

## PROPAGATION OF TAXUS BACCATA BY CUTTINGS

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**Abstract:** *The 'Green Diamond' variety of Taxus baccata boasting a spherical habit similar to Buxus sempervirens 'Suffruticosa' is a slow-grower with small, dark green leaves and would be suitable to replace 'Suffruticosa'. It tolerates pruning well and has a good renewing capacity. Taxus baccata 'Green Diamond' is currently propagated by grafting in Western European ornamental tree nurseries, which is however a costly and slow propagation method. As part of our work, we set the aim to work out the propagation method for Taxus baccata 'Green Diamond' by cuttings. As part of our work, we examined the propagation of Taxus baccata 'Green Diamond' by cutting in various plant growth mediums with the application of root stimulants in different concentrations. Our results have confirmed that it is possible to propagate the examined 'Green Diamond' species by cuttings.*

**Key words:** *'Green Diamond', number of roots, root length, growth mediums, IBA hormone*

### INTRODUCTION

The 'Green Diamond' variety of *Taxus baccata*, boasting a spherical habit similar to that of *Buxus sempervirens* 'Suffruticosa', typically seen in historic gardens, is a slow-grower with small, dark green leaves. It tolerates pruning well and has a good renewing capacity. *Taxus baccata* 'Green Diamond' is currently propagated by grafting in Western European ornamental tree nurseries, which is, however, a costly and slow propagation method. If another propagation method were developed, it would significantly help spread this variety. As part of our work, we set the aim to work out the propagation method for *Taxus baccata* 'Green Diamond' by cuttings. Once this technology is developed, we will be able to spread a new *Taxus baccata* variety, launch its production faster and replace *Buxus sempervirens* 'Suffruticosa', which is threatened by extreme damage by the box tree moth, and, consequently, rescue historical gardens.

This paper presents the results of our research done in 2016. In our research, our aim was to test the influence of hormones to stimulate rooting (IBA) in various concentrations on the rooting and root callusing of cuttings, on cutting decay, and on the number and length of the developed roots.

### MATERIALS AND METHODS

The propagation experiment was performed under greenhouse conditions in Kovács Nursery in Zalaszentgyörgy. The treatments were completed with four repetitions on 14 March 2016 as a result of which 20 cuttings per repetition and 80 cuttings per treatment were treated thereby totalling 320 cuttings. Both simple and torn cuttings were used. The green mass of the cuttings was measured, which yielded the value of 128 g/100 pieces. The composition of the rooting media was determined based on former experiments: the mixture of 60% Hahót peat, 30% Baltic peat and 10% horticultural perlite was used. Four types of treatment were tested in which the cuttings were treated with IBA hormones in the concentrations 0.50 %, 1.00 % and 1.50 %. The fourth was the untreated control stock. The striking experiment was evaluated on 22 July 2016 and the number of rooted, callused or decayed cuttings was recorded, the roots counted and their length measured with a tape

measure. All experimental data were recorded in an excel table and evaluated using percentage calculations and variance analyses.

### RESEARCH RESULTS

#### The influence of different hormone concentrations on the rooting of cuttings

The best rooting performance was achieved by the control (untreated) stock and the cuttings treated with 1 % IBA (*Figure 1*), while the cuttings treated with 0.5 % IBA did not root at all.

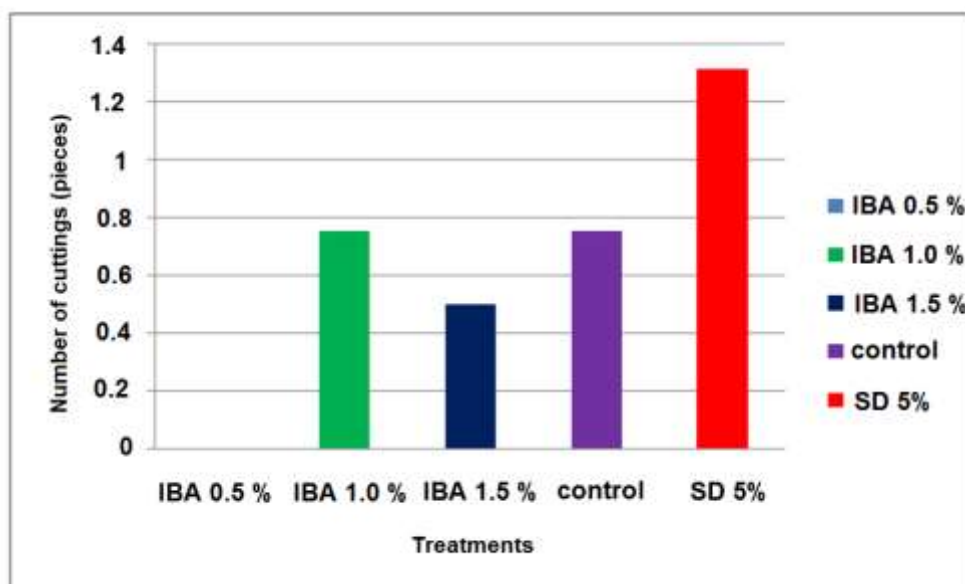


Figure 1 The influence of IBA concentrations on the number of rooted cuttings (Zalaszentgyörgy, 2016)

#### The influence of hormone concentrations on root callusing in cuttings

In terms of root callusing in cuttings, the hormone concentration of 1.0 % yielded the best results again, followed by the control stock (*Figure 2*). The least callus developed as a result of the 0.5 % treatment.

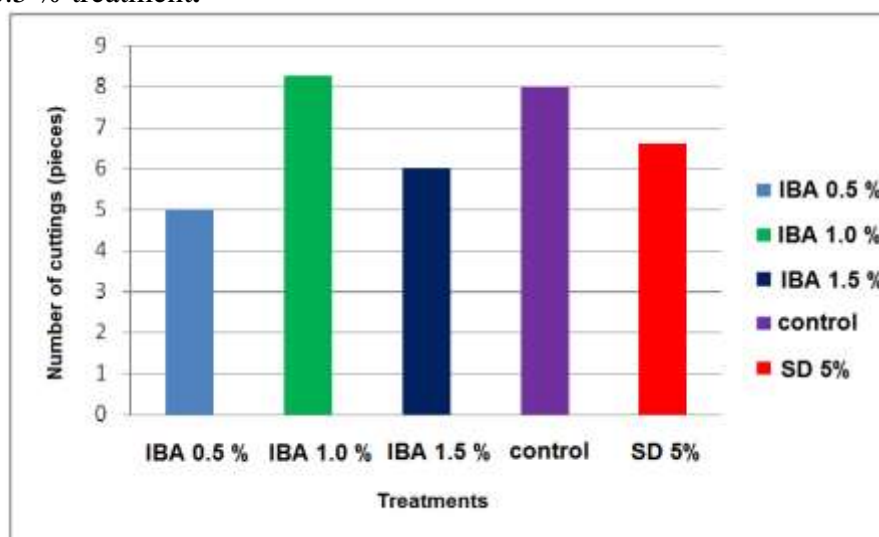
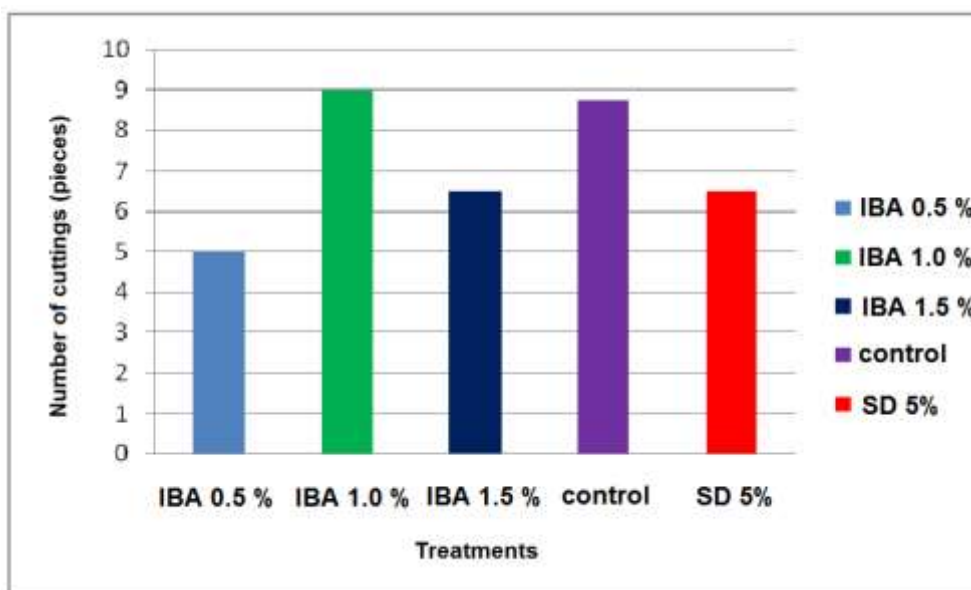


Figure 2 The influence of IBA concentrations on root callusing in cuttings (Zalaszentgyörgy, 2016)

**The influence of hormone concentrations on rooting and root callusing in cuttings**

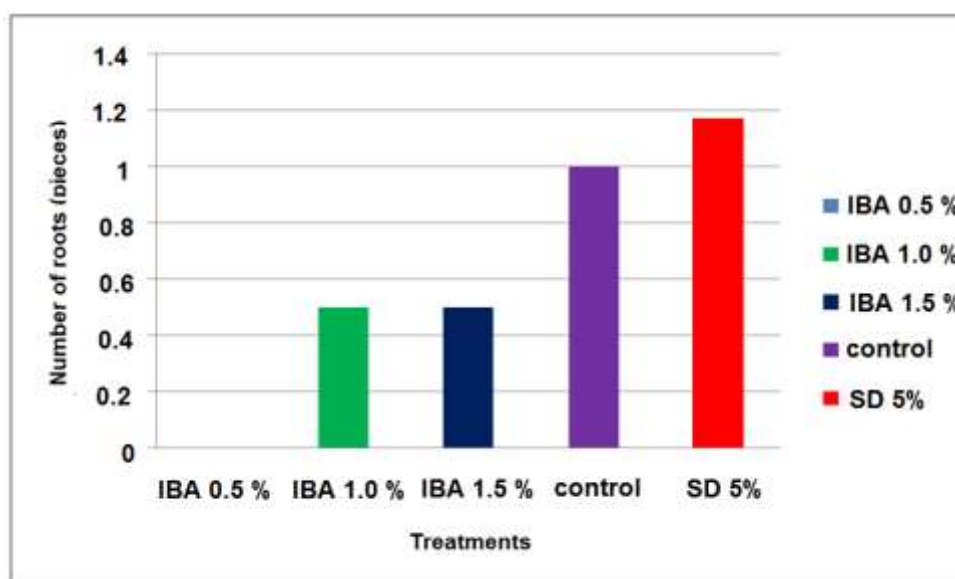
We have examined the influence of IBA hormone of different concentrations on rooting and root callusing at the same time (*Figure 3*). Our experience is the same as the one described in relation to *Figure 2*.



**Figure 3** The influence of IBA concentrations on the number of rooted and callused cuttings (Zalaszentgyörgy, 2016)

**The influence of hormone concentrations on the number of roots**

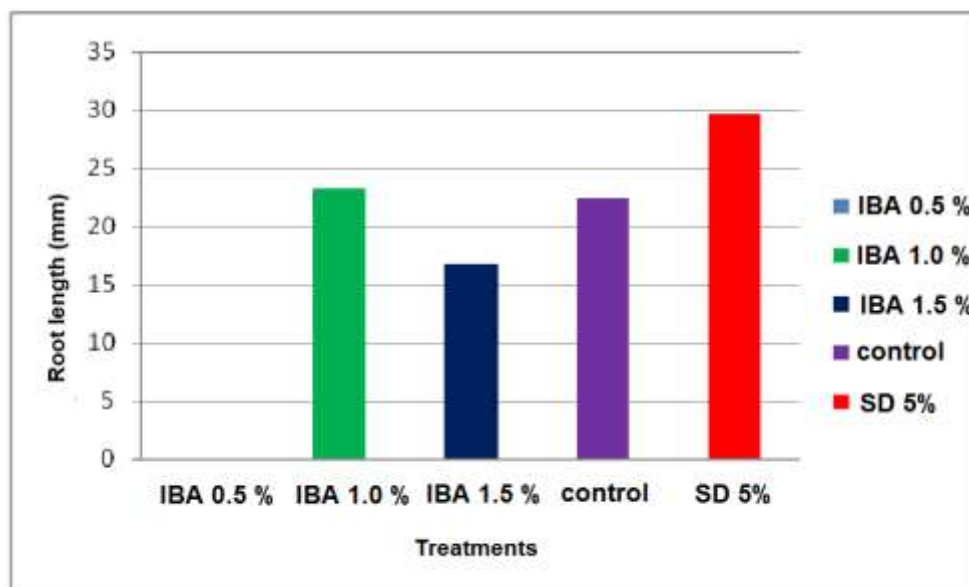
In our research the highest number of roots developed in the untreated stock while no root developed with the 0.5 % treatment (*Figure 4*).



**Figure 4** The influence of IBA concentrations on the number of roots (Zalaszentgyörgy, 2016)

### The influence of IBA concentrations on root length

The longest roots developed in the stock treated with IBA 1.0 %, followed by the control stock and the stock treated with IBA 1.5 % (Figure 5).



**Figure 5 The influence of IBA concentrations on root length (Zalaszentgyörgy, 2016)**

### CONCLUSIONS

We did not get significant results for any of the four treatments.

The most beneficial result was for IBA treatment in the concentration of 1 % as far as rooting, callusing, cutting decay and root length is concerned.

However, the control stock gave the best results for the number of roots, since these cuttings developed the most roots.

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