed money in August, firstly for the capital for rice cultivation on wetland, and secondly for buying food stuff as other crops were not yet ready. A respondent of complex village mentioned that yam tubers harvested in August were mostly sold for money, while tubers harvested in December were mostly consumed for food. On the contrary, there were far more respondents from upland villages that sold most of their yams in December. It was because these respondents produced in larger scale so their tubers were sold in bulk to merchants when harvested in December. Lack of proper storage facility and threat of robbery push farmers to sell freshly harvested tubers immediately to merchants. The different pattern indicated that farmers of upland villages probably get better earning from yam as compared with farmers of complex villages because market prices of yam tubers were much higher in December than in August.

5.9. Yam consumption of Nupe farmers

5.9.1. Characteristics of yam consumption

Table 5-20. Summary of the characteristics of yam consumption of respondents.

Characteristics	%, (N=131)
<i>Frequency of consumption</i>	
Few times a week	73.3% (96)
Once a week	17.6% (23)
Once a month	6.9% (9)
Few times a year	1.5% (2)
Once a year	0.8% (1)
<i>Source of yam</i>	
Own production	88.5% (116)
Buy from market	36.9% (47)
Gift from relatives/friends	2.3% (3)
<i>Way of consumption</i>	
Boiled yam	98.5% (129)
Pounded yam	89.3% (117)
Roasted yam	72.5% (95)
Fried yam	70.2% (92)
Yam porridge	70.2% (92)
Amala yam	41.2% (54)
<i>Ceremonial use</i>	
Eat yam for celebration	48.9% (64)
Provide yam to guests	33.9% (43)
<i>Wild yam consumption</i>	
Ever consumed wild yam*	12.2% (16)
<i>Yam for medication</i>	
Acknowledge the medical value of yam	3.1% (4)

Note: Actual number in parentheses.

Source: Fieldwork.

The findings concerning yam consumption of respondents were summarized in table 5-20. Sorghum and millets are the most dominant staple food in the region which Nupe consume daily. Rice is another important staple food which is consumed often although not daily. It has been observed in Nupe villages that people ate sorghum or millet every day for both breakfast and dinner, and for lunch, they consumed rice, legumes or root and tuber crops. This traditional pattern of food consumption was

widely observed in the region. The crops that agricultural people eat change according to what available from their farms in different seasons. The Nupe eat different crops in different seasons according to crop availability, and usually a crop was consumed most when it was being harvested. This research was conducted in January, and yam consumption was supposed to be among the highest. Majority of respondents (73.3%) could eat yams few times in a week. The frequency of yam consumption certainly links to the scale of yam production. Respondents who did not produce yam could just consume yams very rarely. Majority of respondents (88.5%) got the yams for consumption from their own production. It is not easy for ordinary Nupe farmers to afford buying yams in market so they stop consuming yam when their own stock is finished. There were just 36.0% of respondents who bought yam from market for consumption. Consumption of yams received as gift was very uncommon (2.3% only).

Yams are extremely time-consuming to prepare as food by most traditional methods. Yams have comparatively thick skins, which must be removed by peeling before the tubers are used as food; the extreme 'head' ends, from which sprouts arise at the end of the dormant period, are usually hard and unpalatable, and are rejected; some physical damage often occurs during harvesting or handling, and the damaged portions, which rapidly dry out and develop disease or mold, are also rejected when preparing yams for food. The losses arise from these factors account for 10-15% of the tubers (Coursey, 1967). Despite of these demerits, yams are still much preferred in West Africa to alternative staple foods. There are many ways to consume yam in the study area. The most preferred method of preparation of tubers was boiling (98.5%) and pounding into a thick paste (pounded yam) (89.3%) which was then consumed with "soup" – stew containing meat or fish, vegetables and spices. Boiled yam can be consumed directly, but more often it is cooked with rice or bean and is eaten with palm oil. It is the most common way to prepare yams for lunch in Nupe villages. Pounded yam is a lot more time consuming and laborious to prepare as the pounding process of boiled yam by mortar and pestle lasted at least fifteen to thirty minutes. Pounded yam is highly delicious; it provides a good texture for easy swallowing and good "hand feeling" which is more important than "mouth feeling" for African. Pounded yam with "soup" is often the most popular dish in local restaurants. In Nupe villages, pounded yam is not often prepared, but it is sometimes prepared for special occasions such as wedding ceremony. Roasted yam was the third most common way of consumption

(72.5%) that it was often used as food on farm. Farmers bring fresh and small tubers to farms which they can easily roast and eat in the break during farm work. Frying in oil is also an important cooking method (70.2%). Moreover, boiled yam are broken up and mixed with palm oil and spices, sometimes even with meat or fish, to form “yam porridge” (70.2%). Amala, which made from the dried yam flour described before, was considered as a Yoruba food and was much less consumed in the study area (41.2%). Regarding the preference of yam variety for consumption, Kpakogi was by far the most preferable variety which was selected by 79.4% of respondents. This explains why Kpakogi was cultivated in all the selected villages and by 97% of yam producing respondents. Some respondents mentioned that Kpakogi was the best for rainy season, while another variety, Malagbagi, was the best for dry season.

In the Nupe tradition, rice is regarded as the food for traditional ritual and ceremony. It is the obligation of the host to serve rice meal, often pounded rice ball with “soup”, to the guests in any ceremony and important traditional events. People belong to the same community of the host, are also obligated to contribute rice to assist the host. Concerning yam, it plays no role in the Nupe tradition. There is no special festival for the consumption of new yams, and yam is not used as ritual meals, for the Nupe respondents. Yam is of much less cultural importance compared with rice in the Nupe culture, but with its high market value, it is being regarded as a luxurious food which is nowadays sometimes prepared in ceremony for important guests. Almost half (48.9%) of the respondents have ever consumed yam for celebration, but it was limited to family members only, not to guests. There were only 33.9% of respondents who have ever provided yam meal to guests, often just in wedding ceremony. Respondents confessed that it was limited to some important guests only as they could not afford a lot of yams.

Almost throughout Africa, wild forms of yams have been used in times of famine as an emergency food (Irvine, 1952). However, many wild yams species suffer from the severe disadvantage that they are, to a greater or lesser extent, toxic. Consuming wild yams without proper precautions can cause death in the worst circumstance (Coursey, 1967). The practice of consuming wild yam is uncommon in the study area. There were only 16 (12.2%) respondents who have ever consumed wild yam. The dominant reason for them to take wild yams was because of food shortage. There was

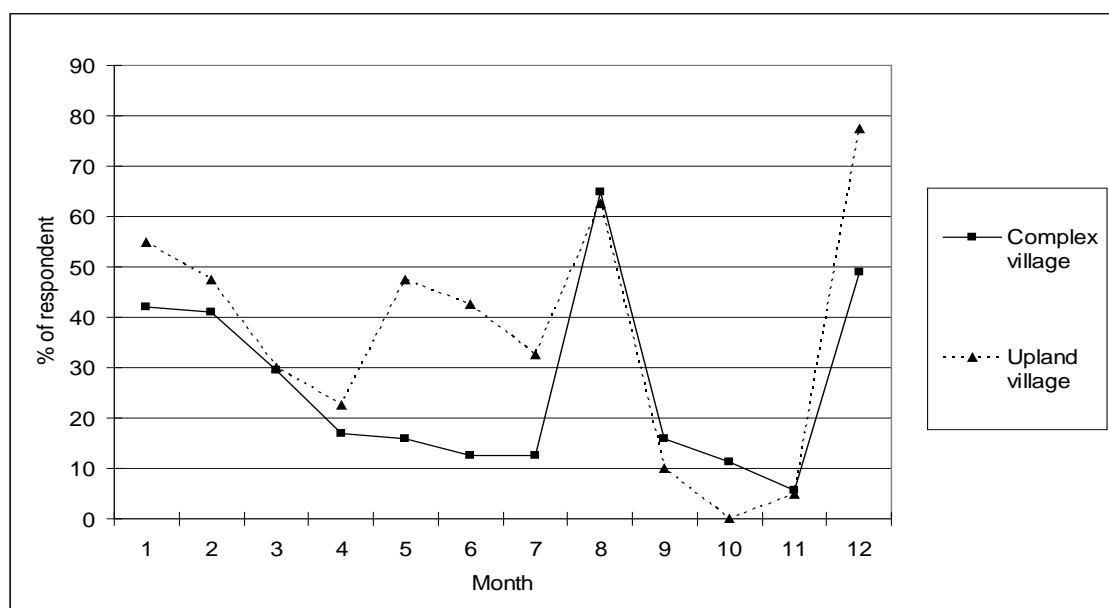
no record of famine happened in the study area for the last century, but occasional food shortage might have happened at household level. These 16 respondents were from BM (4), SM (7), CF (2) and BT (3) villages, which all had relatively large scale of yam production and longer years of experience in yam cultivation.

Many varieties of yams are used in traditional medicine in Africa, among the Chinese and other Asiatic peoples (Watt and Breyer-Brandwijk, 1962; Burkill, 1935; Nakasone et al, 2006). However, the medical value of yam was little known by respondents. There were only 4 respondents who acknowledged the medical effect of yams. These four respondents were again from BM (1), SM (1), CF (1) and BT (1) villages. According to them, Kpakogi helped to cure fever and malaria; Giwa could cure dizziness; Baidza and Wutus also got medical value but no detail was provided.

5.9.2. Time period for yam consumption

Figure 5-9 presents the yam consumption of respondent in each month. Similar to the time period for yam marketing, most respondents consumed yams in August (64.1%) and December (57.8%). Yams were consumed by respondents in every month. Yam consumption reached the peak in August as fresh yams became available from milking, and then it went down from September to November. Yam consumption reached another peak again in December when the main crop was harvested. It stayed high in January and February, but dropped and stayed low from March until July, except in May when respondents consumed the unused yam seeds. There was difference between the yam consumption patterns of respondents of the two village categories. The peak of yam consumption for respondents of complex villages was August, while it was December for respondents of upland villages. The proportion of respondents consuming yams was higher for upland villages in every month, except from September to November. Respondents of upland villages tended to be more patient in waiting the tubers to reach the full maturity. The proportion of respondents of upland villages which consumed yam in May and June was a lot higher than that of respondents of complex villages. Respondents of upland villages might have stocked extra seed yams so when they were unused respondents consumed them.

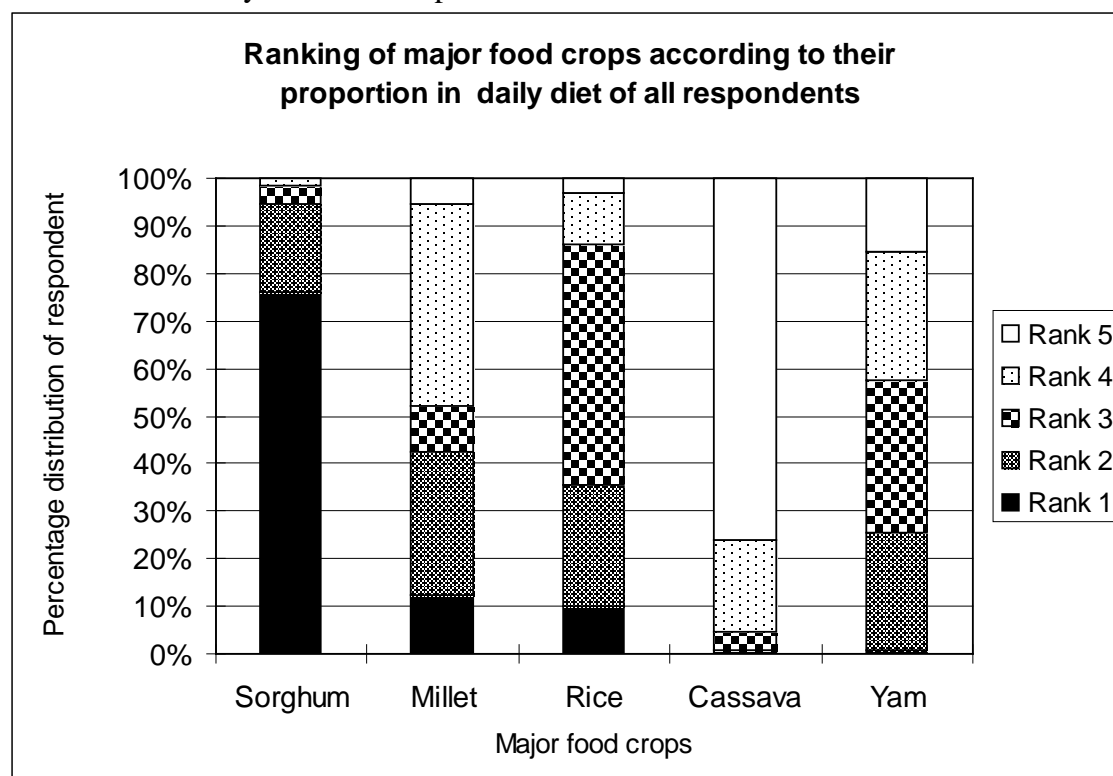
Figure 5-9. Month for yam consumption of respondents by village category.



Source: Fieldwork.

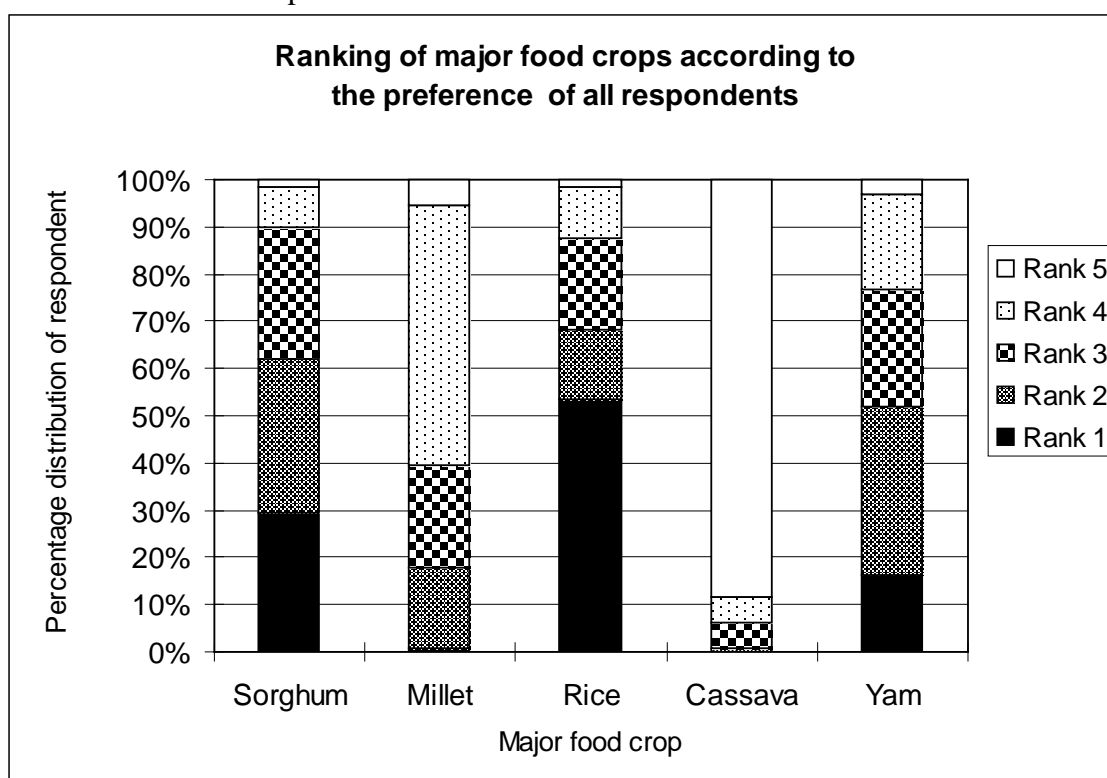
5.9.3. Comparison with other major crops

Figure 5-10. Ranking of major food crops according to their proportion in daily diet of all respondents.



Source: Fieldwork.

Figure 5-11. Ranking of major food crops according to the preference of all respondents.



Source: Fieldwork.

Respondents compared and ranked the five most important staple foods of the region, namely: sorghum, millet, rice, cassava and yam, in terms of proportion of daily diet and consumption preference. The findings of all respondents were aggregated and then presented in figure 5-10 and 5-11. Sorghum was the most important food crop in the daily diet of all respondents, and then followed by rice and millet (figure 5-10). Yam was ranked mostly as the second (24.8%) and the third (31.8%) in the proportion of the daily diet of respondents. Sorghum and millet are consumed for breakfast and dinner every day in Nupe villages. Rice is mainly consumed for lunch, but occasionally for dinner as well. Rice is also the ritual food which is provided to guests for both lunch and dinner during ceremony. Yam is mainly consumed for lunch, occasionally for dinner as well although much less frequent compared with rice. Cassava is mainly processed into coarse powder called “gari”, which is often soaked with water and drank by men for lunch. The nontoxic species are sometimes boiled and eaten for lunch. Based on the ranking of respondents, rice should be the biggest potential competitor for yam as these two crops are both considered as afternoon food by the Nupe farmers. Rice was the

most preferable crop for respondents (figure 5-11). The cultural role it played made it the most favorable food for respondents. Sorghum and yam were the second and the third most preferable crops. Millet ranked the forth in terms of preference, and cassava was in the lowest preference for respondents. The cultural root of rice is indeed very deep for Nupe farmers which will not be replaced by other crops easily.

5.10. Conclusion

Yam is relatively harmless to the environment. Biologist Coursey believed that in societies which have the ecologically gentle yam as their staple crop, an ideology oriented towards the conservation of nature must exist (Breemer, 1989). Available statistics of the earlier part of the paper indicate that yam is of dominant significance for Nigeria, and the research findings presented in the latter part suggest that yam is of growing importance for the Nupe farmers in the Bida Emirate of the Niger State. Nigeria is the largest yam producer of the world, which produces 67% of the world's yam in 2007. Yam is important to these countries not only because of its function as the starchy staple food to feed the rapidly growing population, but also because of its cultural value and social function that the civilization of yam has been established upon. Many exotic crops have been introduced to Nigeria in the last few centuries, but none of them have successfully replaced the position of yam as the most preferable staple food of many ethnic groups of the country. Compared with other crops like rice and cassava, yam receives much less attention and research interest from the nation and the international society. Although with limited resources and little assistance, Nigerian farmers have been able to multiple the nation's yam production by 890% from 1961 to 2007. The high popularity of yam has never dropped throughout 1961 to 2003 that yam consumption of the country has been multiplied by 652%. With its high market value, yam has become a very important commodity being exported not only to surrounding countries such as Niger, Benin and Togo, but also to European countries like the UK.

The Nupe who inhabit in the middle-belt of central Nigeria were thought to be unfamiliar with yam culture. Nevertheless, the findings of the questionnaire survey disprove this perception. The coverage of the Yam Zone has expanded that nowadays

yam production has moved from the humid forest area into the Guinea savanna zone and even extended to the Sudan savanna zone of the country. Niger state, where the Nupe is the dominant ethnic group, has replaced the southern states where yam has been traditionally produced, as the biggest yam producing state with largest cultivated area of yam throughout the nation. Yam is commonly produced, marketed and consumed by the Nupe farmers. The scale of yam production of Nupe farmers is generally small, and their production technology is simple, but with the attractive market value of yam, Nupe farmers have gradually increased yam production over time. For the Nupe, yam is mainly consumed as one of the afternoon foods when it is in season, that the importance of yam as food lags behind sorghum and rice. Yam does not play important traditional role for the Nupe, but with its high value and palatable taste it is occasionally used as gifts for important people and special food among family for ceremony. The research findings show that there are discrepancies between complex villages and upland villages that scale of production, yam variety, cultivating calendar and time pattern for major sale and consumption slightly differed. It indicates that yam production is probably more important for the Nupe farmers who have less access to irrigated lowland fields.



Photo 5-1. A per-harvest yam farm of Nupe farmer (January 2009)



Photo 5-2. Nupe farmers harvesting yams (January 2009)



Photo 5-3. Yam barn for shortage of harvest yam tubers (January 2009)

Chapter Six

Corralling contract between Nupe farmers and pastoral Fulani

6.1. Introduction

Chapter six and seven shift the main subject of analysis to the Fulani pastoralists of the Bida Emirate. Pastoral Fulani is one of the most important contributors to the agricultural sector of Nigeria. More than eighty percent of Nigerians depend on the pastoral Fulani, the custodians of the nation's herds, for meat, milk, hair, manure, animal blood, and hides and skins. The pervasive influence of the Fulani pastoralists in the local food chain cannot be overlooked, as they account for the supply of beef, which remains as the most important source of animal protein in Nigeria (Omotayo, 2002). Another important contribution of pastoral Fulani in agriculture is the complementary use of environment with farmers which is to be presented in the following sections. In this dissertation the discussion on the pastoral Fulani retains to issues concerning land related interactions with farmers. The production system of pastoral Fulani in the study area remains to be a major topic for future investigation. In this chapter, the practice of the corralling contract between Fulani pastoralists and Nupe farmers is examined.

Coexistence of farmers and herders in the semi-arid Africa has been described as symbiotic. Although confrontations occasionally occur, in most cases they can be regulated in such a way that the peaceful cohabitation of the groups as a whole is not endangered. In West Africa however, conflicts over the use of scarce natural resources between farmers and herders are said to be on the increase in recent years. The occurrence of such conflicts is generally attributed to two factors: the changing patterns of resource use that lead to increasing competition for resources; and the breakdown of traditional mechanisms governing resource management and conflict resolution. The generalization of increasing conflict gives an impression that the traditional mutual dependent and mutual beneficial forms of farmer-herder interaction that well-functioned in the past does not work anymore now. This perspective justifies direct interventions

and implies new structures for new institutions for the co-operative management of natural resource use and conflict management. Observations have been made in respect to the Nupe farmers and Fulani herdsmen in the Niger State of Nigeria. Case materials suggest, at least with the specific case of the Nupe farmers and the Fulani pastoralists in the field site, a perspective that is contrary to the increasing-conflict view. Even though limited natural resources are shared and their production systems are gradually converging, the cooperative relationship between the two groups shows no sign of deterioration. The traditional institutions governing natural resource use and conflict resolution are being preserved and are still functioning.

Corralling contract is one of the most important traditional resources use institutions between farmers and herdsmen that have been practiced down through the ages in sub-Saharan Africa. It refers to the contractual agreement between farmers and herders to maintain livestock on croplands for a specified time period. Following the great reduction since mid-1980s and finally the withdrawal in 1997 of fertilizer subsidies by the Nigerian government, the corralling contract has become more important for resource-poor farmers who cannot afford fertilizer. Meanwhile, the decreasing availability of grazing resource due to the extension of cultivated area outpacing population growth also make herders rely more on the corralling contract as the tool to ensure access to resources. The corralling contract has gained more attention in recent years. Some scholars consider it as an emerging traditional institution that has great potential in contributing to peaceful cohabitation of multiple ethnic groups. There are numerous researches done that focus on the ecological impacts of manure on soil fertility, but only few examine the socio-economic implications of the corralling contract. These researches take mainly the farmers' perspective, even though the contract is an institution that requires the agreements of both farmers and herders. The perspectives of herders are indispensable for the thorough understanding of the corralling contract. There is no ethnographic account that the author can find so far that explained how the farmers and herders actually reached to the corralling contract and how the details are being arranged. Researches have been done on both sides to investigate the implementation of this traditional institution. The main questions are: how do the two groups arrange the corralling contract; how do they utilize this instrument and how does it influence their socioeconomic relationship? Findings suggest that Fulani groups adopt different strategies to maintain social relations with

specific villages in order to ensure resources entitlement. Their “popularity stakes” and the amounts of payment they can get through the contract vary greatly from each other. The competition for Nupe farmers to host a Fulani group is keen and costly therefore villagers need to combine collective efforts. Contrary to traditional depiction, richer and influential farmers do not necessarily benefit more from corralling contracts and there is no significant sign that Fulani herders claim more payment in cash or in kind than in former years.

6.2. Pastoral Fulani in Nigeria

The Fulani¹ are the most numerous and probably the most prominent of all the pastoral groups in West Africa. They expanded eastwards from the Gambia River over the last thousand years and stretched across the entire West Africa sub-region. Among the estimated 30 million of pastoralist in Africa, 10 million are found in Nigeria. The Fulani is the largest group of pastoralists in Nigeria that constitutes about 95% of nomadic herders in the country. The presence of Fulani was recorded in the Hausaland of northern Nigeria as early as the thirteenth century (Awogbade, 1983:3). A number of classic monographs described the Nigerian Fulani, most notably St. Croix (1972), Hopen (1958), and Stenning (1959). They studied the pastoral clans in the semi-arid areas. More recent researches were from Awogbade (1983) who described the Fulani on the Jos Plateau and Gefu (1992) who studied the Fulani of Udubo Grazing Reserve. The study on pastoral Fulani in the humid and sub-humid regions of Nigeria was still limited. Some of the papers in Kaufmann, Chater & Blench (1986) studied the Fulani in southern Zaria. Omotayo (2002) and Fabusoro (2006) explored the land related issues of Fulani in Southwestern Nigeria.

The pastoral Fulani in Nigeria, same as other nomadic pastoralists in Africa in general, have for several centuries concentrated their activities in the dry savanna and arid regions where farming activities were limited and competition for resources with other forms of land use were practically non-existent (Tonah, 2002). During the

¹ The Fulani are referred to variously as Fulbe, Peul, Fellah or Fula in the literatures. They call themselves Fulbe. In this paper the Hausa term Fulani is used as it is a more widely used term in Nigeria.

twentieth century, Fulani herders in Nigeria began to migrate through and settle in whole zones that were previously inaccessible to pastoralists. Ecological change and population increase has reduced the tsetse challenge for the non-trypanotolerant cattle owned by Fulani. This has removed the major barrier that stopped their southern expansion in previous era (Blench, 2003). The conventional stereotypes of the Fulani as living in Northern Nigeria are becoming less and less true, year after year. Now it is not surprising to find Fulani pastoralists settling even in the coastal states in southern Nigeria.

Fulani are highly differentiated, not only according to clans but also by their economic pursuits and way of life. Fulani can be divided into two main types. The first type is called “*Fulbe siire*” in the Fulani language *Fulfulde*, meaning “town Fulani”. They are Fulani urban dwellers who may or may not own cattle. They are mostly engaged in commerce, administration and education. The Fulani aristocrats who are the ruling class living in town belong to this type. Most of them have long abandoned the traditional lifestyle of Fulani, and they do not speak the Fulani language *Fulfulde*. The second type is the “pastoral Fulani”, which in *Fulfulde* are called “*Fulbe na’i*” – “cow Fulani”, or “*Fulbe ladde*” – “bush Fulani”. The one important distinguishing feature differentiating the “pastoral Fulani” from the “town Fulani” is their close relationship with their cattle. This is the second group, the pastoral Fulani who reside in the bush and farmlands of the rural area that is the concern of this paper. Research on the pastoral Fulani in the Niger State is very limited. The ecological anthropological study conducted by Shikano (2002) in the mid-90s is the only account. There is no affinity between the pastoral Fulani and the town Fulani in the research area. Their clan organizations do not cross and they do not intermarriage. It has to be emphasized that pastoral Fulani is not a homogenous group. There are “*Fulbe wuro*”, the semi-settled or settled transhumant² Fulani having permanent homestead; and “*Fulbe bororo*”³, the highly nomadic Fulani who still maintain a closed system. *Fulbe bororo*, who are the true nomads, constitute only a small fraction of the total Fulani population in West Africa. The pastoral Fulani studied in this paper can be considered as “*Fulbe bororo*”.

² Transhumance is the seasonal movement of people with their livestock between fixed wet season and dry season pastures. In case of pastoral Fulani in West Africa the wet season pasture is often their home pasture.

³ The term *Bororo* is a Hausa word derived from *Bororo’em*, a Fulani name for a “special” class of pastoral Fulani which is highly nomadic, conservative and the lastly enlightened by the Islamic religion. Despite its widespread use, it has pejorative overtones and is not used by the people themselves.

6.3. Corralling contract

6.3.1. Ecological benefits brought by corralling contract

Corralling contract, or manure contract, is an indigenous fertilization system commonly practiced in the semi-arid area of West Africa (Asanuma, 2004; Neef, 2001). It is also known as “parcage system” in the French literatures and locally as “*hoggo* system”. *Hoggo* is the cattle enclosure where cattle herds are kept overnight. When individual or group of farmer and herder enter into the contractual agreement, the herder has to corral his cattle overnight on the farmer’s field for a specific period of time at the farmer’s request. In return the farmer pays the herder in cash or in kind and allows livestock to graze on the crop residues on his fields.

Land scarcity and degradation from insufficient nutrient cycling increase the demand for manure in sub-Saharan Africa. In Nigeria, the lack of accessibility to good quality and affordable chemical fertilizer and the unavailability of chemical fertilizer in time of need make farmers rely on cattle manure. Demand for manure increased especially after the gradual reduction of the chemical fertilizer subsidy since the mid-1980s and the liberalization of the fertilizer sector in 1997 (Nagy and Edun, 2002; Shimada, 1999). Chemical fertilizer use declined sharply from a peak of 461,000 nutrient tones in 1994 to 173,000 nutrient tones in 2000. To ensure the availability of fertilizer for farmers, the federal and the state governments still procure and subsidize chemical fertilizer in an ad hoc manner. However the problem of lack of access to subsidized fertilizer for farmers still persisted. A substantial amount of subsidized fertilizers are reported to be sold on the black market due to manipulation of corrupted politicians and government officials (Nagy and Edun, 2002; USAID, 2007).

Farmers have to rely on cattle manure to retrieve the productivity of their lands when fallow system for long period is difficult. The benefits of the use of manure in crop production are the improvement in soil physical properties and the provision of N.P.K. and other mineral nutrients. The application of livestock manure increases soil organic matter content, which leads to improved water infiltration and water holding capacity as well as increased cation exchange capacity. Farmer access to manure

requires either a decision to invest in animals or to enter into a corralling contract with someone who keeps livestock, usually the professional herders. The latter is more commonly in use in rural Nigeria not only because many farmers cannot afford to own livestock, but also because the corralling contract can bring a better efficiency in fertilizing a larger area of farmland with lower cost. In Niger (a West African country), evidence suggested that the fields manured through corralling contract received five to thirteen times more manure than average land (Hiernaux et al., 1997).

Many researches have proven the effectiveness of corralling livestock on cropland for improving soil fertility (Schlecht et al, 2004; Sangarè et al, 2002; Achard & Banoin, 2003). It is more effective in maximizing nutrient cycling of soil comparing with merely applying manure transferred from other places. Based on the report of TropSoils (1991), the ecological benefits from manure applied by corralling animals can last for ten years, which is much longer than that of transported manure which can last for only three years. The corresponding crop yields are also significantly higher. The difference is proven to be brought by cattle urine, which is difficult to be transported (Powell & Williams, 1993). Urine and manure together can effectively raise the PH level of soil and accelerate the decomposition of organic matter and termite mounds⁴ (Brouwer and Powell, 1995; 1998). Many farmers regard the corralling contract with herders a better mean to fertilize their fields than the application of either chemical or organic fertilizer by themselves.

6.3.2. Social impacts of corralling contracts

Corralling contract can be regarded as an exchange of services between herders and farmers: the service to fertilize croplands in exchange for the right to settle on fallow lands and to graze on crop residuals. Exchange of farm products and milk products between farmers and herders is also very common when herders are settling on the land of farmers (Grayzel, 1990; Wilson, 1984; Ogawa, 1998). Corralling contract is an important traditional arrangement that facilitate the complimentary relationship of the two groups. Nevertheless, changes caused by economic, environmental and political

⁴ Termites are recognized as “ecosystem engineers” by scholars because they promote soil transformations by disturbance processes. They collect particles from different soil depths and deposit them in the mounds which can be regarded as soil nutrient reservoirs. The decomposition of termite mounds releases the nutrient back to soil.

factors are making the contract less accessible to some farmers. The corralling contract is no longer just a simple economical agreement. Some scholars point out that it has turned into tools and symbols in broader struggles among communities over access to land for field and pasture (Heasley and Delehanty, 1996).

The research of Neef (1997) in southwest Niger found out that richer and more influential farmers obtained greater access to manure through corralling contract than poor farmers. In many parts of sub-Saharan Africa, herders were reported to be claiming more and more payment in cash or in kind than in former years. Evidence in southwest Niger suggested that tenants of short-term use rights used animal manure to a significantly lesser extent compared with landowners and tenants with medium-term use rights. Some of them feared that the landowner would reclaim the land back if he noticed that soil fertility was improved (Neef, 2001).

On the other hand, higher demand for manure enhanced the bargaining power of herders and enabled them to get a better position in the politics of manure. Many pastoralists used the contract as a trump in case of land conflicts (Loofboro, 1993) and as a strategy to obtain and secure permanent land use rights from private landowners or local leaders (Neef, 1997). Heasley and Delehanty (1996) illustrated the case study of four villages in southwestern Niger to demonstrate how the access to manure has become a signal point of entry into the political economy of agropastoral production emerging in the Sahel. In two of the villages studied, the pastoral Fulani could threaten to withhold or even boycott corralling contract to enforce claims to ownership of lands and secure free passage to grazing resources. However in another two villages studied, the Fulani herders were in weaker positions that manure could only ensure their temporary access to lands. Contrary to conventional depiction, access to manure was not guaranteed for wealthier farmers who have livestock ownership. The control of manure was rather likely to reside with a professional herder entrusted with the farmer's stock. These case studies showed that beneficiaries of manure contracts were not necessarily determined by wealth ranks, but increasingly by the vagaries of the shifting local politics of ecology control. Manure has become a potent political tool because the rules and procedures governing its accessibility were undergoing transition. Such transition was due to the changing production systems from strictly crop or livestock based into more agropastoral based.

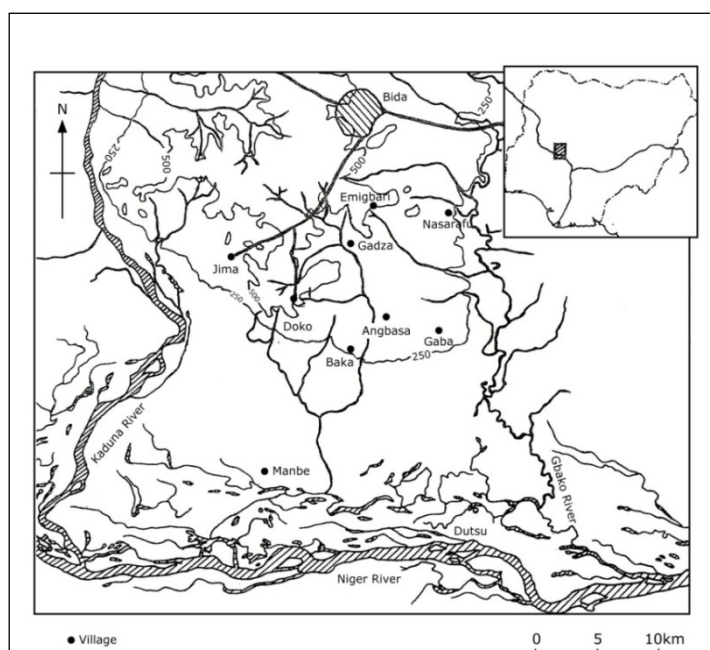
6.4. Methodology

Pastoral Fulani groups and Nupe agricultural villages in the Cis-Kaduna region of the Niger State were studied. Bida is the largest town in the region and it is the political and cultural center of the current Bida Emirate where the highest level traditional chiefs, such as the Bida *Emir* and the Fulani *Dikko* are stationed. The research was conducted in the rural communities south to the Bida town. The area is surrounded by several river basins, the Kaunda River to the left, the Emikpata River in the middle, the Gbako River to the east and the Niger River to the south (figure 6-1). The area can be divided into uplands and lowlands roughly by the counter line of 250 feet, which is approximately 75-80 meters. This peculiar topography and the availability of water in surrounding river basins throughout the dry season allow the pastoral Fulani not to migrate in long distance between seasons. The activities of pastoral Fulani concentrate on the uplands during the wet season from June to November. In the dry season from December to May, the river valleys turn into important grazing resource for the pastoral Fulani and other nomadic Fulani which migrate through or settle in from the north. In 2006, a bag of 50kg fertilizer (NPK:15-15-15) was estimated at NGN 3, 000 (USAID, 2007), which was expensive for ordinary farmers and credit for purchase was unavailable. Like many parts of rural Nigeria, many young farmers have left their villages for education or better income in towns and cities. Their farms are usually managed by other household members and they just come back to work on their farms during long vacation. Since some years ago, motorbike-taxi driver in Bida town has become a very popular occupation for young Nupe farmers. Older Nupe farmers complained to the author that there was labour shortage especially for the community farms and younger farmers did not manage their farms as good as before. This situation also caused dissatisfaction of the pastoral Fulani as it was sometimes difficult to distinct farm from fallow land and farm encroachment might happen unintentionally.

The research was based on fieldworks carried out from September to October in 2005 and September in 2006. Similar to many researches on pastoralists, much time was needed to build up relationship with the pastoral Fulani. The author first contacted the Fulani herdsmen in the field site in September 2004. Some preliminary researches were done from December 2004 to January 2005 with two major Fulani groups in the area. In

order to investigate the migration pattern and the practice of corralling contact of more pastoral Fulani groups, permission was obtained from *Dikko Bida* before more extensive research could be carried out. Statistical procedure to select samples for interview was impossible because both the Nupe and the Fulani were rarely studied in recent years and updated census data did not exist. The author was introduced to the Nupe and Fulani informants through the Fulani officer of *Dikko Bida* council and the extension staff of Bida Agriculture Development Project. The main fieldwork was conducted between September and October 2005. Interviews were carried out mostly in the Fulani camp with the group heads. However as many of the heads gathered in market or Nupe village during day time, some of the interviews were carried out in market or Nupe village. Supplementary interviews were also conducted with other male household heads (*baade head*). Information of seventeen pastoral Fulani groups was gathered. For farmers' perspectives, farmers from sixteen Nupe villages who have hosted Fulani groups were interviewed. For additional information about the relationship between pastoral Fulani and Nupe, dispute settlement, grazing reserve and traditional administration, interviews were conducted with the Nupe Village Area heads, the *Bida Dikko*, the assistant of *Bida Emir*, the officer of the Bida Agriculture Development Project and the officer of the Niger State Ministry of Agriculture. Fulani camp sites and farmers' manured fields were surveyed and maps were drawn out of the survey data.

Figure 6-1. Environment of the research site (counter lines shown in feet)



6.5. Pastoral Fulani in the research site

The exact date when the pastoral Fulani first reached the land of the Nupe was unknown. It was estimated that nomadic pastoralists made their appearances for dry season pastures at an early stage, but long-term settlement probably did not take place until much later (Johnston, 1967:135). At about seventeenth century, Fulani mallams and Fulani aristocrats began to reach to the land of the Nupe (Ismaila, 2002). Nadel (1942) estimated that by early nineteenth century, the total number of Fulani, including the leading Fulani preachers and warriors, plus their cattle Fulani followers and Hausa mercenary soldiers, was not more than 1,000 or 1,500. The expansion of the Sokoto Caliphate in the nineteenth century provided the political protection that enabled the migration drift of pastoral Fulani. Following the establishment of the Fulani Empire in the nineteenth century, pastoral Fulani began to settle in the Nupe region for long-term stay. The first group of pastoral Fulani that settled in the Bida region was the *Dindima'em, Juuliranko'em* group led by *Abdul-Maliki*. They chased their origin to the Massina Empire which was an early nineteenth century Fulani *jihād* state centered in the Inner Niger Delta area of what is now the Mopti and Ségou Regions of Mali. During the colonial era, Fulani from the *Dindima'em, Juuliranko'em* group was selected by the *Emir* as *Dikko* - the chief of all pastoral Fulani in the emirate for the convenience of cattle tax collection. Apart from collecting cattle tax during the rainy season, other major functions of *Dikko* are to settle disputes, to arbitrate divorce, to attend the transferal of cattle ownership and to represent the interests of his people in the national association of Fulani, Miyetti Allah Cattle Breeders Association (MACBAN). When the *Dindima'em, Juuliranko'em* group first settled in the Nupeland, they were just four in persons. After the migration of these four pioneers, pastoral Fulani from Massina and other regions in the northern Nigeria gradually infiltrated into the Bida Emirate. *Dikko Bida* estimated that by 2005 there were about 1,450 Fulani groups under his domain in the whole Bida Emirate, within which about 350 groups resided in the Cis-Kaduna region. The main pastoral Fulani lineage groups that were presently settling in the region were the *Dindima'em*, the *Boodi* and the *Fittoji*. Pastoral Fulani in the region sustain their subsistence by raising cattle, sheep and chicken. Majority of them are pure pastoralist that they do not farm at all, but in recent years there is a growing trend for Fulani to borrow farm plots from the Nupe for very small-scale upland farming.

6.6. Pastoral Fulani group and camp

Table 6-1. Information of the pastoral Fulani groups studied.

Group	Lineage	Year of residing in Bida Emirate	Place of origin	No. of household	No. of people	No. of cattle	No. of sheep
AA	D.J.	~200	Massina	6	51	353	162
AJ	D.J.	~200	Massina	2	21	75	45
AK	D.J.	~200	Massina	1	11	45	30
DB	D.J.	~200	Massina	2	50	600	30
GA	D.B.	46	Sokoto	1	6	35	0
KA	D.B.	18	Nararuka	1	14	25	15
MK	D.B.	60	Sokoto	1	10	60	30
AB	D.B.	75	Kano	6	45	151	15
DU	D.B.	35	Sokoto	3	21	90	15
AE	D.B.	30	Massina	5	34	285	-
SA	H.A.	27	Sokoto	1	12	25	-
WA	D.J.	20	Minna	3	37	375	81
AI	B.O.	51	Sokoto	1	9	32	15
DA	B.O.	51	Sokoto	7	45	145	35
MN	B.O.	51	Sokoto	1	35	500	0
RU	B.O.	51	Sokoto	1	13	900	40
IS	D.S.	50	Lapai	9	112	427	87
<i>Average</i>				<i>3.0</i>	<i>30.9</i>	<i>242.5</i>	<i>40</i>

Source: Fieldwork (September –October 2005).

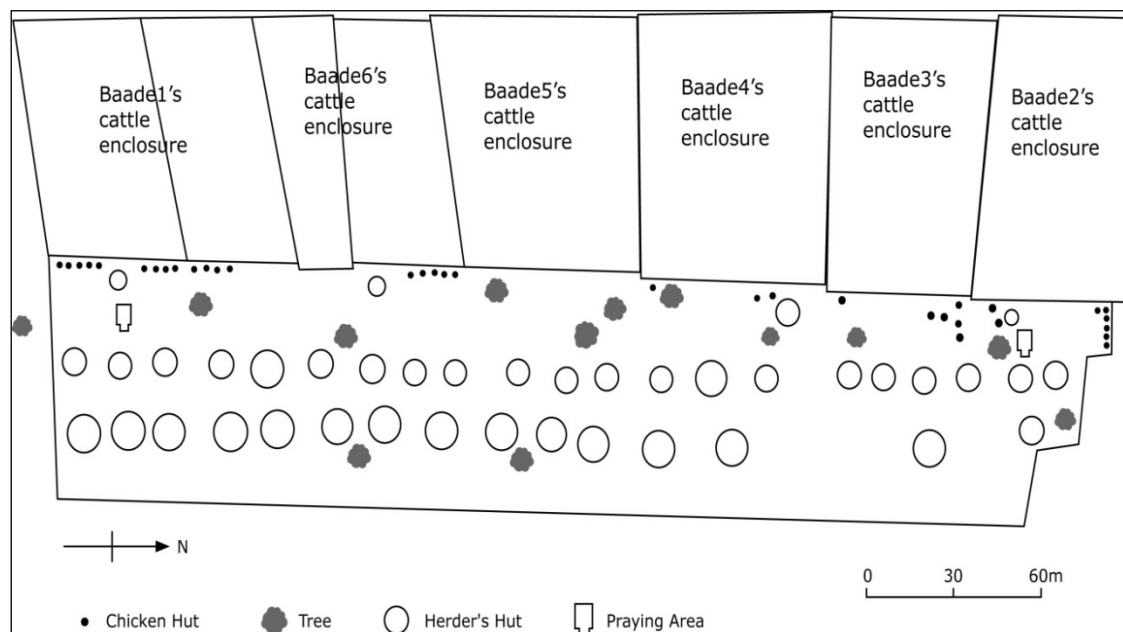
Note for lineage: D.J.: Dindima'em, Juuliranko'em; D.B.: Dindima'em, Baasamanko'em; H.A.: Hausaji; B.O.: Boodi; D.S.: Dindima'em, Sattanko'em.

Pastoral Fulani in the region form small group compose of several families and live in cooperation with one another. They call their camp as *wuro*. A pastoral Fulani camp in the Cis-Kaduna region normally composes of several *baade*, which refers to a household headed by a married man with an independent herd of cattle. The most senior male member of the whole group usually becomes the group head, *moudo wuro*. The seventeen Fulani groups studied varied greatly in size as indicated in table 6-1. The average number of people was 30 per group, but the smallest group just consisted of 6 people while the largest one had 112 members. The average herd size was 252.5 per group, but the smallest group just owned 25 cattle while the biggest herd size of a group was 900 heads. The spatial structure of the homestead of a pastoral Fulani group in the

region is shown in figure 6-2. In general the pastoral Fulani camp in the region is long and narrow rectangular in shape extending from south to north. This rectangular shape and orderly arrangement is related to the practice of corralling contract that Nupe farmers turn these camp sites into farms after the Fulani have moved.

The pastoral Fulani camp consists of the residential section for Fulani people and the enclosure for their cattle herd which is called *hoggo*. In the rainy season, *hoggo* is enclosed with logs, but in the dry season log is not necessary because there is no crops around the camp. After the Fulani move out, the manure and soil inside the *hoggo* are spread over the whole camp site, very often even beyond the camp site. The camp site of an average Fulani camp in the region was about 8,548m²⁵. However as mentioned there was great variation among groups that the smallest camp site was just 2557m² while the largest one was almost 2 hectares in size.

Figure 6-2. The spatial layout of a pastoral Fulani camp



Source: Fieldwork. Camp site of the AA group in September 2005.

⁵ The camp sites of ten Fulani groups were surveyed in 2005 and the camp site of two major groups were surveyed again in 2006. From the twelve surveyed camp site records and the cattle data of the corresponding groups, the average camp site area per cattle of 35.25m² was obtained. As the average head of cattle for the 17 groups was 242.5 heads, the average size of camp site was calculated as 35.25m² x 242.5, which was 8,548m².



Photo 6-1. View of *hoggo* of Fulani camp in rainy season (DB group, October 2005)



Photo 6-2. View of a pastoral Fulani camp in the dry season (AA group, January 2005)

6.7. Corralling contract between Nupe and pastoral Fulani

The brief record of the practice of corralling contract in the study area could be found in the ethnographies of Nadel (1942:206) and Shikano (2002:353). Nadel described it as “*an interesting cooperation*” between villagers or landlord and nomadic Fulani herdsmen. Presents of food, cash and assistance in the building of the camp were given to induce the nomadic group. Shikano even observed that invitation had to be done more than one year ahead. For the benefit of such cooperation, Nadel stated that “*I have myself seen the enormous difference in the growth of the crops between a plot on which the Fulani had made their camp and other, ordinary farm-plots*”. He also mentioned that it was an accepted arrangement among the Bida landlords to place one’s fallow land at the disposal of the Fulani herdsmen before leasing it to a new tenant. The landlord could then obtain a much higher price for his land. The record of Nadel and Shikano were very brief and no further information was provided, but they proved that the corralling contract has been an arrangement being practiced at least for half a century in the study area.

6.7.1. Invitation to pastoral Fulani

Pastoral Fulani in the research site migrate twice a year; in June they migrate to the drier uplands to avoid tsetse fly and to get closer to the markets in Bida town; in late October they move to the *fadama* lowlands to secure water and pasture for their cattle in the dry season. As mentioned before, the topography of the region benefits the Fulani that seasonal migration distance is relatively short as compared with pastoralists in other regions. Interviewed pastoral Fulani groups settled on uplands around the Bida town in the rainy season; and in the dry season they migrated about 10-20km west to the river basin of the Gbako River, or about 20-30km southwest to the large floodplain of the Niger River. This was similar to the case of the Fulani in Jos Plateau whose seasonal migration distance was 20km (Awogbade, 1983). On the contrary, Hopen (1958) estimated that the average one way distance for transhumance was about 100km (ranging from 10km to 303km) in Sokoto. In southwestern Nigeria the dry season grazing radii ranged from 32km to 125km (Fabusoro, 2006). Comparing to these figures,

pastoral Fulani in the research site were carrying out their pastoral activities in a rather limited district. It allowed Nupe farmers to easily stay in contact with the pastoral Fulani even after they migrated away. They could observe the behavior of the Fulani, find those they trusted, and to frequently visit the groups that they are targeting to host.

The battle for inviting popular Fulani groups began few months to a year before the seasonal migration. Some groups received invitation from several villages in every season. The number of invitation a group received depends on its popularity stakes and strategy to be linked with various villages or to stay free. Likewise, Nupe farmers also had their options to invite a few groups simultaneously or to tightly target a particular group. Among the groups studied, five of them got invitations from three or more villages for each season, but more of them, that were nine, got invitation from just one village for each season. Nupe farmers needed to formally declare the wish to host the group at least few months before the season changed by visiting the group with kola nut and gifts. When the village was already hosting a Fulani group, farmers needed to express welcome for the group to come again next year before they moved away. Fulani group head was not the only person who could accept invitation; other male household heads also could be the contact point of villagers. It was a norm among the pastoral Fulani in the region that before the decision was made; no gift other than kola nut should be taken from any village so to avoid conflict. Village representatives normally visited the targeted group at least three to four times before the decision was made. They gathered information about their competitors and the amount of gifts they proposed to offer. Some villages offered more and more gifts every time they visited the Fulani camp in order to out beat other villages.

6.7.2. Cost to host a group of pastoral Fulani

There was great variation in the cost to host a pastoral Fulani group. The amount of gifts farmers needed to offer mainly depended on the expectation and the size of the group. Generally speaking, farmers had to pay cash and kola nut once their invitation was honored. After the Fulani has settled in the village, farmers then needed to offer sorghum, rice, salt and so on. Moreover, in recent years popular groups additionally

requested for truck money to move their belongings. Farmers needed to pay 50% or even all of the transportation cost which could sometimes reach a few thousands Nigerian Naira. Nevertheless, not all the pastoral Fulani used the corralling contract to take financial benefit from farmers. It depended on their bargaining power and the strategy adopted. As shown in table 6-2, nine out of the studied groups received nothing from farmers in the dry season of 2005. Most of them settled on uncultivated area of floodplains for the dry season. Based on the information obtained from the Fulani group studied, the estimated average amount of gifts that a Fulani group received for the corralling contract for the dry season of 2005 was NGN 2,803 (about US\$21), and for the rainy season of 2005 was NGN 4,295 (about US\$33)⁶. This amount probably underestimated the actual amount because Fulani tended to tell a lower amount during interview. While it could cost some villages almost nothing to host a smaller group, it could also cost some villages over NGN 10,000 to host a big or popular group. In the rainy season of 2005, the biggest group in the area received gifts equivalent to NGN 23,156 (about US\$177) for the corralling contract.

Table 6-2. Estimated amount of gifts received by the Fulani groups studied (n=17).

Amount in Nigerian Naira	Number of groups (Percentage shown in parenthesis)	
	2005 Dry season	2005 Rainy season
0	9 (53%)	3 (18%)
1-1,000	1 (6%)	4 (24%)
1,001-5,000	4 (24%)	5 (29%)
5,001-10,000	1 (6%)	3 (18%)
>10,000	2 (12%)	2 (12%)

Source: Fieldwork.

Apart from gifts, there were many other things that the hosts needed to provide to their Fulani guests, such as labour. Younger farmers normally were obligated to clear the land, cut tree, set up hoggo, and to assist in building shelters after the Fulani has

⁶ The values of rice and sorghum were calculated based on the official record of the average retail market price of the Bida market of the Niger State Agricultural Development Project. The values of kola nut and salt were given by Fulani informants while the values of yam and fresh maize were given by farmer informants. Regarding the average exchange rate of US dollar to Nigerian Naira, during 1 December 2004 to 31 May 2005 it was 1:132.35 and during 1 June 2005 to 30 November 2005 it was 1:130.58.

selected their camp site. Female villagers provided labour and assistance in cooking when their Fulani guest held ceremony. The hosts had the obligation to allow their guests to access to resources like water, firewood, building materials for shelter and most importantly, the grazing resources like crop residuals on harvested fields and pasture grasses on pre-cultivated fields and fallow lands. Thatching grass as the main building material for shelter was specially requested in the dry season. According to informants, it was a tedious task for farmers to gather all the materials necessary for making all the huts of a whole Fulani camp. Not only labour was costly but also the materials themselves were expensive if these were purchased in market. Pastoral Fulani therefore expected a lower amount of cash gift and no salt was requested for dry season.

6.7.3. Village selection by pastoral Fulani

Decisions for timing and arrangement of seasonal migration are the most important production decisions in a year for pastoral Fulani which must be made collectively by all the household heads of the group. Pastoral Fulani regarded setting up camp site in a farming village as “sitting for” a village. The meeting for village selection was called “*kauten hore bolwen hala hodde*”, meaning gathering together to discuss about sitting. In the meeting, all the household heads could express their opinions and preferences. Decision must be made with consensus among all the household heads and the group head was responsible for the final approval. When deciding which village to sit for, the record that cattle reproduction was good in the village candidate was one of the most important points for consideration. Pastoral Fulani was deeply superstitious in cattle reproduction. Villagers could be quite sure that the Fulani would come again when they believed their village as a place that brought luck to the herds. On the contrary, when cattle reproduction was bad, no matter how much the villagers were willing to pay the Fulani would avoid going there again at least for a few years. The second most important criterion was the availability of water and pasture especially during the dry season. The location of village was the third factor for consideration. Pastoral Fulani avoided villages that located close to rivers, streams and forests in the rainy season because their zebu cattle were prone to sickness in humid environment. In the dry season they preferred villages that located closer to grazing resources on floodplains. In

case when the conditions among village candidate were similar, a good personal relationship between herders and villagers became an important criterion. Pastoral Fulani avoided villages that used to trouble them with farm encroachment and showed hatred when they settled before. They also appreciated the good personal quality of farmers. For instance some of them were more willing to sit for farmers who were hard working and had a record of better utilization of the manured site.

No Fulani group admitted that the amount of payment affected their decision making. However, some of the informants did sit for villages when the payments offered were higher. There was also a case that herders did not sit for a village again because the farmers did not offer any gift other than kola nut. For the popular groups, to maintain fairness among multiple villages and different households within a big village was important. They rotated among villages as well as different households of a village to avoid conflict among Nupe. All the groups studied had the experience that they could not sit for particular villages even when they wanted to because almost all the lands were under cultivation. Pastoral Fulani avoided settling in such kind of villages because it could easily result in unintended farm encroachment which harmed the relationship with villagers. In case the group really wanted to sit for a particular village for some reasons while the location of the village was unfavorable or there was lack of enough vacant land within the village, the Fulani might request farmers to lease a piece of land in another village to accommodate the Fulani camp. There were few cases like this recorded but in 2006 a village which used to lease land to other villages to host Fulani began to refuse the request of farmers. Therefore the group concerned sat for another village which was not their first choice. Female members of the group had no influence in village selection although the camp location greatly affected their well-being. They could not complain even if the village was far from market or they needed to trek longer for water and firewood. After the group has decided which village to sit for, a day was selected for the village representatives to present kola nut and cash to the Fulani group head. Once this ritual was done, the corralling contract was formally set up. A few household heads of the group would visit the village and chose the camp site from a few pieces of land selected by villagers before the seasonal migration.

6.8. Diverse strategies of pastoral Fulani

All the seventeen pastoral Fulani groups studied had different migration patterns and different degree of closeness with Nupe villages. They also arranged the corralling contract in slightly different ways in response to their different conditions and needs. The adoption of the corralling contract for pastoral Fulani was not just a simple economic arrangement, but the most powerful tool for them to ensure access to resources and to maintain a harmonious relationship with the Nupe. They had different strategies with respect to the use of the corralling contract in accordance to their peculiar circumstances. Although generalization was difficult, their strategies could be roughly grouped into four different types. The four strategies were namely; the utilization of the corralling contract as a local political tool, the utilization of the corralling contract as an economic tool, the passive adoption of corralling contract and the adoption of corralling contract with an exclusive village. Each of the strategies is illustrated below with a representative case study.

6.8.1. Strategy one: Corraling contact as a local political tool

As the chief of all pastoral Fulani in Bida Emirate, the group of *Dikko Bida* needed to act as a role model regarding the practice to sit for Nupe villages. *Dikko Bida*, *Alhaji Adamu Dikko*, owned one of the largest herds in the area. He was a highly respected elder who persisted in maintaining the traditional nomadic lifestyle of pastoral Fulani. Although he earned a monthly salary as a civil servant in one of the Local Governments of the Niger State and owned a house in Bida town as office, this ninety years old chief still lived in his simple shelter with his family members in the camp. The group of *Dikko Bida* began to sit for villages north to Bida town for the rainy season about sixteen years ago. He moved northward as the *Dindima'em* group expanded so he moved slightly northward to explore new grazing resources. As the chief of pastoral Fulani, his group was soon welcomed by villages. For rainy season, the group rotated among four Nupe villages, namely Kologa, Bube, Akote and Emigbari. Meanwhile for the dry season, the group has been sitting for just one village – the Eyagi village, for all the last 80 years. For *Dikko Bida*, corralling contact was not a tool to get economic

benefit, but a local political tool to symbolize the harmonious social relationship between pastoral Fulani and Nupe farmers, as well as to maintain the linkage with the *Emir*. Eyagi village was the birthplace of the mother of the late Bida *Emir*. In addition, the village head of Eyagi has always been the Village Area head, *Etsu Yenkpa*, who was responsible for dispute settlement at community level. Sitting for Eyagi could be regarded as an annual virtual to acknowledge the allegiance of pastoral Fulani to the Bida Emirate. Regarding the four villages for rainy season stay, unlike other popular groups, *Dikko Bida's* group did not take any cash gift from villagers; rather cash was always given to village heads whenever they came to greet *Dikko*. The group only received kola nut as the ceremonial gift. However, in recent years villagers volunteered to offer money for the group to hire truck to move their belongings. Exchange of gift between herders and villagers was more often comparing with other groups studied. Crops like yam, sweet potato, maize, rice and sorghum were always given to the group. In return, village heads received cheese, milk, chicken and money. The exchange was unbalanced; *Dikko* always offered more gifts to show generosity and to gain prestige. Corraling contract with villages did not bring economic benefits to *Dikko Bida's* group, but it had an important local political meaning for the maintenance of the cordial social relationship between Nupe and pastoral Fulani.

6.8.2. Strategy two: Corraling contract as an economic tool

Some informants from more popular groups which always received many invitations described the corraling contract as a kind of “exchange”. They regarded it as a kind of service provided for farmers to achieve better yield, and in return they could take some advantage from it. As mentioned before, these popular groups received higher payments and more gifts from farmers for the contract. They sat for different villages in each season. However, they were not absolutely utilitarian in their consideration for village selection. The monetary benefit they received was just one of the conditions that they expected farmers to fulfill. The long term harmonious relationship with various villages was a more important consideration for them. The groups with higher popularity usually had higher social status, such as belonging to the ruling house or led by respectful Islamic *mallam*. Besides, their groups were usually bigger in size, and it

was highly welcomed by many villages because they could get more benefit of manure at once.

Table 6-3. Camp sites and amount of gift received of Aliyu Abdullahi group.⁷

Year	Dry season (Dec – May)		Rainy season (Jun – Nov)	
	Village	Amt. of gift (NGN)	Village	Amt. of gift (NGN)
2006	Nasarafu	3, 200	Alukusu Tako	7, 350
2005	Tswatagi	5, 267	Emigbari	7, 650
2004	Nasarafu	5, 367	Emigbari	8, 528
2003	Shabamaliki & Nasarafu	5, 600	Lemuta	7, 578
2002	Nasarafu	4, 267	Patishin	16, 628
2001	Nasarafu	4, 667	Ekota	10,122
2000	Shabamaliki	7, 480	Emigbari	7, 428
1999	Nasarafu	4, 500	Lemuta	6, 778
1998	Tswatagi	2, 867	Lemuta	6, 378
1997	Nasarafu	3, 867	Emigbari	6, 578
1996	Tswatagitako	3, 933	Emigbari	6, 378

Source: Fieldwork.

The group of *Aliyu Abdullahi* was one of the most popular groups in the area. The group belonged to the same lineage group of *Dikko Bida*. The group had 51 people and 353 heads of cattle. It was the second largest group in the area in terms of population. The group sat for various villages south to Bida town in the rainy season. In the dry season, the group migrated to the basin of Gbako River and rotated among a few villages. Table 6-3 lists the locations of the camp site and the amount of gift the group received from 1996 to 2006.

The amount of gift received in certain years deserves some elucidations. In the dry season of 2006, only 150 pieces of kola nut, 40 kg of sorghum and NGN1,000 were

⁷ For a more accurate estimation, track hiring cost was not included in the calculation of the gift value. However, it was one of the biggest burdens for farmers when hosting a popular group. The values of agricultural products calculated based on the retail price of the Bida Market in 2005 rainy and dry season. The official record was obtained from the Niger State Agricultural Development Project. For time-series comparison 2005 was used as the base year for value calculation.

requested by the group. It was because of the lack of rainfall in 2005 that herders were willing to accept a lower payment from farmers. On the other hand, in the rainy season of 2002, a record-breaking high amount of gift and payment were received from a farmer from Patishin village. Moreover, to avoid the cattle disease that prevailed in the area during that time, the farmer accepted the request to rent a piece of land in Ndaceko village in order to accommodate the Fulani camp. Although the group did benefit a lot financially that year, they did not continue the contract with that farmer because they did not want to provoke other villages. As listed in table 6-3, the group did not sit for a village continuously for over two years. The informant of the group pointed out that, *“It is good to maintain relationship with various villages because it gives you more freedom and bargaining power.”* When deciding which village to select, informant said, *“You cannot follow money, you need to follow cattle.”* Financial benefit was just one of their considerations, what really mattered to them were the welfare of their cattle and the good relationship with villages which made grazing on farmers’ land an easier task. To avoid conflict among villages, the group needed to rotate. In the dry season of 2003, there was a special case that farmers of two villages needed to share the site. The group originally promised to sit for a Nasarafu villager but they wrongly chose the land belonged to a Shabamaliki farmer. None of them were willing to give up so finally herders requested them to share the site equally. For large village like Nasarafu and Shabamaliki, the group even needed to rotate among different households in order to avoid conflict within village. To run the corralling contract was similar to running a “business” to those popular groups. They cared about financial benefit, but they also needed to maintain “customer relations” with various “clients” and to prevent them from “fighting among themselves”.

6.8.3. Strategy three: Passive corralling contract

Some pastoral Fulani groups were not so eager to engage in corralling contract with villages. They valued freedom of mobility higher than the close relationship with certain Nupe communities. *Adamu Iya* belonged to the *Boodie* lineage group which began to settle in the Bida area in the 1930s from the Sokoto region. His group was small; it had just 9 people and 32 heads of cattle. Unlike the *Dindima’em* group, most of

the *Boodie* groups studied did not formally engage in corraling contract with Nupe villages. Even though they did not get so many benefits from the corraling contract comparing with the two types of group mentioned above, they were less nomadic in the sense that they did not need to move to different villages every year. They usually settled on a particular village continuously for several years during the same season. For example, until 2005, *Adamu Iya* has been setting up his camp in Fakunba village during the rainy season for five consecutive years, and in Gaba village for the dry season for ten consecutive years. However, he never set up his camp on the same spot for two consecutive years. When he sat for a small village, he could choose a plot of fallow land as he wished and let farmers later share the land among themselves. When the village he settles was large, he needed to follow the advice of the village head and rotated among the lands of different households. *Adamu Iya* did not actively engage in corraling contract with villages although a few villages always showed welcome to host his group. He did not receive payment from villagers, but village head of each village usually gave him 100 pieces of kola nut and some grains for gratitude and to express welcome for his coming back. Nevertheless, *Adamu Iya* usually did not give promise that he must come again. He preferred to keep his flexibility. If he wanted to come again in the following year, he just walked-in and got permission to settle from village head. Villagers still needed to provide some basic services, such as clearing the land for his camp and assisting in building camp. There was usually no specific reason when *Adamu Iya* decided not to return to a village. He preferred to be flexible so that he could explore new environment for his cattle any time he wants. The precondition for him to stay in a village was that the villagers had shown welcome and had ever forgiven him for minor destruction caused by farm encroachment.

6.8.4. Strategy four: Fixed corraling contract

There were a few groups studied that did not carry out seasonal migration. They settled both in the rainy and dry seasons in a village for years. Their life-style could be regarded as semi-settled, but they did not own permanent shelters and needed to move their cattle enclosure frequently within the village following the request of their hosts. These groups were usually smaller and owned a smaller herd. The villages they stayed

were usually larger in scale, with large area of vacant land or fallow land. Besides, there must be water resource available even during the dry season. Groups preferred not to migrate but just sat for a particular village because it was “too much suffering” to move around villages. They did not get any payment for their cattle manure, but they did receive kola nut and grain sometimes from villagers for courtesy. The group of *Aliyu* moved into the Bida area from the Sokoto region about 45 years ago. They had 21 people and 90 heads of cattle in the group. *Aliyu* had never moved out of Gbanchitako village for over a decade. The stable relationship with the village enabled him to get a relatively large plot to do his own farming. He also got a plot in a nearby village. Although he got no payment from farmers, he got land to farm and the right to use the cattle manure exclusively for his own farms during the dry season. *Aliyu* moved his cattle enclosure following the wishes of farmers in the rainy season. In the dry season, he could let his cattle to stay on his two farms for two months respectively. *Aliyu* was not interested in getting financial benefits by corraling contract. Stability was more valued and by sitting for a village all year round for long term, he was able to sustain a semi-settled life.

6.9. Utilization of pastoral Fulani camp site

Cattle manures were accumulated inside the *hoggo* during the season. Calves, sheep and other animals were not corralled inside the *hoggo* and were left free in the camp at night. Every morning the Fulani women and children swept the residential section and dropped the animal faeces inside the *hoggo*. Pastoral Fulani did not use cattle manure as fuel or construction material. All the animal faeces were concentrated inside the *hoggo*. In the next rainy season after the group have moved away, Nupe farmers spread the faeces all over the previous camp site and the area was usually extended. They often transferred part of the manure to their other farms as well. The size of such manured field depended on the size of the camp. Based on the twenty-four surveyed manured fields (table 6-4), the average size of such manured field was 14,016m². These fields were extended on average by 199% beyond the original size of the Fulani camp site.

Table 6-4. Summary of the manured fields surveyed.

No. of field surveyed	Smallest field size	Largest field size	Average field size	Lowest portion to size of camp	Highest portion to size of camp	Average portion to size of camp
24	2,542m ²	38,312m ²	14,016m ²	81%	605%	199%

Source: Fieldwork.

The arrangement for the corralling contract of Nupe farmers could be categorized into two: hosting by collective effort of the whole village and hosting by single household of the village. The former was far more common in the study area, especially for smaller scale villages that hosted Fulani group during the wet season. The latter was only practiced in larger village or during the dry season when small group of pastoral Fulani, often just one *baade*, migrated into the region for relatively short period of stay. For the region was close to the great floodplain of the Niger River, many pastoral Fulani basing in the north passed through the research area during the dry season for reaching the floodplain for water and pasture. They moved in small groups and stayed on the lands of Nupe villages for short period like a few weeks.

For villages that hosted pastoral Fulani during the wet season, not only the very field that was utilized as camp site, but also the fields surrounding the camp site, that the farming activities for the year had to be suspended because of inevitable cattle destruction. If the benefits brought by the corralling contract were not shared among all the villagers whose farming activities have been affected, tension could easily be generated. For villages that hosted Fulani group during the dry season, there was no such trouble because no farming activity would be affected.

When arrangement was done by collective effort of the whole village, the land for past Fulani camp site would be divided into many small plots and distributed to village members according to the norms and rules of the village. For a group of about one hectare, it was normally divided into eight to nine plots. There was a case that a Fulani camp site of 1.5 hectare was turned into a field of about 2.6 hectares and was then divided into twenty-three small plots. Fourteen manured fields achieved through collective effort were surveyed and the average area of such divided small plot was just

about 1,447m². Dividing the field into so many long and narrow small plots might not comply with the principle of economics of scale, but for many Nupe farmers the notion of fairness in the community was highly important. That was the reason why larger group was more desirable by Nupe farmers. By hosting a bigger Fulani camp, they could ensure members of every household of the village could get a share of the manured land.

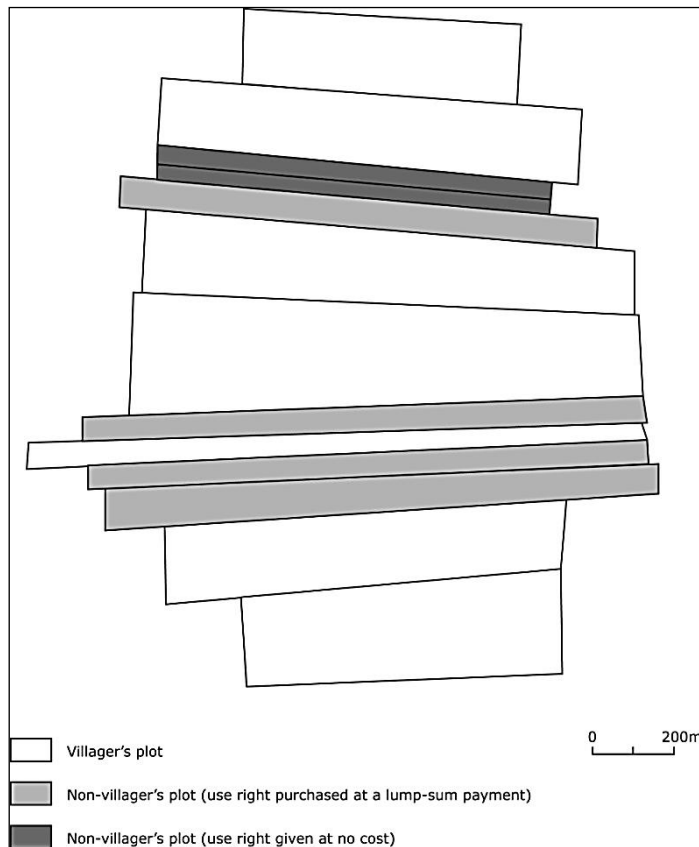
Village head often had the first priority to choose the plots he preferred and the remains were then distributed to other members usually according to seniority. According to farmers, the plots in the middle and of the two ends were most wanted, because farmers thought the plots in the middle had more faeces accumulated and the plots at the two ended could easily be extended into larger size. As the most senior member of the village and usually the secondary landlords, the village heads had the privilege to get a bigger portion. In the measurement it was found that the plots of village heads were 146% bigger than plots of ordinary villagers.

The cost incurred for the corralling contract was divided among members of the village. If the cost was not shared, it would be a very heavy burden for farmers as it could easily cost a few thousands Nigeria Naira to host a popular group. In most cases the cost was divided unequally. Senior and wealthier members, especially the village head, of the village usually contributed more money and grains. This justified their bigger shares of the manured land. Younger farmers could contribute less money, but they needed to provide physical labour in assisting the clearing of land and building of camp in order to entitle to the manured land.

Figure 6-3 shows a typical example of a measured manured field of a hosting village. It used to be the camp site of the group of Aliyu Abdullahi in Emigbari village for the rainy season of 2005. The Emigbari village had a population of fifty-six. Villagers were earnest about the corralling contract with pastoral Fulani for maintaining the fertility of their land. In 2006, there were totally nine fields made out of previous pastoral Fulani camp site in the whole village. Twenty-seven percent of their land was manured through the corralling contract with pastoral Fulani groups. The field in figure

6-3 was divided into thirteen long and narrow plots. All the six household heads of the village obtained their shares. The distribution was uneven: 25% and 29% of the field were taken by the village head and the deputy village head respectively while the remaining 47% were shared by the other four household heads.

Figure 6-3. Example of the layout of a manured field in Emigbari village.

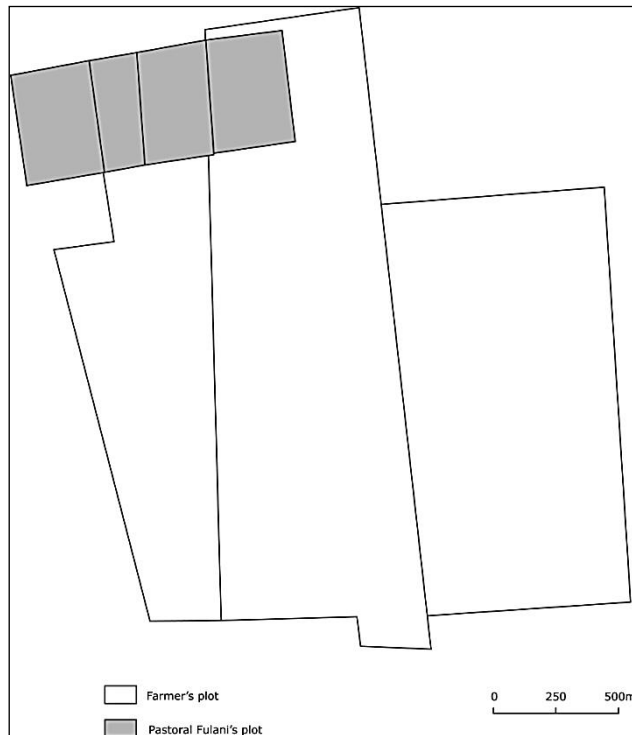


Source: Fieldwork, surveyed in September 2006.

It was noteworthy that six plots out of the thirteen plots, about one-fifth of the whole field, were occupied by non-villagers. In Cis-Kaduna area it was common for the owner of such manured fields to sell the use right of part of their plots for good income. Ten plots with the use right sold to non-villagers were identified. The lump-sum price for the use right of 5-7 years for a plot of 1130m² was NGN 4,100 on average. Every year the tenants also needed to submit 10% of the harvest to their landlords as rent. In this example, three farmers from other villages had bought the use right for four plots. One of the household heads sold the use right of 70% of his plot to his father-in-law of

another village. In addition, two non-villagers obtained the plots for no lump-sum cost through affinity relationship and friendship.

Figure 6-4. Example of the layout of a manured field in Nasarafu village.



Source: Fieldwork, surveyed in September 2005.

When the unit of host was a household, the distribution of land was much simpler. Figure 6-4 shows the layout of a manured field owned by a household of a larger village. It used to be the camp site of the group of *Aliyu Abdullahi* in Nasarafu village for the dry season of 2003. The previous group camp site was largely extended and then distributed among the three brothers of the household. Plot size of the manured fields achieved through individual household effort was often much larger. For the ten surveyed fields of such, the average plot size was 7,645m² in area. It was probably because as the household did not need to share the land with other villagers, they could arrange the group to set up camp site in the midst of their family land and then easily spread the manure all over the land when the Fulani has gone. Instead of dividing the plot into smaller size and selling the use right, farmers of such fields preferred more extensive farming. In the study area, only the large and populous villages on the

floodplains of river basins allowed their villagers to invite a Fulani group on their own. To avoid competition among villagers, coordination of village head was necessary but villagers still competed on time and gift to invite the same group sometimes. Pastoral Fulani usually intentionally rotated among different households when sitting for such large villages in order to avoid conflict among villagers.

6.10. Farmers' access to manured land

In the conventional depiction, richer farmers and cattle herders are often described as the major beneficiaries of the corralling contract. Resources-poor farmers with less access to manure, suffer more on land degradation as they have to provide pasture for cattle grazing but get nothing in return to retrieve the nutrient cycling of their lands. In this research, evidences from case studies suggested that it was not necessarily the case at least with respect to the Nupe farmers and pastoral Fulani herders. Under the same local settings, different pastoral Fulani groups had different strategies regarding the adoption of corralling contract with Nupe villages. The classical description that herders were the dominative beneficiaries of the politics of manure was only true to some herders. The corralling contract was the most powerful instrument that assisted in the access to resources for all the groups studied, but what they could get from the arrangement varied greatly from each other. While some groups could well manipulate the relationships with various villages through the adoption of the corralling contract to their advantages, some groups preferred a more stable situation and just got the minimum advantages out of the contract. Findings revealed that higher social status, larger herd size and long history of interaction which allowed trust to be built were the factors contributing to the popularity of a group. Each of the strategies illustrated before had its merits and demerits if comparisons were to be made. But the important message was that different strategies had been evolved and adopted by the pastoral Fulani in accordance with their particular circumstances and needs. Under the customary land system of the study area, the corralling contract played a pivotal role that facilitated the interdependence of the two groups. This well-functioning traditional institution allowed limited resources to be shared and balance to be maintained.

Concerning the farmers, although village chiefs usually benefited more, the sharing and rotation practices allowed members of the whole village to get their shares of manured fields. Village heads and village elderly usually contributed the major part of the payment to invite herders. They were also the ones responsible for the gifts to herders in ordinary time and during their stays in order to maintain the relationship. Therefore, younger farmers justified their bigger share of the manured land. All the interviewed farmers confirmed the higher yield brought by the manure. They pointed out that the benefits of the previous cattle corral could last for six to ten years and the performance was at least three times better than the chemical fertilizer that they could get in the market. The manured plots could be a source of cash income when the farmers sold the usufructuary rights of their plots. When a village failed to invite any Fulani group, farmers could still access to such manured fields through affinity relationship, friendship or by purchasing the right of usufructuary. There was no evidence that access to manure was concentrated only to wealthier farmers. Although the competition for corralling contract sometimes created tensions between villages or among villagers, such tensions were never serious as farmers knew the norm that pastoral Fulani would rotate among them and they expected that they would get their chance sooner or later. Villages did cooperate occasionally by jointing efforts to host a group together.

Table 6-5. Change in the value of gift received for the pastoral Fulani group during 2001 to 2005.

Value of gift received	Dry Season		Rainy Season	
	No. of group	Amt. of change	No. of group	Amt. of change
Increased	4	NGN 341.45	6	NGN 531.44
Unchanged	10		6	
Decreased	3	- NGN 59.72	5	- NGN 611.12
Net change	17	NGN 69.80	17	NGN 7.83

Source: Fieldwork.

Contrary to the conventional description, findings did not show a strong tendency of increasing payment to herders for the manuring service. Table 6-5 illustrates the

change in the value of gift received for the pastoral Fulani studied groups during 2001 to 2005. The value increased for NGN 69.8 for the dry season and just NGN 7.83 for the rainy season during those four years. On the other hand, some groups even received fewer amount of gifts than previous years.

As illustrated in the examples, some pastoral Fulani groups preferred not to get formal invitation and not to get payment in order to remain flexible. It was only the popular groups whose payments received had shown a slightly increase over the last ten years. The major increase of financial burden to farmers was the truck hiring cost to move the belongings of herders. This burden had partly or totally shifted from popular Fulani groups to farmers. However, as mentioned before, herders did consider the affordability of farmers and the amount of payment was never their only consideration in village selection. With respect to the Nupe farmers and the pastoral Fulani herders of the study areas, the notion that herders were asking for more payment and making manure only accessible to wealthier farmers was not applicable. Nevertheless, informants reviewed that prior to the mid-1990s, pastoral Fulani seldom received any payment for the manure service. Farmers might just take care of lodging and food when the herders stayed on their fields. Herders even needed to move their camp sites two times in each season to sit for four villages in a year. The great improvement of the pastoral Fulani's term of benefits from the corralling contract should be related to the changes of fertilizer policy of the Nigeria government as well as the degradation of land due to population increase and excessive farm expansion.

6.11. Conclusion

The corralling contract has enhanced the mutual dependence of the Nupe farmers and the pastoral Fulani herders. It is especially essential to pastoral Fulani who, under the customary land system, has no guaranteed access to land. With the failure of the government in providing grazing reserve, the corralling contract has remained as their most important asset that assists them to access to resources. It is also the most important antifriction for the social relations between the two groups. Most of the

interviewed farmers answered that they would forgive pastoral Fulani for minor crop encroachment for the sake of the cattle manure. Village heads were expected to assist their Fulani guests when they had disputes with other villages. In the study area, most of the disputes caused by cattle encroachment into farms could be settled by village heads, just few cases needed to be settled by *Dikko* or the *Emir*.

Despite all the merits mentioned, the corralling contract is not without constraint. First of all, farmers have limited power to manipulate the adoption and the arrangement of the corralling contract. When a village fails to establish relationship with the Fulani groups in the surrounding area, it is difficult for villagers to invite Fulani groups from other areas. There are implicit rules governing the territory of a Fulani group, new comers normally do not just infiltrate into the area without the consensus of the existing groups. It is to avoid competition on resources and unnecessary social conflict. A village has less access to corralling contract when it is located in an unfavorable environment for cattle. Because of these limitations, farmers can hardly plan for the fertilization proactively. Secondly, excessive farm expansion due to population growth and decreasing productivity of land, have created great limitation not only for herders but also for farmers. Many herders revealed that they could not sit for certain villages even if they wanted to because almost all the lands were under cultivation. When a village hosts a Fulani group during the rainy season, not only the spot where the camp is set up, but also the surrounding farmlands are expected to be sacrificed due to inevitable farm encroachment by cattle and sheep. It is a great problem that stops pastoral Fulani from sitting for some Nupe villages and it may lead to a vicious circle for them. Thirdly, the corralling contract prevents the pastoral Fulani from settling down permanently on a place and limits their progress in development. All interviewed herders pointed out that if they would stop providing manure for Nupe farmers someday, there would be war between them. The corralling contract helped them to access to resources, but on the other side of the coin, they did not have the chance to develop a more stable life because they could not break the expectation of farmers that they would move and rotate. Although some groups could begin to get lands for farming from their hosts, they were not supposed to farm on the same lands continuously after they have moved out. Pastoral Fulani well acknowledged the responsibility that they should help poor farmers

to fertilize their lands, but they also expressed their wishes for a more stable and secure life.

Despite the history of the Fulani conquer in the early nineteenth century, Nupe farmers generally are not antagonistic toward the pastoral Fulani. Although they do not form marital relations, the Nupe and the pastoral Fulani have a wide range of social interaction. The camp sites of pastoral Fulani are generally close to the homestead of villagers. Fulani men often gather in village and pray in the mosque with their Nupe fellows. The corralling contract has a very positive impact on the social relation of the two groups. They see each other as partner: the Nupe need the Fulani for manure while the Fulani need the Nupe for land and fodder. The corralling contract is not just a casual arrangement, but a dynamic and well-functioning traditional institution that facilitate the collaboration of the two groups. It is an important example of local adaptation and innovation that allow balance to be maintained when limited resources are being shared. By contrast, statutory efforts to draw territorial distinctions between agriculture and livestock production have created social rifts in many regions. Technological solutions, such as chemical fertilizers, have not halted the decline in agricultural productivity. The corralling contract should be advanced as part of the complex set of social and biophysical conditions in agropastoral regions. Instead of working in vain to simplify the system with statutory and technological solutions which separate agriculture from livestock production, efforts should be focused on removing the constraints of the corralling contract on both side and facilitating it in order to enhance the association between agricultural and livestock production.



Photo 6-3. A small pastoral Fulani family (January 2005)



Photo 6-4. A cattle manured maize field of Nupe farmer (September 2011)



Photo 6-5. Traditional leader (*Dikko Bida*) of pastoral Fulani and his vassals in the customary court (September 2004)

Chapter Seven

Herding activity of pastoral Fulani

7.1. Introduction

This chapter describes the details of the herding activity of pastoral Fulani residing in the research site. Herding is the most important activity that pastoral Fulani conduct every day to sustain their subsistence. Under the customary land tenure system in the Bida Emirate, Fulani pastoralists do not have guaranteed access to land. Although some pastoral Fulani, in particular the *Dindima'em*, *Juuliranko'em* lineage group, have been residing in the region for decades and even hundred years of time, they are not granted the privilege to have formal entitlement to grazing land. What they rely on for securing access to grazing land is the tolerance and acceptance of Nupe farmers to let them utilize their lands as open ranges. Through flexibly adjusting to change of seasons and progress of farming activity of the Nupe, pastoral Fulani are able to utilize the limited resources available in every niche in time and space. The highly adaptive and delicate herding technique set one of the conditions for the pastoral Fulani to successfully maintain a cordial cohabitation with the Nupe farmers. The herding activity of the pastoral Fulani in the Cis-Kaduna region of Niger State was first studied by Shikano (2002) in the mid-1990s. Shikano recognized that pastoral Fulani were able to choose the best type of herding range available in each period of time according to environmental changes. He recorded the herding activity of a pastoral Fulani group in the period from June 1994 to June 1995. By organizing the records based on the type of grazing ranges, the herding time and the seasonal migration of the Fulani, Shikano found out that pastoral Fulani divided a year into several herding periods. Shikano's findings were used as the foundation of this research. A decade after Shikano's time, the herding activity of the same group of pastoral Fulani group was recorded once again. By comparing the results of this research and that of Shikano, it is to examine whether there is any change in the herding activity of the pastoral Fulani. The paper attempts to confirm if the pastoral Fulani have been able to sustain the complimentary resources use relationship with the Nupe farmers.

7.2. Grazing reserves in Nigeria

Since independence, the Nigerian government has placed emphasis on the sedentarization of nomadic pastoralists in its effort to develop the livestock sector. It was assumed initially that the intensive western ranching models could be introduced to replace the traditional Fulani systems of production. After several unsuccessful attempts at making the westernized ranges work locally, they were dropped in favor of improving the traditional livestock production systems. One of the suggestions was the need to protect and improve grazing areas and stock routes so as to stabilize the Fulani mode of production. In 1965 the federal government passed the “Grazing Reserve Law” which intended to provide grazing rights and all-year resources to the pastoralists (Powell, 1992). The idea of establishing grazing reserves was to provide grazing land on which nomadic pastoralists could settle permanently with the expectation that this would lead to empowerment and equitable property rights for the Fulani pastoralists, improved standards of living, improved cattle production and elimination of conflict between them and sedentary crop farmers (Omotayo, 2002; Fabusoro, 2006).

In the Third National Development Plan of 1975-80, the establishment of a total of 22 million hectares of grazing reserves for the exclusive use of nomadic pastoralists was proposed (Gefu, 1989:23-25). The long-term objective of the policy was to enable the herders to settle down and adopt modern technologies of livestock production. The provision of infrastructural facilities such as watering points, improved pastures, treatment centers and feed store was to be embarked upon by the government as part of the strategies to develop the grazing reserves (Olomola, 1998). Nevertheless, despite what has been written on proposal, in reality very little has been accomplished beyond the demarcation of some identified lands. By 2003, only 2.8 million hectares, which were only 13% of what has been proposed, had been acquired by the government for the purpose of grazing reserves in the northern states. Out of these acquired lands only about 10% were legally gazetted (National Livestock Development Project, 2003:5; 2007:15). Due to the fact that these grazing reserves often located in very remote districts with bad access to transportation and market, the numbers of pastoralists voluntarily settling in has been limited. Basic infrastructures were often not available in these reserves. Even among the pastoralists who have settled, there were few signs of

improved production and living standard. Serious problems of overstocking and range deterioration have been encountered (Suleiman, 1989: 42-43). Crop farmers and other users have encroached upon almost all the reserves (National Livestock Development Project, 2003:5). As a result, most of the grazing reserves have indeed been abandoned (Fabusoro, 2006:55). Regarding the Niger State, attempt was made to establish grazing reserves at strategic locations to reduce transhumance by pastoralists. Eighteen grazing reserves in total of 104,309 hectares were designated, but only two reserves in total of 44,302 hectares have ever been gazetted (National Livestock Development Project, 2007:73; NYSC, 2006). Although governmental documents indicated that three grazing reserves were locating right in the Cis-Kaduna region, none of the interviewed pastoral Fulani, even those of the ruling *Dikko Bida* council, acknowledged the existence of these grazing reserves. This posed a question of the actual status of grazing reserves listed on paper: whether they have ever actually existed, or have been abandoned and then encroached by farms since long time ago. Obviously, Nigerian pastoralists do not and cannot rely on the nation's grazing reserve policy for securing adequate land resources for their herds. The majority of them continue the nomadic production system, and to maintain a cordial cooperative relation with their hosting communities remains as the most important method to secure resources access.

7.3. The pastoral Fulani group studied

The pastoral Fulani group studied was the same group that Shikano (2002) has studied in 1994 to 1995. After a decade of time, the former group head has passed away and the population and herd size of the group has expanded. The name of the head of the group was Aliyu Abdullahi (AA), therefore the group is named AA in this paper. AA group belonged to the *Dindima'em*, *Juuliranko'em* lineage group, meaning that it was a part of the leading Fulani in the Bida Emirate and its ancestors began to settle in the region since about two hundred years ago. Table 7-1 lists the population and animal size of the AA group. Population of the AA group has slightly increased by 111% from 46 persons in 1994 to 51 persons in 2005. The number of cattle has also expanded by 120% from 293 heads in 1996 to 353 heads in 2005. The rate of herd size growth went slightly over the population growth. The group was composed of six households

(*baade*) in 2005, whereas in 1994 the group was consisted of four households. *Baade* is the Fulani word generally means as “patrilineal family”. *Baade* refers to a household headed by a married man with an independent herd of cattle. The *baade* head manages the cattle of all the members in his household. He manages the composition of the cattle herd, and he makes decision on buying, selling, and exchanging of cattle for the expansion of the herd. When a married man gets matured in age and knowhow in cattle management, and when his herd size becomes big enough, he can then get independent from his *baade* head and set up his own *baade*. The number of *baade* of AA group increased from four to six as the younger men get matured and independent from their father. All the *baade* of a pastoral Fulani group often act collectively. Important decisions on matters such as seasonal migration, herding ranges, social rituals and relations with other community are made collectively by all the *baade* heads.

Table 7-1. Composition of the AA group and animal owned (as of October 2005).

Household (<i>Baade</i>)	No. of men	No. of female	Total no. of persons	No. of cattle	No. of sheep	No. of employed herders
AA	7	6	13	65	8	2
SD	2	4	6	34	9	1
SF	4	2	6	34	40	1
MD	6	3	9	80	40	1
IS	3	3	6	85	45	1
YN	3	8	11	55	20	1
<i>Total</i>	<i>25</i>	<i>26</i>	<i>51</i>	<i>353</i>	<i>162</i>	<i>7</i>
<i>Data in 1994 – Whole group</i>	<i>19</i>	<i>27</i>	<i>46</i>	<i>293</i>	<i>-</i>	<i>-</i>
<i>% change between 1994 and 2005</i>	<i>132%</i>	<i>96%</i>	<i>111%</i>	<i>120%</i>	<i>-</i>	<i>-</i>

Source: Fieldwork. Data of 1994 from Shikano (2002).

Pastoral Fulani in the research site conduct day-trip herding for grazing their cattle. In this research, herding activity of the AA group has been recorded during the period from 17 October 2004 to 14 September 2006 for 696 days. The main information provider of the group, Alhaji Mohammed Abdullahi, recorded information on grazing time, location and type of grazing ranges, name of herders and other important

happenings of the AA group every day for this research during the mentioned period. The very same informant has recorded similar data in 1994 to 1995 formerly for Shikano (ibid). He was well trained on data recording, and information provided could be assumed of minimum deviation and therefore could be used for the purpose of comparison with the past. For verifying the recorded information, detailed hearings have been conducted by the author with the informant during fieldwork. The author has accompanied the grazing activity of the group occasionally and has also visited the grazing ranges physically in order to confirm the information recorded.

7.4. Herding activities of pastoral Fulani

7.4.1. Classification of seasons

Pastoral Fulani roughly divide a year into six seasons which are *setto*, *setto luggini*, *dungu*, *yande*, *dabunde* and *sheedu* (Shikano, ibid; Stenning, 1959: 206-233). The Fulani classification of seasons is demonstrated in table 7-2 with the meteorological data of the research site during the period from March 2005 to April 2006. “*Setto*” is the windy and stormy period leading into the rains. The first rain of the year normally begins at late March. After confirming that the year’s rain has started to fall in earnest, Nupe farmers begin land preparation and plant early millets, egusi melon, maize and other crops in their uplands fields. There is a short period from June to July when rains stop falling temporarily. The period is called “*setto luggini*”. *Luggini* means “between” in *Fulfulde*, so it means it is the period between “*setto*” and the next period *dungu*. The AA group migrates from lowlands to uplands in the beginning of *setto luggini* period. “*Dungu*” is the wet season when rains begin to fall in full scale from mid-July until late October. *Dungu* can be regarded as the most pleasant time of the year for Fulani. In August and September, Nupe farmers harvest some of the early maturing crops, such as cowpea, egusi melon and early millet in the upland fields and begin rice plantation in lowland paddy fields.

“*Yande*” is the hot season after the rainy season. It begins in late October when rain stops and last until end of December. Nupe farmers harvest their sorghum and late

millet from November. Pastoral Fulani generally begin their migration to lowland by the end of *yande*. “*Dabunda*” is the season of Harmattan normally from late December to February. Wind blowing from the Sahara brings fine sand dust which blocks the sunlight out. This period is relative cool as temperature does not rise very much because of the sand dust. In January, Nupe farmers reap rice on their lowland fields. The hot dry season after the harmattan is “*sheedu*”. It usually begins late in February and ends in late March. It is the hottest and driest season of the year, and is the most difficult season for pastoral Fulani.

Table 7-2. Season classification of pastoral Fulani (March 2005-April 2006).

Month	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Fulani Season		Setto			Setto Luggini	Dungu			Yande		Dabunda		She-edu	
Highest Temperature (°C)	39	38	35	33	31	31	32	33	35	35	36	38	38	40
Lowest Temperature (°C)	26	26	25	24	24	24	24	23	20	17	21	23	25	25
Rainfall (mm)	16	45	144	167	331	189	194	123	0	0	0	0	16	29

Source of data: Agricultural Development Project, Bida, Niger State.

7.4.2. Herding unit and meeting

Pastoral Fulani in the study area carries out day-trip herding every day. The herd of each *baade* is led by one to several herders of that *baade*. All the herds of a group usually depart from the camp for grazing at similar time. After arriving at the designated herding range, the herds of different *baade* slightly disperse to graze with some distances. The herds continue to move slowly during the day to graze around under the monitor of the herders. By evening the dispersed herds are gathered again and led to return back to the camp. Dried cattle dung is burnt in each of the cattle enclosure to set up a small fire to produce smoke that repels insects on the body of cattle. They do not carry out herding at night, although in time of serious pasture shortage they sometimes need to start grazing very early from the dawn.

Herding is the duty of young male members of the household. When a boy reaches about 10 years of age, he begins the duty to herd and attend to animals. In periods when no crop are on farms and grazing requires less care, young men of a *baade* can take rotation to carry out the day-trip herding: a boy goes today and another boy goes tomorrow. But in periods when grazing requires more cares, several boys of a *baade* have to carry out the herding together. When a *baade* does not have enough male members to go for herding every day, the *baade* head can borrow a young boy from other households in the group, or he can hire migrant herder who seek for temporary employment. In the research site there are young Fulani coming from other northern regions who seek for temporary job as cattle herder. These young boys often come from families with less favorable background. The regions where they come from often have a harsh natural environment and the families own only very few heads of cattle. The norm of the research site is to pay the migrant herder one male calf of about two years of age for every period of five to six months.

Every day pastoral Fulani must choose the range where they put their pastoral herd out for pasture. After the milking work early at about seven in the morning, senior herders gather together to have meal and exchange information. Decisions on the choosing of grazing range, herding route and water points are made collectively in this meeting, which is called “*hawaare*” in *Fulfulde*. While an outline of the day’s herding activity is decided by senior herders at *hawaare*, the supervision over the entire herding activities of the group is usually the task of the group head. There are two principles that pastoral Fulani strictly follow when deciding the herding ranges. First they must make sure that they do not disturb the farming activity of the Nupe. In this part of Nigeria, rights over pastures and water are not defined. In practice everybody are able to make use of them as long as it is not prohibited by the land owners. To pastoral Fulani, the Nupe are the land owners of the area, and they well understand that their herding activities are only possible with the tolerance of the Nupe. The second principle is that they avoid direct competition over pastures with other pastoral Fulani groups. The Fulani well acknowledge the existence and territory of each other, and cattle herds of different groups never graze too close to each other. In case the herd of any group gets infected by disease, like foot-and-mouth disease, other groups grazing around must be informed. They will set agreement to restrict the grazing area of the infected herd, and also prevent other herds from grazing nearby. It is the responsibility of the head of each

pastoral group to ensure that their herding activity complies with the acceptance of other communities.

7.4.3. Herding pattern in different seasons

Pastoral Fulani choose the best type of herding range available in each season according to the changes in weather and the progress of the farming activities of Nupe farmers. By studying when, where, what and how the pastoral Fulani graze their cattle, the practice of the Fulani to adopt different herding patterns in accordance with physical and human environmental changes is obviously identified. The indicators of the changes in herding patterns are the location of herding range, type of range land, grazing time, seasonal migration, and integration and separation of pastoral herds. Different herding strategy is adopted in different seasons; therefore the herding activities of the pastoral Fulani can be grouped into six patterns according to the Fulani classification of season. In this section, the six herding patterns of the AA group of one year period from June 2005 to June 2006 are analyzed. The methodology and categorization employed in this section are based largely on the work of Shikano (ibid). One note has to be emphasized here is that the pastoral Fulani call the herding range by the name of the Nupe village which owns the land. After long time of cohabitation with the Nupe, the pastoral Fulani group studied is well acknowledged about the territory of every Nupe village in their grazing zone. Farming activities of Nupe farmers are observed every day so that they can decide on where to graze according to the progress of cultivation.

7.4.3.1. Herding pattern in “*setto luggini*”

The AA group moved its camp from Tswatagi, a village close to the floodplain of Gbako River, to the upland village Emigbari, on 23 June 2005. Pastoral Fulani moved their camp to upland when they thought the rainfall had become stable. The first rain of the year fell on 23 March, but rainfall was not much in April and May. Grasses on uplands did not grow well enough with the little rainfall so the group needed to stay longer on the river basin. From 25 June to 24 July 2005, the pastoral herd mainly utilized grasses newly grown on Nupe fields before cultivation. Fulani called this kind of fields as “*shabeho*”. As cultivation activities progressed and more fields were cultivated, pastoral herds turned to fallow lands and secondary forest. Table 7-3 shows

the herding ranges utilized by the AA group. Daytime grazing was carried out during the *setto luggini* period. The average grazing time for the period was 8 hours and 12 minutes, starting from 10:05 and ending at 18:17 on average. Ranges of Shetufu and Leje were used only on rainy days. Rainfall lowered the body temperature of cattle, so cattle were made to travel for longer distance on rainy days so that their bodies could stay warm.

Table 7-3. Daytime grazing in *setto luggini* period, 2005/6/25 – 7/24 (30 days).

Herding range (Village)	Type of range	No. of day (%)	Remarks
1 Emidukun	Uncultivated land	7 (23.3)	
2 Alukusu Tifin	Farm before cultivation / Uncultivated land	5 (16.7)	
3 Ndarubu	Uncultivated land	5 (16.7)	
4 Eyagi	Farm before cultivation / Uncultivated land	4 (13.3)	
5 Shetufu	Farm before cultivation / Uncultivated land	4 (13.3)	Only on rainy days
6 Leje	Farm before cultivation / Uncultivated land	3 (10.0)	Only on rainy days
7 Sodengi	Farm before cultivation / Uncultivated land	2 (6.7)	
Total		30 (100)	

Source: Fieldwork.

Note: Uncultivated land indicates fallow land and secondary forest.

7.4.3.2. Herding pattern in “*dungu*”

By the *dungu* season, Nupe farmers have finished the first stage of planting work and the distribution of cultivated fields was determined. Fulani pastoral herds were completely put out to fallow land and secondary forest in this period. With the rainfall and the modest temperature, *dungu* was a relatively pleasant season for Fulani. Day by day they saw their cattle gaining weight and increasing their yield of milk in response to the lush grazing. Year 2005 was a good year for the group studied that many calves were delivered in this period. There were days that two and even three cows delivered calves more or less at the same time in a day, making the *baade* heads very busy. In the period of 25 July to 22 October 2005, the AA group continued daytime grazing. The

average pasturing time was 8 hours and 40 minutes. They left the camp at 9:53 and returned at 18:33 on an average day in this period. Table 7-4 shows the herding ranges of the *dungu* season. The grasslands of Eyagi, Sodengi and Ndarubu villages were established as major herding ranges, which took up to 52% of the total pasturing days. The herding ranges in this period were mostly used in day-to-day rotation. It was necessary because grazing land was limited in this period, and time was needed to allow grasses to re-grow before the herds could graze there again. Figure 7-1 demonstrates the location of the herding ranges used by the AA group in this *dungu* period.

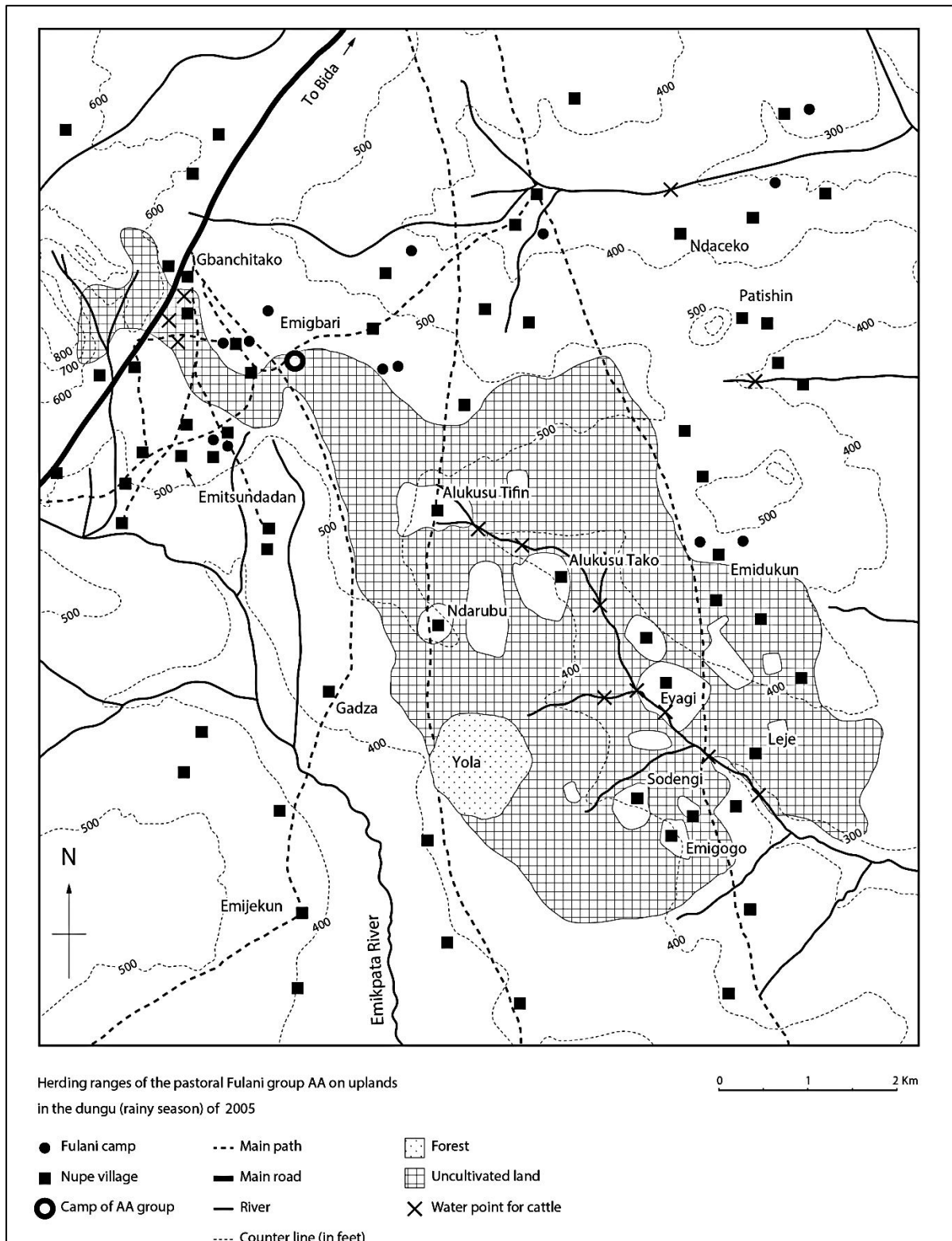
Table 7-4. Daytime grazing in *dungu* period, 2005/7/25 – 10/22 (90 days).

Herding range (Village)	Type of range	No. of day (%)	Remarks
1 Eyagi	Uncultivated land	22 (24.4)	
2 Sodengi	Uncultivated land	21 (23.3)	Only on rainy days
3 Ndarubu	Uncultivated land	15 (16.7)	
4 Alukusu Tifin	Uncultivated land	9 (10.0)	
5 Leje	Uncultivated land	8 (8.9)	Only on rainy days
6 Emidukun	Uncultivated land	8 (8.9)	
7 Alukusu Tako	Uncultivated land	3 (3.3)	
8 Yola	Forest	1 (1.1)	Only on rainy days
9 Gbanchitako	Hillside	1 (1.1)	
10 Emigogo	Uncultivated land	1 (1.1)	Only on rainy days
11 Shetufu	Uncultivated land	1 (1.1)	Only on rainy days
Total		90 (100)	

Source: Fieldwork.

Note: Uncultivated land indicates fallow land and secondary forest.

Figure 7-1. Location of the uplands herding ranges of pastoral Fulani AA group in the *dungu* season of 2005.



Source: Fieldwork.

7.4.3.3. Herding pattern in “yande”

Table 7-5. Daytime grazing in *yande* period, 2005/10/23 – 11/20 (29 days).

Herding range (Village)	Type of range	No. of day (%)
1 Emigbari	Harvested farm	6 (22.2)
2 Emidukun	Uncultivated land	5 (18.5)
3 Alukusu Tifin	Uncultivated land	3 (11.1)
4 Ndarubu	Uncultivated land	3 (11.1)
5 Lemuta	Harvested farm	2 (7.4)
6 Ekota	Harvested farm	2 (7.4)
7 Shetufu	Uncultivated land	1 (3.7)
8 Emidogo	Uncultivated land	1 (3.7)
9 Alukusu Tako	Uncultivated land	1 (3.7)
10 Eyagi	Uncultivated land	1 (3.7)
11 Gbanchitako	Hillside	1 (3.7)
12 Emisheshenatsu	Harvested farm	1 (3.7)
Total		27* (100)

Source: Fieldwork.

Note: Uncultivated land indicates fallow land and secondary forest.

*: Data of two days was missed.

Table 7-6. Morning and afternoon grazing in *yande* period, 2005/11/21-12/9 (19 days).

Herding range (Village)	Type of range	No. of day (%)	
		Morning	Afternoon
	Harvested farm	10 (52.6)	1 (5.3)
2 Lemuta	Harvested farm	6 (31.6)	6 (31.6)
3 Emigilali	Harvested farm		5 (26.3)
4 Ekota	Harvested farm	1 (5.3)	2 (10.5)
5 Sommaji	Harvested farm		3 (15.8)
6 Emisheshinatsu	Harvested farm	2 (10.5)	
7 Alukusu Tifin	Harvested farm		1 (5.3)
8 Alukusu Tako	Harvested farm		1 (5.3)
Total		19 (100)	19 (100)

Source: Fieldwork.

Yande is always a critical period for pastoral Fulani. Major decisions have to be made on the strategies to survive the dry season in which sufficient pasture and water

are not guaranteed. Fulani need to anticipate the availability of pastures base on the weather in the past months, and to decide strategically on the location and timing for migrating onto the lowlands. They also need to decide how the cattle herds of the group should be divided, because in this season pastures available in one range may not be enough to feed the whole herd of the group. Cattle herd often have to be divided into several smaller groups so as to best utilize the limited pasture in this season. The AA group studied divided the whole herd of the group into two herds in this season. One herd migrated earlier onto the lowlands with the young herders. Another herd remained on the uplands with the majority of the group members.

The last rainfall of 2005 in the area was on October 27. From around November grasses in secondary forest and fallow land began to dry out, and farmers began to harvest some of their crops. After crop harvesting, Nupe farmers let Fulani to put their cattle into such fields and graze on the remnants. The dried leaf and stems of harvested crops were the favorite feed for cattle. Table 7-5 and 7-6 show the herding activity of the pastoral herds remained in the upland camp. Since the informant did not migrate to lowlands with the young herders, unfortunately no data were recorded for another herd that moved to the lowland village. The herd that migrated earlier to lowlands grazed on post-harvest farms around lowland villages.

In the first 29 days of the season, daytime grazing was carried out by the AA group. Quality of pastures diminished rapidly in this period so herders needed to explore various herding ranges for their cattle. Average grazing time in this period was 8 hours and 18 minutes, started at 10:01 and ended at 18:20. In the later part of the season, different herding pattern was observed for 19 days. Grazing was done two times a day in the morning and in the afternoon. At this time farmers have completed the harvest of sorghum and the ears of this crop were all cut down. In order to best utilize these remnants, cattle were led to fields of nearby villages early in the morning. In the afternoon, the herd was led to more distant fields. The grazing time for morning grazing was 2 hours and 31 minutes on average. The average beginning time was 8:05 and the ending time was 10:37. Herders only took a short break in between the morning and the afternoon grazing. Afternoon grazing lasted for 7 hours and 17 minutes on average, which began at 11:12 and the ended at 18:29. The total grazing time for both morning

and afternoon grazing was 9 hours and 48 minutes, which was 90 minutes longer than daytime grazing.

7.4.3.4. Herding pattern in “*dabunde*”

Table 7-7. Morning and afternoon grazing in *dabunde* period, 2005/12/11-17, 2005/12/24-2006/2/28 (74 days).

Herding range (Village)	Type of range	No. of day (%)	
		Morning	Afternoon
1 Nasarafu	Harvested farm	59 (79.7)	3 (3.9)
2 Nasarafu	Harvested paddy field		53 (69.7)
3 Nasarafu	Secondary forest	2 (2.7)	1 (1.3)
4 Tswatagi	Harvested paddy field		15 (19.7)
5 Tswatagi	Harvested farm		1 (1.3)
6 Danchitako	Harvested farm	5 (6.8)	
7 Shabamaliki	Harvested farm	3 (4.1)	1 (1.3)
8 Shabamaliki	Harvested paddy field	1 (1.4)	
9 Emidukun	Secondary forest	2 (2.7)	
10 Emidogo	Harvested farm	2 (2.7)	
11 Ndalagun	Harvested paddy field		2 (2.6)
Total		74 (100)	76 (100)

Source: Fieldwork.

Table 7-8. Daytime grazing in *dabunde* period, 2005/12/18 – 23 (6 days).

Herding range (Village)	Type of range	No. of day (%)
1 Nasarafu	Harvested farm / paddy field	4 (66.7)
2 Ndaceko	Harvested farm	1 (16.7)
3 Tswatagi	Harvested farm / paddy field	1 (16.7)
Total		6 (100)

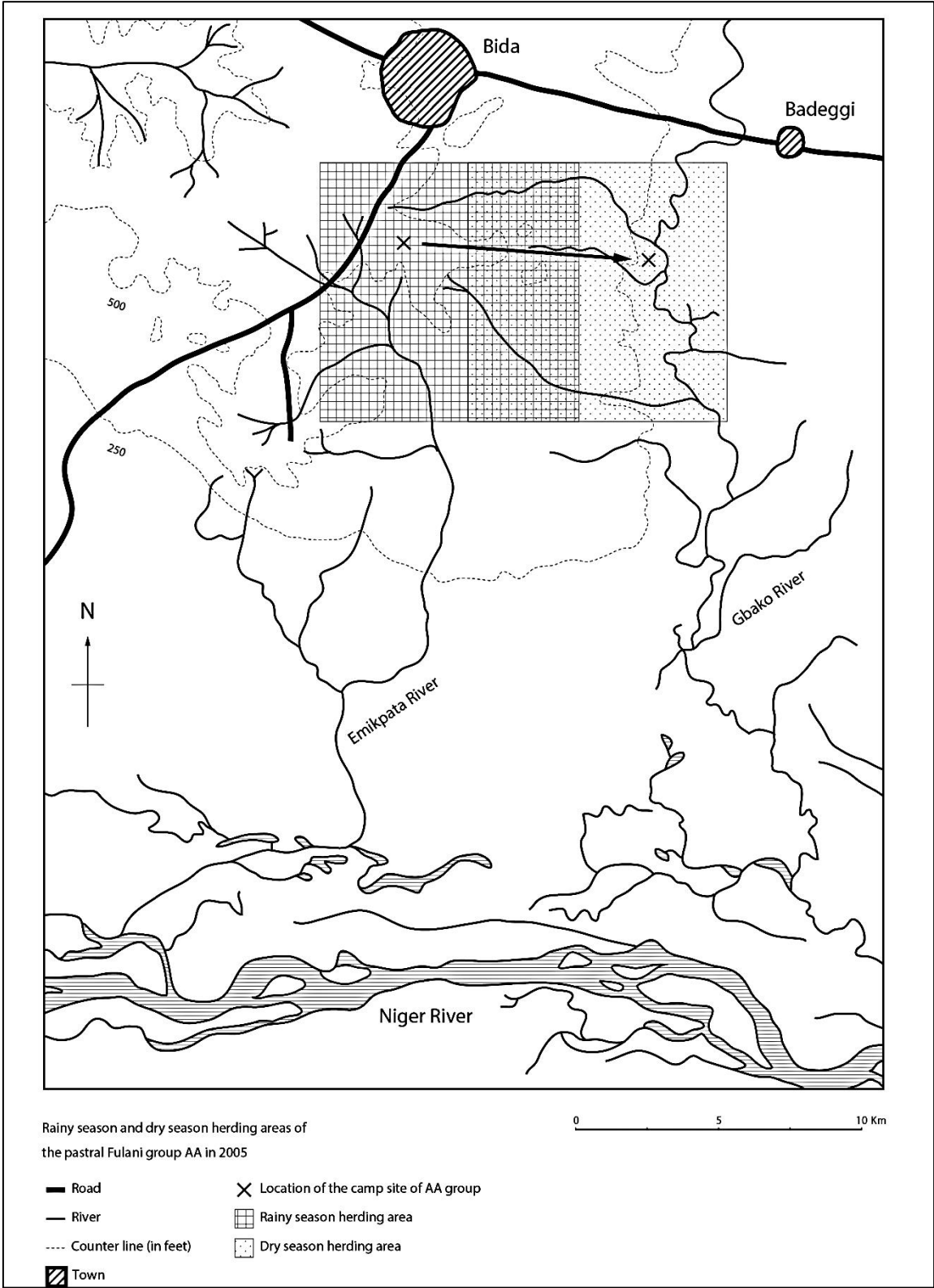
Source: Fieldwork.

Wind from the Sahara cooled down the hot air in the *dabunde* period, but it was not at all a relaxing season for pastoral Fulani. In *dabunde* period, pasture condition declined progressively. On 10 December 2005, the AA group members and the herd remained on uplands moved to Nasarafu village on the lowlands to join the other herd that had migrated earlier in October. In other words, the *dabunde* period was the time when the entire herd of the group started pasturing on lowlands. The AA group

continued practicing morning and afternoon grazing in this season. However, there were six days that the group temporarily changed to daytime grazing. The reason for this was probably because herders needed to spend times on making huts and setting up the new camp site. The seasonal migration and the shifting from upland herding ranges to lowland herding ranges of the AA group are presented in figure 7-2.

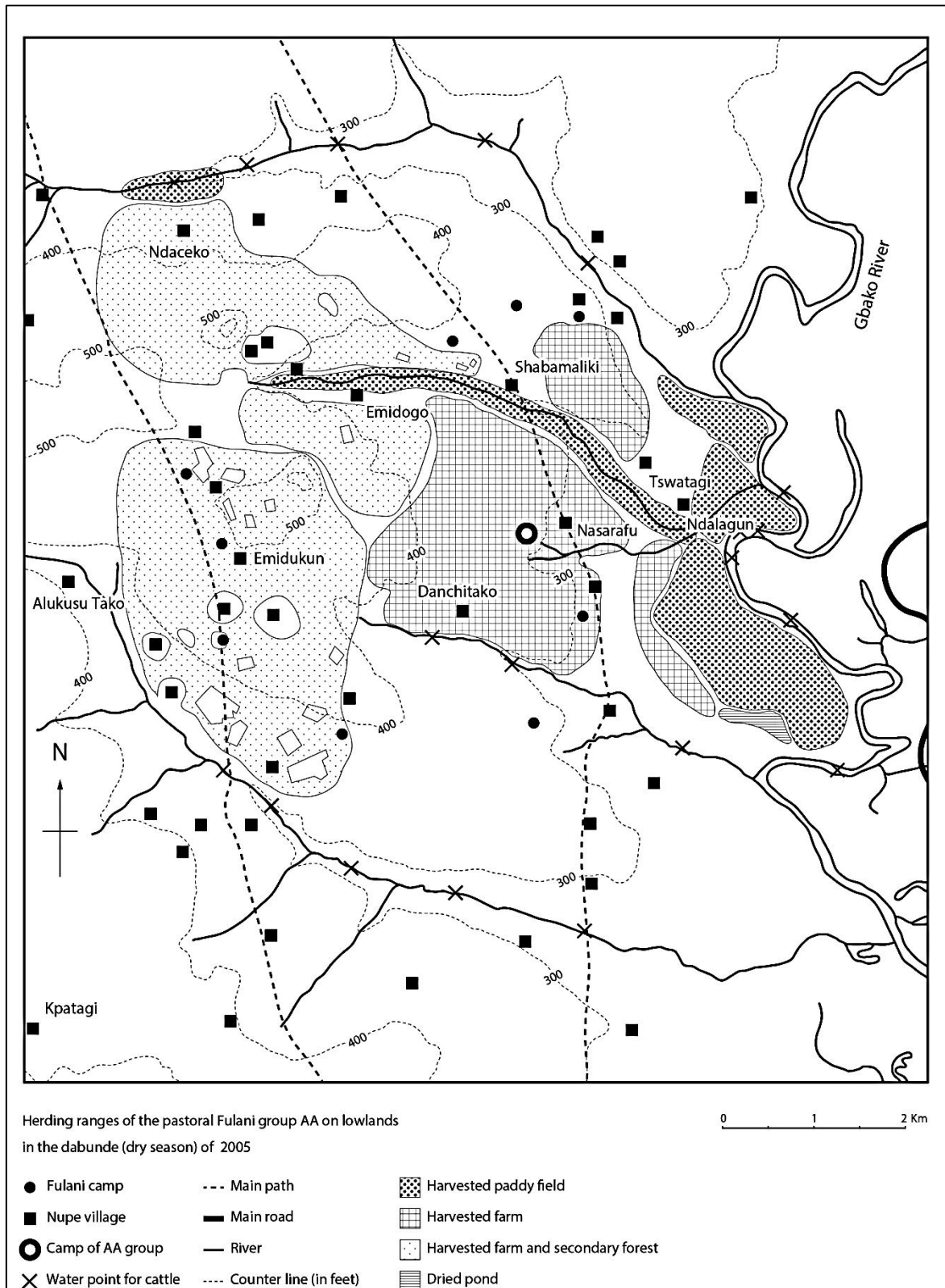
Table 7-7 and 7-8 show the herding activities of this period. Morning and afternoon grazing have been carried out during 11 to 17 December 2005 and 24 December 2005 to 28 February 2006 for a total of 74 days. The average total grazing time were 9 hours and 54 minutes; 2 hours and 32 minutes for morning grazing and 7 hours and 22 minutes for afternoon grazing. Morning grazing started at 8:00 on average. Informant revealed that as crop residuals were very limited in this period, they needed to start grazing early in the morning to secure pasture before cattle herds of other pastoral groups arrived. Afternoon grazing also lasted long in this period that the latest ending time was 18:49. The 6 days of daytime grazing was carried out from 18 to 23 December 2005. The average grazing time for these six days was 9 hours and 44 minutes, which was still long compared with other seasons. As shown in the two tables, harvested farms and paddy fields of Nasarafu village were utilized as the major herding range in the period. Cattle mostly pastured on harvested sorghum fields in the morning. In the afternoon after temperature in the paddy fields rose, cattle turned to graze on harvested rice paddy fields. On fields that rice has already been reaped, cattle fed on grasses and new sprouts that grew from stubs of rice. By late January after farmers have finished threshing and winnowing of rice, Fulani cattle began to feed on rice straws. For wind drying of harvested paddy, it was common for Nupe farmers to pile up paddy into hollow cylinders with ears inside. These paddy hills were left on the fields after threshing and winnowing. Fulani cattle would move from paddy hill to paddy hill to feed on rice straws until they were all eaten up. In 2006 the supply of rice straws finished by the end of February. There was a drop in rainfall in 2005 so rice did not produce well and supply of rice straw was not much. Secondary forests were used on windy days because cattle could get sick grazing in cold wind. Figure 7-3 demonstrates the location of the herding ranges used by the AA group in this *dabunde* period.

Figure 7-2. Rainy season and dry season herding areas of pastoral Fulani AA group in 2005.



Source: Fieldwork.

Figure 7-3. Location of the lowlands herding ranges of pastoral Fulani AA group in the *dabunde* season of 2005.



Source: Fieldwork.

7.4.3.5. Herding pattern in “*sheedu*”

Distinction between morning and afternoon grazing disappeared in this season (table 7-9). Daytime grazing was carried out instead in relatively distant ranges. In this dry hot season, there was nothing much for cattle to feed on. Cattle moved to distant ranges in search for little remained rice strews and some dried grasses on the floodplains. Due to the short of rain in 2005, water level of Gbako River was low in the dry season of 2006. Grazing time was long in this period. The average grazing duration was 9 hours 48 minutes, beginning at 8:48 and ending at 18:37. Harvested fields and secondary forests were often burned in this period. Burning stimulated growth of grasses which were important feed for cattle, although these grasses could not last long because of the dry weather. When grasses were not available, Fulani would cut tree leaf for cattle to survive on.

Table 7-9. Daytime grazing in *sheedu* period, 2006/3/1 – 3/15 (25 days).

Herding range (Village)	Type of range	No. of day (%)
1 Nasarafu	Harvested paddy field	14 (51.9)
2 Tswatagi	Harvested paddy field	5 (18.5)
3 Patishi	Secondary forest	3 (11.1)
4 Egbafu	Harvested paddy field	3 (11.1)
5 Ndalagun	Harvested paddy field	2 (7.4)
Total		27 (100)

Source: Fieldwork.

7.4.3.6. Herding pattern in “*setto*”

Setto in 2006 was an especially devastating period for the AA group. Many calves born in the last *dungu* unfortunately died because of the lack of feed and water caused by the harsh weather. Although the first rain of 2006 was recorded on March 26, the rainfall after that was still very low. Since there was nothing much for cattle to feed, grazing time in this period was shorter than that recorded in the past. The group carried out daytime grazing in this period, with average grazing time of 9 hours and 10 minutes (table 7-10). The average beginning time was 9:21 and the ending time was 18:31. Many Fulani needed to purchase grasses from Hausa people as an emergency measure to help their cattle survive. Informant mentioned that he needed to spend 400 to 500

Naira (~USD4) per day on grasses for his calves since 11 April until 29 May, for almost two months. Unfortunately he still lost eleven cattle in this exceptionally harsh period. For Fulani who could not afford to buy grasses, they could only go to remote lowland fields where farmers plant off-season crops to gather little grasses. This season was marked ended when pastoral Fulani migrated back to uplands. However since rainfall was in short this year, the AA group could not move to uplands earlier than the end of June. Pastoral Fulani did not move to upland area just after one or two full-scale rainfall signal. They needed to wait until river on upland areas have raised and water supply was sure.

Table 7-10. Daytime grazing in *setto* period, 2006/3/26 – 6/30 (97 days).

Herding range (Village)	Type of range	No. of day (%)
1 Nasarafu	Harvested paddy field	62 (63.9)
2 Tswatagi	Harvested paddy field	18 (18.6)
3 Patishi	Secondary forest	9 (9.3)
4 Ndalagun	Harvested paddy field	6 (6.2)
5 Emidogo	Secondary forest	1 (1.0)
6 Lunkodu	Harvested paddy field	1 (1.0)
Total		97 (100)

Source: Fieldwork.



Photo 7-1. Cattle waiting to leave for grazing in the morning (October 2005)

Table 7-11. The summary of the six herding patterns of pastoral Fulani group AA in 2005-2006.

Herding pattern	Period 2005-2006	Camp location	Main type of herding range	Herding time (hours: minutes)	Splitting of pastoral herd	No. of herders
Setto luggini	6/25-7/24	Uplands	Farm before cultivation	Daytime 8:12	No	7.40
Dungu	7/25-10/22	Uplands	Uncultivated land	Daytime 8:40	No	7.33
Yande	10/23-11/20	Uplands	Uncultivated land/ Harvested farm	Daytime 8:18	Yes	15.81
	11/21-12/9			Morning + Afternoon 9:48		16.79
Dabunde	12/11-12/17; 12/24-2/28	Lowlands	Harvested farm and paddy field/ Secondary forest	Morning + Afternoon 9:54	Yes	10.93
	12/18-12/23			Daytime 9:44		9.83
Sheedu	3/1-3/15	Lowlands	Harvested paddy field	Daytime 9:48	Yes	10.24
Setto	3/26-6/30	Lowlands	Harvested paddy field	Daytime 9:10	No	8.90

Source: Fieldwork.

Table 7-12. Herding patterns of pastoral Fulani group AA in 1994-1995 by Shikano (2002:354).

Herding pattern	Period 1994-1995	Camp location	Main type of herding range	Herding time (hours: minutes)	Splitting of pastoral herd	No. of herders
Setto luggini	6/5-6/11	Uplands	Farm before cultivation	Morning + Afternoon 9:30	No	2.64
	6/12-7/15			Daytime 8:21		2.03
Dungu	7/16-11/13	Uplands	Secondary forest and uncultivated land	Daytime 8:25	No	1.70
Early yande	11/14-1/6	Uplands/Lowlands	Harvested farm	Morning + Afternoon 9:36	Yes	?
Late yande	1/8-2/28	Lowlands	Lowland field	Morning + Afternoon 9:57	Yes	2.52
Sheedu	3/1-4/22	Lowlands	Harvested paddy field	Daytime 9:22	Yes	2.08
Setto	4/23-6/3	Lowlands	Lowland field	Daytime 9:25	Yes	2.00

Source: Shikano (2002:354)

7.4.4. Herding system of pastoral Fulani

The six herding patterns mentioned above are summarized in table 7-11. For the purpose of comparison, the record of 1994-1995 by Shikano (ibid) is listed in table 7-12. The records of 2005 to 2006 show that the pastoral Fulani group studied constantly made adjustment to their herding activities in accordance to natural and human environment changes. While having 353 cattle, a herd that was on the large size comparing with many other pastoralists in Africa, the geographical coverage of their herding activities throughout the year concentrated in an area not more than 200km². The seasonal migration distance of the group was even not up to 10km. Apart from natural geographical factors such as the topography of uplands and inland valleys, and the rich availability of water, the herding system of pastoral Fulani was another important factor that efficient exploitation of resources could be achieved. Based on records of the herding activities, it was identified that there were five elements of the herding system that have consistently been adjusted by pastoral Fulani in order to cope with seasonal and environmental changes. These five elements were: (1) type of herding range, (2) camp location, (3) grazing duration, (4) herd size and (5) herder number.

7.4.4.1. Utilizing different types of herding range

The AA group utilized different types of herding ranges in different seasons. In *setto luggini* in June when rainfall was moderate, Nupe farmers were in the middle of upland crops plantation. In this period the AA group moved to upland village for their rainy season pasture. They put their cattle out to fields where the Nupe have not yet started planting and let them feed on new grasses naturally grown on those fields. By *dungu* when rainfall approached its peak, the upland farms were now filled with established crop plants. Pastures on fallow fields and secondary forests became the main feed for cattle. Because uncultivated land was never abundant in any single village, the AA group had to reach out for more villages in order to get enough pastures to sustain this long *dungu* period. By late October when the *yande* season began, the Nupe harvested sorghum, maize and late millet from their upland fields. Pastoral Fulani closely observed the harvesting progress, and as soon as the crops were reaped they let their cattle feed on remnants left on the fields. In this period they could reach for villages with higher farm density where they could not go earlier in *setto luggini* and *dungu*. For

example the AA group grazed the most often in Emigbari village during the *yande* season in 2005. It was the village where they had their rainy season camp, but because most of the lands around were farmed, the AA group could not graze there until the crop harvesting has been completed. Lemuta and Emigilali were also villages with high farm density, and the harvested farms of these villages turned into important herding ranges for the AA group during *yande* season. In the *dabunde* season in December, the AA group migrated down to villages close to the Basin of Gbako River for dry season pastures. Crop residuals on harvested sorghum and millet fields continued to be the important feed for cattle in the early part of this period. And then after Nupe have harvested the rice on the paddy fields, rice straws took its turn to be the most important cattle feed. In the dry season of 2005-2006 the AA group had their dry season camp in Nasarafu village. It was the village which provided the AA group with the most important pastures throughout the whole dry season. In the very dry *sheedu* season, pastoral Fulani could only rely on grasses that grown on paddy fields. In the *setto* season rain began to fall, but before the rainfall was established it was the harshest period for both cattle and human. In a good year pastoral Fulani could feed their cattle with grasses naturally grown on lowland fields before it was flooded by rain. In a bad year like in 2006, there was almost no pasture for cattle to feed on.

By adjusting herding ranges and utilizing different types of pastures available in each season, the pastoral Fulani are able to secure feed for their animals throughout a year. It is possible not only because of the intimate knowledge that they have on the geography and vegetation of the region and the dietary preference of their cattle, but also due to the accumulated experiences that they have on farming activities and land usage of the farmers based on a prolonged period of observation and interaction. Referring to the records of Shikano, the types of herding range utilized in each seasons have been similar to the recent record. It indicated that the practice of adjusting herding ranges in accordance with seasonal change and stages of farming activity of the Nupe has been maintained over the last decade. Nevertheless, according to the Fulani informants, many former vacant lands have been turned into farms over the past years. Availability of secondary forests and fallow lands has substantially reduced. When looking into the details of herding range locations, it was discerned that although the types of herding range remained similar to that of ten years ago, the locations of the ranges were no longer the same. The AA group has indeed shifted their rainy season

herding ranges from the denser villages to other new villages that still had some uncultivated lands. On the lowlands, with the expansion of local irrigation system and diffusion of off-season cropping, grazing on the lowlands has become less easy than before. Pastoral Fulani complained that the wide expansion of cassava cultivation on lowlands have reduced the dry season pastures for cattle.

7.4.4.2. Change of camp location

Seasonal migration to lowlands for dry season is the most important event of a year for pastoralists in Nigeria. Some pastoral Fulani in northern Nigeria need to travel hundreds kilometers to reach wetlands where water and pasture still remain in the harshest period of dry season. Group AA migrated 10km west to the floodplain of River Gbako every year. Other groups that I have interviewed moved about 10 to 30km to the floodplains of River Gbako and River Niger. In the rainy season, reliable feeding resources exist in the uplands in quantities enough to feed pastoral herds. Uplands in the rainy season is a comfortable environment for cattle, with green pastures, right humidity and temperature, and absence of tsetse fly which is host and vector for the trypanosome parasites. However as rainfall stops when dry season approaches, pastures on uplands dry out and become only available on lowland fields. It is essential for pastoral Fulani to secure water and pastures for their animals to survive the dry season. To make the most out of the available resources while conducting day-trip herding, pastoral Fulani thus have to shift their camp site between uplands in rainy season and lowlands in dry season. When the rainy season comes again, pastoral Fulani move back to uplands for their cattle. The white zebu cattle of Fulani are resistant to dryness, but are weak to wetness and coolness and they cannot survive if they stay on lowlands in the rainy season. They also need to avoid tsetse fly which widely present on lowlands in the wet environment. The timing for seasonal migration is also important. Pastoral Fulani do not move to lowlands right after the last rainfall. They stay in uplands for a period in order to fully utilize the remnants of upland harvested fields, which is more favorable for cattle. Before the dry season migration, they send young herders to investigate the route beforehand to make sure that cattle will not encroach into unharvested farms during the movement. If they migrate too early they may cause damage to Nupe's farms, but if they migrate too late other pastoral Fulani group may occupy the preferable lowland site before their arrival. Likewise, pastoral Fulani also need to wait for the right timing for

shifting to the uplands. They have to make sure that both rain and pastures have been established before they move. Decision on the timing of seasonal migration is of very high importance which has to be decided collectively by all the *baade* heads of the whole group.

7.4.4.3. Adjustment of grazing time and duration

Pastoral Fulani prefer to build their camp on open area close to Nupe community. Tsetse flies tend to rest on the trunks of trees so open area with no woody vegetation is inhospitable to the flies. Because of this reason, Fulani camps are not usually made inside remote brushy land, but on open land surrounded by Nupe farms. During the midst of cropping season, pastoral Fulani must not let their cattle invade any pre-harvest farms. Once the crops are reaped, cattle can then go into the farms to feed on the remnants. Pastoral Fulani carry out morning grazing when they want to utilize the pastures on post-harvest fields. In most days of a year, the AA group practice daytime grazing, in which cattle herd is led to a distant range in the morning and return to the camp in the evening. Morning and afternoon grazing is only carried out in certain period of a year, during which cattle herd first graze on nearby fields early in the morning, return to the camp for a break, and then go again to distant ranges where they graze until the evening. In the *yande* and *dabunda* seasons of 2005, the AA group practiced morning and afternoon grazing for 19 days and 74 days respectively. Cattle herds were led to harvested sorghum and millet fields around the camp very early in the morning. They needed to go early firstly to make sure than they occupied the remnants earlier than other pastoral groups. Secondly it was easier for cattle to eat sorghum leaf which were still soft before the sun raised high from about 10am. Because cattle got thirsty when eating sorghum leaf, cattle had to be taken to water point before going out again for afternoon grazing.

The practice of morning and afternoon grazing allow herders to extend grazing time duration. In 2005-2006, the recorded herding times for periods when morning and afternoon grazing were practiced were longer than that for other periods when daytime herding were carried out (table 7-11). It was noteworthy that herding time in dry seasons (*yande*, *dabunde* and *sheedu*) was longer than that in the rainy season (*setto*, *setto luggini* and *dungu*) by an hour or more. While herding time in rainy season was

about eight to nine hours a day, herding time in dry season reached almost ten hours a day. This indicated that fewer pastures were available in dry season that longer herding time was necessary. Morning grazing was often the duty of younger herders. Informants indeed had mentioned that the practice of morning grazing had diminished because nowadays Fulani preferred to let their children attend nomadic school in the morning. But in 2006 dry season, the harsh weather had led to the tradeoff between education of children and the survival of cattle. Exceptional dryness made the situation very harsh for herders. The AA group needed to begin grazing as early as 7:30 in order to secure the little remnants left on fields from the keen competition of other Fulani groups. Morning and afternoon grazing was carried out in total of 93 days in 2005-2006, but it was just 24 days in the previous year. Herding time of rainy season recorded by Shikano was similar to that of 2005-2006, but was slightly shorter for dry season. Adjusting herding duration is the most direct technique that pastoral Fulani apply for adapting to changes in feeding resources availability over time.

7.4.4.4. Split-herding

Baade is the minimum unit for the herding activity of pastoral Fulani. The cattle owned by the members of a *baade* are all placed into the *baade*'s cattle enclosure "hoggo" and put under the management of the *baade* head. During the day, cattle are put out to pasture by one or several herders of the *baade*. In the rainy season, particularly the *dungu* season when abundant supply of pasture is available and grazing is relatively easy, the herds of all *baade* of group AA are put together as one pastoral herd. It is possible to secure in one location the quantity of pasture that is enough to feed the cattle of the whole group. Grouping all the herds to graze together can save labour and herders who are off duty can take a longer rest.

In the dry season supply of fodder decreases and feed patches are scattered. Sorghum remnants in each field are never plenty in quantity and small sorghum fields scatter over distant places. The hills of rice straw on paddy fields are also never large and always are dispersed over wide areas. To cope with this situation, pastoral Fulani split the pastoral herd into two to three smaller groups for efficient grazing. The most dominant adjustment of pastoral herd size is carried out in the early *yande* period. The pastoral herd of AA group is always divided into two groups: one group is sent to the

lowland pastures under the care of the youths, and another group remains on uplands with majority of the group members. The motive for this arrangement is to best utilize the limited feeding resources available on both uplands and lowlands simultaneously. Nupe farmers take a long time to gradually harvest all the upland crops in the *yande* season. At the early stage of the harvesting period, supply of crop remnants is bounded to be low. Pastures on fallow lands and secondary forests also dry up rapidly after rainfall has stopped. Thus by splitting the pastoral herd into two and sending them to different locations, the Fulani manage to feed their cattle with the little grass remained and the small quantity of sorghum remnants left on fields after harvesting. The remaining herd on the uplands will move to the lowlands to join the other herd when all the fodders available on uplands get exhausted.

Table 7-13. Cattle distribution of AA group in *yande* season of 2005.

Baade	Total no. of cattle	No. of cattle first sent to lowlands	Cattle stayed on uplands until the seasonal migration
AA – 1	41	25	10 cows with calves, 3 bulls, 3 cows
AA – 2	30	21	7 cows with calves, 2 bulls
SD	38	24	12 cows with calves, 1 bull, 1 cow
SF	38	19	13 cows with calves, 4 bulls, 2 cows
MD	83	59	22 cows with calves, 2 bulls
IS	89	64	19 cows with calves, 4 bulls, 2 cows
YD	58	42	14 cows with calves, 1 bull, 1 cow
Total	377	254	123

Source: Fieldwork.

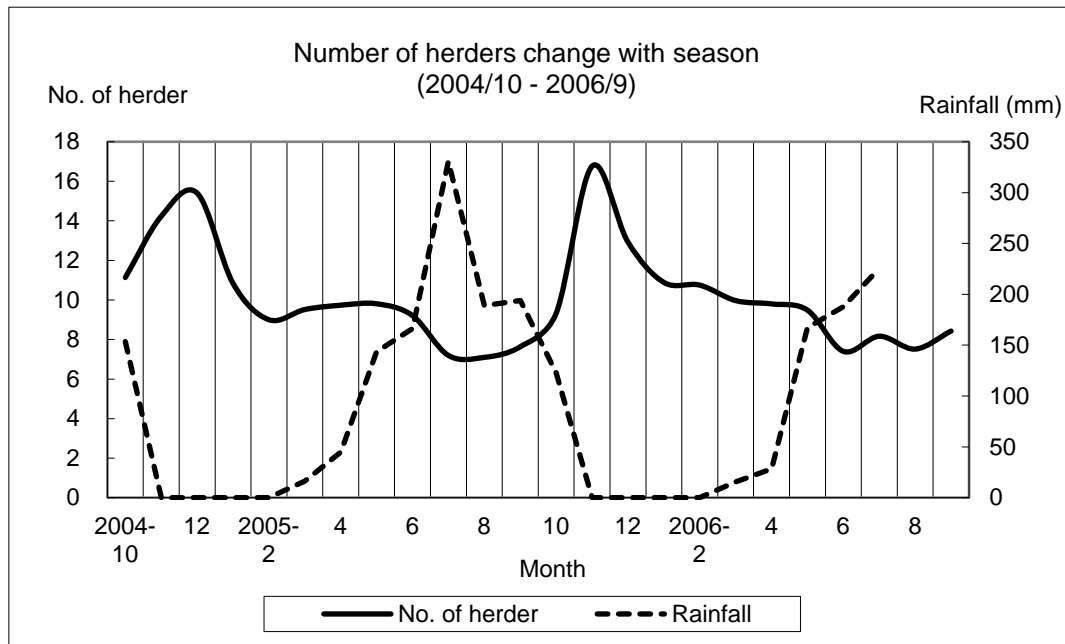
On 23 October 2005 about two-third of the total cattle herd of the AA group were sent to Nasarafu village with seven young herders (table 7-13). Nasarafu was the major lowlands pasture of the group and the destination of dry season migration that year. Before the whole group migrated down to join them in Nasarafu, these young boys could only sleep in simple shelters temporarily set up on a harvested farm. In bad years when the weather was very dry and availability of pasture was critical, these boys and the herd would be sent to even further places, somewhere at like 30km away from the wet season pasture, to the large floodplain of the Niger River. Cattle that were kept on the upland camp with the matured group members were mostly milch cows plus their calves, young productive cows and bulls being used for seeding purpose. It indicated

obviously that pastoral Fulani took the safe side to keep the re-productive cattle under the *baade* heads so to avoid risk during the excursion with the youths. Fulani women would keep processing the milk from these milch cows and sell in Bida market for cash. Similar to the time of Shikano, record of 2005-2006 also showed that pastoral herd was being split for grazing throughout the dry season. By splitting the herd into smaller grazing unit, pastoral Fulani secured the little resources remained over scattered areas.

7.4.4.5. Adjustment of number of herders

Figure 7-4 shows the change in number of herder and rainfall from October 2004 to September 2006. It demonstrates that group AA adjusted the number of herders in accordance to the change of season. During the rainy season when grazing was more pleasant, one herder was enough to lead grazing of the cattle herd of one *baade*. For there were seven *baade* in AA group, it meant about seven herders were used in the rainy season. This is also shown in the record in table 7-11. When rainfall has stopped and farmers began harvesting, pastoral Fulani needed to be very cautious in their grazing and a lot more herders were used. When the pastoral herd was divided into smaller units, when grazing duration was extended and when morning grazing on scattered post-harvest fields was conducted, more herders were needed. In the *yande* season of 2005, 15-17 herders were used on average per day (table 7-11). There were days when 21, and even 23, herders were used, meaning that almost all the male members in group AA were needed to graze on those days. Grazing in the *yande* season required the highest number of herders because farmlands were used as herding ranges in this period. Cattle herd might need to pass through some pre-harvest farms before they could reach the post-harvest farms for sorghum remnants. Several herders were needed to lead cattle to pass through narrow paths between farms, and they had to be very careful not to let cattle encroach on any pre-harvest fields. In case cattle destroy any pre-harvest crop, Fulani must beg for forgiveness from farmers and even compensate farmers by cash. Sometimes it can escalate into a dispute which harms their social relations with farmers. It is interesting to note that while in Shikano's time one herder could take care of about 75 cattle on average, in the new record one herder could only take care of about 32 cattle on average. With higher population to land ratio and more lands turning into farms, grazing also require more cautiousness and labour than before.

Figure 7-4. Number of herder used and rainfall in each month



Source: Fieldwork.

7.5. Conclusion

The herding activity of pastoral Fulani group AA has been recorded for almost two years from October 2004 to September 2006. In this chapter the herding activity of AA group during the one year period of June 2005 to June 2006 has been analyzed in detail. Pastoral Fulani divide a year into six seasons and different herding patterns have been observed in each of the season. Herding ranges in various locations and with diverse types of pasture are used in different season so to secure the most reliable feed for cattle in each season. Through the analysis, it is identified that pastoral Fulani are constantly adjusting five elements in their herding system, which are herding ranges, camp location, grazing duration, herd size and herder number. By flexibly adjusting these elements of herding activity, pastoral Fulani are able to secure access to the limited resources available in every niche in time and space. Comparing with Shikano's record ten years ago, although the locations of some herding ranges have changed, no major change has been found in the overall herding pattern of AA group. It indicates that pastoral Fulani have been able to maintain their production system and sustain the complimentary resources use relationship with the Nupe farmers over the last decade.

The environment where pastoral Fulani sustain their cattle husbandry consists of both natural and human variables. Natural environment includes factors such as seasonal changes, complex topography, quantity and distribution of vegetation and availability of water. Human environment changes in accordance with the farming activity of the Nupe, such as progress of plantation and harvesting of upland and lowland crops, expansion of cultivation area and decision of land fallowing. Pastoral Fulani have been continuing their herding activity under these two diverse environments. Through years of interaction with both the natural and human environments, they have accumulated the necessary knowledge and experiences that enable them to develop their unique herding system. They secure the available feeding resources by rotating among different herding ranges of various locations. They move their camp to get the best access to the herding ranges available in the season. They also perform morning grazing and extend grazing duration. They adjust herd size and number to herders in order to allow cattle to access to any small patch of feed. Their intimacy with the Nupe allows them to know very well their land use and farming status, which enable them to select the usable grazing lands for day-trip herding as long as they do not intervene into the activity of the Nupe. Pastoral Fulani can utilize the resources by segregating their herding activity from the farming activity of the Nupe in time (graze on pre-harvest and post-harvest fields) and in space (graze on uncultivated land). All of these are essential elements of the herding strategy and technique that developed by pastoral Fulani after years of efforts to make the limited available resources more accessible to them with the minimum interruption to the farming activity of the Nupe. The highly adaptive herding system allows pastoral Fulani to cohabitate with the Nupe within a rather small area and to sustain their cattle husbandry way of life without the need for long distant transhumance.



Photo7-2. Cattle grazing on uncultivated grassland in rainy season (September 2005)



Photo 7-3. Seasonal migration of pastoral Fulani (October 2005)



Photo 7-4. Cattle passing through irrigated field in dry season (January 2005)



Photo 7-5. Cattle grazing on harvested rice field in dry season (January 2006)

Chapter Eight

Conclusion

8.1. Summary of research results

Getting agriculture growing is considered the most important solutions to the intractable problem of African impoverishment. Nevertheless, despite the continuous intervention of international institutions, the African agricultural sector constantly suffers from stagnation. Nigeria, the most populous country of Africa, was previously self-sufficient in food production until the 1970s, but today it is the largest food importer on the African continent. The generalized perspective on African agriculture is negative: the sector is held back by smallholder farmers who are low in productivity and lack of incentive to improve, and the environmental resources are over-exploited due to population explosion and the rudimentary production methods which cause “the tragedy of the commons”. The conventional diagnoses to the stagnated African agriculture have been focusing on the provision of material inputs, the liberalization of market, and the experts-led intervention strategies. Improved technologies and intervention strategies have been transmitted one-way from the top down to the farmers. These conventional approaches, however, underplay the potential of indigenous initiatives and the gradual successes achieved by smallholder farmers. Contrary to the bias that African farmers are changeless, they are indeed capable of innovating and generating indigenous initiatives to improve their farming systems, natural resources management and community livelihood. Local agricultural initiatives are adaptive to the local agro-ecological, history, political, socio-economic and cultural conditions. In this study, substantial anthropological fieldwork has been carried out to investigate into the local agricultural initiatives developed by the rural Nupe farmers and pastoral Fulani.

Economic anthropology concepts on community economy and peasant economy are reviewed in chapter one. In the economic anthropology perspective, the economy consists of both the market and the community realms. The African peasant economy is dominated by the community realm. In the community economy, individual is embedded in a web of social dependencies and obligations; materials goods and

resources are exchanged through a complex of social relationships and associations. The foundation of a community is the “base”, which consists of the shared commons, such as ecological resources, indigenous knowledge, social networks, history, traditional practices, agreed rules, ritual, and so on. Between communities, reciprocity is the tactical act to establish and break relationship through extending the base of a community to another community and include it as the user of the base. African peasant economy is not yet totally captured by capitalism and state control. Social and economic behaviors of African peasants are guided not by profit maximization, but by the principles of subsistence orientation and reciprocity. Their foremost concern is to sustain themselves in a reliable way. Therefore they maintain a close social tie with their community members through reciprocal exchange, and this ensures them the social safety even in time of subsistence crisis. In Nigeria peasant society, there is not yet a strong evidence of agrarian capitalism. Traditional institutions governing labour arrangement and natural resource allocation still persist, which means Nigerian peasants still have certain control over their factor of production: land and labour.

The rural communities studied in this dissertation are the Nupe farmers and the pastoral Fulani residing in central Nigeria. Following the economic anthropology concept, chapter two and chapter three can be regarded as concerning with the “base” of the Nupe community. Chapter two provides a description of the research site – the Cis-Kaduna region of the Bida Emirate in Central Nigeria. The research area belongs to the Guinea savanna zone with the rainy season lasting from April/May to October and dry season from November to April. It is surrounded by multiple river channels with the special topography that contains of both uplands and lowlands within a close distance. Chapter two gives the background of the persisting traditional administration and resources allocation institutions of the research site. The conquest of the old Nupe kingdom by the Fulani *jihad* and the establishment of the Bida Emirate in the nineteenth century have led to the emergence of the current dual public administrations and the multi-layered land ownership system.

Chapter three presents an ethnographic record of the rural livelihood of the Nupe farmers. The research area is originally a sparsely-populated zone and a “conquered territory”. Majority of villages are founded by migrants who were former slaves and dependents of the conquerors in the late nineteenth to early twenty century. Farming for

Nupe peasants is primarily for self-subsistence. By cultivating diverse crops and cultivars which adapt to the varying hydrological and meteorological environments, Nupe farmers harvest different crops in different time periods to ensure sufficient food supply throughout the year. Millet and sorghum are by far the most extensively cultivated cereals grains on uplands. Rice is the most dominant crop in the lowland marshy areas. A case study of a Nupe village called Emitsundadan (EN) shows that farm plots of Nupe farmers are small in size and scattered. Nupe villages often do not have adequate farmland for its own members, but acquiring farmland from surrounding villages is a common practice in the region. Mature farmers with well-established social connection may acquire lands from multiple landlords in order to safeguard access to sufficient lands. The study also finds out that traditional institution of community labor remains as an important source of labor particularly for elderly farmers.

Chapter four reveals the first case of local agricultural initiative. Marshy areas were marginally used in the research site about half a century ago. With the higher demand for cash, lowland farming of rice in the rainy season and off-season crops in the dry season has gradually become an important source of income for Nupe farmers. Although without any external assistance, Nupe farmers have been able to mobilize local resources and gradually expand indigenous irrigation and scale of cash crops farming on lowlands. Irrigated off-season cultivation of the research site has expanded further in the 1990s when the Hausa merchants began to purchase from the Nupe farmers. But the traditional land tenure has prevented lowland plots accumulation. The system surveyed is cultivated by farmers from multiple villages, each have only a small area of plot. With limited availability of irrigated land, the plots are sometimes temporarily sublet to others who have urgent cash need as a custom of helping out. Informal collective effort of irrigation management began in the mid-1980s after a drought happened. Irrigation management effectiveness is highly influenced by the involvement of landlords. There is no clear water right definition. In time of water shortage, water is rotated and shared. Water scramble occasionally happens between top-enders and tail-enders, but through social obligation top-enders have to release water to tail-enders for an agreed period of time whenever there is a request.

Chapter five illustrates the second case of local agricultural initiative. The chapter explores how the Nupe farmers have incorporated yams, a high valued exotic crop, into

their upland farming system and dietary habit. When ethnographer visited the Nupe in the 1930s, Nupe farmers was still unfamiliar with yams and their farming system was predominately grain-based. Through the spontaneous effort of farmers to pick up the early maturing cultivars, yam production has become possible in the Guinea savanna zone. Following the increasing demand for yams since the late 1980s, the middle-belt region has gradually replaced the southern states and become the new center of yam production of Africa. The study proves that the Nupe farmers have already taken the initiative to incorporate this high-valued crop into their farming system as a cash crop. Yams are already commonly cultivated, particularly for upland villages which possess no lowlands within their village boundary. Although in small-scale and with a short cultivation history, a total of thirty-one varieties of yams were recorded from interviewed farmers. Yams require rich soils and preferably planted on virgin land, but the Nupe farmers commonly intercrop yams with sorghum and egusi melon, and they also mixed crop yams with cowpea and okra. This indicates the lack of uncultivated land in the research site. For the Nupe, the importance of yams as food lags behind sorghum and rice. Yams do not play any role in the traditional ritual of the Nupe, but with its high market value and palatable taste it is increasingly used as gifts for important people.

Chapter six examines the reciprocal natural resource use relationship between the Nupe farmers and the pastoral Fulani. Following the establishment of the Bida Emirate in the nineteenth century, pastoral Fulani gradually began to settle in the Nupe region for long-term stay. Pastoral Fulani is a minority in the Bida Emirate and they maintain the nomadic cattle husbandry lifestyle. Under the traditional land ownership, pastoral Fulani in the Bida Emirate do not have guaranteed access to land. They secure their resources entitlement through enacting reciprocity, the “corralling contract”, with the Nupe farmers. Corralling contract refers to the reciprocal arrangement to maintain livestock on croplands for a specified time period. In return to the cattle manure, farmers often offer cash and gifts to herders and allow livestock to graze on uncultivated and harvested fields. Corralling contract is the indigenous fertilization method commonly practiced in the arid and semi-arid zones southern to the Sahel. Fieldwork findings suggest that pastoral Fulani groups in the research site have different strategies to maintain social ties with Nupe villages through the adoption of corralling contract. While some groups can well manipulate the relationships with various villages to their

advantages, some groups prefer a more stable situation and just get the minimum advantages out of the contract. Pastoral groups with higher social status and a good track record may enjoy a higher bargaining power when negotiating for the return for corraling contract. But the social relationship with the Nupe farmers is always given weight when deciding which village to settle. They are willing to help farmers with higher need and they intentionally rotate among different farmers for avoiding the risk of conflict. Farmers commonly combine collective efforts to host a pastoral group and then share the manured fields. Land sharing and pastoral camp rotation enable multiple Nupe farmers to have access to manured fields. The reciprocal relationship between the pastoral Fulani and the Nupe farmers is one of the keys that sustain the harmonious cohabitation of the two groups.

Chapter seven presents the third case of local agricultural initiative, which is the herding practice of the pastoral Fulani in the Bida Emirate. With the failure of the Nigerian government to provide grazing reserves for the nation's pastoralists, majority of Nigerian pastoralists rely solely on the customary arrangement with the agricultural community for accessing to grazing resources. In the research site, the arrangement of corraling contract help pastoral Fulani to secure access to land. However, the amount of fodder that the Fulani cattle need always far exceeds what their hosts can offer. Pastoral Fulani have to rely on the tolerance and acceptance of the greater Nupe community to let them access to uncultivated and harvested lands for pastures. Through a long history of intimate interaction with the natural and human environments, pastoral Fulani in the research site has developed the indigenous herding technique which allows them to access to sufficient pastures throughout a year. Pastoral Fulani studied divide a year into six seasons mainly according to changes in rainfall and vegetation. Through the analysis, it is identified that pastoral Fulani are constantly adjusting five elements in their herding system, which are herding ranges, camp location, grazing duration, herd size and herder number. Pastoral Fulani adjusts the herding ranges and utilizes different types of pasture available in each season. In the research site, pastoral Fulani migrate from uplands to lowlands in the early dry season and vice versa in the early rainy season. They migrate to river floodplain in the dry season for water and pasture, but in the rainy season they have to return to uplands for the health of their cattle. In the dry season when pasture availability is low, pastoral Fulani extend the grazing duration and divide the cattle herd into a number of smaller sub-herds so that they can reach to every small pitch of

remaining pastures. The harvesting period in the early dry season is the most critical period for pastoral Fulani because farm encroachment by cattle can easily break their social tie with the Nupe community. They must graze more carefully in this period, so they have to use more herders and also to divide the cattle herd into smaller sub-herds. By flexibly adjusting these elements in accordance to subsequent changes in natural and human environments, pastoral Fulani are able to utilize the limited resources available in every time and space niche. Their indigenous herding technique is another key that contributes to the symbiosis between Nupe farmers and pastoral Fulani.

Through the studies on the Nupe farmers and the pastoral Fulani in central Nigeria, we demonstrate how rural communities develop local agricultural initiatives to diversify their production system and to secure their natural resources need. African peasants are often assumed to be irresponsive to new innovation and reluctant to change, but through the evidences obtained by the detailed fieldwork, they are proven to be capable of generating indigenous solutions in response to gradual changes in the natural and human environments. These local initiatives emerge out of the community base of the rural people. They reflect the indigenous knowledge that is created through years of careful observations and experience of interactions between humans and nature. They are adaptive to the cultural and socio-economic conditions of local people. In the cases of the Nupe farmers, they have been able to spontaneously expand their production capacity and diversify their cash crop portfolio following the change in market demands and with the availability of local techniques. For the pastoral Fulani, their entitlement of grazing resources is ensured by the reciprocal relationship with the Nupe. Their cattle husbandry is sustained by the complex herding techniques that are backed by a reliable and adaptive indigenous knowledge base. Reciprocity is the tactic that links and ensures the mutual benefits of the two groups. From the perspectives of conventional intervention rationality, the local agricultural initiatives developed by rural community may not be the most efficient for gain maximization and technologically polished. But from the situated reasoning perspective, the endogenously generated solutions are often rational because they are adaptive to the social obligations and resources constraints of the community. Coping with changes by adaptation, adjustment and step-by-step improvement is often more preferably by local communities living on the verge of subsistence.

8.2. Symbiosis between Nupe farmers and pastoral Fulani from economic anthropology perspectives

The Cis-Kaduna region of the Bida Emirate is surrounded by multiple river channels with the special topography that contains both uplands and lowlands within a close distance. The ecological environment of the research site sets up one of the basic conditions for the intimate cohabitation of the Nupe farmers and the pastoral Fulani. The political history of the Nupe reveals that the research site was originally a sparsely-populated zone. The establishment of the Bida Emirate by the Fulani *jihad* in the nineteenth century has brought several changes which are still relevant today. First of all, it put the region under Islamic rule and value, which at present still has important implications on resources allocation for the Nupe rural community. Under the Islam ideology, people share their wealth with the needy ones for Allah's salvation. Sharing activities of the rural Nupe and the pastoral Fulani are dominated by the principle of generalized reciprocity. Both the Nupe Muslims and the Fulani Muslims believe that the ultimate owner of land and water is Allah. Therefore land resources should not be rejected from community members whenever there are subsistence needs. The second change since the Fulani conquest is that the region has turned into a more densely populated zone. Majority of villages in the research site were founded by migrants who were former slaves and dependents of the conquerors during the late nineteenth and early twentieth century. These migrants might not be Nupe by origin, but they have been "Nupe-ized" culturally and linguistically over time. The history of people's attachment to land and farming activities are thus not more than two hundred years of time. Natural resources utilization and farming system of the rural Nupe are bounded to be unsophisticated when compared with that of Asia and Europe where sedentarization of human has occurred centuries and even thousands of years earlier. Another important change brought by the Fulani conquest is that it has removed the political barrier that previously stopped the pastoral Fulani from infiltrating into the region. Even though the Fulani aristocrats did not have direct affiliation with the pastoral Fulani, the expansion of the Sokoto Caliphate provided the political protection that enabled the migration drift of pastoral Fulani. The first pastoral Fulani group began to settle in the region for permanent stay following the establishment of the Fulani dynasty. It is therefore

anticipated that the first pastoral Fulani group and the migrant farmers should have begun their presences in the research area from a similar period of time.

Gudeman (2001) postulates that all economies consist of both the market and the community realms. Although signs of market economy infiltration can be found even in the most remote village in Africa, fieldwork findings indicate that the community realm continues to constitute a major portion of the economic life of the rural communities researched. The Fulani conquest in the nineteenth century has created a stratified hierarchy of authority and control over land. In the rural community, customary norms and laws governing allocation and use of land persist. Individuals within the community are entitled to portions of communal land for personal use and are expected to hold such land in trust for coming generation. The lack of land in a village does not impose a constraint to its inhabitants for acquiring farmland necessary for their basic subsistence. When they have needs they can obtain farmlands from surrounding communities via social networks like marital relation and inherited tenancy. It is similar to the observation of Hills (1972) in northern Nigeria that rural farmers have not been separated from land and a landless class of labour for the land-rich has not emerged. Family labour, labour exchange and village community are the major sources of labour for Nupe farmers. By controlling over the factors of production, land and labour, Nupe farmers are able to maintain the subsistence mode of agriculture production.

Farming production of a family unit in the substantive economy is primarily for self-sufficient householding (Polanyi, 2001). Nupe farmers adapt themselves to different hydrological environments that range from uplands to lowlands, and from the rainy to dry seasons. The priority of agricultural production is to secure diverse variety of cereals, legumes and tubers that the family consumes throughout the year. Nevertheless, it is certainly unrealistic to consider the economy of the Nupe peasants as an autarky. The economic life of African peasants also consists of the market realm and cash is increasingly necessary for sustaining livelihood and social interaction. The relationship between the world capitalist system and the local system in the developing world has gradually changed from a “horizontal integration” to a “vertical articulation” (Sugimura, 2008). The market realm of peasant economy has already been integrated as a part of the global economy. Although the Nupe peasants have not yet been fully captured by the state and the capitalist market, they cannot isolate themselves from the

changes brought by the expansion of cash economy. Their livelihood is inevitably influenced by the fluctuation of crop selling prices in the local market and even in the global market. Besides securing different variety of food throughout the year, it is also important for the Nupe farmers to earn some cash income from a portion of their agricultural production.

The principle of reciprocity is strongly embedded in the African peasant economy. The social institutions and human predisposition to act as a reciprocator are important mechanisms to explain the origins and maintenance of interethnic cooperation (Paciotti et al, 2004). The practice of corralling contract between the Nupe farmers and the pastoral Fulani demonstrates that the institution of reciprocity can well facilitate resources sharing between ethnic groups with different modes of economic subsistence. Through the reciprocal exchange of cattle manure with land use right, pastoral Fulani secure access to grazing resources while Nupe farmers get the manure to fertile their lands. For Nupe villages which do not have chance to benefit from corralling contract, their generosity to tolerate pastoral Fulani from accessing to their lands as herding ranges can also be considered as basing on reciprocity. The expectations that the Nupe have, that by maintaining a cordial relationship with the pastoral Fulani they may come for their lands for corralling contract someday, is a strong motive for the Nupe to generously let the Fulani cattle graze on their harvested and uncultivated fields. The condition behind this is first and foremost the flexible adaptation of the pastoral Fulani to changes in seasonal and human environments, which enables them to strictly maintain the time and space segregation from the farming activity of the Nupe.

In the concept of substantive meaning of economy proposed by Polanyi (1975b), man depends upon nature and his fellows for his living. The substantive meaning of economy refers to the interchange with one's natural and social environment, in so far as this result in supplying him with the means of material wants satisfaction. Polanyi opposes against the formalist tradition which insists the market system as the only one possible way of allocating resources. He proposes that redistribution, designating "appropotional the movements towards a center and out of it again", and reciprocity, designating "the movements between correlative points of symmetrical groupings", are the other alternatives for resources allocation. These two modes are historically more important than the market. Since independence the Nigerian government has attempted

to transform the livestock production sector by the market and the redistribution solutions. However, the introduction of the western range models by private companies has mostly resulted in vain efforts. Land redistribution by establishing grazing reserves in the northern states has also shown little effectiveness in improving pastoral production system. Fieldwork findings in central Nigeria reveal that reciprocal arrangements made directly between farmers and pastoralists end up remain to be the most effective method for both communities to allocate resources and to sustain their production. Maruyama asserts (2006; 2008) that the increasing dominance of the market domain exposes human security to a higher risk. Ever since the great transformation of economic institutionalization in the 1930s (Polanyi, 2001), the importance of reciprocity as the domain of economic integration has diminished, which is destructive to the ecological commons that link human with nature. In the case study of the Nupe farmers and the pastoral Fulani, cattle manure in the corralling contract and the crop remnants left on harvested fields function as the means for the two communities to share resources and maintain cooperative relationship. Manure and crop remnants can normally be considered as valueless waste, but when they are given a use value appropriately, they can function like a “local currency” that by its use can strengthen social tie among individuals and communities (Maruyama, 2006; 2011).

We further elaborate the importance of reciprocity between the Nupe farmers and the pastoral Fulani for the sustainability of their peaceful cohabitation. In Gudeman’s (2001) idea, providing gift and enacting reciprocity are the tactical acts that extend the resources base of a community to persons outside the community. Through reciprocity, community is extended to outsiders, including them as users of the base. This reciprocal extension of communality suggests the possibility of forming a larger, encompassing community. Reciprocal exchanges of goods and services between farmers and pastoralists in other part of Africa have been reported by researchers. Driel (1999) illustrates the herding contract in which Dendi agriculturalists entrust their cattle to Fulani pastoralists in North Benin. Sun (2002) reports farmers digging well for pastoralists in Kenya. Even in capitalized economy like Japan, there is reciprocal exchange of rice straws with cattle manure between rice farmers and dairy farmers (Yasaka, 2012). In the Bida Emirate, exchange of gifts such as livestock, dairy products and crop is very common between farmers and pastoralists. There are also cases of farmers entrusting their cattle to herders. Intermarriage is one of the most commonly

used exchange instruments among communities to strengthen social integration and interdependence (Nakanishi, 2008). However, there is no exchange of women between the Nupe farmers and the pastoral Fulani. It is probably because of the difference in lifestyle and the skill that the Fulani require a wife to have to process dairy product. It is also probably because mobility still remains as the core value of the pastoral Fulani. In the absence of intermarriage, cattle manure and grazing resources become the important medium of reciprocal exchange between the two communities. Through the reciprocal arrangements, they are able to extend their bases to each other and include each other as users of their resources.

The emphasis of the importance of the principle of reciprocity does not mean that every single village and pastoral group have to be as open for exchange and interaction as every others. Deviances in the degree of interdependence among communities do exist. In Sahlins (1972)'s model that scale the correlation between reciprocity and social relations, he places positive and negative reciprocity at the two ends of a continuum and argues that kinship distance is correlated with reciprocity (Gregory, 1994). By replacing "kinship distance" with "social distance", Sahlins' model can be applied to explain the interrelations of the Nupe farmers and the pastoral Fulani. As stated earlier, the African peasant economy is dominated by "generalized reciprocity", which is the "putatively altruistic" transaction. Some pastoral Fulani groups offer their cattle manure for the use of farmers without receiving many gifts. Meanwhile, some Nupe farmers let Fulani cattle to graze on their lands although they do not benefit from any cattle manure. These are examples of the implementation of "generalized reciprocity". Communities engage in generalized reciprocity need to have large amount of trust and the minimum amount of social distance. This is never unconditional and has to be maintained through continuous efforts of both parties to sustain social interaction and mutual benefit. The goods and services offered by generalized reciprocity are often expected to be balanced out over time based on trust and social consequences. That is why some pastoral groups need to rotate their camps for multiple villages to fulfill farmers' expectations, and some farmers to tolerate the minor crop damage caused by cattle. In fact both the Nupe farmers and the pastoral Fulani often participate in the social events, like ceremony and religious functions of each other. Through frequent social interactions the two groups sustain the mutual trust between them. In face of instability of resource allocation,

increasing diversity of social networks and clientage is the optimal strategy for African rural people (Berry, 1993).

In the middle of Sahlins' scale is "balanced reciprocity", which is the exchange that expects a fair and tangible return, at a specified amount, time and place (Bonvillain, 2010). Example of such arrangement is the herding contract between pastoralists and farmers. When cattle are entrusted to herders, often the agreement on duty, allocation of milk, service charge and so on has to be arranged with a witness. Trust and social tie are still essential for herding contract because cattle are often of enormous value to both the Nupe and the Fulani. At the extreme end of Sahlins' scale is "negative reciprocity", which is the attempt to get something for nothing. Negative reciprocity can involve a minimum amount of trust and a maximum social distance; indeed, it can take place among strangers. Between the Nupe farmers and the pastoral Fulani, action of negative reciprocity can result in the dissolution of social tie. A pastoralist may let his cattle eat up farmers' crops and then run away, or a farmer may intentionally burn up his crop residuals in the purpose of avoiding Fulani cattle. These actions of negative reciprocity indicate the lack of desire to create mutuality and the unwillingness to sustain social connection. For pastoral Fulani who have no guaranteed control and attachment over land, if the hosting community as a whole continues action of negative reciprocity, it indicates the total rejection of pastoralism in the region and the whole pastoral community has to undeliberately migrate out. Situation like this is rare but it could happen when social destruction between different ethnic groups reaches to an unrestorable level. The Wadaabe Fulani migrated out of West Bornu in 1944 to escape from political hardship was an example of such (Stenning, 1959:222-224).

From the economic anthropology perspective, the subsistence economic livelihood and the complimentary environment use relationship of the Nupe farmers and the pastoral Fulani in the Bida Emirate are based on the dominance of the community realm of the economy and the principle of reciprocity. It is not the stand of this study to assert that the current economic livelihood and harmonious cohabitation of the two communities are an everlasting phenomenon that is ideal and should never change. From the political history, we know that the cohabitation of the two communities has no more than two hundred years of history. Over time both the Nupe farmers and the pastoral Fulani have developed the survival strategies that are highly adaptive to

changes and accommodative to the neighboring community. Traditional institutions governing land and labour have largely been preserved in the Nupe peasant society. Although they are reluctant to adopt imposed modern technology that does not fit their farming system, indigenous initiatives for agriculture development have spontaneously emerged. Although without any external assistance, farmers are able to mobilize local resources to extend their cultivated area to land of different topography and incorporate new crops to diversify their farming system. For the pastoral Fulani, reciprocal arrangement with the Nupe farmers enables them to secure grazing resource entitlement and maintain a collaborative relationship with their hosts. Their herding strategy has been developed in such a way that allows them to be highly flexible and adaptive to change of seasons and progress of farming activity of the Nupe.

We do not deny the possibility that the current subsistence strategies and reciprocal relationship of the Nupe farmers and the pastoral Fulani may not sustain at a stable condition in the future. Change is one of the fundamental natures that constitute human society. The greatest threat to the symbiosis of the Nupe farmers and the pastoral Fulani will occur someday when they completely lose control over their land and labour under the rigorous force of the state and the market. When the community realm of economy drastically shrinks and the market realm excessively expands, the Nupe and Fulani men and land will finally be turned into “fictitious commodities” (Polanyi, 1957b). In this situation the behaviors of members of these two communities would turn to be more driven by personal gain maximization, which would deteriorate the domain of reciprocity and cause change in environment use so as to increase production. In face of the growing uncertainty brought by the expanding influence of the state and the market, the sustainability and advancement of local social institutions and community networks is becoming even more important because they would provide the African rural people with the “subsistence insurance” to buffer the violence in the process of economic change (Scott, 1976).

8.3. Policy implications

Through the studies on the Nupe farmers and the pastoral Fulani in central Nigeria, we demonstrate that African rural communities are capable of innovating local initiatives for agricultural development. In response to the ever-changing ecological, social and human environments, rural communities devise, develop, adopt and adapt ingenious initiatives for achieving subsistence production and improving their economic welfares. These initiatives, although may not be the most technological sophisticated or the most gain maximizing, they are suitable to the local circumstances as they are generated out of the community base and are guided by local socioeconomic norms. As indicated in the resources allocation and the reciprocal arrangement of the Nupe farmers and the pastoral Fulani, local agricultural innovations are operating without threatening the subsistence right of local people and the reciprocal relationships between communities. These disciplines are especially important to Nigerian peasants as they rarely get governmental help and are often impoverished by the destructive effects of irrelevant intervention strategies. After years of false governmental promises, Nigerian peasants have strengthened their tendency of self-reliance. Diversification of livelihoods and social connections has become the more reliable subsistence strategy for them.

Over the past decades development agencies and agricultural research institutes have put the improvement of agricultural productivity of African peasants high on their agenda. However, technology solutions have often been put at a high level of generalization that prefers universal explanations. Africa is immensely diverse, and the ecological and social constraints are often local and specific which require local and ecological peculiar responses. This study reveals the capacity of African peasant to innovate and take initiatives, but it is not to argue that African peasant agriculture needs no technique inputs or assistance from the formal sectors. Under the rapid expansion of globalized market economy, appropriate assistance are necessary for helping African peasants to lower their vulnerability and enhancing their ability to stand again rapid changes and growing uncertainty. Appropriate assistance must be generated out of a well recognition of local natural and social conditions. Indigenous initiatives of peasant producers are not without any weakness. Some indigenous initiatives may not be beneficial to the sustainable development of local community in the long-run, for

example the expansion of extensive cassava cultivation and the unrestricted increase of new migrant pastoral Fulani. In addition, some local initiatives may lack the capacity to respond to the rapid ecological, economic, political, and cultural changes on a global scale. They may vanish and become inappropriate for new challenges when they adapt too slowly. Appropriate assistance from the formal sectors can strengthen the innovation capability of peasant producers and assist them to evolve improved solutions to tackle the problems in their locality.

Deriving from the research results, two policy recommendations are made on African agricultural development. Firstly, there is a good potential for scientific research and extension provision to seek out changes already taking place within the peasant farming sector and aim to build upon the best of the local initiatives. African peasants are capable of making changes in their own interest which are potentially of benefit to the society as a whole. They are dynamic innovators and they know the opportunities and challenges posed by their local environments. The most effective and rapid rates of African agricultural development will occur when appropriate technical supports and state resources are used to back changes that peasant producers are already keen to make. This requires participatory research and farmer-led extension approaches.

Secondly, development policy makers should take into account the diversity, flexibility and personal nature that characterized African community economy when deciding intervention strategies. A thorough understanding of the ecological and socioeconomic characteristics of the targeted peasant society is one of the prerequisites for successful intervention. When imposing externally generated change, it is essential to assess its impacts on the relation between people and physical environment, as well as the relations among people. Scott (1998) argues that radical simplification of agricultural high modernism fails to represent the actual complexity of natural and social processes of farmers and their communities. The combination of the universally pretentious scientific knowledge and the authoritarian social engineering, Scott stresses, has proven to be truly dangerous to humans and to the environment. Development intervention without recognizing the importance of the sustainability of shared commons and indigenous knowledge of rural communities would risk to the result of modernization of poverty (Illich, 1981).

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APPENDICES

Appendix 2-1

The lists of villages were collected from two Village Area Head, *Etsu Nyenkpa*. They are presented here to provide additional information.

Table 2a. Villages under the Eyagi Village Area.

No	Village	Primary landlord	No	Village	Primary landlord
1	Alkusu Yisa	Tsoyida	16	Kusotachin Ndaiji	Ndaiji
2	Tswatagi (Bantigi)	Indigene	17	Lafaruma	Indigene
3	Bida Mayaki	Ibandawaki	18	Majin Kaji	Indigene
4	Dadi	Alkali Ndagi	19	Malogi	Indigene
5	Emidajinchi	Indigene	20	Mandzwukwu	Mandzwukwu
6	Emidogo	Ceceko	21*	Mininko	Ndaiji
7	Emigogo Tako	Dandarma	22	Nassarafu	Villager
8	Emigogo Tifin	Dandarma	23	Ndaceko	Lukpan
9*	Emijiko	Ejiko	24	Ndarubu	Tsoyida
10	Emilukpa	Rani	25	Patigi Shaba	Takah
11	Emiworogi	Indigene	26*	Patishin	Talbah
12 ⁺	Eyagi	Indigene	27	Shabamaliki	Nagenu
13	Gadza	Tsoyida / Natsu	28	Sodangi	Indigene
14	Guzan	Indigene	29	Tsadu Dangana	Nagenu
15	Kusotachin Aliyu	Ndaiji	30	Tswawadzaman	Indigene

Source: based on fieldwork conducted by author.

⁺ Village of the *Etsu Nyenkpa*.

* Villages overlap with Kuchigbako Village Area.

Note: The list was obtained through the interview with *Etsu Nyenkpa* of Eyagi Village on 16 September 2005.

Table 2b. Villages under the Kuchigbako Village Area.

No	Village	Primary Landlord	No	Village	Primary Landlord
1	Bade	Ndagimba	27	Gudu Gbagba	Cekpa
2	Danchitako	Tsoyida	28	Kangi	Rani
3	Ekosa Mesa	Waziri	29	Kangi Lakpene	Lakpene
4	Ekota Ekomisun	Nakordi	30	Kangi Tifin	Rani
5	Ekota Nin	Gbate	31 ⁺	Kuchigbako	Indigene
6	Emi Aduwata	Tswana	32	Kuchiwo	Ejiko
7	Emi Tswana 1	Cekpa	33	Kuchiyabata	Indigene
8	Emi Tswana 2	Ndagimba	34	Lemuta	Gbate
9	Emibazhi	Ndagimba	35	Madodo	Natsu
10	Emigbari	Tutiginba	36*	Mininko	Waziri
11	Emigilali	Natsu	37	Mokwagi	Indigene
12*	Emijiko	Ejiko	38	Mokwako	Iya / Indigene
13	Emiladan	Gara	39	Nnashiru	Ndagimba
14	Emi Ndabolo	Rani	40	Patibokungi Tako	Tsoyida
15	Emi Ndeji	Lakpene	41	Patibokungi Tifin	Tsoyida
16	Emisheshi Natsu	Natsu	42	Patigi Wari	Cekpa
17	Emitete	Nakordi	43	Patinda	Rani
18	Eimitsu Ndadan	Iya	44*	Patishin	Gbate
19	Esungi	Rani	45	Rogota	Etsu Maru
20	Fikin	Indigene	46	Saikiwa	Etsutanci
21	Fitigi	Indigene	47	Sheshikatsa	Chekpa / Iya
22	Gbranchitako Ekomisun	Etsu Umaru	48	Somazi	Somazi Bida
23	Gbranchitako Tifin	Etsu Umaru	49	Somazi Emindalu	Cekpa
24	Gbanguba	Tsoyida	50	Takun Kabagi	Ejiko
25	Gbara Gbagu	Lakpene	51	Yekoko	Indigene
26	Gongagi	Kuchigbako			

Source: based on fieldwork conducted by author.

⁺ Village of the *Etsu Nyenkpa*.

* Villages overlap with Eyagi Village Area.

Note: The list was obtained through the interview with *Etsu Nyenkpa* of Kuchigbako Village on 15 February 2005.

Appendix 4-1

List of questions for lowland farmers on lowland farming and irrigation management.

Information of informant

1. Name: _____
2. Age: _____
3. Village: _____
4. Highest education level obtained _____
5. Years of experience in farming _____
6. Major occupation _____
7. Other source of income _____
8. Marital Status: [☐] Married (_____ wives) [☐] Single
9. Household Head [☐] Yes [☐] No (Name of HH _____)
10. Household size _____
11. No. of household members involve in farming _____
12. No. of farms owned [☐] Uplands farm [☐] Lowland farm

Lowland farming and irrigation management

1. Lowland farms location and crops

No	Size	Location*	Wet season crop	Water source	Dry season crop	Water source

* Top-ender, mid-streamer or tail-ender

2. How do you acquire the usufructuary right of these farms?
3. Do you participate in community management of the canal that irrigates your plot? If yes, what is the motive for you to participate?
4. What is your position and task in the irrigation management?
5. Have you ever experienced problem with water control for your lowland plots? If yes, how do you cope with the problem?
6. What do you do to secure water for your rice after the end of rainy season?
7. Have you ever experienced water shortage for your off-season crops? If yes, how do you cope with the problem?
8. Have you ever obtain water from other farmers? If yes, was it in the form of exchange or just request? Please describe the arrangement.
9. How do you evaluate the management of the irrigation system?
10. How do you evaluate water distribution arrangement of the irrigation system?
11. Please describe the rules that you know on water allocation and water use of the irrigation community.
12. Who have the authorities to monitor water use of farmers along the irrigation system? Why do these people have the authority over water use?

13. Who is in charge of the regular maintenance, repairing and cleaning up of the irrigation system?
14. Is there any community effort for extensive construction and maintenance?
15. Do you attend meeting of the irrigation community? When are the meeting being hold and what topics are discussed?
16. Did you attend the communal canal weeding last year? When?
17. Is there any punishment when a person absents from the community meeting and work?
18. If a farmer comes to your part of canal/ your field to get water without noticing you, is it considered to be an offend or stealing? Have it ever happened to you? Please describe.
19. Have you ever taken water from other's field/ blocked the intake of others' field to get water? Please describe the situation?
20. Do you have any trouble with other farmers on water use on lowlands? How do you think the trouble can be avoided?

Appendix 5-1

Yam production data of Nigerian State.

1. Yam production of Nigeria by state (1,000 tonnes).

	State	1999	2000	2001	2002	2003	2004	2005	2006	2007
1	Abia	416.3	401.2	420.0	420.0	435.0	436.0	489.8	498.7	558.9
2	Adamawa	9.5	9.4	10.0	10.0	10.0	10.0	10.0	12.0	12.0
3	Akwa Ibom	268.8	254.3	294.7	284.0	240.0	239.0	259.9	256.8	256.8
4	Anambra	566.8	548.2	541.0	598.6	620.8	656.9	808.3	841.7	892.1
5	Bauchi	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Bayelsa	163.6	155.0	160.0	160.0	157.0	125.0	125.0	131.0	137.1
7	Benue	2723.6	2700.4	2875.4	2872.2	2870.7	2854.0	2872.0	2874.0	2872.2
8	Borno	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	Cross River	1356.2	1256.0	1256.0	1288.0	1312.0	1403.1	1504.1	1830.0	2043.5
10	Delta	404.6	434.7	415.2	417.3	417.3	441.8	917.8	1069.0	1112.3
11	Ebonyi	563.9	479.1	485.0	485.0	530.0	613.8	828.1	1127.0	1127.0
12	Edo	349.6	350.0	360.0	360.0	360.0	373.0	360.0	354.3	354.3
13	Ekiti	582.4	550.0	570.0	570.5	611.2	630.0	1053.8	1288.7	1341.1
14	Enugu	2240.9	2043.8	2135.7	2155.0	2183.4	2222.1	2322.1	2554.3	2707.6
15	Gombe	n.a.	n.a.	n.a.	n.a.	11.0	n.a.	n.a.	n.a.	n.a.
16	Imo	592.6	576.9	580.0	606.0	623.0	625.4	618.1	634.8	685.9
17	Jigawa	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	Kaduna	1886.7	1800.6	1820.0	1800.0	1800.0	1930.3	1932.5	1901.7	970.0
19	Kano	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
20	Katsina	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.6
21	Kebbi	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.0	n.a.	0.9
22	Kogi	1206.0	1174.0	1089.7	1015.4	1003.5	1025.5	1153.5	1264.9	1226.4
23	Kwara	772.3	736.6	752.0	624.0	590.0	327.7	385.9	412.9	434.8
24	Lagos	23.1	22.6	25.6	26.3	27.2	27.7	32.6	35.4	40.3
25	Nassarawa	922.6	900.7	963.7	900.0	950.0	1000.0	1047.3	1157.2	1773.4
26	Niger	3430.9	3264.3	3345.8	2845.4	2799.3	2940.0	2987.1	3024.8	4685.8
27	Ogun	73.6	63.9	53.2	67.8	75.3	84.1	117.0	143.0	199.2
28	Ondo	1046.7	1000.0	1060.4	1186.1	1212.1	1448.0	1508.6	1733.9	2000.7
29	Osun	509.2	480.5	500.0	500.0	500.0	99.5	99.1	149.1	267.2
30	Oyo	966.9	1045.0	1015.7	1015.7	979.9	908.7	907.2	855.8	792.9
31	Plateau	779.3	646.5	600.0	571.0	458.2	491.2	555.0	589.8	120.1
32	Rivers	1005.7	850.0	860.0	741.0	771.0	827.0	794.5	830.4	835.3
33	Sokoto	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
34	Taraba	1600.2	1580.4	1480.2	1480.2	1500.4	2952.0	3161.5	2997.0	2413.3
35	Yobe	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
36	Zamfara	4.1	4.0	4.2	4.2	4.2	4.2	4.2	4.2	3.3
37	F.C.T. (Abuja)	95.8	94.5	101.2	135.5	135.0	281.0	269.5	318.1	324.4
	Total	24561.7	23422.5	23774.7	23139.2	23187.6	24977.0	27126.5	28890.4	30191.2

Source: Department of Policy Analysis, Research and Statistics of the Nigeria Federal Ministry of Agriculture and Water Resources.

2. Yam cultivated area of Nigeria by state (1,000 ha.).

	State	1999	2000	2001	2002	2003	2004	2005	2006	2007
1	Abia	25.0	26.0	27.0	27.0	28.0	28.5	30.6	31.2	36.5
2	Adamawa	1.4	1.4	1.5	1.5	1.5	1.5	1.3	1.5	1.5
3	Akwa Ibom	42.6	40.3	54.9	57.1	45.1	43.7	45.0	44.6	44.6
4	Anambra	42.3	41.3	41.0	43.4	46.1	50.4	60.0	61.0	63.8
5	Bauchi	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
6	Bayelsa	24.1	23.5	22.0	22.0	22.5	18.0	18.0	18.9	20.3
7	Benue	221.4	225.9	226.1	226.0	226.0	225.1	226.1	226.1	226.0
8	Borno	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
9	Cross River	133.6	130.0	126.0	128.0	130.1	132.4	138.2	166.1	190.3
10	Delta	38.4	40.4	39.1	39.2	39.2	41.3	73.4	85.5	87.5
11	Ebonyi	44.1	41.2	42.0	42.0	44.1	54.9	70.0	89.2	89.2
12	Edo	34.7	35.0	34.0	34.0	34.0	37.7	38.2	33.3	35.2
13	Ekiti	59.4	59.8	57.0	57.1	60.0	60.2	103.3	119.2	91.9
14	Enugu	209.0	188.1	193.5	194.5	194.6	196.0	204.5	222.9	235.1
15	Gombe	n.a.	n.a.	n.a.	n.a.	14.1	n.a.	n.a.	n.a.	n.a.
16	Imo	41.0	41.0	39.0	41.0	42.0	42.3	39.6	40.5	44.3
17	Jigawa	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	Kaduna	192.5	176.0	170.0	176.0	176.0	177.3	177.3	177.3	94.2
19	Kano	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
20	Katsina	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.5
21	Kebbi	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.3	0.3	0.1
22	Kogi	110.8	100.3	94.0	92.2	89.5	91.3	101.9	101.9	100.1
23	Kwara	70.2	61.9	58.0	52.0	48.9	28.0	33.2	33.2	35.0
24	Lagos	4.2	4.0	4.6	4.7	4.9	5.2	6.0	6.4	6.7
25	Nassarawa	64.0	67.8	69.5	62.0	65.7	67.8	69.2	69.7	96.9
26	Niger	266.8	281.0	297.2	250.0	249.3	245.0	222.3	202.3	299.6
27	Ogun	9.4	8.7	7.3	8.9	9.7	10.8	13.8	16.8	22.7
28	Ondo	75.8	76.0	80.3	82.0	82.2	97.2	97.9	112.5	128.0
29	Osun	34.6	35.0	36.0	36.0	36.0	6.9	7.0	10.3	18.4
30	Oyo	63.5	70.0	76.6	76.6	73.7	72.3	78.2	72.9	74.5
31	Plateau	66.9	56.0	53.0	50.1	40.2	39.0	38.2	38.2	7.4
32	Rivers	110.1	97.0	90.0	80.0	83.3	83.5	84.2	87.4	95.5
33	Sokoto	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
34	Taraba	119.4	120.0	119.2	109.2	110.2	210.9	212.1	212.1	174.3
35	Yobe	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
36	Zamfara	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5
37	F.C.T. (Abuja)	6.4	6.5	7.0	9.1	9.1	17.7	19.8	19.8	23.0
	Total	2111.8	2054.8	2066.3	2002.1	2006.5	2085.3	2210.2	2301.7	2343.5

Source: Department of Policy Analysis, Research and Statistics of the Nigeria Federal Ministry of Agriculture and Water Resources.

3. Yam productivity of Nigeria by state (t/ha).

	State	1999	2000	2001	2002	2003	2004	2005	2006	2007
1	Abia	16.7	15.4	15.6	15.6	15.5	15.3	16.0	16.0	15.3
2	Adamawa	7.0	6.6	6.6	6.6	6.6	6.6	7.7	8.0	8.0
3	Akwa Ibom	6.3	6.3	5.4	5.0	5.3	5.5	5.8	5.8	5.8
4	Anambra	13.4	13.3	13.2	13.8	13.5	13.0	13.5	13.8	14.0
5	Bauchi	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Bayelsa	6.8	6.6	7.3	7.3	7.0	6.9	6.9	6.9	6.8
7	Benue	12.3	12.0	12.7	12.7	12.7	12.7	12.7	12.7	12.7
8	Borno	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	Cross River	10.2	9.7	10.0	10.1	10.1	10.6	10.9	11.0	10.7
10	Delta	10.5	10.8	10.6	10.6	10.6	10.7	12.5	12.5	12.7
11	Ebonyi	12.8	11.6	11.5	11.5	12.0	11.2	11.8	12.6	12.6
12	Edo	10.1	10.0	10.6	10.6	10.6	9.9	9.4	10.6	10.1
13	Ekiti	9.8	9.2	10.0	10.0	10.2	10.5	10.2	10.8	14.6
14	Enugu	10.7	10.9	11.0	11.1	11.2	11.3	11.4	11.5	11.5
15	Gombe	n.a.	n.a.	n.a.	n.a.	0.8	n.a.	n.a.	n.a.	n.a.
16	Imo	14.4	14.1	14.9	14.8	14.8	14.8	15.6	15.7	15.5
17	Jigawa	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	Kaduna	9.8	10.2	10.7	10.2	10.2	10.9	10.9	10.7	10.3
19	Kano	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
20	Katsina	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5.5
21	Kebbi	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5.8	n.a.	7.2
22	Kogi	10.9	11.7	11.6	11.0	11.2	11.2	11.3	12.4	12.3
23	Kwara	11.0	11.9	13.0	12.0	12.1	11.7	11.6	12.4	12.4
24	Lagos	5.5	5.7	5.6	5.6	5.6	5.4	5.4	5.5	6.0
25	Nassarawa	14.4	13.3	13.9	14.5	14.5	14.8	15.1	16.6	18.3
26	Niger	12.9	11.6	11.3	11.4	11.2	12.0	13.4	15.0	15.6
27	Ogun	7.9	7.4	7.3	7.6	7.7	7.8	8.5	8.5	8.8
28	Ondo	13.8	13.2	13.2	14.5	14.7	14.9	15.4	15.4	15.6
29	Osun	14.7	13.7	13.9	13.9	13.9	14.3	14.2	14.5	14.5
30	Oyo	15.2	14.9	13.3	13.3	13.3	12.6	11.6	11.7	10.6
31	Plateau	11.6	11.5	11.3	11.4	11.4	12.6	14.5	15.4	16.2
32	Rivers	9.1	8.8	9.6	9.3	9.3	9.9	9.4	9.5	8.8
33	Sokoto	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
34	Taraba	13.4	13.2	12.4	13.6	13.6	14.0	14.9	14.1	13.8
35	Yobe	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
36	Zamfara	6.7	6.7	7.2	7.2	7.2	7.2	7.2	7.2	6.6
37	F.C.T. (Abuja)	15.1	14.5	14.4	15.0	14.9	15.8	13.6	16.1	14.1
	Total	11.6	11.4	11.5	11.6	11.6	12.0	12.3	12.6	12.9

Source: Department of Policy Analysis, Research and Statistics of the Nigeria Federal Ministry of Agriculture and Water Resources.

Appendix 5-2

Questionnaire of the research on yam production, consumption and marketing of Nupe farming community in Niger State, Nigeria.

RESEARCH ON YAM PRODUCTION, CONSUMPTION AND MARKETING OF NUPE FARMING COMMUNITY			
Date _____		Interviewer _____	
Village _____		LGA _____	
Village Topography <input type="checkbox"/> Upland		<input type="checkbox"/> Upland and Lowland <input type="checkbox"/> Lowland	
<u>BACKGROUND INFORMATION</u>			
1 Basic Information			
Name: _____		Age: _____	
Ethnicity: <input type="checkbox"/> Nupe _____		Religion: _____	
Origin: <input type="checkbox"/> Indigene <input type="checkbox"/> Migrant (From: _____)			
2 Are you a household head? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If no, please state the relationship with your household head _____			
3 Highest educational level obtained			
<input type="checkbox"/> Adult education		<input type="checkbox"/> Primary	
<input type="checkbox"/> Koranic education		<input type="checkbox"/> Secondary	
<input type="checkbox"/> Post secondary education		<input type="checkbox"/> Illiterate	
4 Years of experience in farming _____			
5 Major occupation _____			
6 Other source of income _____			
7 Material status: <input type="checkbox"/> Married <input type="checkbox"/> Single			
8 Household size _____			
9 No. of household members involved in farming _____			
10 Do you have the following items at home?			
<input type="checkbox"/> Radio		<input type="checkbox"/> Mattress	
<input type="checkbox"/> Bicycle		<input type="checkbox"/> Generator	
<input type="checkbox"/> Motorcycle		<input type="checkbox"/> TV	
		<input type="checkbox"/> Car	
		<input type="checkbox"/> Handset	
		<input type="checkbox"/> Other _____	
11 Do you receive money from family members living in towns or cities? <input type="checkbox"/> Yes <input type="checkbox"/> No			
12 Do you work on farms of others? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If yes, which type? <input type="checkbox"/> Work for other family member		<input type="checkbox"/> Work for other villager	
<input type="checkbox"/> Work for village community		<input type="checkbox"/> Work as wage labor	
<input type="checkbox"/> Work for landlord		<input type="checkbox"/> Work for Bida noble	
13 No. of farms owned _____ Upland <input type="checkbox"/> Upland Fallow <input type="checkbox"/> Lowland <input type="checkbox"/> Lowland Fallow <input type="checkbox"/>			

- 14 Tenancy (Please click the options that you obtained lands)
☐ Inherited ☐ Obtained from village elder ☐ Purchased
☐ Obtained from relatives of wife ☐ Walked-in
☐ Rented-in in other villages ☐ Other: _____
- 15 If you obtained/rented-in land out of your own village, please specify.
☐ Upland (Location: _____)
☐ Lowland (Location: _____)
- 16 Do you own the following livestock? How many do you own?
☐ Goat (_____) ☐ Cattle (_____) ☐ Chicken (_____) ☐ Pig (_____) ☐ Pigeon (_____) ☐ Sheep (_____)
- 17 Are you a landlord? ☐ Yes _____ ☐ No
- 18 Do you own special title? ☐ Yes _____ ☐ No

YAM PRODUCTION

- 1 Are you currently cultivating yam? ☐ Yes (Q4 to 39) ☐ No (Q2 to 3)
- Please answer questions 2-3 and the Yam Consumption section if farmer answers NO.
- 2 Did you ever plant yam before? ☐ Yes (Answer Q3) ☐ No
- 3 What are the reasons that you stop farming yam?
☐ Decrease in yam demand ☐ Lack of labour
☐ Substituted by cassava ☐ Yam crop failure (Disease/Bug)
☐ Soil degradation ☐ Unable to access to land for yam
☐ Unable to secure yam seed ☐ Other: (_____)
- 4 What type of yam do you plant?
☐ White yam ☐ Yellow yam ☐ Water yam ☐ Bitter yam
- 5 Please state the name of the yam variety that you plant.

- 6 When did you start growing yam? _____
- 7 Why did you begin to plant yam?
☐ Traditionally planted ☐ Because of good income of yam
☐ Because of good taste of yam ☐ For crop diversification
☐ Other reason: _____
- 8 How do you obtain yam seed?
☐ Open market ☐ Father and relatives
☐ Old stock ☐ Neighboring farmers
☐ Government/extension ☐ Other: (_____)
- 9 How many yam farm do you have now? _____

- 10 Location of yam farm. (Please state no. of plot)
 Upland (____) Home garden (____) Fringe (____) Lowland (____)
- 11 Number of yam heap _____
- 12 Tenancy of yam farms.
☐ Inherited ☐ Purchased
☐ Leased/Rented ☐ Other: (_____)
- 13 Criteria for choosing the land to plant yam
☐ Virgin land/Forest ☐ Good location
☐ After fallow (Years _____) ☐ Available of water
☐ High fertility ☐ Other: (_____)
☐ Soil type
- 14 Cropping system
☐ Solely yam ☐ Relay (Crops followed: _____)
☐ Mixed cropping (Other crops: _____)
- 15 Please indicate the time that you do the following works for yam plantation.
 Land clearance _____
 Mound making _____
 Plantation _____
 Putting pole _____
 1st weeding _____
 2nd weeding _____
 3rd weeding _____
 1st harvest _____
 Last harvest _____
- 16 Please indicate the labour type involved in yam farming.
☐ Family member ☐ Village community ☐ Wives
☐ Hired labour ☐ Reciprocal assistance
- 17 If labour was hired, for what task, for how many days and how much did you pay?

- 18 Do you produce yam seed? ☐ Yes ☐ No
- 19 Do you apply fertilizer on yam farm?
☐ Yes (Which type? How much? _____) ☐ No

- 20 Where do you store yam after harvest?
☐ Yam barn ☐ Store in house
☐ Under tree ☐ Other: (_____)
☐ Store underground in farm
- 21 Do you domesticate wild yam? ☐ Yes ☐ No
If yes, why? _____
- 22 Do you plant more or less yam in recent years?
☐ More ☐ No change ☐ Less
- 23 What are the reasons for the change?

More	Less
<input type="checkbox"/> Increase in yam price	<input type="checkbox"/> Decrease in yam price
<input type="checkbox"/> Availability of fertilizer	<input type="checkbox"/> Lack of fertilizer
<input type="checkbox"/> Soil fertility retrieved	<input type="checkbox"/> Soil degradation
<input type="checkbox"/> Availability of yam seed	<input type="checkbox"/> Unable to secure yam seed
<input type="checkbox"/> Increase labour supply	<input type="checkbox"/> Decrease labour supply
<input type="checkbox"/> Change in farmer's preference	<input type="checkbox"/> Yam Disease/Bug
<input type="checkbox"/> Lower demand for cassava	<input type="checkbox"/> Substituted by cassava
<input type="checkbox"/> Able to access to land	<input type="checkbox"/> Lack of land
<input type="checkbox"/> Other: (_____)	<input type="checkbox"/> Other: (_____)
- 24 If new technology is introduced, do you want to try off-season yam cropping at lowland or fringe area around September (Planting) to June (Harvest) ☐ Yes ☐ No
- 25 Do you make amala (elubo)?
If yes, what kind of yam do you use? White yam, water yam or Damaged yam?

YAM MARKETING

- 26 How many yam tuber did you harvested in last season? _____
- 27 Please describe the approximate proportion of total harvest that were kept for sale.
☐ 0 ☐ 1/4 ☐ 1/3 ☐ 1/2 ☐ 2/3 ☐ 3/4 ☐ All
- 28 How many tuber was wasted because of decay? _____
- 29 Who is in charge of the marketing decision of yam in the household?
☐ Farmer ☐ Wife of farmer ☐ Household head
- 30 Did you give yam to your wife to sell?
If yes, how many tubers did she sell? _____
Where did she sell? _____
How much money was derived from the sale? _____
- 31 To whom did you sell your yam to?
☐ Merchants in surrounding markets ☐ Food vendors, ordinary users
☐ Merchants who come to village ☐ Village merchants

- 32 If merchants came and bought, where did they come from? _____
When did they come? _____
- 33 In which months did you sell yam?
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12
- 34 Which month was the peak that you sold most of the yam?
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12
- 35 How much did you obtain from the sale of yam? _____
- 36 Do you store yam and delay sale for better prices? ☐ Yes ☐ No
- 37 Do you give yam to others as gift? ☐ Yes ☐ No
If yes, to whom? How many? _____

YAM CONSUMPTION

- 1 How often do you eat yam?
☐ Few times a week ☐ Once a week ☐ Once a month
☐ Few times a year ☐ Once a year ☐ Rarely
- 2 How do you obtain yam for consumption?
☐ Own production ☐ Buy from market
☐ Received as gift from friends/relatives ☐ Other: (_____)
- 3 Is there any special festival/ritual until you can eat new yam of the year? ☐ Yes ☐ No
If yes, when is it? What kind of festival?

- 4 In what way do you eat yam?
☐ Pounded yam ☐ Boiled yam ☐ Fried yam
☐ Roasted yam ☐ Yam pottage ☐ Amala yam
- 5 Do you have any favor yam variety for eating? ☐ Yes (_____) ☐ No
- 6 In which months do you eat more yam?
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12
- 7 Do you eat yam when you have a ceremony? ☐ Yes ☐ No
If yes, in what ceremony? _____
Do you provide yam to your guest? ☐ Yes ☐ No
- 8 Have you ever consumed wild yam? ☐ Yes ☐ No
If yes, when? Why? _____

- 9 Have you ever taken yam for medication? ☐ Yes ☐ No
 Which variety? _____
 For what kind of sickness? _____
- 10 Please rank the following stable foods according to their proportion in your daily diet.
 1 = Most frequently consumed 5 = Least frequently consumed
☐ Sorghum ☐ Millet ☐ Rice
☐ Cassava ☐ Yam
- 11 Please rank the following stable foods according to your preference.
 1 = Most favored 5 = Least favored
☐ Sorghum ☐ Millet ☐ Sorghum
☐ Cassava ☐ Yam
- 12 Please rank the following stable foods according to their value.
 1 = Most valuable 5 = Least valuable
☐ Sorghum ☐ Millet ☐ Sorghum
☐ Cassava ☐ Yam