

Research Paper :

Effect of different level of sulphur and potassium on growth, yield and yield attributes of sesame (*Sesamum Indicum* L.)

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ABSTRACT

A field experiment was conducted during *Kharif*, 2003 at Junagadh (Gujarat) to study the effect of varying levels of sulphur (0, 20, 40 and 60 kg ha⁻¹) and potassium (0, 20, 40 and 60 kg ha⁻¹) on growth, yield attributes and yield of sesame (*Sesamum indicum* L.) cv. G-TIL-2. The results revealed that sesame responded significantly to the application of sulphur and potassium up to 40 kg ha⁻¹ for growth, quality, yield attributes and yield of sesame.

Key words : Potassium and sulphur levels, Sesame yield, Yield attributing characters

Sesame (*Sesamum indicum* L.) is an important oilseed crop in India next to groundnut and rapeseed - mustard. Sesame is regarded as the oldest oil yielding plant known to human being. India ranks first both in the area and production of sesame in the world. India is still the world leader with the maximum production (25.8 per cent) from the largest area (29.3 per cent) and highest export (40 per cent) of sesame in the world (Duhoon, 2004). Sulphur and potassium play a vital role in the nutrition of plants. In fact, these nutrients are lacking mostly in the soils. The soils of Gujarat as well as in Saurashtra are deficient in sulphur and medium to high in the potassium. Therefore, the application of chemical fertilizers become essential to raise the crop yield. No work has been done on the effect of sulphur and potassium on yield and quality of sesame crop in this region. Keeping this in view, the investigation was carried out to study the effect of sulphur and potassium on growth, yield and quality of sesame crop.

MATERIALS AND METHODS

A field experiment was conducted on medium black calcareous soil (Typic Ustocrepts) at Agronomy Research Farm, Junagadh Agricultural University, Junagadh in a Factorial Randomized Block Design, with four replications using sesame cv. G-TIL- 2. There were 16 treatments consisting of four levels of S (0, 20, 40 and 60 kg ha⁻¹ applied as elemental sulphur Sulphex, 80 %) and four levels of K₂O (0, 20, 40 and 60 kg K₂O ha⁻¹ applied as Muriate of potash). The soil was silty clay in texture, having pH_{2.5} 7.9, EC_{2.5} -0.32 dSm⁻¹, CaCO₃ 145 gkg⁻¹ and O.C. 6.3 gkg⁻¹. It contained 220, 38.5 and 234 kg ha⁻¹

available N, P₂O₅ and K₂O, respectively and available sulphur 9.5 mg kg⁻¹. The half dose of nitrogen (6.5 kg ha⁻¹) and full dose P₂O₅ of (25 kg ha⁻¹) were added through urea and DAP as basal application in each plot. The remaining half dose of nitrogen (6.5 kg ha⁻¹) was applied at 45 days after sowing. The treatment wise sulphur and potassium were applied through elemental sulphur and muriate of potash, respectively as basal. The crop was raised with standard package of practices. The crop was harvested at maturity and plot wise fodder and grain yield were recorded after sun dry as well as plant height, number of branches per plant, number of capsules per plant, length of capsule, number of seeds per capsule and 1000 seed weight were also recorded.

RESULTS AND DISCUSSION

The results obtained from the present investigation are presented in Table 1 and 2.

Effect of sulphur on yield and yield attributes:

The yield attributing characters like plant height, number of branches per plant, number of capsules per plant, length of capsule, number of seeds per capsule, 1000 seed weight of sesame were increased significantly with increasing levels of sulphur (Table 1). The application of 40 kg S ha⁻¹ gave highest number of capsule per plant, length of capsule and number of seeds per capsule. However, it was at par with 20 kg S ha⁻¹ and 60 kg S ha⁻¹ in case of yield attributing characters. While, 1000 seed weight and yield per plant were found significantly highest with application of 60 kg S ha⁻¹ and it was at par with 40 and 20 kg S ha⁻¹. The increase in growth characters of