

Effect of organic nitrogen sources and fulvic acid spray on growth and yield of soybean in inceptisol

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Accepted : August, 2008

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ABSTRACT

A field experiment was carried out during *kharif* 2005 to study the effect of organic nitrogen sources and Fulvic acid spray on soybean in relation to growth and yield contributing characters. Among different organic sources poultry manure showed better quality compost. The application of 100% nitrogen through poultry manure + spray of Fulvic acid significantly increased the plant height, number of leaves (30 and 60 DAS), grain and straw yield.

Key words : Fulvic acid, Soybean, Organic nitrogen sources.

Soybean (*Glycine max* .L) being legume improves the soil fertility, therefore, it has an unique importance in crop rotation in irrigated as well as dryland area. Continuous supply of nutrients through chemical fertilizers has resulted in deteriorating soil fertility and productivity. Application of nitrogen through different organic sources significantly influenced the yield and growth parameters (Bacchav and Sabale, 1996). Therefore, the present study was carried out to assess the effect of organic sources and Fulvic acid spray on growth and yield of soybean in Inceptisol.

MATERIALS AND METHODS

A field experiment was conducted on soybean in the post graduate research farm Mahatma Phule Krishi Vidyapeeth, Rahuri Dist Ahmednagar (M.S.). The experiment was laid out in randomised block design with

nine treatments and three replications; the details of which are furnished in Table 2. The soil belonged to Sawargaon soil series of Inceptisol (Vertic Ustropepts) and was clay in texture with low bulk density (1.28 Mg m⁻³), alkaline in reaction (8.23), moderate in organic carbon (0.51%), low in available nitrogen (189 kg ha⁻¹), moderate in phosphorus (20.2 kg ha⁻¹) and very high in potassium (360 kg ha⁻¹).

The seeds of soybean were sown during *kharif* 2005 @ 75 kg ha⁻¹. The different nitrogen sources *viz.* FYM, press mud cake, poultry manure, vermicompost, fresh dung were used as organic sources of nutrients; their composition is presented in Table 1. They were applied according to nitrogen content. The Fulvic acid extracted from vermicompost by standard procedure (Stovenson, 1982) was used for foliar spray (100ppm) on soybean crop. The chemical fertilizers *viz.* urea, single super phosphate and muriate of potash were used. The

Table 1 : Characteristics of organic sources

Composition	FYM	Compost	Press mud cake compost	Poultry manure	Vermicompost	Fresh dung
pH (1:10)	7.06	6.75	7.09	7.43	7.25	7.09
EC (1:10 dsm ⁻¹)	2.03	1.13	1.22	2.04	2.22	0.77
O.C. (%)	25.10	28.00	30.40	14.80	15.20	19.00
C.N. ratio	20.90	23.40	18.78	11.20	10.80	23.77
Nitrogen (%)	0.56	0.80	1.60	2.90	2.60	0.40
Phosphorus (%)	0.40	0.61	4.50	2.90	1.40	0.25
Potassium (%)	0.78	1.00	2.00	2.35	2.45	0.80
Humic acid (g 100 g ⁻¹)	1.40	2.10	4.08	5.00	5.01	1.20
Fulvic acid (g 100 g ⁻¹)	13.10	13.38	14.20	15.60	15.60	9.80
Humic content (g 100 g ⁻¹)	85.50	84.50	81.70	79.40	79.30	89.00