Bull. Fac.Agric.,Cairo Univ., 61:399-405 (2010).

EFFECT OF NAPHTHALENE ACETIC ACID AND INDOLE BUTYRIC ACID ON ROOTING AND GROWTH OF *Populus euramericana* GUINIER AND *Populus nigra* L. STEM CUTTINGS

(Received: 4. 7.2010)

By

A.M.Z. Sarhaan, A.M.S.Arafa,E.El.Habba* and N.M.Yousset *

Ornamental Horticulture Department, Faculty of Agriculture, Cairo University,Giza, Egypt.
**Ornamental Plants and Woody Trees Department, National Research Centre, Dokki, Giza, Egypt.*

ABSTRACT

This study was carried out at the Ornamental Horticulture Department, Faculty of Agriculture, Cairo University during two successive seasons; 2006 and 2007 aiming to find out the effect of NAA and IBA at 0,500, 1000 and 1500 ppm on rooting and growth parameters of *Populus euramericana* and *Populus nigra* cuttings. The results on *Populus euramericana* cuttings showed that NAA at 500 ppm gave the highest values of rooting percentage, number of roots/cutting, root length/cutting, fresh and dry weights of roots/cutting ,plant height (cm), number of leaves, fresh and dry weights of leaves /cutting. Whereas, NAA at 1000 ppm gave the highest values of stem diameter, fresh and dry weights of stem in both seasons.

On *Populus nigra* cuttings the data indicated that IBA at 1000 ppm gave the best results of rooting percentage, number of roots/cutting, root length/cutting, fresh and dry weight of roots/cutting, plant height (cm), number of leaves; stem diameter, fresh and dry weight of leaves /cutting, fresh and dry weights of stem during the two seasons.

Key words: *cuttings, IBA, NAA, Populus euramericana, P. nigra , rooting.*

1. INTRODUCTION

Populus the common name from the early Roman expression arbor Populi, meaning "the people's tree" because poplars were frequently planted in public places and meetings were held beneath them. In fact, the Latin word *Populus* is defined as "a multitude, host, crowd, throng, a great number of persons or things; the people ".

Populus (poplar, aspen, and cotton wood) is a genus of 30-40 species of dioecious, large or small trees with soft white wood belonging to the family Salicaceae, much planted for pulpwood, windbreaks, avenues, and as ornamentals. Poplars are of easy cultivation in almost any soil. Poplar can be propagated by hardwood cuttings, suckers, or sometimes by seeds and the weeping sorts by grafting on upright forms (Macmillan, 1978).

Within the last ten years it has been established that indole butyric acid (IBA) is an endogenous compound in a variety of plant species. When applied exogenously, IBA has a variety of different effects on plant growth and development, but the compound is still mainly used for the induction of adventitious roots (Jutta, 2000). Some treatments were used to enhance success rate on the cutting propagation.

Exogenous plant growth regulators are one of the most commonly used methods to improve rooting of cutting (Polat and Kamilo, 2007).

Swamy *et al.*(2002) found that application of NAA at 500 ppm on *Robinia pseudoacacia* cuttings significantly enhanced the number of roots, root length, leaf number and leaf area. Sunil and Swamy (2004) on *Azadirachta indica*, demonstrated that the application of 500 mg/liter indole butyric acid (IBA) significantly increased root numbers, root length, root dry weight, rooting percentage, shoot number and shoot height. Liang *et al.* (2005) on poplar (*Populus euramericana [P. canadensis*]) cuttings, indicated that the IBA solution could accelerate the growth of cuttings. Zheng *et al.*(2006) on *Azadirachta indica*, stated that survival rate and rooting of cuttings treated by IBA at 1000mg/litre had better effects than those treated by ABT1 [aminobenzotriazole] and 2, 4-D.. Ali *et al.*(2007) on *Pongamia pinnata*, revealed that stem cuttings treated by IBA and NAA at 800 ppm showed the best result compared to other treatments. Abdi and Ascari (2009) on *Delonix regia* found that IBA treatments increased the number of roots per cutting in comparison with the control.

The aim of this work was to study the effect of IBA and NAA on rooting and growth for *Populus euramericana* and *Populus nigra* stem cuttings.

2. MATERIALS AND METHODS

This study was carried out at the Ornamental Horticulture Department, Faculty of Agriculture, Cairo University during two successive seasons, 2006 and 2007 aiming to find the effect of some auxins (NAA and IBA) at different concentrations (0, 500, 1000 and 1500 ppm) on rooting and growth of *Populus euramericana* Guinier and *Populus nigra* L. stem cuttings.

The stem cuttings of the two poplar species were taken from mother trees grown in the Experimental Station of Hort., Res. Inst. The stem cuttings were obtained from branches one year old .

Populus euramericana and *P. nigra* stem cuttings were treated with indole butyric acid (IBA) and naphthalene acetic acid (NAA) solution at the concentrations of 0,500,1000 and 1500 ppm as quick dipping for 60 sec.. Control cuttings were treated with distilled water. The cuttings were directly inserted in polyethylene bags, filled with clay and sand at the ratio of 1:1(v/v) on 1st March 2006 and 2007 in the first and second seasons.

The layout of the experiment was a complete randomized plot design, the experiment included 7 treatments each treatment included six replicates; each replicate consisted of three stem cuttings.

The following data were recorded on 15th May in both seasons (after 75 days). At the end of the experiment ; rooting percentage, number of roots, length of root (cm), fresh and dry weights of roots (g), plant height (cm), number of leaves, diameter of stem (cm), fresh and dry weights of leaves (g), and fresh and dry weights of stem (g) were determined.

Data recorded on vegetative growth, were statistically analyzed, and separation of means was performed using the least significant difference (L.S.D.) test at the 5% level, as described by Snedecor and Cochran (1980).

3. RESULTS AND DISCUSSION

3.1. Effect of NAA and IBA on rooting and growth parameters of *Populus euramericana* cuttings

As shown in Table (1) the highest values of rooting, number of roots per cutting, root length, and fresh and dry weights of roots were recorded in the cuttings treated with NAA at 500 ppm, followed by IBA at 500 ppm during both seasons except in the first season, IBA at 500 ppm gave the highest number of roots/cutting compared with another treatments. Data also indicated that increasing the concentrations of both NAA and IBA caused reduction to these parameters in the first and second seasons. The lowest values were obtained from the untreated cuttings (control) in both seasons. These results are in agreement with those obtained by Puri and Swamy (1999) on *Azadirachta indica* and *Dalbergia sissoo*, they showed that cuttings applied with 500mg IBA/L significantly increased root numbers, root length, root dry weight, rooting percentage, shoot number and shoot height; Srivastav *et al.* (2000) on *Quercus serrata*, cleared that the best treatment was 500 ppm NAA, for both induction of rooting. Singh and Harish (2001) on neem (*Azadirachta indica*), found that maximum rooting percentage and number of roots were observed in softwood cuttings treated with 500 ppm of IBA. Swamy *et al.* (2002) reported that treated cuttings of *Robinia pseudoacacia*, with NAA (500 mg/liter) significantly enhanced the number of roots. Srivastav *et al.* (2002) on *Quercus griffithii*, found that NAA 500 ppm was found to be the best dose for the induction of rooting .

The data in Table (2) show that cuttings treated with NAA at 500 ppm significantly increased the plant height (cm) and number of leaves/cutting giving 35.45 cm and 31.67 leaves/cutting in the first season and giving 36.40 cm and 39.67 leaves/cutting in the second season, respectively, Cuttings treated with IBA at 500 ppm gave 32.50 cm and 28.00 leaves/cutting in the first season and 33.80 cm and 35.33 leaves/cutting in the second season, respectively. Cuttings treated with NAA at 1000 ppm significantly increased diameter of stem giving 0.89 and 0.92 cm in both seasons, followed by those cuttings treated with IBA at 500 ppm (0.83 and 0.86 cm) in two seasons, respectively, compared with the other treatments. The lowest values of these parameters were obtained from untreated cuttings in the first and second seasons. These results are in agreement with those obtained by Harish *et al.* (1996) on *Azadirachta indica*, who found that the maximum increases in main branch length and number of leaves of hardwood cuttings were obtained by using 500 ppm IBA. Puri and Swamy (1999) on *Azadirachta indica* and *Dalbergia sissoo*, showed that cutting treated with 500mg IBA/L significantly increased shoot number and shoot height.

Table(1) Effect of NAA and IBA [at different concentrations (0, 500, 1000 and 1500 ppm)] on rooting percentage, number of roots/cutting, length of root (cm), fresh and dry weights of roots (g) of *Populus euramericana* stem cuttings during 2006 and 2007 seasons.

Tested parameter	Rooting (%)		No. of roots/ cutting		Length of root (cm)		F.W. of roots (g)		D. W. of root (g)	
Treatments	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season
Control	65	63.3	11.33	12.67	20.50	20.40	3.60	3.10	1.44	1.24
NAA 500 ppm	85	81.3	19.00	22.00	33.8	35.50	6.45	7.50	2.84	3.30
NAA 1000 ppm	73	71.3	15.67	18.00	26.40	29.60	4.40	5.40	1.84	2.30
NAA 1500 ppm	68	68.0	13.67	16.33	22.60	25.20	3.85	4.09	1.58	1.68
IBA 500 ppm	82	81.0	21.33	21.00	31.70	32.80	5.24	6.54	2.28	2.81
IBA 1000 ppm	79	79.0	16.67	17.67	28.60	26.20	4.15	4.22	1.74	1.77
IBA 1500 ppm	67.3	67.0	15.00	15.00	25.30	23.40	4.95	3.60	2.13	1.47
LSD at 0.05	**2.26**	**3.15**	**2.22**	**2.15**	**1.79**	**1.24**	**0.25**	**0.15**	**0.14**	**0.08**

Table(2) Effect of NAA and IBA [at different concentrations (0, 500, 1000 and 1500 ppm)] on plant height (cm), number of leaves /cutting and diameter of stem (cm) of *Populus euramericana* stem cuttings during 2006 and 2007 seasons.

Tested parameter	Plant height (cm)		No. of leaves		Diameter of stem (cm)	
Treatments	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season
Control	22.50	20.50	17.00	18.67	0.65	0.67
NAA 500 ppm	35.45	36.40	31.67	39.67	0.78	0.84
NAA 1000 ppm	30.7	31.7	25.67	33.00	0.89	0.92
NAA 1500 ppm	27.50	26.30	21.67	23.00	0.70	0.76
IBA 500 ppm	32.50	33.80	28.00	35.33	0.83	0.86
IBA 1000 ppm	29.30	28.60	26.67	26.67	0.82	0.80
IBA 1500 ppm	25.80	24.90	22.67	20.33	0.75	0.71
LSD at 0.05	**2.43**	**1.81**	**2.35**	**2.77**	**0.02**	**0.02**

The data presented in Table (3) show that NAA and IBA treatments significantly increased fresh and dry weights of leaves and stems compared with the control of *P. euramericana* in the two seasons. However, using NAA at 500 ppm gave the heaviest fresh weights of leaves in the first and second seasons, compared with the other treatments. The same treatment gave the heaviest dry weights of leaves (3.04 and 3.63 g) in the first and second seasons, respectively, compared with the control which recorded the least results (1.26 and 1.31 g) in both seasons, respectively. While,the most effective treatment which had the highest fresh and dry weights of stem was NAA at 1000 ppm treatment. The increments were (77.7 and 92.4%) in the first season and were 123.6 and 145.2 % in the second season, respectively over the control.

3.2. Effect of NAA and IBA on rooting and growth parameters of *Populus nigra* cuttings

Table(3) Effect of NAA and IBA [at different concentrations (0, 500, 1000 and 1500 ppm)] on fresh and dry weights of leaves (g), fresh and dry weights of stem (g) of *Populus euramericana* stem cuttings during 2006 and 2007 seasons.

Tested parameter	F.W. of leaves (g)		D.W.of leaves (g)		F. W. of stem (g)		D. W. of stem (g)	
Treatments	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season
Control	5.48	5.80	1.26	1.31	5.36	5.21	1.98	1.90
NAA 500 ppm	11.92	12.50	3.04	3.63	7.45	6.50	2.88	2.43
NAA 1000 ppm	8.68	8.85	2.10	2.05	9.53	11.65	3.81	4.66
NAA 1500 ppm	7.91	9.73	1.86	2.31	6.04	7.42	2.27	2.82
IBA 500 ppm	10.36	12.65	2.59	3.10	8.65	9.25	3.43	3.61
IBA 1000 ppm	8.66	10.16	2.06	2.68	8.06	8.16	3.14	3.14
IBA 1500 ppm	9.50	6.60	2.35	1.52	6.34	5.80	2.41	2.15
LSD at 0.05	**0.45**	**0.12**	**0.19**	**0.11**	**0.21**	**0.07**	**0.09**	**0.07**

Table(4) Effect of NAA and IBA [at different concentrations (0, 500, 1000 and 1500 ppm)] on rooting percentage, number of roots/cutting, length of root (cm), fresh and dry weights of roots (g) of *Populus nigra* stem cuttings during 2006 and 2007 seasons.

Tested parameter	Rooting (%)		No. of roots		Length of root (cm)		F.W. of roots (g)		D. W. of roots (g)	
Treatments	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season
Control	75.00	75.7	10.33	16.33	20.00	18.50	3.50	1.86	1.41	0.71
NAA 500 ppm	86.00	86.0	22.00	27.33	33.50	28.30	7.88	4.87	3.43	1.94
NAA 1000 ppm	83.00	85.0	19.67	24.67	29.00	25.10	6.20	6.38	2.62	2.58
NAA 1500 ppm	77.67	78.6	14.67	19.33	26.50	22.60	4.16	3.66	1.75	1.43
IBA 500 ppm	80.30	83.0	17.33	21.67	24.00	24.30	3.98	4.50	1.66	1.78
IBA 1000 ppm	87.60	88.3	25.33	31.33	31.00	30.50	6.53	7.25	2.80	2.97
IBA 1500 ppm	76.00	77.0	13.00	18.33	36.00	20.90	8.40	2.54	3.70	0.98
LSD at 0.05	**2.49**	**2.58**	**2.4**	**3.27**	**2.32**	**1.54**	**0.37**	**0.12**	**0.28**	**0.05**

The data presented in Table (4) reveal that IBA at 1000 ppm gave the highest values of rooting percentage and number of roots of *Populus nigra* cuttings giving 87.60 % and 25.33 roots/cutting, respectively in the first season and giving 88.3 % and 31.33 roots/cutting, respectively in the second season, followed by NAA at 500 ppm treatment, compared with the

Table(5) Effect of NAA and IBA [at different concentrations (0, 500, 1000 and 1500 ppm)] on plant height (cm), number of leaves /cutting and diameter of stem (cm) of *Populus nigra* stem cuttings during 2006 and 2007 seasons.

Tested parameter	Plant height (cm)		No. of leaves		Diameter of stem (cm)	
Treatments	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season
Control	26.50	23.50	19.00	16.33	0.78	0.63
NAA 500 ppm	50.67	42.80	43.00	35.67	0.90	0.86
NAA 1000 ppm	41.00	35.20	32.67	31.67	0.86	0.90
NAA 1500 ppm	37.00	28.70	31.00	25.33	0.84	0.71
IBA 500 ppm	42.00	30.60	38.33	28.67	0.88	0.75
IBA 1000 ppm	54.00	49.40	50.67	44.00	0.98	0.95
IBA 1500 ppm	32.50	26.30	29.33	25.00	0.83	0.67
LSD at 0.05	**3.9**	**3.48**	**3.67**	**3.95**	**0.04**	**0.07**

Table(6) Effect of NAA and IBA [at different and concentrations (0, 500, 1000 and 1500 ppm)] on fresh and dry weights of leaves (g), and fresh and dry weights of stem (g) of *Populus nigra* stem cuttings during 2006 and 2007 seasons.

Tested parameter	F.W.of leaves (g)		D.W.of leaves (g)		F. W. of stem (g)		D. W. of stem (g)	
Treatments	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season
Control	5.80	4.46	1.27	1.07	7.74	5.75	2.86	2.13
NAA 500 ppm	11.14	7.13	2.78	1.89	10.40	9.62	4.10	3.75
NAA 1000 ppm	10.58	6.96	2.65	1.81	9.84	8.68	3.79	3.35
NAA 1500 ppm	6.75	5.88	1.60	1.47	8.92	7.45	3.38	2.82
IBA 500 ppm	8.82	6.40	2.20	1.64	10.10	8.15	3.94	3.11
IBA 1000 ppm	12.35	8.26	3.17	2.23	10.65	10.33	4.26	4.08
IBA 1500 ppm	7.50	5.27	1.77	1.30	8.36	6.44	3.15	2.41
LSD at 0.05	**0.17**	**0.06**	**0.12**	**0.07**	**0.29**	**0.06**	**0.18**	**0.05**

control in the two seasons. Also,the data showed that increasing the concentration of NAA and IBA caused reduction in the values of rooting percentage and number of roots .Whereas, the lowest values were obtained from the control cuttings in the first and second seasons. Concerning, the effect NAA and IBA on the length of root and fresh and dry weights of roots. It was found that IBA at 1500 ppm treatment gave the highest root length and the heaviest fresh and dry weights/cutting 36.00 cm, 8.40 g and 3.70 g, respectively in the first season, compared with other treatments. Whereas, in the second season IBA at 1000 ppm treatment gave the highest root length and the heaviest fresh and dry weights roots/cutting (30.50cm, 7.25 g and 2.97 g). These results are in harmony with those obtained by Mohit *et al.*(1997) on *Azadirachta indica* cuttings. They stated that the best treatment was IBA(1000 ppm), which gave 70% rooting, and also the largest number and length and dry weight of roots. Mohit *et al.*(1998) on *Azadirachta indica*, mentioned that the IBA treatment performed the best for all the parameters studied, increasing rooting, number of roots per cutting, maximum root length and root dry weight. Palanisamy *et al.* (1998) on neem (*Azadirachta indica*), found that IBA (1000 ppm)significantly increased

adventitious rooting percentage (80 and 100%, respectively) and numbers of roots. Also, the same results were found by Wendling *et al.*(2000) on *Eucalyptus* species. Swamy *et al.*(2002) on *Robinia pseudoacacia*, Devarnavadagi *et al.* (2005) on shoot cutting of neem (*Azadirachta indica*) , Liang *et al.*(2005) on Poplar (*Populus x euramericana* [*P. canadensis*]) and Latsague *et al.* (2008) on *Berberidopsis corallina*.

The data in Table (5) show that plant height, number of leaves and diameter of stem were significantly increased in all treatments in the two seasons, compared with the control. IBA at 1000 ppm treatment gave the highest values of plant height (54.00 and 49.40 cm) in both seasons. The increments effect on the number of leaves by using IBA at 1000 ppm followed by NAA at 500 ppm were 166.7 and 126.3 % in the first season and 169.4 and 118.4 % in the second season, respectively. Concerning the effect of NAA and IBA on the diameter of stem, it was found that the highest values were observed by IBA at 1000 ppm followed by NAA (500 ppm) in the first and second seasons, compared with the control.

The data presented in Table (6) for *Populus nigra* cuttings show that all treatments of IBA and NAA increased fresh and dry weights of leaves,and fresh and dry weights of stems compared to the control in the two seasons. The highest values were observed by IBA at 1000 ppm, followed by NAA (500 ppm) treatment for these parameters in the first and second seasons. Data also indicated that increasing the concentrations of both NAA and IBA caused reduction to these parameters in the first and second seasons. The lowest values were obtained from the untreated cuttings (control) in both seasons.

4. REFERENCES

Abdi Gh. and Ascari R. N. (2009). Enhancement of IBA, urea- phosphate, paclobutrazol and their combinations on rooting of Royal Poinciana (*Delonix regia*) stem cuttings. Americana- Eurasian J. Agric. & Environ. Sci., 6 (2): 132- 136.

Ali M.S., Kumar R., Alam I., Choudhary S.C., Chakraborty A.K. and Kumar D. (2007). Vegetative propagation in Karanja (*Pongamia pinnata*, L.). Biosciences Biotechnology Research Asia, 4 (2): 799-803.

Devarnavadagi S.B., Sajjan A.S. and Wali S.Y. (2005).Effect of growth regulator on induction of adventitious rooting in stem cutting of neem. Karnataka Journal of Agricultural Sciences,18 (1): 210-211.

Harish C., Singh R.R. and Mandal B.S. (1996). Effect of auxin on number of leaves per cutting and length of main branch in neem (*Azadirachta indica*). Annals of Biology Ludhiana ,12(1): 57-61.

Jutta L. M.(2000). Indole-3-butyric acid in plant growth and development. Plant Growth Regulation, 32(3-4):219-230.

Latsague V. M. ,Saez D. P. and Hauenstein B.E. (2008).Induction of rooting in cuttings of *Berberidopsis corallina* with indole butyric acid. Bosque, 29(3): 227-230.

Liang J., Qu-Z.W., Li-Z.N., Jia X.Z. and Zhang X.Y.(2005). The effect of compound preparation made by ectomycorrhizal fungus and hormone on the growth and disease resistance of poplar cuttings. Forest Research, Beijing, 18(6): 717-721.

Macmillan C. (1978). Hortus A. Concise Dictionary of Plants Cultivated in the United States and Canada. Publishing Co., Inc. New York, Third Printing, United States of America.

Mohit G., Neelu G. and Meena S.L.(1997). Rooting trial of *Azadirachta indica* A. Juss through shoot cuttings. Indian Forester, 123(9): 860-862.

Mohit G., Neelu G.,Meena S.L. and Tribhuven S. (1998). Variation in rooting response in ten provinces of *Azadirachta indica*. Indian Forester, 24(6):4262.

Palanisamy K., Ansari S.A., Pramod K. and Gupta B.N. (1998). Adventitious rooting in shoot cuttings of *Azadirachta indica* and *Pongamia pinnata*. New Forests, 16(1): 81-88.

Polat A. and Kamilo O. (2007). Experiment on propagation with cutting of Quince-A and BA-29 rootstocks and on budding with loquat cultivar (in Turkish with English Abstract). Turkey V. National Horticulture Congress, 1(4-7): 169-173.

Puri S. and Swamy S. L. (1999). Geographical variation in rooting ability of stem cutting of *Azadirachta indica* and *Dalbergia sissoo*. Genetic Resources and Crop Evolution, 46(1):29-36.

Singh R.R. and Harish C. (2001). Effect of auxins on rooting behaviour of neem (*Azadirachta indica*) branch cuttings. Indian Forester,127 (9): 1019-1024.

Snedecor G.W. and Cochran W.G. (1980). One Way Classification Analysis of Variance. In: Statistical Methods (8^{th}edition). Iowa State University Press, Ames,Iowa, U.S.A., Chapter 12, p. 217-236.

Srivastav P.K., Singh T.S. and Singh N.I. (2000). Clonal propagation of *Quercus serrata* Thunb.

Syn.*Q. acutissima* Carr. Through air layering. Indian Forester126 (8): 879-884.

Srivastav P. K., Singh T.S., Singh N.I. and Thangavelu K. (2002). Clonal propagation of *Quercus griffithii* Hook. & Thom. ex Miq. through air layering. Indian Journal of Forestry 25(3/4): 406-410.

Sunil P. and Swamy S.L. (2004). Variation in rooting ability of *Azadirachta indica*. Range Management and Agroforestry, 25(1): 37-42.

Swamy S.L., Puri S. and Kanwar K. (2002). Propagation of *Robinia pseudoacacia*, Linn and *Grewia optiva*, Drummond from rooted stem cuttings. Agroforestry Systems, 55(3): 231-237.

Wendling I., Xavier A., Gomes J.M., Pires I.E. and Andrade H.B. (2000). Effect of the growth regulator IBA on propagation of *Eucalyptus* spp. clones by microcutting. Revista Arvore, 24(2): 187-192.

Zheng Y.X., Peng X.M., Zhao B.R. and Zhang Y.P.(2006). Influencing factors to cutting propagation of *Azadirachta indica*. Journal of Zhejiang Forestry Science and Technology, 26(3): 50-53.

تأثير الأوكسينات (نفثالين حامض الخليك و اندول حامض البيوتريك) على تجذير ونمو العقل الساقية للحور الأيروأمريكانا و الحور الأسود

عاطف محمد زكريا سرحان – عزة محمد سعيد عرفه – ابراهيم الأباصيرى حبه*– نورا محمد يوسف*

قسم بساتين الزينة – كلية الزراعة – جامعة القاهرة – الجيزة – مصر

*قسم نباتات الزينة و الأشجار الخشبية – المركز القومى للبحوث – الدقى – الجيزة – مصر

ملخص

أجريت هذه الدراسة فى قسم بساتين الزينة بكلية الزراعة – جامعة القاهرة خلال موسمى الزراعة ٢٠٠٦ ، ٢٠٠٧ لدراسة تأثير نفثالين حامض الخليك و اندول حامض البيوتريك بتركيزات ٥٠٠، ١٠٠٠، ١٥٠٠ جــزء فى المليون على التجذير و النمو لعقل كل من الحور الأيروأمريكانا و الحور الأسود .

أظهرت النتائج أن معاملة عقل الحور الأيروأمريكانا بنفثالين حامض الخليك بتركيز ٥٠٠ أعطى أعلى قيم لنسبة التجذير و عدد و طول الجذور و كل من الوزن االغض و الجاف للجذور وإرتفاع النبات و عدد الأوراق و كل من الوزن الغض و الجاف للأوراق، بينما أعطت المعاملة بنفثالين حامض الخليك بتركيز ١٠٠٠ جــزء فــى المليون أعلى قيم لقطر الساق و الوزن الغض و الجاف للساق فى الموسمين .

كذلك تشير النتائج بالنسبة للحور الأسود إلى أن أعلى معدل قيم لنسبة التجذير و عدد و طول الجــذور و كل من الوزن الغض و الجاف للجذور وإرتفاع النبات و عدد الأوراق وقطر الساق و كل من الــوزن الغــض و الجاف للأوراق والسيقان، كانت نتيجة المعاملة بأندول حامض البيوتيرك بتركيز ١٠٠٠ جزء فى المليون.

المجلة العلمية لكلية الزراعة – جامعة القاهرة – المجلد (٦١) العدد الرابع (أكتوبر ٢٠١٠):٣٩٩-٤٠٥.