

CONCLUSION

The formal survey revealed that soybean residues and green manure particularly *Sesbania rostrata* could be a potential source of N and organic matter for maintaining soil productivity in rice-soybean cropping system. Burning rice straw, the limited amount of animal manure and the lack of knowledge on the use of green manure by farmers were obstacles to replenishing organic matter in the soil.

The results from the field experiment indicated that the green manure crop particularly *Sesbania rostrata* with the biomass of 15 t/ha of fresh weight (2.9 t/ha of dry weight) and N accumulation of 88 kgN/ha gave the rice yield similar to the urea, 50 kgN/ha. The *Sesbania rostrata* gained higher net return over total variable cost than urea but the latter gained higher MRR than the former. Both *Sesbania rostrata* and urea appeared to be important sources of N for rice in rice-soybean cropping system. The economic performance of the treatments depend very much on the relative costs of urea and land preparation. *Sesbania rostrata* becomes more attractive when the price of the urea increases to 6 baht/kg at the cost of land preparation of 625 baht/ha or when the price of the urea increases to 8 baht/kg at the cost of land preparation of 937.5 baht/ha. If the cost of land preparation for *Sesbania rostrata* increases from 625 to 1250 baht/ha, urea will be more attractive. *Sesbania rostrata* is not only an alternative source of N but also a source of organic

matter for paddy soil in this system.

The effect of organic matter on improving soil properties could not be detected in this study since it was merely a one year experiment. Maintaining soil productivity through replenishment of organic matter requires long-term experiment to determine the effect of organic matter on soil properties. Furthermore, on-farm trials should be conducted to validate the beneficial effects of *Sesbania rostrata* under farmers' environment prior to transferring this technology in the broader scale.



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