

ESTABLISHMENT OF N₂-FIXING LEGUMES FOR IMPROVING THE PRODUCTIVITY OF RICE-WHEAT SYSTEM

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ABSTRACT

A field experiment was conducted using three green manure legumes (GMLs): *Sesbania aculeata*, *Sesbania rostrata* and *Crotolaria juncea* during 1995-97. The legumes were established with three methods as relay cropping with wheat (in March), zero-tillage after wheat harvest and line sowing in finely prepared seedbed. *S. aculeata* and *S. rostrata* were proved as the most promising GMLs in the paddy soils, the latter contributed dry biomass and N upto 5.12 t ha⁻¹ and 109 kg ha⁻¹, respectively. *Crotolaria juncea* did not perform well in the paddy soils. Use of *Sesbania* GM increased the paddy yield by 124 percent over the untreated plots and 2 percent over the crop receiving 90 kg N ha⁻¹ as urea fertilizer. After three years, *Sesbania* spp. had significant residual effect on wheat yield. Green manuring improved soil physiochemical properties. The results concluded that establishment of *Sesbania* spp. through relay cropping or zero-tillage were the most effective and economical methods and saved Rs. 1960 ha⁻¹ over the line sowing method (conventional method) and produced the same level of paddy yield.