

Sesbania grandiflora: a successful tree legume in Lombok, Indonesia

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Introduction

Sesbania (*Sesbania grandiflora*) is a multi-function tree. Its main use is as a livestock feed in southern Lombok, Indonesia, the major region for goat and cattle production. It is the main (and sometimes the only) component of ruminant diets (Dahlanuddin 2001). A national program, aimed initially at improving soil fertility and replanting barren areas, formally introduced it to Lombok in the 1970s (Suseno 1990).

Sesbania has the highest nutritive value and is the most widely used of all tree legumes available for livestock feeding in Lombok. It is planted in single rows along the bunds of rice paddies. The leaves are cut and fed fresh in a cut-and carry system and the branches are dried for firewood. Farmers harvest only the side branches of the tree to avoid tree mortality, and to make the trunk straight for pole timber when cut at around 3 years of age. It is also used as a nutritious vegetable, especially for nursing mothers as the local community believes it stimulates milk production. Southern Lombok has limited forest resources, making *sesbania* the main source of firewood and timber for both housing and animal pens.

Currently, *sesbania* is planted on approximately 25% of rice field bunds on Lombok, mostly on the southern part of the island (which is the main rice region in Lombok). Mature seeds that drop naturally during the dry season provide sufficient seedlings in the early wet season for transplanting on to the bunds. Each farmer plants an average of 520 plants, 40–60 cm apart. From an estimate of the total length of the bunds over Lombok Island, we estimate circa 65K small farmers plant *sesbania*.

Major reasons for success

The Department of Agriculture introduced the *sesbania* concept, initially through demonstration and seed provision. At local level, several NGOs also were involved in encouraging farmers to plant it. In the early stages of the program, the local community was reluctant to adopt the technology because they believed that dead and decaying *sesbania* roots would make holes in the bunds, causing them to leak water

from one field to another. Intensive extension activities by government and NGOs successfully convinced farmers that planting *sesbania* was worthwhile. By arrangement, landless livestock growers may plant *sesbania* on other farmers' rice field bunds; the livestock growers harvest the leaves, leaving the trunk to the landowner, or the two parties may share the leaves and trunks. Landowners also may sell or barter the leaves to livestock growers.

Future potential and limitations to wider adoption

Unfortunately, despite some attempts by the government to extend the system to other areas, *sesbania* plantings are concentrated mainly in southern parts of Lombok Island. This may be related to lack of suitable soil types and conditions in other regions, or perhaps to lack of transfer of indigenous technology for planting to other farmers. The total area of rice field on Lombok Island is 167 Kha, with an estimated total length of bunds of approximately 6860 km. If all bunds were planted successfully with *sesbania*, the number and productivity of ruminant livestock in Lombok would increase significantly. The system has potential for expansion to other areas of Indonesia with similar agro-ecological conditions.

Conclusion

Sesbania planting is a valuable and sustainable technology that fits well into smallholder farms. It allows farmers to produce high quality forage. Farmers are convinced that *sesbania* does not provide too much shade for rice crop production, while the addition of organic fertiliser from fallen *sesbania* leaves may improve production. For these reasons, the agronomy of the area and methods of planting should be investigated further to expand the planting of *sesbania* to other areas of Indonesia.

References

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