

## Effect of nitrogen, phosphorus and potassium on growth and yield of olive (*Olea europea* L.)

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### ABSTRACT

An experiment was conducted in the month of October-November 2006-2007 to study the effect of different doses of nitrogen, phosphorus and potassium on growth and yield of olive. Experiment was laid out in a randomized block design factorial with sixty four treatments consisting of four levels of nitrogen ( $N_1=300\text{g/tree}$ ,  $N_2=400\text{g/tree}$ ,  $N_3=600\text{g/tree}$  and  $N_4=750\text{g/tree}$ ), phosphorus ( $P_1=200\text{g/tree}$ ,  $P_2=300\text{g/tree}$ ,  $P_3=400\text{g/tree}$  and  $P_4=500\text{g/tree}$ ) and potassium ( $K_1=200\text{g/tree}$ ,  $K_2=300\text{g/tree}$ ,  $K_3=400\text{g/tree}$  and  $K_4=500\text{g/tree}$ ). All the treatments replicated thrice and the treatment unit was a single tree. The highest mean rate of shoot development  $7.33 \times 10^{-3} \text{ cm day}^{-1}$ , mean rate of leaf appearance  $1.267 \times 10^{-1} \text{ day}^{-1}$ , NPK content level 2.417% and yield 17.0 kg / tree was recorded with  $N_4$  level (Nitrogen @ 750g/tree) and phosphorus and potassium did not show any significant effect.

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Olive (*Olea europaea* L.) has great socio-economic importance. It is discovered as a health restoring, antiviral and antibacterial boon to mankind. Olives are principally used for oil extraction (92 per cent of its produce is used for oil extraction) but some cultivars can also be used for pickles. Olive oil is a product of high biological and nutritive value, being rich source of polyunsaturated fatty acids and freedom of cholesterol makes it ideal oil as compared to many edible oils. Olive oil is also used medicinally as a rubefacient. Furthermore, it is used as a tonic, appetizer, useful in scabies, thirst, burning of eyes and toothache. Olive is found growing throughout the world. Olive varieties were introduced in India under Indo-Italian programme in 1984 at Govindpura, Ramban in Jammu and Kashmir; at Bajaura in Himachal Pradesh and at Dakrani and Jeolikote in Uttar Pradesh. The cultivation of olive has been taken up since then on a limited scale in North Sub-Himalayan region comprising Jammu and Kashmir, Himachal Pradesh and Uttar Pradesh. In Jammu and Kashmir it has been growing wild in Doda, Udhampur, Rajouri, Poonch, Kupwara and Baramulla districts. The commercial olive cultivation in Jammu and Kashmir is only of recent origin, which comprises an area of 276 hectares with a production of two metric tones from Doda and neighboring districts. As the olive orchard, which consisted of nine years old plantation and was non productive, as the trees did not bear any flower/fruit. Due to these bottlenecks, the farmers seldom go for its cultivation. Keeping this in view, the experiment was conducted in the month of November, 2006-2007 at Udhampur district of Jammu and Kashmir

to study the effect of different doses of nitrogen, phosphorus and potassium on growth and yield of olive so as to ascertain the treatment, which can increase its production and provide opportunity to the farming community to grow it commercially.

### MATERIALS AND METHODS

The experiment was conducted in the month of November, 2006-2007 at Udhampur district of Jammu and Kashmir to study the effect of different doses of nitrogen, phosphorus and potassium on growth and yield of olive. The trial was laid on the farmer's field by adopting the olive orchard, which consisted of nine years old plantation and was non productive, as the trees did not bear any flower/fruit. Experiment laid out in a randomized block design factorial with sixty four treatments consisting of four levels of nitrogen ( $N_1=300\text{g/tree}$ ,  $N_2=400\text{g/tree}$ ,  $N_3=600\text{g/tree}$  and  $N_4=750\text{g/tree}$ ), phosphorus ( $P_1=200\text{g/tree}$ ,  $P_2=300\text{g/tree}$ ,  $P_3=400\text{g/tree}$  and  $P_4=500\text{g/tree}$ ) and potassium ( $K_1=200\text{g/tree}$ ,  $K_2=300\text{g/tree}$ ,  $K_3=400\text{g/tree}$  and  $K_4=500\text{g/tree}$ ). All the treatments replicated thrice and the treatment unit was a single tree. During the experiment a basal dose of well decomposed farmyard manure @ 40 kg/ tree was applied to the experimental trees. Light winter pruning was also given to the trees. Nitrogen was applied in three split doses. 2/3 of N was applied in the month of January and two split doses of rest of 1/3 of N in equal proportion in the month of March and June at the time of pit hardening. Phosphorus and potassium were applied as single dose in the month of January along with first dose of nitrogen. The biometrical