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RESPONSE OF DIFFERENT ROSE SPECIES TO DIFFERENT ROOT PROMOTING HORMONES

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Research studies related to the present project were carried out in the Rose project area Department of Horticulture, University of Agriculture, Faisalabad, during 2001 to 2002. Rose cuttings were taken from two rose species i.e. *Rosa Centifolia* and *Rosa Damaseena* were selected for this experiment. Basal portion of their stem cuttings were treated with 500 ppm and 1000 ppm concentration of two growth hormones, NAA and IBA, by quick dip method in addition to a control. The experiment was laid out according to the randomized complete block design with factorial arrangement. Results expressed significant supremacy of 1000 ppm over rest of the treatments in both the growth hormones *Rosa eentifolia* produced more roots as compared to *Rosa damaseena* and IBA give significantly better roots as compared to NAA.

Key Words: IBA, NAA, number of roots, roses.

INTRODUCTION

Rose, a symbol of perfection, elegance, romance and love was firstly called "queen of flowers" firstly by a Greek poet in her "Ode to the Rose". According to Harkness (1993) fossilized roses found in Europe, Japan and America were reported to be 35 million years old. From the ancient Greek to the modern world, roses are grown for their aesthetic, medicinal and economic value (Randhawa and Mukhopadhyay, 1994).

Roses are conventionally propagated by cutting, budding, grafting and layering methods. All methods are quite expensive, laborious and time consuming except cutting. Although the success rate through cutting is limited in most of the rose species due to failure in root formation.

Yet cutting would be the simplest way to increase the desirable rose varieties. Plant growth regulators could promote rooting in many ornamental plants including rose (Pandey and Sinha, 1997). The compounds, which are commonly used for root induction include IBA and NAA.

Present study was planned to investigate the response of rooting hormones applied on stem cuttings of two species of rose, for root induction.

MATERIALS AND METHOD

Research studies were carried out at the rose project area Department of Horticulture, University of Agriculture, Faisalabad during 2001-2002. Three hundred Stem-cuttings of Rose species having three or four dormant buds were taken from uniform, healthy, and vigorous plants of uniform age from (PARS) Post Agriculture Research Station, Faisalabad. Two different species *Rosa eentifolia* and *Rosa damascena* were selected for these studies. Two synthetic growth regulators i.e., IBA and NAA were used, with two concentrations of each i.e. 500 ppm and 1000 ppm and a control. Solutions were prepared in absolute alcohol and quick dip method was used for cutting.

The experiment was laid out according to the randomized complete block design with factorial arrangement with three repeats of each treatment. Mortality percentage, number of sprouted buds, length of sprouted shoots (cm), width of plant (cm), number of branches, number of roots and length of roots (cm) were recorded for each treatment.

RESULTS AND DISCUSSION

Mortality percentage

The mortality percentage expressed by T_3 (1000 ppm) was only 1.5 percent followed by T_2 (500 ppm), which gave the mortality percentage of 3.3 percent while control showed the highest mortality percentage i.e. 4.5 percent Table 2. There was significant supremacy of V_1 *Rosa Centifolia* over V_2 *Rosa Damaseena* Table 1. as mortality percentage in *Rosa Centifolia* was only 2.7 percent while in *Rosa Damascena* mortality was 3.5 percent. Table 3 showed that C_1 (IBA) proved better than C_2 (NAA) as mortality rate was 3.3 percent in IBA and 3.1 percent in NAA. Interaction of variety, chemical and levels was non-significant.

Table 1. Comparison of means of species

Parameters	Rosa centifolia	Rosa damascena
Mortality percentage	2.7 b	3.5 a
Number of sprouted buds	3.7 a	3.2 b
Length of sprouted buds	3.8 a	3.3 b
Width of plant	9.2 a	8.6 b
Number of branches	2.8 a	2.2 b
Number of roots	10.9 a	8.0 b
Length of roots	3.8 a	3.2 b

Number of Sprouted Buds

Results showed that V_1 (Rosa *Centifolia)* performed better than V_2 (Rosa *Oamascena)* in terms of sprouted buds as it produced 3.7 buds while Damascena produced 3,2 buds Table 1. Table 2 expressed significant supremacy of T_3 over rest of the treatments by producing 4.9 buds. T_2 secured second position by producing 3.3 buds while control produced only 1.8 buds. Chemical C_1 (IBA) showed significant superiority over C_2 (NAA) by producing 3.5 buds compared to 3.1 buds. Interaction among variety, chemical and levels was non-significant.

Table 2. Effect of different levels on stem cuttings of two rose species

Parameters	Control	500 ppm	1000 ppm
Mortality percentage	4.5 a	3.3 b	1.5 c
Number of sprouted buds	1.8 c	3.3 b	4.9 a
Length of sprouted buds	2.2 c	3.7 b	4.8 a
Width of plant	6.8 c	8.7 b	11.2 a
Number of branches	1.3 c	2.5 b	3.6 a
Number of roots	5.7 b	10.8 ab	11.9 a
Length of roots	2.2 c	3.5 b	4.8 a

Length of Sprouted Shoots

Regarding length of sprouted shoots variety (V_1) Rosa *Centifolia* expressed significant superiority over V_2 Rosa *Oamascena* Table 1. V_1 variety produced 3.8 cm length of shoot compared to variety V_2, which produced 3.3 cm shoot length. Significance superiority of chemical (C_1) (IBA) over C_2 (NAA) can be visualized from Table 3. Chemical C_1 produce 3.9 cm mean length of sprouted shoot and NAA produce 3.3 cm length of sprouted shoot. So we can say that C_1 (IBA) is better than C_2 (NAA). Above figure demonstrated that significant results could be recorded between D_3 (1000 ppm), D_2 (500 ppm) and D_1 (control) and that they were significantly suppressed by D_3. Interaction among the variety, chemical and levels was non-significant.

Table 3. Effect of different chemicals on stem cuttings of two rose species

Parameters	IBA	NAA
Mortality percentage	3.0 a	3.1 a
Number of sprouted buds	3.5 a	3.1 a
Length of sprouted buds	3.9 a	3.3 b
Width of plant	9.6 a	8.2 b
Number of branches	2.7 a	2,4 a
Number of roots	10.5 a	8,4 b
Length of roots	3.6 a	3,4 b

Width of Plant

The width of plant shoot produced in Rosa *centifolia* was 9.2 cm and that of Rosa *damascene* was 8.6 cm. IBA is superior over NAA as chemical C_1 (IBA) produced 9.6 cm. wide plants (table 3) while chemical C_2 (NAA) produces 8.2 cm wide plants. Dose (1000 ppm) expressed its significant superiority over all other doses by producing 11,2 cm width of plant. Control produces 6.8 cm wide plant while D_2 (500 ppm) produce intermediate results between D_3 and control table 2. Interaction of variety, chemical and levels was non-sig nificant.

Number of Branches

It may be visualized from the table 1 that V_1 (rosa *centifolia)* expressed significant superiority over V_2 (rosa *damascena).* Rosa *centifolia* produced 2.8 number of branches while V_2 produced 2.2 number of branches. Dose 3 (1000 ppm) expressed its significant superiority over all other treatments. While D_2 (500 ppm) showed intermediate results between D_3 and control. On the whole, D_3 occupied the highest and D_1 the lowest position (Table 2). Chemical C_1 produce 10.5 number of branches while C_2 produced 8.4 number of branches. Interaction among variety, chemical and levels was non-significant.

Number of Roots

Chemical C_1 (IBA) produce more number of roots than chemical C_2 (NAA). IBA produced 10.5 number of roots while NAA produced 8,4 number of roots Table 2 expressed significant supremacy of T_3 over rest of the treatments by producing 11.9 roots. T_2 recurred second position by producing 10.8 buds while control produce only 5.7 roots. Table 1 revealed that V_1 (Rosa *centifolia)* showed its significant superiority over V_2 (Rosa *damascena)* by producing 10.9 number of roots and V_2 produced 8.0 number of roots. (Hartmann et.al.1990) Interaction among variety, chemical and levels was non-significant.

Length of Root

Table 1 showed significant supremacy of V_1 (Centifolia) over V_2 (Damascena) by producing 3.8 cm length of root while V_2 produced 3.2 cm length of root. Dose 3 (1000 pprn) performed better than all other treatments. D_3 produced 4.8 cm length of root while D_1 control gave lowest value of 2.2 cm and D_2 showed intermediate results. C_1 produced 3.6 cm length of root while C_2 produced 3,4 cm length of root (Table 3). Interaction among the variety, chemical and levels was non-significant.

CONCLUSIONS

From the above, it can be concluded that Rosa *centifolia* is better than Rosa *damascena* in all studied parameters especially number of roots, root lengths etc. and IBA is better than NAA and 1000 ppm concentration of both chemicals was better than others.

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