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Effect of nitrogen, potassium and sulphur on yield, quality and yield attributes of *Kharif* sesame (*Sesamum indicum* L.)

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ABSTRACT

An experiment was conducted on medium black calcareous soil to study the effect of different levels of N, K and S on yield and yield attributes of *Kharif* sesame (*Sesamum indicum* L.) in FRBD using three replications during the year 2007 at Agricultural Research Station, JAU, Amreli. The results revealed that the significantly higher seed and stover yields, yield attributes, as well as quality parameters were obtained at application of N @100 kg ha^{-1}, K_2O @ 80 kg ha^{-1} and elemental S @ 40 kg ha^{-1}. The seed yield of sesame increased to the tune of 35.96, 17.90 and 15.11 per cent with application of 100 kg N ha^{-1}, 80 kg K_2O ha^{-1} and 40 kg S ha^{-1} as compared to control, respectively. The combined application of N_{100} and K_{80} resulted in 67.5, and 87.7 per cent increase in seed and stover yields of sesame over control (N_0K_0).

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Key words : Nitrogen, Potassium, Sulphur, Sesame yield and yield attributes

INTRODUCTION

Sesame is an important oilseed crop in India. India is the highest producer of sesame in the world which occupies an area of 17.60 lakh ha with a production of 7.85 lakh tones with productivity of 446 kg ha^{-1} (Anonymous, 2009). The oilseed crops generally require a good supply of major nutrients particularly N for growth and yield of crops. Balance application of potassium along with N and P_2O_5 not only gave higher yield but it also improved the quality of economic produced (Kumar *et al.*, 1989). Similarly, sulphur is now recognized, as the 4th major plant nutrient, next to nitrogen, phosphorus and potassium. Hence, it plays critical role in balanced fertilization particularly in sulphur deficient areas. No work has so far been done on effect of nitrogen, potassium and sulphur on yield of sesame particularly in this region. Keeping this in view, study was taken to know the effect of nitrogen, potassium and sulphur on yield, yield attributes and quality of sesame.

MATERIALS AND METHODS

The field experiment was conducted on clayey soil (Vertic Ustrocrept) at Agricultural Research Station, Junagadh Agricultural University, Amreli during *Kharif* 2007 with sesame (*Sesamum indicum L.* var. G.Til-2*)*.The soils had $pH_{2.5}$ 8.18, $EC_{2.5}$ 0.44 dSm^{-1}, Organic carbon 6.1g kg^{-1},CEC 48.2 cmol (p^+) kg^{-1}. Available N, P, K and S were recorded 213 kg ha^{-1}, 28 kg ha^{-1},222 kg ha^{-1} and 12.9 mg S kg^{-1}.The treatments consisted three levels of N (0,50 and 100 kg ha^{-1}), K_2O (0, 40 and 80 kg ha^{-1}) and S (0, 20 and 40 kg ha^{-1}).with triplicate replication. Nitrogen in the form of urea and potassium in the form of KCl, while, sulphur was applied in the form of elemental sulphur prior to 25 days before sowing of crop. One half of the nitrogen and full dose of potassium were applied in furrow as basal. The remaining amount of nitrogen was applied as per treatment in two split at 30 and 45 days after sowing as top dressing. Recommended dose of phosphorus @ 25 kg ha^{-1} was applied in the form of

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