論文の内容の要旨

農業・資源経済学専攻

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論文題目　A study on the impact of private rice grading system on production and market transaction in Sub-Saharan Africa- A case study of the Northern region ,Ghana －

（サブサハラアフリカにおける米の民間品質基準の導入が生産及び市場取引に及ぼす影響に関する研究－ガーナ北部州の事例分析－）

　　Globalization integrated developing countries with developed countries thorough the international trade. This integration provided access for people in developing countries to many new products from developed countries. Imported agricultural products are one of the important examples because it has changed the composition of agricultural products markets in developing countries. Combined with increased income of urban consumers, this change induced the consumers to prefer high quality agricultural products: milled rice is the typical new staple food for peoples in Sub Saharan African (SSA) countries. Despite this trend, the quality of local rice is still lower than the imported rice. The gaps between consumers and producers are a source of economic inefficiency both in terms of consumer and producer welfare. Why this gap remains and how we can solve the problem? This dissertation tries to provide an answer to this important question.

　　This dissertation hypothesized that the quality certification system will be an incentive to upgrade quality of producers' rice if the system provides a quality premium on price. However, this kind of system is rarely available in SSA. To test this hypothesis, I have conducted the detailed qualitative survey in the Northern region of Ghana and found that the large-scale rice milling plant had introduced the quality-based rice grading system, which differentiates purchase price based on quality parameters

with objective measurements at the laboratory. This is very unique system for purchasing paddy in SSA and I expected this system will be work as a quality certification system to upgrade quality of rice in SSA.

For quantitatively examine the impact of the introduction of this grading system, I have conducted representative household survey in the area around the location of the large-scale rice milling plant. To examine the impact on objective quality of rice, I have collected harvested rice from all sample farmers and measured quality at the laboratory. I have also conducted the training meeting to teach the existence of the grading system to generate exogenous variation of the introduction of the system to rice farmers. This originally collected data sets allowed us to quantitatively investigate the impact of the system on quality upgrading of rice in the study area. Thus, the main findings of the analysis are as follows.

First, I examined the impact of the adoption of new aromatic rice variety, which was introduced in response to the urban consumer demand, on the outcomes of rice farmers before the introduction of the grading system. The results of endogenous treatment effect models showed that farmers who adopted new local aromatic rice varieties obtained higher rice yields, but the higher yields were far from the potential yield of new local aromatic rice variety. The impact on revenue and profits are negligible (positive, but not statistically insignificant) possibly due to non-existence of quality price premium, which is suggestive findings that explains why quality of local rice is not higher in SSA.

Second, I examined the impact of the introduction of the quality-based rice grading system on competition between farmers and traders. I applied an IV approach and found that the introduction of the system generated competition between farmers and trader, and this competition leads farmers to get quality price premium and higher sales price during the transactions.

Third, I examined the impact of the introduction of the quality-based rice grading system on quality-upgrading of rice farmers. Linear regression results armed with RCT showed that the farmers

realized the introduced grading system as a new quality-based rice sales opportunity, sold harvested rice through the grading system, although the induced number not so large and the impact on price premium is not detected, and get higher hypothetical grade of the grading system rice and incidence of getting quality accepted scores with adopting quality-upgrading practices such as adopting local rice aromatic variety, using combine harvester for harvesting, and threshing harvested rice with sheet/tarpaulin though the average quality of rice is very lower, especially in contents of red rice, discoloration and crack of paddy. These findings suggest that the quality-based rice grading system induced rice farmers to upgrade rice productions toward quality.

Over all, the analysis confirmed the hypothesis of this study is true at least in study area. The findings are the first empirical evidence that the introduction of non-contractual quality-based rice grading system operated by the private large-scale rice milling plant and the resulted market competition between the plant and the rice traders induce quality-upgrading of rice producers in SSA, which both contribute to the related literature and policy discussion on rice market in SSA.

The reminder of the dissertation is organized as follows. Chapter 1 explains the research question, challenges and solutions to research question, the position of this dissertation in the related literature, and the contribution of this dissertation. Chapter 2 describes institutional background based on related literature and author's field work in the study area, which includes original analysis conducted by author, and provides the research hypothesis. Chapter 3 reports time line of data collection, the structure of data set used in the analysis, and experimental design of the training meeting. Chapter 4 examines the impact of the quality considered rice sales on rice farmers. Chapter 5 examines the impact of the grading system on quality-upgrading of rice farmers. Chapter 6 discusses summary of findings and implications for practice of quality upgrading of rice in SSA, and then concludes.