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Research on the Factors of the System of Rice Intensification (SRI) Dissemination in Indonesia
-Case Study in Banyumas Regency, Central Java –

1. Background

Indonesia is one of the largest producer and importer of rice in the world. Indonesian Government have been aimed at achieving self-sufficiency by increasing rice production. One of the most policies is the System of Rice Intensification (SRI) dissemination.

The System of Rice Intensification (SRI), developed in Madagascar in the early 1980`s, is claimed to be a new, more productive and more sustainable method for cultivating rice. Indonesia was the second country outside of Madagascar to evaluate SRI methods and to confirm their value in 1999.

However, despite of the widespread attention and support from the government, in 2015 there were only about 3% of the total area of paddy field that SRI implemented.

Practicing SRI might face some difficulties such as water control and labor intensity. According to Gani et al., (2002), the farmers were particularly afraid of running risks by planting younger seedlings, believing they were at greater threat from pests, diseases and damage from handling.

The aim of this study is to find the factors that affects SRI dissemination in Indonesia in by doing case study in Banyumas regency, Central Java.

Figure 5. Central Java Map (http://wikitravel.org/en/Central_Java)

2. Research Objectives

A. To identify the factors that affect the level of acceptance of SRI

B. To compare the condition the between SRI and NonSRI farmers (household characteristics, land levelling, and soil textures)

3. Research Questions

A. What are the key factors that affect farmers to adopt or not to adopt SRI?

B. What are the differences between characteristics of SRI and non-SRI farmers?

4. Research Hypotheses

A-1. Most farmers were keen to adopt SRI in an attempt to increase their yields.

A.2. Pest control appeared to be the most common problem that was preventing SRI uptake.

B-1. No significant associations difference between the adoption of SRI and the household characteristics of farmers such as: age, job, availability of labour, income, and the variety of rice grown.

B-2. SRI farmers has more suitable soil texture land leveling condition than non-SRI farmers.

5. Methodology

In order to get the data from multiple dimensions of SRI dissemination factors, various data collection methods had been applied in this research such as stakeholder interview, household survey, field observation and literature review. Data collection was carried out over four times period.

6. Results and Discussions

-SRI Incentives

SRI has high potential for raising production yields. However, it can be said that the increase of the yields is not only the main factor that drive the farmer`s interest in SRI. The farmers want to apply SRI to reduce the amount of chemical fertilizers because in the future the government will reduce the subsidy amount for fertilizer.

- SRI Dissemination Hurdles

According to the analysis of household survey and interviews, it is appeared that pest was the most common

problem that preventing SRI adoption, especially for the snail pest.

The results also shows the difference between SRI and NonSRI farmers to countermeasure the snails. Compared to the NonSRI farmers which remove the snails manually by taking by hands, SRI farmers make a ditch around the fields to prevent snails enter inside the fields.

- Labour Availability

In generally, it has been said that SRI often requires greater attention to crop and water management.

Table 1. Difference in Yield, Labour and Incomes of SRI and NonSRI Farmers in South Sulawesi (Takahashi and Barret, 2013)

	Sri	NonSRI
Yield per hectare (ton)	5.54	3.37
Labour Inpur per hectare (person days)	62.75	46.72

Takashi and Barret found that in South Sulawesi, the family labour input per hectare is around 16 person days (34%) higher on SRI farmers. Given the agricultural wage rate of 20-30 thousands rupiah per day, it can be estimated that SRI farmers spend around 320-480 thousands rupiah more than the NonSRI farmers for the increasing labour input. Given the rice price is 5 thousands rupiah and the increases 2.17 ton yield, the SRI farmers can earn 10 millions rupiah per hectare more by doing the SRI.

- Field Condition

Land levelling is one of the most important element to keep the water level low and manage the intermittent irrigation in SRI system. In order to know land levelling condition of SRI and NonSRI farmers, total 6 fields (2 SRI, 4 NonSRI) were examined.

Table 2. Land Levelling and Soil Experiment Results

	Field 1 (SRI)	Field 2 (SRI)	Field 3	Field 4	Field 5	Field 6
Area(m²)	258.5	676.5	419.9	479.6	560.0	411.8
Levelling Rate (%)	55	48	49	67	51	52
STD (cm)	1.98	1.32	1.30	1.88	1.48	1.38
Soil Texture	Clay	Clay	Clay	Clay	Clay	Clay

These results suggest that there is no significant difference in land levelling and soil condition between SRI and NonSRI field.

- Soil Condition

From soil texture experiment, there is no difference found in the soil textures of SRI and NonSRI. All of the fields have the clayey soil textures.

7. Conclusions

It can be concluded that the farmers were keen to adopt SRI not only to increase their yields but to save the amount of the seeds and reduce the chemical fertilizer usage.

The results of this study also indicate that the pest management especially the snails was the main barriers to implementation of SRI. By planting single young seedling, the farmers were afraid from threat of pests, diseases and damage from handling.

The connection between household characteristics and the SRI adoption are shown in this study. SRI members have more family members that can increase the labor availability. This is especially important in the initial phase of SRI adoption. SRI farmers also found to be have younger age than NonSRI farmers. It may because the SRI method is not only labor intensive, but also knowledge intensive.

8. Future Works

This study has suggested the key factors that affect the level acceptance of SRI and comparison of the condition between SRI and NonSRI farmers. However, some restrictions and limitations should be noticed.

More representative and larger sample would strengthen the conclusions that can be drawn from the data.

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