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Oil, protein content and uptake studies under varying levels of fertilizer in sesamum cultivars

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SUMMARY

The experiment was laid out in Factorial Randomized Block Design with twelve treatment combinations, formed due to three varieties (Tapi (JLT-7), Phule Til-1and Hawari) and four levels of fertilizer (0, 12.5 + 6, 25+12.5 and 37.5 + 18.5 N + P₂O₅ kg/ha) replicated three times. Amongst the three varieties studied, the mean values for height, spread of plant, number of functional leaves were more in the variety Phule Til-1 at 60 days. The total dry matter accumulation per plant, straw yield, straw to grain ratio were also more in Phule Til-1. the number of capsules and branches per plant, number of seeds per capsule, thousand grain weight, grain to empty capsule ratio and harvest index were significantly more in variety Tapi (JLT-7). Due to expressions of higher order for yield contributing characters, the variety Tapi (JLT-7) produced significantly more grain yield and oil yield. The protein content in the varieties was found to be non-significant. The variety Hawari is early type and required less days for maturity as compared to the rest of the varieties. The growth attributes *viz.*, plant height, spread number of functional leaves and dry matter accumulation per plant were influenced by different fertilizer levels. The values of the yield attributes *viz.*, number of capsules, grain weight per plant and thousand grain weight were increased with every successive increased level of fertilizer and was maximum with 37.5 kg N+18.5 kg P₂O₅ ha. The grain (9.93q/ha), straw (20.97 q/ha) and oil (4.68 q/ha) yields obtained due to the application of 37.5 kg N+18.5 kg P₂O₅/ha were the highest and significantly more than the rest of the lower levels.

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KEY WORDS : Sesamum, UPtake studies, Protein content, Oil contents, Fertilizer level

Vultivation of oilseed crops is gaining momentum to bridge the gap of oilseed production in the country. Sesamum, though cultivated on a small scale, is of immense importance in industry and commerce. Sesamum seed is rich in oil and protein. It is also used as a component for the manufacture of soap and paints. Due to the synergistic effects, it is used in pyrethrun insecticides industry (Kinman and Martin, 1954). In Ayurveda, the seeds of sesamum are medicinally useful in diarrhea. The roots and seeds are used in the preparation of tonic for the hair. They enrich blood and are useful in snake bite, bleeding piles etc. Sesamum oil is useful for dry cough, asthama diseases of lungs, burning sensation, diseases of the ear and eyes Kirtikar and Basu (1935) carried out chemical analysis of commercial 28 strains and observed that sesamum contains about 46 to 55 per cent oil, 18.05 to 26.25 per cent protein, 2.85 to 3.85 g of methionine per 16 g of nitrogen, 0.150 to 0.258 per cent sulphur,

reducing suger 1.12 to 1.51 per cent, total suger 5.60 to 7.20 per cent, iodine value 109 to 113, calcium 0.80 to 1.40 per cent, phosphorus 0.413 to 0.706 per cent and potassium 0.401 to 0.950 per cent.

The production statistics of this crop is most discouraging at both national and state levels. The yield of this crop is low mainly due to its cultivation on marginal and sub-marginal soils with very little or no application of mannure and fertilizers. The other causes of low yield are the use of low yielding varieties and non-adoption of proper and improved agronomic practices. Gaur and Trehan (1974), Deora *et al.*(1975), Maiti *et al.*(1981) and Maiti and Jana (1985) reported that the application of nitrogen and phosphorus increased the yield of sesamum seeds significantly.

With this view in mind, it was felt necessary to take up an experiment at the Mahatma Phule Agricultural University, Rahuri, during *Kharif* under rainfed conditions

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