

CONCLUSION

The results of the study suggest that:

(1) The growth duration of *Sesbania rostrata* (4-5 months) fits the main rainy season rice crop in most tropical rice farming areas. This indicates that *S. rostrata* can be successfully introduced as green manure into the rice-based intensive cropping systems by intercropping with rice.

(2) In intercropping with rice, *S. rostrata* is a strong competitor when established simultaneously with rice. Its competitive ability decreases greatly when establishment is delayed by 30 days, at which time it no longer depresses growth and yield of the associated rice when sown at 30 days after transplanting rice.

(3) Seed production of *S. rostrata* is highest in the early establishment treatments; up to more than 3 t/ha. However, reasonable amounts of 1.3-2.0 t/ha of seeds can be obtained in the delayed establishment of 30 days.

(4) The beneficial effects of intercropping in term of seed yield and nitrogen nutrition can be clearly observed in the early establishments of *S. rostrata*. Amounts of nitrogen fixation in intercrop treatments range from 15 to 307 kgN/ha. Delayed establishment reduces nitrogen fixation and seed yield of *S. rostrata*, but lightens the losses in grain yield of rice.

(5) Residues of total biomass of *S. rostrata* and rice straw returned to the soil give the positive N-balance of 36- 132 kg/ha except in late sowing treatments. However, removal of stems of *S. rostrata*, as being practiced by farmers, results in a negative balance of nitrogen in all treatments.

(6) Sowing *S. rostrata* into rice field at transplanting time, with 25% of population, gives 1.3 t/ha of *Sesbania* seeds, which is high enough for seed production purpose. Dry matter of *S. rostrata* is also considerable (2.96 t/ha), and the amount of N-fixed is relatively high (145 kgN/ha) and the N-balance is positive. Furthermore, grain yield of rice is not significantly reduced.

(7) In practice, *S. rostrata* should be arranged in such a way that it will not interfere during the rice harvest. Clipping may be applied to reduce the competition from early established *S. rostrata* on rice. Residues from clipping can be readily incorporated as green manure during the growing season.

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