

## THE SUBSTRATUM INFLUENCE ON CUTTING'S ROOTING OF THUJA OCCIDENTALIS COMPACTA

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### **Abstract**

*In this experiment were used Thuja occidentalis Compacta plants. The plant is very valuable through his decorative effect, has slow growing, 4/5 m high. Is not very often in our country because of the absence of the plant material as a result of the slow growing and the low rate of multiplication.*

*In present it is known as a decorative plant cultivated in field. In areas with less favorable climatic conditions where the minimal temperature goes down during winter below the resistance limit, they are cultivated in pots placed outdoor during the summer and indoor during the cold season.*

**Keywords:** *Thuja occidentalis* Brabant, rooting substrate variants, cuttings

### **INTRODUCTION**

In our country *Thuja occidentalis Compacta* is not very spreaded because of the shortage of cuttings caused by the low rate of multiplication.

In order to increase the efficiency of multiplication on vegetative way, between 2011-2014, in the green houses from Les(Bihor) we have watched over the *Thuja occidentalis* Brabant cuttings rootedness process using stimulating substances of Radistim type.

### **MATERIALS AND METHODS**

The cuttings were gathered on the first decade of November. There have been used 10-12 cm long cuttings.

The experiment included 3 variantes:

V<sub>1</sub>-rooting in perlite;

V<sub>2</sub>- rooting in peat;

V<sub>3</sub>- rooting in peat 40%+ perlite 60%.

For each variant have been used 600 cuttings.

The cuttings were planted on 6x6 cm distance, 3 cm depth, before planting the substratum has been tramped to eliminate the air bags from the rooting area. The experiment took place in a green house, the thickness of the rooting substratum was 10-12 cm.

In the rooting period the temperature oscillated between 10°C-24°C in air and 15°C-20°C in rooting substratum. The relative humidity oscillated between 75%-85%. The light was directioned by covering the cuttings with a green net. We have made observations and determinations about the

period of rooting process, the cuttings' rooting percentage, the length and the number of roots for every cutting. The complete rooting period took 210 days.

## RESULTS AND DISCUSSIONS

The number of rooted cuttings varied from 480 rooted cuttings on V<sub>1</sub>-rooting in perlite variant, to 590 rooted cuttings on V<sub>3</sub>-rooting in peat 40%+ perlite 60%, (table 1).

On relative aspect, the number of rooted cuttings had risen with 9% on V<sub>2</sub>-rooting in peat and with 23% on V<sub>3</sub>-rooting in peat 40%+ perlite 60%, as on V<sub>1</sub>-rooting in perlite variant.

Table 1

The number of rooted cuttings of *Thuja occidentalis Compacta*  
(average values) Sîntandrei, 2011-2014

Variantes	The number of rooted cuttings		±D	Signification of the difference
	Absolute (pcs.)	Relative (%)		
V <sub>1</sub> -rooting in perlite	480	100	-	-
V <sub>2</sub> -rooting in peat	525	109	45	x
V <sub>3</sub> -rooting in peat 50%+ perlite 50%	590	122,9	110	xxx

LSD 5% - 36, LSD 1% - 59; LSD 0.1% - 95

The rooting substratum has a great influence on the quality of the rooting material. The number and the dimensions of roots of every cutting watched to prove that. The medium number of roots per cutting oscillated between 6.3 on V<sub>1</sub>-rooting in perlite variant, and 11.9 on V<sub>3</sub>-rooting in peat 50%+ perlite 50% (table 2).

Table 2

The average number of roots per cutting  
Sîntandrei, 2011-2014

Variantes	The medium number of roots per cutting		±D	Signification of the difference
	Absolute (pcs.)	Relative (%)		
V <sub>1</sub> -rooting in perlite	10,1	100	-	-
V <sub>2</sub> -rooting in peat	12,5	123	2.4	-
V <sub>3</sub> -rooting in peat 50%+ perlite 50%	16,7	165	6,6	xxx

LSD 5% - 2.8, LSD 1% - 4,3; LSD 0.1% - 6,5

On relative aspect, the substratum quality has risen the number of roots cutting with 23% on V<sub>2</sub>- rooting in peat variant, and with 65% on V<sub>3</sub>-rooting in peat 40%+ perlite 60% variant. The rise of rooting capacity shows from the length and the thickness of the cuttings roots, too.

The thickness and the length of the roots alternates but the highest values, obtained on V<sub>3</sub>- rooting in peat 40%+ perlite 60% variant (table 3).

Table 3

The dimensions of the cuttings roots (average values)  
Sintandrei, 2011-2014

Variantes	The length of the roots (extrem values) (cm)	The number of the roots per cutting with		The number of roots per cutting (pcs.)
		Diameter < 1mm (pcs.)	Diameter > 1.1 mm (pcs.)	
V <sub>1</sub> -rooting in perlite	0.3-1.4	6,3	2,8	9,1
V <sub>2</sub> - rooting in peat	1,5-1.9	9,1	3,6	12,7
V <sub>3</sub> - rooting in peat 50%+ perlite 50%	2,0-17	11,2	4.7	15,9

On V<sub>1</sub> rooting in perlite variant, the cuttings roots were 0.3-1,4 cm long and on V<sub>3</sub>- rooting in peat 40%+ perlite 60% variant we obtained 2,0-17 cm length. About thickness of the roots we acquired following: the average number of roots with diameter < 1mm, per cutting, was 6,3 on V<sub>1</sub>-rooting in perlite variant and 11,2 on V<sub>3</sub>- rooting in peat 40%+ perlite 60% variant, and the medium number of roots with diameter > 1.1 mm was 1.2 on V<sub>1</sub>-variant and 4.7on V<sub>3</sub>-variant.

This paper describes an experiment of rooting the cuttings of *Thuja occidentalis Compacta*. We proved that the substratum has an great influence to the rooting process. From three variantes of rooting we obtained the best resultes on rooting in peat 40%+perlite 60% variant.

## CONCLUSIONS

1. *Thuja occidentalis Compacta*, as an ornamental tre, with great economical value, can be multiply vegetively, using cuttings.
2. Using a proper substratum increases the rate of multiplication.
3. A proper substratum rises the quality and the number of roots per cutting, too.
4. The substratum composed by peat 40%+ perlite 60% has risen the rooting rate. The rooting percentage was 98% on V<sub>3</sub>- rooting in peat 40%+

perlite 60%, 87,5% on V<sub>2</sub>-rooting in peat variant and 80% on V<sub>1</sub>-rooting in perlite variant.

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