

FOOD & AGRICULTURE

Technologies for Better Quality of Life

GREEN MANURE CROP TROMBAY SESBANIA ROSTRATA

Green manure is used to add nutrients as well as organic matter to the soil to improve the conditions of soil.

Sesbania rostrata is a leguminous plant originally from West Africa which fixes atmospheric nitrogen through root nodules. It differs from other legumes in having nitrogen fixing nodules also on the stem and branches. Due to high nitrogen content and rapid growth, it is used as a green manure and reported to add as much as 120 to 150 kg nitrogen per hectare, when ploughed back, in 55 days.



If grown in winter when days are shorter, it flowers early which results in lesser vegetative growth. It also nodulates sparsely in winter. Due to lesser phytomass production and reduced nodulation, lower amount of nitrogen is fixed. *Sesbania rostrata* is thus unsuitable as a green manure crop for use in winter.

A mutant of the plant produced by gamma ray irradiation has been developed at Bhabha Atomic research Centre (BARC), Mumbai. This mutant named TSR-1 (Trombay Sesbania rostrata-1) is insensitive to photoperiod. The mutant remains in vegetative phase for at least upto 60 days after the date of sowing, even in winter season. The extended vegetative phase during short-day period allows TSR-1 mutant to be grown also in winter assuring luxuriant vegetative growth and nitrogen fixation upto its best potential.

A population of 250,000 plants per hectare when grown for 55 days can fix about 120-150 kg nitrogen per hectare. About half of this is available to the next crop taken on the same plot.

Experiments carried out at BARC using TSR-1 as a green manure for rice crop have shown that rice yield was equivalent to using 60 kg nitrogen in the form of urea per hectare. It can also be effectively combined with chemical fertilizer

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