

Research
Paper

Effect of fertilizer levels on growth parameters of sesamum (*Sesamum indicum* L.) cultivars

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ABSTRACT

The investigation was laid out in Factorial Randomized Block Design with twelve treatment combinations, formed due to four levels of fertilizer (0, 12.5 + 6, 25+12.5 and 37.5 + 18.5 N + P_2O_5 kg/ha), three varieties (Tapi (JLT-7), Phule Til-1 and Hawari) and 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). The variety Tapi (JLT-7) produced significantly more grain yield also. 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 were increased with every successive increased level of fertilizer and was maximum with 37.5 kg N+18.5 kg P_2O_5 /ha. The grain (9.93q/ha) yield obtained due to the application of 37.5 kg N+18.5kg P_2O_5 /ha was the highest and significantly more than the rest of the lower levels.

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Key words : Fertilizer level, Growth parameters, Yield, Sesamum

INTRODUCTION

Sesamum is produced in Southern latitudes in developing countries as a crop of small holders. Sixty five countries in the world grow sesamum out of which 24 are in Asia, 21 in Africa, 15 in Central and South America and 5 in Europe. India is the world's major producer having one-third of the world's average and producer approximately a quarter of total global production. Other sesamum producing countries are China, Burma, Sudan, Mexico, Nigeria, Venezuela, (Ashri, 1981). Cultivation 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 pyrethrin 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.

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 manure 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), Dora *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. The research finding emerged out in other regions may not meet the local needs of sesamum cultivation, especially in scarcity area due to its specific agro-climatic conditions. Secondly, the date on specific fertilizer application for sesamum varieties are not available under Rauri conditions. Therefore, it was considered essential to tackle the problems like fertilizer management and to find out the suitable variety under Rauri conditions.