SESBANIA - A POTENTIAL NITORGEN FIXING GREEN MANURE CROP.

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Sesbania is a legume. Useful as a green manure crop. Being an annual crop its life cycle is complete in 3 - 3½ months. Under good management sesbania plants grow upto a height of 250 cm. Flowering occurs at the age of 8-9 weeks, after germination and at this stage the crop can be be ploughed in as a green manure crop. Nitrogen fixing nodules are found both in roots and shoots and and shoot nodules start developing from the 3rd week after germination. There are 3-5 rows of shoot nodules on the stem and branches and the nitrogen fixing activity shifts from base to apex, with the age. Shoot nodules are found throughout the stem except for about 50-60 cm. from the apex. It can fix atmospheric nitrogen by both shoot and root nodules. Sesbania grows in submerged conditions although the growth rate is slower. Therefore it has a great potential in both highland and lowland sandy and/or degraded soils, to improve the soil structure and nutrient holding capacity.

Sesbania seeds obtained from IRRI Philippines, were grown at the Regional Research Station, Bombuwela, under highland conditions.

Sesbania is supposed to be photoperiod sensitive and therefore a study was undertaken tin April 1986, to find the best planting time for seed production, and as a green manure crop, by staggering planting every 10th day. At the maturity of the 1st planting (95 days) noduler actaivity was investigated and is presented in Table 1.

Data indicate that the noduler activity was 98.5% at the onset of flowering and at this stage the plants could be ploughed in as a green manure crop. If the crop is ploughed in at this stage, it adds nitorgen to the soil nitrogen buffer in addition to organic matter. The Data also indicate that the nodule activity shifts from base to apex with age and also the nitorgen fixing activity decreases. Shoot nodule dry weight per plant also indicate that it increase with the age while the activity of nodules decreases. Whether this decrease is dry weight could be

compensated by having a higher dry weight can only be judged based on the fixed nitrogen analysis. However if allowed to grow beyond flowering stage, the value of the crop as a green manure is lost except for the advantage of seed production.

Potential of the crop

Sesbania could be used as a green manure crop, to upgrade the soil structure of the sandy and /or degraded soils. Because of its ability to thrive under wet soil conditions it has an immense potential in both highland and lowland soils. As a green manure it could be grown during the fallow period and ploughed in at land preparation. This could increase the organic matter content and the nitrogen buffer in both highland and lowland soils. Unlike non-legume manures, if sesbania is used as a green manure crop, the basal organic nitorgen application could probably be ignored. Another alternative is to grow the plants on bunds. At flowering stage it could be harvested and put to the paddy fields at the time of nitrogen top dressing, provided the crop is row planted or row sown. This practice is advantageous because the mulch smothers the weeds. However, further research is needed to understand the photo-periodic behaviour of the crop, its nitrogen fixing ability, and any adverse effects of applying the green manure as a nitrogen supplement at later steges of the rice crop.