

On the number of seedlings for the System of Rice Intensification

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Introduction

The System of Rice Intensification (SRI) is an environmentally-friendly and sustainable rice farming practice developed in 1980s in Madagascar. This practice can reduce resources, such as irrigation water, chemical fertilizer, number of seedlings by keeping and sometimes increasing yield of rice. It has spread to many countries in early years of 21st century. Indonesia is one of the early diffused countries and many farmers adopted this practice. The authors made experiments in Lombok island of Indonesia, measuring water consumption, rice growth, GHG emissions et al. From many results, this paper discusses appropriate number of seedlings.

Method

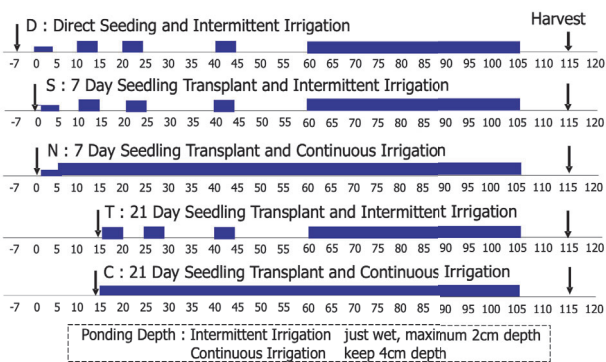
This experiment prepared 50 small plots (5.0mx2.5m) and set 2 types of irrigation; intermittent and continuous, 3 types of seedlings; 0, 7, 21 days, and 3 types of number of seedlings; 1, 2, 4. At the growing stage, number of tillers and height are measured and at the harvest time, number of panicles, grain weight, filled grain weight and root weight of 5 samples are measured from each plot.



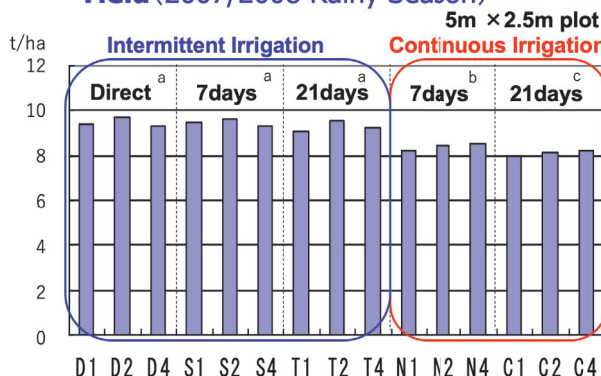
Result

We planted most popular variety around the experiment plots, i.e. Ciherang. Spacing of each seedlings are 25cm by 25cm. And we irrigated each plot as irrigation schedule. At the harvest time, five samples from every plot were precisely measured. Then, we harvested all plants of every plot, measured grain weight and moisture content. Grain weight was converted to yield(t/ha) at 24%moisture. The result shows the bar chart below. Compared in nursery stage, 0 day seedlings, meaning direct seedling and 7 days seedling gave higher yield than 21 days seedling, however statistically not significant. On the number of seedlings, 2 seedlings achieved best yield in intermittent irrigation and 4 seedlings achieved best yield in continuous irrigation. Comparison between five groups shows 3 groups of intermittent irrigation achieved best, 7 days seedling in continuous irrigation was second, and 21 days seedling in continuous irrigation was third. All comparison are statistically significant at the risk of 5%.

Irrigation Schedule (2007/08 wet season)



Yield (2007/2008 Rainy Season)



Discussion

In Indonesia, SRI promoters of local government and NPO basically recommend farmers to transplant One 7 days seedlings. However, farmers are very afraid for less growth and they often transplant two seedlings although they were taught to transplant One. The result of this experiment shows farmers choice was right. Two seedlings method needs two times cost of seedlings than one seedling method. However, this method needs about half cost compared with traditional method. Moreover, two seedlings method gives farmers peace of mind when transplant stage. So, this method is to be said as more reasonable than one seedling method. And we need to execute this experiment in every place where SRI method is introducing.

Keywords: System of Rice Intensification (SRI), Number of Seedlings, Intermittent Irrigation, Yield

