

THE INFLUENCE OF THE SUBSOIL LAYER ON THE ROOTING OF THUJA ORIENTALIS "AUREA" PLANTS

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Abstract

Thuja Orientalis "Aurea" plants beautify greenspaces, improve microclimates, purify and refresh the atmosphere, providing oxygen. Aesthetically, they contribute to the physical and mental condition.

The crown is cone-shaped, the scale leaves are yellow-coloured and the thin, flattened shoots are arranged in vertical planes.

This study focuses upon the rooting of cuttings in perlite (V1), in peat (V2) and in a mixture of equal parts of perlite and peat. (V3)

Key words: *Thuja Orientalis "Aurea"*, perlite, peat, cuttings.

INTRODUCTION

Thuja Orientalis "Aurea" is a type of ornamental plant. It reaches the height of 2-4 m and it has a straight stalk with a stringy-textured reddish-brown bark.

Resistant to frost, draught and dust-ridden environments, it grows well in field and hill regions.

It is not widely spread in Romania, which can be attributed, among others, to a lack of planting material.

The subsoil layers used are 1:1 proportions of sand and peat, celery soil and sand, sand and perlite or vermiculite, perlite and peat, perlite alone or peat alone. (John Brookes, 1977)

For our country, the recommended mixtures are peat and perlite 2:1 (Zaharia D., 2002), beech sawdust and sand 1:1. (Verd D., 2005)

In Germany, very good results have been obtained by using 80% river sand with granules of 1-2 mm and 20% pine needles. (Krüssmann, 2004)

To increase the efficiency of the vegetative propagation in the period 2006-2008, we have studied the influence of the subsoil layers on the rooting of cuttings harvested during the period of vegetative rest.

MATERIAL AND METHODS

Semi-lignified cuttings have been harvested, 8-10 cm in length. The experiment consisted of three variants:

V1 - rooting in perlite;

V2 - rooting in peat;

V3 - rooting in 50% peat and 50% perlite.

800 cuttings have been used for each variant.

The planting of the cuttings was carried out in the first ten days of November, at the distance of 6x6 cm and a depth of 4.5-5.5 cm. The subsoil layer was compacted to eliminate the air from the rooting area.

During the rooting period the temperature varied between 10-12°C in the atmosphere and 14-18° in the layer. Air humidity oscillated between 70-75% and layer humidity between 60-65%.

To differentiate the variants, there have been observations and calculations made, regarding the rooting period, the percentage of cuttings striking root and the size of the roots.

RESULTS AND DISCUSSION

The stem cutting callusing process started at relatively close intervals of time, but faster in the third variant.

The period of complete rooting of the cuttings extended over 170 days.

After striking roots, the cuttings were moved to 6-8 cm diameter pots in a mixture composed of two parts leaf soil, one part manure, one part celery soil and one part sand.

Out of the total number of cuttings, the number of cuttings that have caught root varies from 500 in the first variant to 709 in the third variant. (see table 1).

The number of rooted cuttings is 21% greater in the second variant and 41% greater in the third variant than in the first variant.

The subsoil layer had a great influence on the quality of the roots.

The medium number of roots per cutting increased from 7.2 in V1 to 11.8 in V3. (see table 2).

The subsoil layer increased the number of roots per cutting with 29% in V2 and with 57% in V3 than in V1.

Table 1

Number of stem cuttings (medium values), Oradea, 2006-2008

Variants	Medium number of cuttings that caught root		± D	Difference meaning
	Absolute (units)	Relative (%)		
V1 - perlite	500	100	-	-
V2 - peat	605	121	105	**
V3 - 50% perlite and 50% peat	709	141	209	***

DL 5% - 82; DL 1% - 131; DL 0.1% - 210

Table 2

Number of roots per cutting (medium values), Oradea, 2006-2008

Variants	Medium number of roots per cutting		± D	Difference meaning
	Absolute (units)	Relative (%)		
V1 - perlite	7.2	100	-	-
V2 - peat	9.2	29	2	**
V3 - 50% perlite and 50% peat	11.8	163.8	4.6	***

DL 5% - 1.9; DL 1% - 3.0

An increase in the capacity of catching root also results from the number and thickness of the newly formed roots.

In V1 the roots had a length of 0.8-10.7 cm, while in V3 the values were of 1.2-16.1 cm.

Considering thickness, the roots up to 1 mm in diameter have recorded values of 5.1 units in V1 and 10.6 units in V3. Roots thicker than 1.1 mm have recorded values of 2.81 units in V1 and 5 units in V3.

CONCLUSIONS

As an economically important species, *Thuja Orientalis "Aurea"* can be propagated through cuttings. The increase of the propagation rate can be stimulated by using an adequate subsoil layer.

The peat and perlite layer increases the rate of rooting. Therefore the cuttings planted in this layer can be rooted in proportion of 88%, compared to 62% in the perlite layer.

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