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The comparison of various concentrations of 2,4-D and IBA hormons on Rooting of Cutting Roses

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ABSTRACT: Roses (Rosa hybirida) belong to family Rosaceae and Genus Rosa which contains more than 150 species and 1400 cultivars. Rose is a symbol of perfection, elegance, romance and love. It was called "The Queen of Flowers" firstly by Greek poetess in her "Ode to the Rose". Rose is recognized for their high economic value, which are used in agro-based industry especially in cosmetics and perfumes. Additionally, roses play a vital role in the manufacturing of various products of medicinal and nutritional importance. IBA is one of the most common materials that are used in stimulating rooting. IBA of relatively slow and weak auxin, auxin-degrading enzyme system of a material is chemically stable, has a great effect on root production. The field experiment was laid out factorial with randomized complete block design with three replications. Treatments included 2,4-D (1, 2, 3 and 4 mg/lit) and IBA (1000, 2000, 3000 and 4000 mg/lit). Analysis of variance showed that the effect of IBA and 2,4-D on all charactristics was significant.

Key words: Number of root, Root height, Root fresh weight, Root dry weight

INTRODUCTION

Rose, a universally celebrated flower, has been used as a garden plant since the dawn of civilization. Rose is a symbol of perfection, elegance, romance and love. It was called "The Queen of Flowers" firstly by Greek poetess in her "Ode to the Rose" (Muhammad et al., 1996). Roses (Rosa hybirida) belong to family Rosaceae and Genus Rosa which contains more than 150 species and 1400 cultivars (Synge, 1971). Rose enjoys superiority over all other flowers being extensively used for decorative purposes and is prized for its delicate nature, beauty, charm and aroma. Rose is recognized for their high economic value, which are used in agro-based industry especially in cosmetics and perfumes. Additionally, roses play a vital role in the manufacturing of various products of medicinal and nutritional importance. However, the main idea of rose plant cultivation is to get the cut flowers, which greatly deals with the floricultural business (Butt, 2003). There is a tremendous diversity of growth habit, flower form, and color among roses. Rose is the most popular of all the flowers because of its beauty and fragrance and is called the "Queen of Flowers" (Schneider and Dewolf, 1995). Roses are immensely important for landscaping and no garden is considered complete without roses (Gibson, 1984). Roses respond well to pruning and are believed strictly to be pruned every year regularly. The judicious removal of leaves, branches, buds, flowers and undesirable parts of the plant to increase its usefulness is termed as pruning (Schneider and Dewolf, 1995). IBA is one of the most common materials that are used in stimulating rooting. IBA of relatively slow and weak auxin, auxin-degrading enzyme system of a material is chemically stable, has a great effect on root production (Hartmann and kester, 1975). Mehrus in the year (2000) studied the rooting ability of cuttings of three Bougainvillea flowers that impress and excite IBA using levels of 100 ppm IBA, the rooting percentage of rooted in cutting has increased from three species Bougainvillea and three cuttings that were taken in the middle of the three rosette compared with the cuttings were taken from the top or bottom of the parent directory has the highest percentage of rooting. It stated that the reason for the increase in rooting percentage of cuttings that have been taken by the central branch of the c / n is above the cuttings (mahros, 2000). Blythe (2004) evaluate the different concentrations of IBA and NAA for rooting of rooting of 'Cammelia japonica' cuttings and observed that 3000 mg/L IBA and 2500 mg/L IBA plus 1250 mg/L NAA increases rooting percent in the cuttings. Singh et al. (2011) reported that 4000 mg/L IBA under mist system has been greatest influence on rooting of 'Bougainvilla spectabilis' cuttings. Al-Sagri and Alderson (1996) reported that in propagation of Rose plant by leafy and hardwood cutting, 1000 and 3000 mg/L IBA increased root numbers than control treatment. Chen In (1999) examined the effects of taking cuttings and cuttings in Bougainvillea has stated that rooting of cuttings of the young shoots with a diameter of 3 to 6 mm in diameter, 9-6 mm higher than cuttings and the rooting of cuttings taken from the tips of twigs or branches down (more than 9 mm in diameter) were lower Cuttings treated with rooting hormone IBA at a concentration of 6000 ppm compared with cuttings treated with 3000 ppm concentration.

Ersi selly in (2001) studied the effects of hormone IBA on adventitious root formation in cuttings of rose wood, which IBA is suitable for rotting. IBA hormone associated with the use of talcum powder and 3 different levels of potassium nitrate solution increased the rooting percentage, root length, root fresh weight, root viability - the net weight of leaf length and number of branches (Naggar, 2004). Zeirat the Year (1997) investigated the effects of the seasons and types of cuttings on rooting Bougainvillea glabra and spectabilis showed that Maximum spectabilis kind of rooting cuttings green in July was the lowest rooting in cuttings taken in February wooden, And have been the type and number glabra maximum rooting cuttings of woody roots the lowest in February was rooting green cuttings in July and roots .And various concentrations of hormone IBA, the rooting percentage and number of roots per cutting increased (Ziraat and Fakultesi, 1997).

MATERIAL AND METHODS

Location of experiment. The experiment was conducted at the zahedan in green house

Composite soil sampling. Composite soil sampling was made in the experimental area before the imposition of treatments and was analyzed for physical and chemical characteristics.

Field experiment. The field experiment was laid out factorial with randomized complete block design with three replications.

Treatments. Treatments included 2,4-D (1, 2, 3 and 4 mg/lit) and IBA (1000, 2000, 3000 and 4000 mg/lit).

Data collect. Data collected were subjected to statistical analysis by using a computer program MSTATC.

Least Significant Difference test (LSD) at 5 % probability level was applied to compare the differences among treatments` means.

RESULTS AND DISCUSSION

A. Number of root. Analysis of variance showed that the effect of IBA on number of root was significant (Table 1). The maximum of Number of root of treatments 2000 ppm was obtained (Table 2). The minimum of number of root of treatments 4000 ppm was obtained (Table 2). Analysis of variance showed that the effect of 2,4-D on number of root was significant (Table 3). The maximum of number of root of treatments 1 mg/lit was obtained (Table 4). The minimum of number of root of treatments 4 mg/lit was obtained (Table 4).

B. Root height. Analysis of variance showed that the effect of IBA on root height was significant (Table 1). The maximum of root height of treatments 2000 ppm was obtained (Table 2). The minimum of root height of treatments 1000 ppm was obtained (Table 2). Analysis of variance showed that the effect of 2,4-D on root height was significant (Table 3). The maximum of root height of treatments 1 mg/lit was obtained (Table 4). The minimum of root height of treatments 4 mg/lit was obtained (Table 4).

C. Root fresh weight. Analysis of variance showed that the effect of IBA on root fresh weight was significant (Table 1). The maximum of root fresh weight of treatments 2000 ppm was obtained (Table 2). The minimum of root fresh weight of treatments 1000 ppm was obtained (Table 2).

Table 1: Anova analysis of the roses affected by IBA.

S.O.V		Number of root	Root height	Root fresh weight	Root dry weight
IBA	3	24.562**	32.807**	1.0173*	0.096ns
Error	12	3.604	0.846	0.270	0.023
CV (%)	-	31.97	14.71	56.61	47.87
*, **, ns: significant at p<0.05 and p<0.01 and non-significant, respectively.					

Table 2: Comparison of different traits affected by IBA.

Treatment	Number of root	Root height	Root fresh weight	Root dry weight
IBA				
1000 ppm	4.75c	3.96c	0.58c	0.24b
2000 ppm	9.25a	10.07a	1.67a	0.54a
3000 ppm	6.25b	6.82b	0.85b	0.29b
4000 ppm	3.50d	4.14c	0.57b	0.19c
Any two means not sharing a common letter differ significantly from each other at 5% probability				

Table 3. Anova analysis of the roses affected by 2,4-D.

S.O.V		Number of root	Root height	Root fresh weight	Root dry weight
2,4-D	3	1.417*	11.424*	0.103*	0.017ns
Error	12	0.292	3.905	0.018	0.012
CV (%)	-	22.74	48.25	42.08	10.66
*, **, ns: significant at p<0.05 and p<0.01 and non-significant, respectively.					

Analysis of variance showed that the effect of 2,4-D on root fresh weight was significant (Table 3). The maximum of root fresh weight of treatments 1 mg/lit was obtained (Table 4). The minimum of root fresh weight of treatments 4 mg/lit was obtained (Table 4).

D. Root dry weight. Analysis of variance showed that the effect of IBA on root dry weight was significant (Table 1). The maximum of root dry weight of treatments 2000 ppm was obtained (Table 2). The minimum of root dry weight of treatments 4000 ppm was obtained (Table 2). Analysis of variance showed that the effect of 2,4-D on root dry weight was not significant (Table 3). The maximum of root dry weight of treatments 2 mg/lit was obtained (Table 4). The minimum of root dry weight of treatments 4 mg/lit was obtained (Table 4).

Table 4: Comparison of different traits affected by 2,4-D.

Treatment	Number of root	Root height	Root fresh weight	Root dry weight
2,4-D				
1 mg/lit	3.25a	6.26a	0.51a	0.15a
2 mg/lit	2.25b	4.52ab	0.38ab	0.17a
3 mg/lit	2.00b	3.23ab	0.24bc	0.09a
4 mg/lit	2.00b	2.38b	0.147c	0.02a
Any two means not sharing a common letter differ significantly from each other at 5% probability				

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