IJBPAS, October, 2015, 4(10), Special Issue: 55-62

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

THE EFFECT OF DIFFERENT CONCENTRATIONS HORMONE INDOLE BUTYRIC ACID ON ROOTING THREE DIGITS ROSETTE (*ALABAMA SUNSET* ، *BAMBINO NINGILI* ،*RED MANILA*)

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ABSTRACT

In order to evaluate the effect of IBA on rooting Cuttings Rosette Factorial experiment in a completely randomized design with three replications. Factors examined include three varieties Rosette (*Alabama Sunset* ،*Bambino Ningili* ،*Manila Red*) and four levels of IBA (zero, 1,500, 3,000 and 4,500 ppm), respectively. Traits of rooting percentage, root dry weight, Leaf surface, shoot fresh weight, respectively. The results showed that all traits are statistically significantly different from the control. So that the highest leaf area in the Alabama Sunset and the highest leaf and root dry weight of the Bambino Ningili Using the IBA 3000 ppm were observed. The highest percentage of rooting And shoot fresh weight of the Bambino Ningili using IBA 4500 ppm were obtained. Most Root dry weight, Rooting percentage And shoot fresh weight with 3000 ppm of IBA in the Red Manila, respectively.

Keywords: bougainvillea, Hormone indole butyric acid, rooting percentage

INTRODUCTION

Cultivation of ornamental plants helps to improve urban green space. Recently, in developing countries the use of plant growth regulators and greenhouse cultivation of attention, research and application is located. Wooden decorative plants further propagated by cuttings take place. One of the most important steps of

this method of propagation, rooting cuttings is to speed up the usually water-soluble hormones are used. Favors to family Nyectaginaceae And belongs to the order Caryophyllales. This category contains 30 genera and 300 species and is one of the most important category Bougainvillea sex. The scientific name of this plant Bougainvillea sp. Is. Favors in fact a beautiful shrub with thorny branches and progressive, true flowers are small and tubular. Each flower is very small 5 sepals and 5 to 6 small leaves are interconnected. Not petals favors. The flowers usually appear as a trio; each guarded by three bracts and creates a beautiful landscape (Daneshvar, 2009). This study aimed to accelerate the process of rooting in cuttings of ornamental shrubs favors is that it saves time and the cost of the greenhouse, optimal use of water resources, soil and increase crop yield and quality of flowering will be, will become.

MATERIALS AND METHODS

The survey in 2014 was conducted in a greenhouse located in the province. Along longitude 51 degrees 53 minutes north latitude and 29 degrees 35 minutes is a medium of perlite, sand, Coco peat and peat were prepared for this study factorial experiment in a completely randomized design with 3 replications that factor A three digit favors (Alabama Sunset, Bambino Ningili, Red Manila) and factor B includes four levels (zero to control, 1500, 3000, 4500 ppm) INDOL 3 BUTYRIC ACID (MW203.24) was.

RESULTS AND DISCUSSION

The results showed that among varieties favors the root dry weight, leaf area and shoot fresh weight% probability level and rooting percentage was significant at the level of five percent. As well as between different concentrations of the hormone indole butyric acid in all the traits of a percent as well as interaction in the percentage of rooting and shoot fresh weight% probability level and root dry weight and leaf area five percent had significant levels (table 1).

Table 1: Mean Square traits

Mean square (MS)				Degrees of freedom	Resource change
Shoot fresh weight	LAI	Weight Dry Root	Rooting percentage		
59/37**	4809/79**	0/003**	168/03*	2	**Figures favors (A)**
8/61**	1562/74**	0/003**	498/39**	3	**Hormone IBA (B)**
4/57**	541/91 *	0/0007*	158/89**	6	**A × B**
0/59	234/00	0/0002	44/58	24	**Error**
17/59	17/32	18/61	18/33	-	**Coefficient of variation (%)**

ns not significant * Significant at the 5% level ** significant at the level of one percent

Rooting percentage

To calculate the percentage of rooting ratio or prevalence of a certain number View (f) the total number of observations (N) on ($100 \times N / f$) were used (Rezai et al., 2007). In this experiment, the number of cuttings rooted in each group and the counted separately and the total number of cuttings per treatment and genotype was divided. And finally was multiplied by 100% of the cuttings were obtained. The results showed that the highest percentage of rooting for the Red Manila and the lowest was related to the Alabama Sunset IBA effect on rooting percentage concentration showed that concentrations of 1500, 3000 or 4500 There was no significant difference ppm so that the maximum amount of 3000 ppm treatment was lowest in the control treatment. The control with the other treatments, there are significant differences. Favors the interaction of different varieties and different concentrations of the hormone IBA showed the highest rooting percentage (55.55%) for the treatment of cuttings of the Red Manila 3000 ppm was used. And with increasing treatment intensity decreased to 4500 ppm measured and the lowest (25/92%) for the control in the above figure. In all three the least amount of cuttings that were in the control group. In the control group, 1500 and 3000 ppm and Alabama Sunset and Bambino Ningili figures were not significantly different, so that the treatment increased the Bambino Ningili increased to 4500 ppm but in the Alabama Sunset during the same process (see Figure 1).

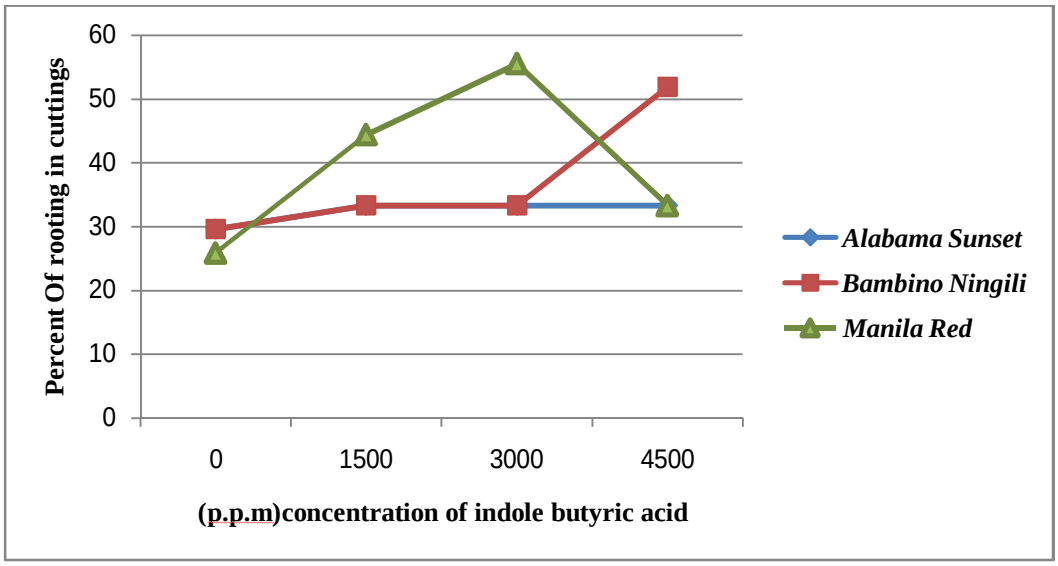

Figure 1: The interaction of two factors: (A × B) on rooting percentage

In this experiment, different varieties favors rooting percentage varies with increasing concentrations of IBA significant difference was seen compared to the

control by the results Mirsoleymany (2007) equality. Red Manila in the treatment of 3,000 ppm and 4,500 ppm in the Bambino Ningili treatment was highest among 50 to 60 per cent and the roots Alabama Sunset Zatr the other two varieties were observed. Due to the positive impact of this matter on the effect of auxin rooting can be indispensable for root initiation in cuttings shoot, he split the root Ghazndh cells are dependent auxin (good-natured, 2003). In this experiment, different varieties favors rooting percentage varies with increasing concentrations of IBA significant difference was seen compared to the control by the results Myrsoleymany (2007) equality. Red Manila in the treatment of 3,000 ppm and 4,500 ppm in the Bambino Ningili treatment was highest among 50 to 60 per cent and the roots Alabama Sunset Zatr the other two varieties were observed. Due to the positive impact of this matter on the effect of auxin rooting can be indispensable for root initiation in cuttings shoot, he split first root is primordial cells depends on auxin (Khoshkhoy, 2003). Rizokalyn with auxin plays an important role in the initiation and differentiation of finding the root causes of displacement and transfer Rizokalyn animated rooting zone and activate it is in these areas. Rooting cuttings is a complex process and a set of internal and environmental factors play a major role in the success or failure of the research Alizadeh (2001) and Zarrin Ball (2005) was adapted.

However, high concentrations of auxin can cause tissue damage in the bottom of the cuttings, which treated 4,500 ppm in the Red Manila was observed that research Karakot et al (2009) on cuttings apple equality and also with R Gupta 2 (1989) on rooting cuttings correspond marshmallow. Rooting percentage was significantly different depending on the type of figure that with the help of research and Yari etal (2013) is consistent.

Root dry weight per cutting

The roots were dried at room temperature for one day and then by balance was recorded 0/0001 showed, the Bambino Ningili and the Red Manila had the lowest (table 2). Cuttings that were in control and the lowest concentration of 3000 ppm were cuttings that had the highest rate (Table 3). The interaction of two factors: (A × B) showed that the average amount of hot 0/0755 to 3000 ppm treatment was at the Bambino Ningili. The application of 4500 ppm treatment had no significant difference in the Bambino Ningili. In the absence of hormone use in all three varieties were not significantly different, So that at the Manila Red in control had the lowest. 0-1500 ppm treatment effect was observed in all three

varieties increased so that at the Bambino Ningili more quickly than the Sunset Alabama and also faster than the number of digits Manila Red increasingly while the Bambino Ningili between 0 and 1500 ppm group were significantly different, but the other two did not show significant differences. 1500-3000 ppm treatment effect in the figures Bambino Ningili Manila Red and increasingly so in the Manila Red significant difference was observed between the two treatments, but in the Ningili Bambino in treatments were not significantly different. In the Alabama Sunset at 4500 ppm treatments and no significant differences were observed. Treatment effect in the 3000-4500 ppm Red Manila and Bambino Ningili figures showed a downward trend so more quickly than other varieties in Manila Red figure showed a decreasing trend a significant effect, but there was no significant difference in the Ningili Bambino treatment (figure 2).

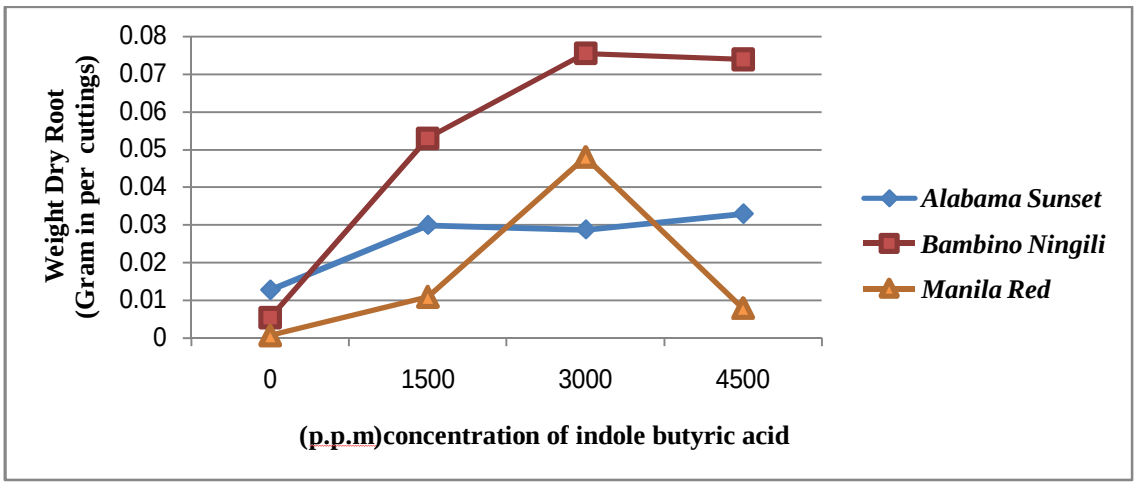

Figure 2: The interaction of two factors: (A × B) on root dry weight

Leaf area per scion

Using a leaf area meter (model Aerea meter - AM 200 and maker ADC TAIWAN) were measured leaf area per scion. The results showed that most of the Bambino Ningili and the lowest on the Red Manila (Table 2). Application concentration of 1500 ppm IBA and more, with no significant differences were analyzed in a group so that the highest concentration of 3000 ppm. Do not use this value reduced IBA had the lowest (Table 2).

Results showed that the interaction of two factors (71/63 mm square) of the Bambino Ningili treatment was 3,000 ppm. All three varieties were not significantly different in control and in a group were analyzed. Manila Red figure in all treatment groups showed no significant difference and had the lowest rate. Treatment effect 0-1500 ppm in all three varieties have increased so that the Bambino Ningili more quickly than the Sunset Alabama and the figure more quickly than the process the Manila Red

showed 1500-3000 ppm treatment effect in all three varieties separately, there was no significant effect and that the figure had increased more rapidly than the Bambino Ningili Alabama Sunset and the number of speed more than the figure had increased Manila Red. The figures for 3000-4500 ppm favors treatment effects showed a decreasing trend so that in the Sunset Alabama with a steeper slope than the Ningili Bambino and the figure is higher The figure showed a decreasing trend Manila Red. In fact the lowest (8/73 mm square meters) of 4,500 ppm and the Manila Red treatment (Figure 3).

Shoot fresh weight per cuttings

Each shoot separately by balance 0/001 cuttings were measured and recorded.

The results showed no significant differences were so favors varieties of cuttings Bambino Ningili highest and lowest related to the Alabama Sunset (Table 2). The effect of different concentrations of IBA showed that the cuttings that were in the control treatment lowest and cuttings that were treated with 4500 ppm, with the highest concentration of 1500 ppm and 3000 significant effect showed significant (Table 3). Results showed that the interaction of two factors: the maximum value of 4500 ppm (9/65 g) of the Bambino Ningili and the lowest in the Sunset Alabama show that in the Sunset Alabama the other treatments did not show significant differences (Figure 3).

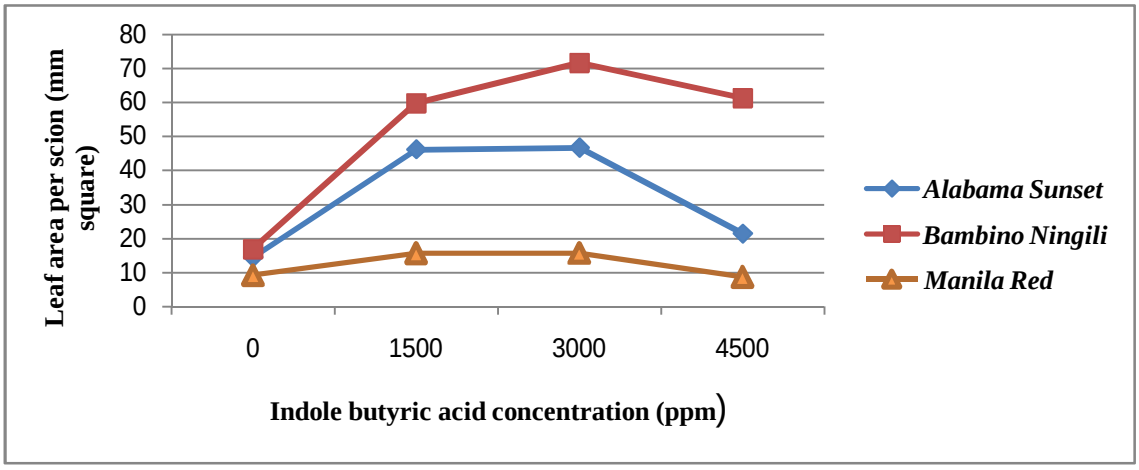

Figure 3: The interaction of two factors: (A × B) on leaf area

Table 2: Comparison of cultivars favors

Average traits				Hormone indole butyric acid (ppm(
Shoot fresh weight	**LAI**	**Weight Dry Root**	**Rooting percentage**	
b3/09	**b**13/55	**c**0/006	**b**28/3866	**Zero**
a4/64	**a**40/55	**b**0/031	**a**37/0333	1500
a4/94	**a**44/68	**a**0/043	**a**40/7366	3000
a4/89	**a**30/49	**ab**0/036	**a**39/5033	4500

Table 3: Comparison of different concentrations of indole butyric acid

Average traits				Figures favors
Shoot fresh weight	LAI	Weight Dry Root	Rooting percentage	
c2/69	**b**32/24	**b**0/026	**b**32/40	***Alabama Sunset***
a6/19	**a**52/38	**a**0/052	**ab**37/03	***Bambino Ningili***
b3/57	**c**12/34	**b**0/017	**a**39/81	***Manila Red***

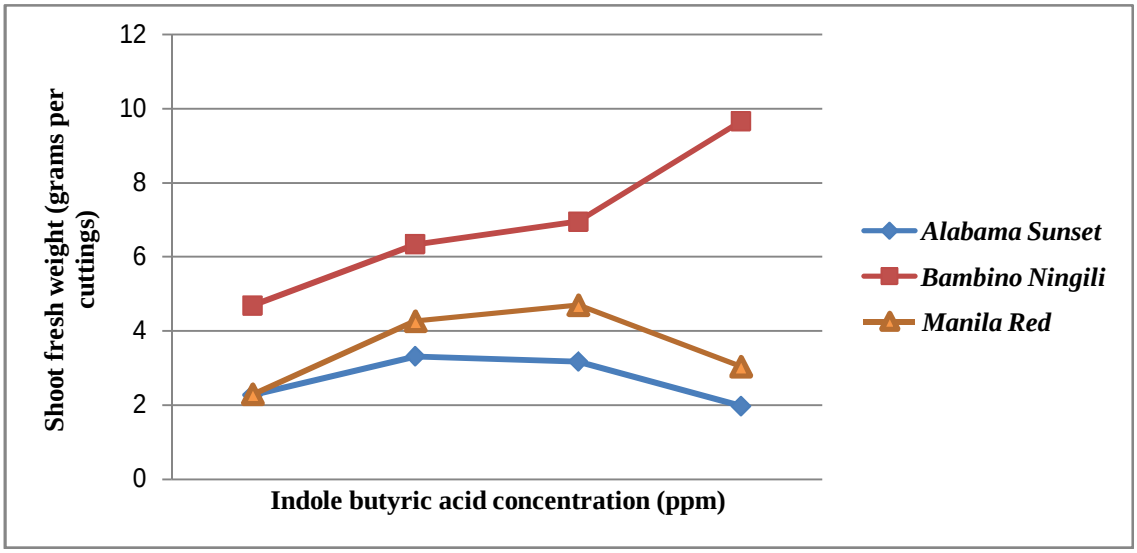

Figure 4: The interaction of two factors: (A × B) on shoot fresh weight

The results of this study showed that the overall traits (root, leaf, root and shoot fresh weight percent) using the optimum concentrations of IBA hormone and increased recovery is. Most of the leaf area and leaf weight at the Alabama Sunset at 3000 ppm treatment was observed. The results of this study showed that the overall traits (root, leaf, root and shoot fresh weight percent) using the optimum concentrations of IBA hormone and increased recovery is. Most of the leaf area and leaf weight at the Alabama Sunset at 3000 ppm treatment was observed. Most of the leaf area and root dry weight of the Bambino Ningili treated with 3000 ppm while the optimal treatment for these traits, treatment is 1500 ppm and the maximum and optimal treatment for root traits formation and shoot fresh weight was treated with 4500 ppm showed a significant difference with control. Most of the dry weight of root, rooting percentage and fresh weight of shoot, at the Manila Red 3000 ppm were observed in treated and control group had no significant difference.

ACKNOWLEDGMENT

This article is extracted from my thesis under the title of "The effect of different concentrations Hormone indole butyric acid on rooting three digits rosette (*Alabama Sunset* ،*Bambino Ningili* ،*Red Manila*)". Hereby, I extend my sincere appreciation to Islamic Azad university of Arsanjan for the efforts and supports they provided to me.

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