

***Development of SRI (System of Rice Intensification)
KSP¹ Tirtabumi, Cikoneng, Ciamis District, West Java
By Enceng Asikin² and Koeswara³***

Background:

The Farmers got idea of the developing of SRI in KSP from FAO Community IPM Program as an information on improving of rice farming and developing of farmer science. As a group of researcher farmers, they didn't apply directly every information they receive from others but they use the information as a tool to generate their critical thinking through participatory analysis. In the case of the SRI, they had also discussed after they received the information and tried to analyze the concept based on their problem in the field. Coincidentally, they had problem such as decreasing of rice yield by the year and they thought that SRI can increase their great yield.

So far, IPM alumni in KSP develop some studies focused in living soil. They tried to integrate their experience on soil ecology and seed exercises to develop the SRI study. They think this concept will help farmers to improve the healthy of soil.

The objective:

The objective of the study was to answer their question on the feasibility of SRI to be applied by farmers in the future.

Time and Place:

The SRI study was conducted in KSP's field at Sindang Kasih Village, Cikoneng Sub-district, Ciamis District starting February to early May 2001.

Study plot:

The study was implemented in a plot with size 10 x 10 m and use rice variety IR 64.

Study Implementation:

The study was implemented through some steps as follow:

1. Seed Selection

They bought the seeds from a seed company, but they tried to select only good quality of the seeds through a local method developed by farmers in the area. The process were:

- a. Farmers mixed water and salt and then they put an egg into the liquid as an indicator. In the beginning when the liquid had still little salt, the egg was in the bottom. They added more salt until the egg was floating in the liquid. It means the liquid is ready to use for testing the seed because the

¹ The abbreviation of KSP in Bahasa Indonesia is Kelompok Sains Petani (Farmer's Science Group)

² IPM Farmer trainer and the Coordinator of KSP Tirtabumi

³ IPM Field Trainer of Ciamis District, government officer who support and facilitate KSP's activities

liquid had already higher capacity to float the egg, including the lower quality of seeds.

- b. After that, the farmers put the seeds from the company in the liquid. Used the analogy of the egg that only the sink-seeds were best seeds to plant because they are the really fulfill grain and good quality.
- c. Next step was they washed the seeds and they germinated in the small seedbed.

2. Seedbed

- a. Basically, the idea is same as SRI design but farmers in KSP prepared the seedbed in wood-boxes (size: 60 x 40 x 10 cm) to make easier for observation because they can cultivate the seed in the garden surrounding their house. Another reason was to make easier during transplanting. They can bring the boxes to the rice field and transplant the seed without worried about water lost because of evaporation and mechanical damage during transplanting. Through this method they can also control the damage of pest and disease easier because they keep the seedbed away from the rice field.
- b. They need 3 boxes for a 420 m² rice field (90 boxes per hectare) and 500 grams seeds/420 m² (10,5 kg per hectare)
- c. They transplanted the seed in 13 days after sowing.

3. Soil Management and Fertilization

They used SRI information for soil management but they also involved their idea on improving of the soil healthy and fertility. In the SRI concept, they focused on improving Oxygen flow in the soil, means we have to have good soil structure. To realize this condition, farmers arranged number of seedling and planting spacing. Based on information from SRI method, farmers only planted 1-2 plant per hole because this condition can maximize the growth of plant roots and tillers. And to help farmers got better soil structure, they tried to arrange good planting spacing that it can help farmers to do weeding easier.

Usually, the healthy soil consists of 45% minerals, 5% organic matter and 50% air and water. Based on the result of their study on water and nutrient holding capacity and soil structure, said that soil with rich organic matter, they have bigger capacity to hold and release nutrient and water. Even, the soil looks dry but they still have enough water because the soil is not too compact (have good structure). Based on this experience, in the SRI study plots, farmers in KSP used only organic fertilizers (mixture compost and chicken manure).

Total organic fertilizer they used for 420 m² is 600 kg. Based on their observation this amount of this fertilizer was too much and not in the good composition because the fertilizer contains moderate high Nitrogen, low Phosphor and moderate high Potassium. This fact can be indicated from the color of leaves. The leaves were still green until almost harvesting time.

4. Planting Spacing

The treatment in the study was different planting spacing. The planting spacing was 30 cm x 30 cm and 27 x 27 cm with 1-2 plant(s) per hole. No replication in this study and use farmer's plot nearby the study plot as control plot.

5. Weeding

The weeding activities were done in this study for 2 times. Information from SRI about weeding is 1 to 4 times during vegetative stage.

6. Irrigation:

Farmers in KSP irrigated the rice field, follow this method such as after planting they irrigated the field with 2-cm deep of water from soil surface. Then, they left the water until all water was absorbed by soil, but they have to keep the soil dry but still have some water (keep the soil from cracked, it means do not left soil until very dry so it can cause the soil cracked). They keep this way for controlling water until 15 days before harvesting.

7. Results:

Observation	Treatment			Notes
	I (30 x 30 cm)	II (27 x 27 cm)	Farmer's practices	
Productive tillers	40 -60	45 - 55	16 - 25	In farmer's practices number of plants were 4-8 plants per hole
 <p><i>Ms. Iik Mudrikah and Mr. Enceng Asikin are showing the great number of tillers</i></p>				
Number of plants per m ²	9	12	16	
Number of tillers per 2 m ²	450	600	336	

Type of transplanting method	Shallow planting (1-1,5 cm)	Shallow planting (1-1,5 cm)	Deep planting (4- 7 cm)	
 <p style="text-align: center;"><i>Farmer are doing observation in the SRI's Plots</i></p>				
Pests (stem borer and rice bug)	Less than 3% and 1 per hill	Less than 3% and 1 per hill	Less than 8% and 1 per hill	In treatment I and II, increasing of tiller number was happened at 4 weeks after transplanting. In farmer's practices, the increasing was happened at 3 week after transplanting. This is a reason why population of stem borer higher in farmer's practices plot than in SRI plots because the population of stem borer was increased at 3 weeks after transplanting, at that time there were not more tillers in SRI's plots. This condition was not suitable for stem borer to survive.
Length of panicle	long	Shorter that Treatment #1	Shorter that Treatment #2	Not use quantitative data (need to be improve for the next study)
Pesticides use	No pesticides use	No pesticides use	Unknown pesticides used	
Yield Average	6,7 ton/ha	7 ton/ha	4,5 ton/ha	

7. Comment

In the beginning, farmers in surrounding the study plots laughed them and they were not sure about the method because until 4 weeks after transplanting, they didn't get more tillers but when in the flowering till harvest stage, they were wondered with the great progress of growing.

They mentioned that this study was an introductory step. Based on the result above, they think that they need more trials to convince themselves about the method before they distribute this information to other farmers. Based upon that, farmers in KSP Tirtabumi will conduct SRI study again in the next season, starting June 2001 to improve the implementation of the previous study. Some points need to be improved, such as:

1. The farmer's practices plot should be planned as same as the SRI's treatments.
2. Need to take sample for measuring panicle length and count the average of the panicle length to get quantitative data about it.
3. Need to do survey to get information about common farmer's practices in the area and this information will be used to treat farmer's practices plot. So, we can compare the pesticide application in the study plots.

Another thing, this information is not a recommendation. Through this information, farmers in KSP will ask other farmers to study it and if they are convinced that the method can solve their problem especially on increasing the inputs' price and decreasing of rice yield rather than just want to increase the rice production with using more chemical inputs.

Thank you very much for the discoverer of SRI!

Ciamis, 25 June 2001