Agric. Sci. Digest, 22 (3) : 176 - 178, 2002

EFFECT OF IBA AND NUMBER OF INTERNODES ON ROOTING OF STEM CUTTINGS OF GRAPE ROOTSTOCKS*

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ABSTRACT

The present investigation was undertaken to study the effect of IBA and number of internodes on rooting of stem cuttings of grape root stocks. It was found that the rootstock 1613-C did not require any chemical treatment for stimulating the root formation while Dogridge and Salt creek cuttings with five internodes were treated with 1500 ppm IAB for better sprouting percentage of 86.60 and 80.00 respectively. The significant results for root growth parameter of rootstocks were obtained at higher concentration of IBA.

Generally grape responds readily when propagated by any of the methods like cutting and layering. However, propagation by cuttings is the most popular due to its easiness in operation, high percentage of success and economy. As the use of rootstocks in grape cultivation is fast becoming a necessity in problamatic soils, therefore, it is important to standardize their propagation techniques. (Prakash and Reddy, 1991). The plant growth regulators are generally used to increase the percentage of rooted cutting, hasten root initiation and increase number of roots per cutting. Some rootstocks that are more difficult to root can be rooted satisfactorily, if all influencing factors are taken into consideration and maintained at the optimum conditions. However, very little information is available on the rooting of stem cutting of rootstocks which are very difficult to root. Therefore, the present investigation was undertaken to study the effect of IBA and number of internodes on the rooting of stem cuttings of grape rootstocks.

The field experiment was undertaken to study the effect of IBA and number of internodes on the rooting of stem cuttings of important grape rootstocks during February-1998 at All India Co-ordinated Research Project on Grapes, Department of Horticulture, Mahatma Phule Krishi Vidyapeeth Rahuri. The hardwood stem cuttings of pencil size thickness having 3, 4 and 5 internodes of important rootstocks such as Dogridge, Salt creek and 1613- C, were taken from the middle portion of the matured canes. These cuttings were dipped and soaked for 30seconds in solutions of IBA at 500, 1000, 1500, 2000 and 2500 ppm and watersoaked as control were planted on raised beds in nursery. While planting the cuttings treatmentwise, care was taken to see that two internodes were kept under soil while the remaining internodes were kept above soil. The observations on sprouting percentage, number of lateral shoots, primary roots per cutting and length of root were recorded after six months of planting and data were analysed statistically in factorial randomised block design.

The data presented in Table 1 revealed that the treatment of IBA and number of internodes influenced significantly the rooting in Dogridge and Salt creek rootstocks. It was also observed that, the highest sprouting percentage was recorded by water dipped cutting of 1613-C (96.60%) having five internodes followed by cuttings of Dogridge (86.60%) and Salt creek (80.00%) with same number of internodes treated with IBA at 1500 ppm. The results obtained in the cuttings of Dogridge and Salt creek are in conformity with the results obtained by Prakash and Reddy

* Paper presented in National Dialague on "Sustaining the Productivity of Grapes Under Adverse Situations" organised by National Research Centre on Grapes, held at Pune between 8th to 9th 1999.

Table 1. Effect of IBA and number of internodes on shoot growth and root growth of different grape roststocks

Treatments	No. of internode	Sprouting percentage			Number of lateral shoots/cutting			Root length (cm)			Number of primary roots/cutting		
		Dogridge	Salt creek	1613-C	Dogridge	Salt creek	1613-C	Dogridge	Salt creek	1613-C	Dogridge	Salt creek	1613-C
T_0 Control	3rd	73.30	43.30	73.30	12.30	10.00	8.80	22.20	15.00	25.50	8.20	9.20	17.20
	4th	73.30	56.70	56.70	6.70	10.50	5.50	23.00	20.30	21.40	9.80	8.60	24.30
	5th	76.70	9.00	96.60	11.10	2.70	4.20	22.50	7.30	23.80	9.33	4.33	19.80
T_1 (500ppm)	3rd	30.00	60.00	36.60	7.50	6.90	3.60	12.80	17.70	18.20	6.70	7.00	18.40
	4th	33.30	20.00	70.00	13.50	10.20	5.40	25.00	14.00	22.00	11.50	6.70	25.00
	5th	70.00	53.30	80.00	12.70	8.70	6.30	22.00	16.90	27.40	20.10	9.20	25.20
T_2 (1000ppm)	3rd	16.70	13.30	20.00	6.50	7.00	3.40	8.70	19.30	24.00	6.70	10.30	12.33
	4th	20.00	16.66	86.60	6.60	4.80	10.30	23.00	18.70	31.10	16.30	10.70	23.00
	5th	23.30	23.00	83.30	9.70	9.90	9.60	13.20	14.70	27.80	17.00	13.00	20.20
T_3 (1500ppm)	3rd	70.00	43.30	53.30	12.70	5.90	4.80	24.50	22.70	26.40	15.90	11.80	21.00
	4th	63.30	26.70	50.00	8.10	6.50	8.70	22.20	21.00	25.70	12.70	11.33	20.30
	5th	86.60*	80.00	63.30	11.20	11.20	12.00	19.,50	20.30	35.00	19.70	13.30	38.40
T_4 (2000ppm)	3rd	43.30	63.30	46.70	12.00	9.40	5.80	23.50	18.30	22.40	13.00	12.00	22.40
	4th	20.00	60.00	80.00	4.00	5.80	9.50	5.30	16.80	25.00	2.00	14.20	18.90
	5th	13.30	23.30	60.00	4.00	6.20	8.10	7.00	7.30	23.90	3.00	10.20	22.80
T_5 (2500ppm)	3rd	20.00	70.00	56.70	3.30	11.80	8.40	7.70	19.00	24.30	2.70	14.30	19.90
	4th	63.30	76.70	83.30	13.70	10.40	4.70	26.20	19.40	23.30	19.70	14.30	27.10
	5th	56.70	56.00	46.60	15.50	14.20	8.80	42.50	24.40	29.50	24.00	18.00	24.70
Main (A)													
S.E.±		2.252	2.060	3.375	0.664	0.674	0.548	1.280	1.094	1.994	0.919	0.674	1.460
C.D. at 5%		6.472	5.921	9.699	NS	NS	NS	3.680	3.145	NS	2.640	1.938	NS
Submain (B)													
S.E.±		1.592	1.457	2.386	0.469	0.477	0.387	0.905	0.774	1.410	0.649	0.477	1.033
C.D. at 5%		4.577	NS	NS	NS	NS	NS	2.602	2.224	NS	1.868	1.370	NS
Interaction													
S.E.±		3.901	3.568	5.845	1.149	1.167	0.949	2.218	1.895	3.454	1.591	1.168	2.530
C.D. at 5%		11.210	10.255	16.800	3.304	3.355	2.727	6.374	5.447	NS	4.572	3.357	NS

(1991) in the cuttings of Dogridge and St. George rootstocks and Singh *et al.* (1986) in grape cuttings. The cuttings of 1613-C did not show any response to IBA treatments but the highest sprouting percentage was recorded by the cuttings having five internodes. Similar findings were also reported by Prakash and Reddy (1991) in the cuttings of Dogridge and St. George rootstocks and Singh *et al.* (1986) in stem cuttings of grape cv. Perlette. The concentrations of IBA and number internodes had non-significant effect on the number of lateral shoots per cutting of all the rootstocks under study, but the highest number of lateral shoots per cuttings were recorded by the cuttings of Dogridge and Salt creek having five internodes treated with IBA at 2500 ppm concentration.

The data in respect of root length parameters presented in Table 1 revealed that, the root length was significantly influenced by the number of internodes and IBA concentrations. The significant results were obtaied in Dogridge and Salt creek at higher concentration of IBA. The maximum root length was noticed in the cuttings of Dogridge (42.50) with five internodes when treated with IBA at 2500 ppm followed by the cuttings of Salt creek (24.40) having the same number of internodes at the same concentration of IBA, while the non-significant results were recorded in 1613-C cuttings of root length. The results obtained in 1613-C were analogous with the results obtained by Prakash and Reddy (1991). The data further revealed that, there was significant effect on the number of primary roots per cutting in respect of Dogridge and Salt creek root stocks, whereas there was no significant effect on number of roots per cutting of 1613-C. The stem cuttings of Dogridge and Salt creek having five internodes when treated with IBA at 2500 ppm recorded 24 and 18 number of primary roots per cutting respectively, but less than the cuttings of 1613-C. The same number of internodes recorded significantly more number of roots per cutting of grape varieties (Singh and Singh, 1968).

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