

Research Paper :

Response of oilseed crops to enriched and vermicompost on *Vertic ustochrept* under rain fed conditions

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ABSTRACT

A field experiment was conducted for successive six years (2001 to 2006) at Dry farming Research Station, Targhadia (Gujarat) to study the response of oilseed crops (soybean, groundnut, sesame) to enriched and vermicompost on *Vertic Ustochrept* under rainfed conditions. There were four treatments comprised enriched compost @ 6 t/ha, 50 % RDF + 1 t/ha vermicompost, vermicompost @ 2t/ha and 100 % RDF for respective crop. Maximum yield of soybean and groundnut were recorded with enriched compost @ 6 t/ha and that for sesame under 100 % RDF. The application of enriched compost @ 6 t/ha was proved better for obtaining maximum uptake of N, P and K by soybean as well as groundnut and P and K uptake by sesame. Treatments involving enriched compost or vermicompost found beneficial in respect to availability of various nutrients at harvest.

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During last two decades, modernization in agriculture is taken through high yielding varieties, improvement in irrigation facilities and use of fertilizer and pesticides which benefited for higher yield per unit area and time. However, now a days, use of only concentrated chemical fertilizer in injudiciously manner along with reduction in use of FYM resulted in soil productivity. Use of compost prepared through enrichment and vermicompost are best remedies for maintaining of soil health as well as productivity and partially replacement of mineral fertilizer. Keeping these views in mind, a trial on response of oilseed crops to enriched and vermicompost on *Vertic Ustochrept* under rainfed conditions was conducted.

MATERIALS AND METHODS

A field experiment was conducted for successive six years (2001 to 2006) at Dry farming Research Station, Targhadia (Gujarat) to study the response of oilseed crops (soybean, groundnut, sesame) to enriched and vermicompost on *Vertic Ustochrept* under rainfed conditions. There were four treatments comprised: T₁-enriched compost @ 6 t/ha, T₂- 50 % RDF + 1 t/ha vermicompost, T₃-vermicompost @ 2t/ha and T₄-100 % RDF for respective crop (soybean- 20:40, groundnut-12.5:25, sesame- 25:25 NP kg ha⁻¹). Enriched compost was prepared by using the mixture of various farm residues. Residues were chopped into small pieces of 5-6 cm using chaff cutter and filled up in the peat layer by layer of 10-15 cm along with adequate moistening by water. Cow dung slurry was added after every layers. The compost culture, urea and rock phosphate were added

@ 500g, 0.5 % as N and 1.0 % P₂O₅ per tones of organic waste materials, respectively. The crop was harvested at maturity, then dried in the sun and weighed for yield. After that, threshing was done manually and net plot wise yield was recorded and converted on hectare basis. The plant and soil samples were collected after completion of the experiment (2006), processed and analyzed for various chemical properties using standard procedure (Jackson, 1973; Lindsay and Norvell, 1978).

RESULTS AND DISCUSSION

The results obtained from the present investigation are discussed below :

Yield and economic:

The results (Table 1) revealed that maximum yield of soybean (grain 937 and fodder 2186 kg/ha) and groundnut (pod 1368 and haulm 2427 kg/ha) were recorded with enriched compost @ 6 t/ha. While, maximum grain (360 kg/ha) and stalk (1090kg/ha) yield of sesame were produced due to application of 100 % RDF. Overall, application of enriched compost @ 6 t/ha was remained well in respect to yield of different crops. Maximum total income of Rs.11916 and 28586 /ha, net realization of Rs. 3261 and 14211/ha and BC ratio of 1.38 and 1:99 for soybean and groundnut, respectively, were recorded when crop was fertilized with enriched compost @ 6 t/ha. In case of sesame, maximum total income (Rs. 10980 ha⁻¹), net realization (Rs. 3036 ha⁻¹) and BC ratio (1.38) was recorded with the application of 100 % RDF.