THE SUBSTRATUM INFLUENCE ON CUTTING'S ROOTING OF COTINUS COGGYGRIA

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Abstract

Cotinus coggygria is an ornamental tree, with large-pyramidal crown and several stems. The trunks are covered with red scales, the scales takes off in plants. The wood of Cotinus coggygria is compact, strong and is of a great demand in carving.

The shoots are green, the buds are oval, are green color, and are clumped to the top of the shoots. The leaves are 4-5 cm long, 2-3 cm broad, dark-green on the adaxial side, light-green on the abaxial side. The flowers are unisexual and the plants are dioic. The seed is ovoid with a hard and brown tegument, covered by a fleshy aryl, green at the beginning, becoming red. The aryl is eatable but the plant contains poisoning alkaloid named taxyn.

Key words: Cotinus coggygria, rooting substrates variants, cuttings

INTRODUCTION

Cotinus coggygria vegetates also in vegetated areas from plain, as well as in vegetated areas from hills and mountains. It is resistant on frost, drought and dust.

In Romania the species exhibits a restricted spread is little spread, the cause might be the absence of the planting material. To rise the efficiency of the vegetative multiplication by, we investigated the substratum influence on cuttings rooting.

MATERIAL AND METHOD

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

The experiment included 3 variantes:
- $V_1$-rooting in perlite;
- $V_2$-rooting in peat;
- $V_3$-rooting in peat 50% + perlite 50%.

For each variant have been used 500 cuttings.

The cuttings were planted on 6x6 cm distance, 3 cm depth, before planting the substratum has been trumped 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 335 cuttings on V\textsubscript{1}-rooting in perlite variant, to 452 rooted cuttings on V\textsubscript{3}-rooting in peat 50% + perlite 50%, (table 1).

On relative aspect, the number of rooted cuttings had with 20% on V\textsubscript{2}-rooting in peat and with 35% on V\textsubscript{3}-rooting in peat 50% + perlite 50% as on V\textsubscript{1}-rooting in perlite variant.

<table>
<thead>
<tr>
<th>Variants</th>
<th>The number of rooted cutting</th>
<th>±D</th>
<th>Semnification of the difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Absolute (pcs.)</td>
<td>Relative (%)</td>
<td></td>
</tr>
<tr>
<td>V\textsubscript{1} - rooting in perlite</td>
<td>335</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>V\textsubscript{2} - rooting in peat</td>
<td>402</td>
<td>120</td>
<td>67</td>
</tr>
<tr>
<td>V\textsubscript{3}-rooting in peat 50% + perlite 50%</td>
<td>452</td>
<td>135</td>
<td>117</td>
</tr>
</tbody>
</table>

Table 1

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 6.8 on V\textsubscript{1}-rooting in perlite variant, and 12.7 on V\textsubscript{3}-rooting in peat 50% + perlite 50% (table 2).
Table 2

<table>
<thead>
<tr>
<th>Variants</th>
<th>The medium number of roots per cutting</th>
<th>±D</th>
<th>Semiñification of the diference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Absolute (pcs.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1 - rooting in perlite</td>
<td>6,8</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>V2 - rooting in peat</td>
<td>9,8</td>
<td>144</td>
<td></td>
</tr>
<tr>
<td>V3 - rooting in peat 50% + perlite 50%</td>
<td>12,7</td>
<td>186</td>
<td>5,9 xx</td>
</tr>
</tbody>
</table>

LSD 5% - 1,8; LSD 1% - 2,9; LSD 0.1% - 4,6

On relative aspect, the substratum quality has raised number of roots cutting with 44% on V2-rooting in peat variant and with 86% on V3-rooting in peat 50% + perlite 50% variant. The rise of rooting capacity shows the lenght and the thickness of the cuttings roots, too.

The thickness and the lenght of the roots alternates but the highest values, obtained on V3-rooting in peat 50% + perlite 50% variant (table 3).

Table 3

<table>
<thead>
<tr>
<th>Variants</th>
<th>The length of the roots (extreme values) (cm)</th>
<th>The number of the roots per cutting with</th>
<th>The number of roots per cutting (pcs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diameter &lt;1mm (pcs.)</td>
<td>Diameter &gt;1.1mm (pcs.)</td>
<td></td>
</tr>
<tr>
<td>V1 - rooting in perlite</td>
<td>0,6-0,8</td>
<td>5,4</td>
<td>2,5</td>
</tr>
<tr>
<td>V2 - rooting in peat</td>
<td>0,7-12,9</td>
<td>6,8</td>
<td>3</td>
</tr>
<tr>
<td>V3 - rooting in peat 50% + perlite 50%</td>
<td>0,7-14,5</td>
<td>8,4</td>
<td>4,3</td>
</tr>
</tbody>
</table>

On V1-rooting in perlite variant, the cuttings roots were 0,6-0,8 cm long and on V3-rooting in peat 50% + perlite 50% variant we obtained 0,7-14,5 cm length. About thickness of the roots we acquired following: the average number of roots with diameter < 1mm, per cutting, was 5,9 on V1-rooting in perlite variant and 8,4 on V3-rooting in peat 50% +perlite 50% variant, and the medium number of roots with diameter > 1,1 mm was 2,5 on V1-variant and 4,3 on V3-variant.

This paper describe an experiment of rooting the cuttings of Cotinus coggygria. We prowed that the substratum has an great influence to the rooting process. From three variantes of rooting we obtained the best resultes on rooting in rooting in peat 50% +perlite 50% variant.
CONCLUSIONS

1. Cotinus coggygria, as an ornamental tree, with great economical value, can be multiplicate vegetively, using cuttings.
2. Using a proper substratum increases the rate or multiplication.
3. A proper substratum rises the quality and the number of roots per cutting, too.
4. The substratum composed by peat 50% +perlite 50% has rised the rooting rate. The rooting percentage was 90% on V3-rooting in peat 50% +perlite 50%, 80% on V2-rooting in peat variant and 67% on V1-rooting in perlite variant.

REFERENCES