

## Effect of green manuring of Garadi leaves (*Cleistanthus collinus*) on soil physico-chemical properties and yield of paddy in Eastern Vidharbha Zone

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### ABSTRACT

A study on effect of garadi leaves (*Cleistanthus collinus*) on physico-chemical properties of soil and yield of paddy was carried out on clay loam soil with available N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O 220.0, 28.0, 290.0 kg ha<sup>-1</sup>, respectively during *Kharif* for consecutive three years from 2007-2009 at Agriculture Research Station, Sindewahi (Chandrapur) in the Eastern Vidharbha Zone. The experiment comprised of seven treatments (i.e. control garadi leaves application @ 0.75 t ha<sup>-1</sup>, garadi leaves application @ 1.0 t ha<sup>-1</sup>, garadi leaves application @ 1.25 t ha<sup>-1</sup>, garadi leaves application @ 1.50 t ha<sup>-1</sup>, spraying of monocrotophos as per recommendation and foliar spray of 10 per cent garadi leaves extract) replicated thrice in randomized block design. The recommended dose of fertilizer 100:50:50 kg NPK ha was applied to all the treatments. The pooled result revealed that the application of garadi leaves @ 1.5 ha<sup>-1</sup> gave significantly higher paddy grain yield over rest of the treatments except treatment garadi leaves application @ 1.25t ha<sup>-1</sup> which was at par with treatment garadi leaves application @ 1.50 t ha<sup>-1</sup>. The treatment T<sub>5</sub> gave 6.70 per cent 12.85 per cent and 30.52 per cent more grain yield over T<sub>4</sub>, T<sub>6</sub> and control, respectively. The bulk density was found to be decreased by incorporation of garadi leaves indicating the improvement of soil structure porosity, and maximum water holding capacity. The available NPK kg ha<sup>-1</sup> was also increased due to application of garadi leaves. Hence, it can be stated that the application of garadi leaves @ 1.5t ha<sup>-1</sup> gave higher monetary return.

**KEY WORDS :** Garadi leaves, Green manuring, Physico-chemical properties

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### INTRODUCTION

Organic manures application generally improve the soil physical chemical and biological properties along with conserving and improving the moisture holding capacity of soil and results in enhanced crop productivity.

Green manuring is also a cheap and effective way of improving soil fertility as long as water conditions permit. It proves better and efficient as fertilizer for rice crop. Green manuring in combination with chemical fertilizers improves the soil fertility, yield and also has residual effect on succeeding crop. In paddy, it has been observed that green manuring before transplanting helps to sustain with high yield levels. Agro forestry is an age old land use that has been practiced by farmers and agrisilviculture is the major class of agro forestry. Garadi (*Cleistanthus collinus*) is one of the most important multipurpose tree

which grow very profusely in wasteland forests and paddy bunds in Eastern Vidharbha Zone of Maharashtra state used as green manure (2.18%N) and for fencing as it contains *Cleistanthus* which is toxic and repellent for insects and pests of paddy crop. Research work is not available on this tree in EVZ. Keeping this in view, the present study was undertaken to study the effect of garadi leaves on growth yield of paddy and physico-chemical properties of soil.

### MATERIALS AND METHODS

Experiment was conducted for consecutive three years during *Kharif* 2007-2008 to 2009-2010 at Zonal Agriculture Research Station, Sindewahi, District, Chandrapur. The experiment was laid out in randomized block design with three replications. There were seven treatments viz., control, incorporation of garadi leaves @ 0.75 t ha<sup>-1</sup> at transplanting, Garadi leaves incorporation @ 1.0 t ha<sup>-1</sup>, incorporation of garadi leaves @ 1.25t ha<sup>-1</sup>, incorporation of garadi leaves @ 1.50 t ha<sup>-1</sup>, spraying of monocrotophos as per recommendation (0.05%) and foliar spray of 10 per cent garadi leaves extract. A common dose of 100:50:50 kg NPK ha<sup>-1</sup> was applied to all treatments. Rice variety PKV HMT was used. The gross

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