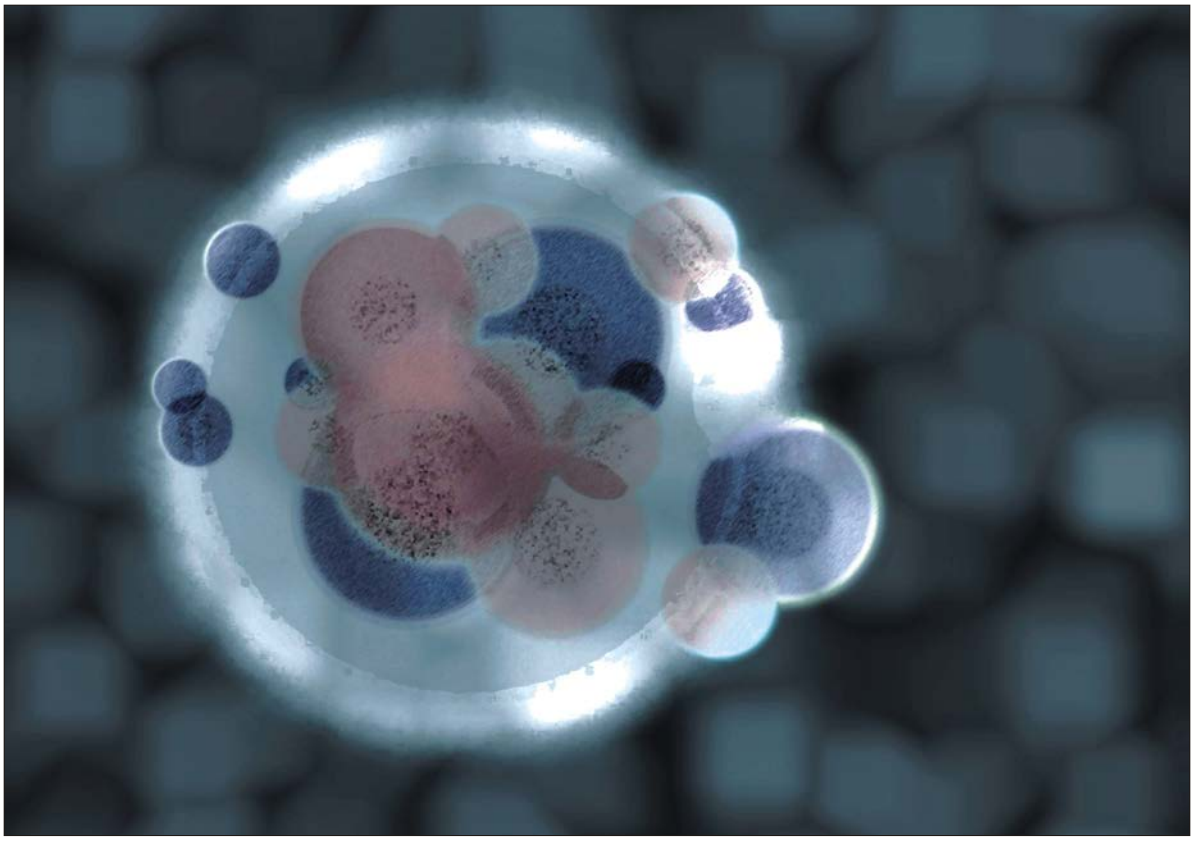

Journal of Biological Sciences

ISSN 1727-3048

science alert

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OnLine Journal of Biological Sciences 1 (6): 440-441, 2001

Performance of Olive (*Olea europaea* L.) Cuttings Taken from Different Varieties in the Agro-climatic Conditions of Peshawar

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Abstract: Olive (*Olea europaea* L.) cuttings taken from different varieties, were studied at the Agricultural Research Institute, Tarnab, Peshawar in February 2000.The cuttings were struck in 3000-ppm solution of IBA for 5 minutes before planting on beds prepared from sand, silt and FYM and then were covered with transparent plastic sheets for arresting proper humidity. Varieties Azarbaijan and Earleeg showed significantly maximum number of leaves per cutting (65.88 and 64.55 respectively) and shoot length (18.21 and 17.88 cm respectively). Variety Azarbaijan gave significantly higher sprouting percentage (48.66%) and the number of shoots per cutting (4.88) followed by variety Earleeg with 35.55% sprouting and 3088 number of leaves per cutting. The shoot diameters were not significantly different in either variety. It can be concluded from the results that variety Azarbaijan gave the best performance followed by Earleeg in the agro-climatic conditions of Peshawar as regards the cutting performance is concerned.

Key words: Olive, propagation, cuttings, varieties, performance

Introduction

Olive (*Olea europaea* L.) is slow growing but very long-lived tree with several thousand years age (Hartman *et al.*, 1981). Its tree attains a height of 15m or more. Archeological evidence confirms the theory of its origin in the Eastern Mediterranean region. Olive is considered to be one of oldest cultivated tree, dating back to about 3500 B.C. on the Island of Crete. Olives are propagated either by seeds or through cutting. Propagation by cutting is preferred due to its simplicity and rapidness besides maintaining genetic uniformity. The trees raised from cuttings have an added advantage of being dwarf, produce uniform growth and come into bearing earlier than those raised from seeds; the yield is thus uniform and stable. Root initiation is generally stimulated by auxin application (Mitra *et al.*, 1982). Stem cuttings of olive with 4000 ppm IBA and planted in sand soil medium. Highest rooting percentage was observed under the treatment. (Abdel-Hussain and Salman, 1988). Hardwood cuttings of Ascolano and Frantoio with IAA, IBA and NAA at either 500 or 1000 ppm concentrations, which resulted into better rooting in olive. The cuttings taken in March had given better rooting than the cuttings taken in September or December, (Ibrahim *et al.,* 1991). Propagated Olive cv. Leccino from hardwood cuttings by the use of IBA and IAA each with 1500, 3000 and 6000 ppm. For 5 sec. duration as "quick dip". Better rooting of 70% was produced by IBA at 3000 ppm. Low concentration of IBA significantly increased the root length and at higher concentration more number of roots/cuttings were produced, (Khattak *et al.,* 1991). Softwood olive cuttings in July, (shoots 20-25 cm long) taken from mother trees were cut in half, each cutting having 1-2 leaf pairs. The apical & basal cuttings, treated with IBA at 0.005% for 12 hours were rooted under mist. They started callusing 18-20 and 24-26 days, respectively, after insertion and formed roots 40-45 and 48-52 days respectively after insertion (Lasareishvili and Zanaishvili, 1991). Cuttings of 5 cultivars treated with IBA at 2500 or 3500 ppm, were struck in agriperlite. Rooting in the untreated control ranged from 9.33% in Corentina to 44.00% in carolea, this rose to 44.0% in Corentina and 81.33% in carolea when treated with IBA at 2500 and 3500 ppm respectively. The best rooting (89.33%) was obtained with Pendolino treated with 2500 ppm IBA (Pandy and Sinha, 1989).

Materials and Methods

At the Agricultural Research Institute, Tarnab, Peshawar during February 2000 the cuttings (1-3 cm thick and 20-25 cm long) were taken this experiment was conducted in late January 2000 from varieties Azarbaijan, Earleeg, Leccio, Corentina and Sufaida. The cuttings had two pairs of leaves and were struck in 3000 ppm IBA solution for 5 minutes. After treatments with IBA, the cuttings were planted on raised beds containing sand, silt and FYM. First irrigation was given just after plantation while sprinkler irrigation was continued every second day till sprouting. The cuttings were covered with transparent plastic sheets to arrest proper humidity. Total number of cuttings were 1750, each variety have 350 cuttings and per replication have 150 number of cuttings. For statistically analysis Randomized Complete Block Design (RCBD) and LSD tests was used.

Results and Discussion

The sprouting percentage was significantly different in the cuttings of various varieties at the 5% level of significance. The significantly higher sprouting (48.66%) was recorded in the Olive variety Azerbaijan followed by Earleeg (35.55%) and Leccio (26.88%) while Corentina (14.88%) and Sufaida (14.22%) were exhibited lowest sprouting presented in Table 1. The significant difference may be attributed to the varied potentials of varieties to acclimatization in the Peshawar area and rooting ability of the varieties.

A significant difference in number of shoots per cutting was observed at 5% level of significance. The maximum number of shoots per cuttings (4.88) was recorded in variety Azarbaijan followed by Earleeg (3.88) while Sufaida (1.66) have minimum number of shoots per cuttings. Shoots are emerged from active buds on the cutting. Therefore it is concluded from the results that the varieties with maximum number of shoots per cutting had greater ability to sustain active buds on the cutting after detachment from mother plants.

Various varieties of Olive were found significantly different in their ability of shoot length of the cuttings. Variety Azarbaijan showed the maximum shoot length (18.21 cm) followed by Variety Earleeg (17.88 cm), both of these varieties were equal at 5% level of significance as regards the shoot length.

Table 1: Mean value table for sprouting percentage, number of shoot, shoot length, number of leaves and shoot diameter

Varieties	Sprouting (%)	No. of shoots	Shoot length (m)	No. of leaves	Shoot diameter (cm)
Azarbaijan	48.66a	4.88a	18.21a	65.88a	0.35
Earleeg	35.55ab	3.88b	17.88a	64.55a	0.34
Leccio	26.88bc	2.44c	9.22b	24.99b	0.21
Corentina	14.88c	1.88d	4.99c	15.10c	0.19
Sufaida	14.22c	1.66d	3.10c	14.33c	0.19
LSD*	17.83	0.5325	2.149	3.910	

Means with similar letters are not significantly different. *LSD at 5% level of significance

Among the rest of varieties Leccio was moderately better than the other two with (9.22 cm) shoot length. Increase in the shoot length is primarily attributed to the varietal characteristics. The variety with highest shoot length may be considered efficient in growth responses and synthesis of essential food materials like carbohydrate for enhancing shoot length. It can be concluded that the variety with highest shoot length is performing better in the present circumstances than the other ones.

Significantly maximum number of leaves (65.88) and (64.55) were recorded in the Olive varieties Azarbaijan and Earleeg. Comparatively moderate performance, as regards the number of leaves was observed in variety Leccio while the remaining varieties Corentina and Sufaida were significantly poor in number of leaves per cuttings. As discussed in the preceeding paragraph the highest shoot length and number of leaves per cutting may be inter dependent.

The results revealed that shoot diameter were equal in significance at the 5% level of significance in each variety of Olive. The shoot diameter may take some time to be significantly different from each other as observed in other parameters.

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