

THE INDUCEMENT OF THE ROOTEDNESS PROCESS OF DEUTZIA SCABRA CUTTING USING RADISTIM TYPE BIOACTIVE SUBSTANCES

Ioan Vlad*, Mariana Vlad, Dinu Grigore Mester, Ioana Mester, Szilard Bartha

**University of Oradea, Faculty of Environmental Protection, 26 General Magheru Street, 410048 Oradea, Romania, ioanvlad2006@yahoo.com*

Abstract

Deutzia scabra "Rosea Carminea" is a shrub cultivated as a decorative plant for its small, lasting and shining leaves, oval-elongated (7-9 cm/2.5-4.5 cm), with short tail (0.5-1.5 cm) and for the various colored sepals (pink, red, violet) gathered around the yellow flowers with no decorative value.

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 their resistance limit, they are cultivated in pots placed outdoor during the summer and indoor during the cold season.

In our country Deutzia scabra "Rosea Carminea" 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 2006-2009, in the green houses from Oradea we have watched over the Bougainvillea brasiliensis cuttings rootedness process using stimulating substances of Radistim type.

Key words: *Deutzia scabra "Rosea Carminea"*, rootedness process

THE MATERIAL AND WORK METHOD

There were gathered cuttings semi-wooden 8-10 cm long. The experiment was organized in two variants: V1 – untreated standard and V2 – treatment with radistim 2, using 1000 cutting per variant in four different times.

Cutting planting for striking roots has been made in perlite with 1-1.5 mm particles, placed on the parapet with a thickness of substratum of 12-14 cm. The treatment was made before planting. First there was renewed the humidity status. Then the cuttings were inserted in the powder stimulating substance (radistim 2) with 1-2 cm of their root.

The cuttings were planted for striking roots in the first decade of May. The distance between cuttings was 6 x 6 cm and the depth was 2-3 cm. The soil was well ramed in order to remove the air from the rootedness zone.

During the rootedness period the temperature oscillated between 18-27 celsius degrees in air and 20-21 celsius degrees in substratum. The substratum's humidity was 65-75 % of total capacity of retaining and the relative humidity was 75-85 %.

The light was directed by covering the cuttings with paper and the windows of the green house were whitewashed once the growing process started. For the variants differentiation there were made observations and determinations concerning the length of rootedness period, the proportion of rooted cuttings and the dimensions of new formed roots.

RESULTS AND DISCUSSIONS

First roots appeared at closed intervals of time for the two variants with a slight advantage for the cuttings treated with Radistim 2.

The period of complete rootedness process last 57 days (04.05-30.06).

After the striking root process the cuttings were dislocated from the rootedness substratum and they were passed in clay flower pots which have the diameter of 6-8 cm. In this pots the substratum is formed of: two parts peat, one part earth of leaves, one part compost and one part sand.

The number of rooted cuttings from the total cuttings planted for rootedness, for each variant registered growing values from 604 cuttings for V1 (control, standard variant) to 742 cuttings for V2 when the cuttings were treated with Radistim 2 (Table 1).

Table 1

The striking roots proportion of *Deutzia scabra* "Rosea Carminea" cuttings at Oradea's green houses (average values 2006-2009)

Variants	Number of rooted cuttings		±D	Semnification of the difference
	Absolute (pcs.)	Relatively (%)		
V1 – untreated standard	604	100	-	-
V2 – treatment with Radistim	742	122.80	+138	***

LSD 5% = 6.34

LSD 1% = 8.27

LSD 0.1% = 11.62

In relativals terms the treatment with Radistim 2 increased the rate of cuttings striking roots with 22 % comparatively with the untreated variant.

From the statistic point of view this difference is considered as very meaningful.

The treatment with radistim 2 stimulates also the quality of rooted cuttings through the number and the dimension of the roots.

From table no. 2 arises that the average number of roots per cutting is growing from 8.2 pcs at V1 – untreated, to 11.7 pcs. per cutting at V2 – treated with radistim 2.

In relativals terms the treatment with Radistim 2 increased the number of roots per cutting with 42 % comparatively with the untreated variant. From the statistic point of view this difference is considered as very meaningful.

Table 2

Average number of roots per cutting (average values 2006-2009)

Variants	Average number of roots		±D	Semnification of the difference
	Absolute (pcs.)	Relatively (%)		
V1 – untreated standard (control variant)	8.2	100	-	-
V2 – treatment with Radistim	11.7	142.60	+3.5	***

LSD 5% = 3.45

LSD 1% = 5.11

LSD 0.1% = 7.59

The increased capacity of striking roots arises also from the number and the thickness of the newly formed plants roots.

From the table 3 we can see that the length and the thickness of *Deutzia scabra* "Rosea Carminea" cuttings vary between large limits with favor for those treated with Radistim.

Table 3

The length and the thickness of *Deutzia scabra* "Rosea Carminea" rooted cuttings
(average values 2006-2009)

Variants	The length of roots-extreme limits (cm)	Grouping the roots in accordance with its thickness		Total
		Pcs.< 1 mm	Pcs.> 1 mm	
V1 – untreated standard (control variant)	0.4-9.5	4.7	3.5	8.2
V2 – treatment with Radistim	0.5-12.7	6.9	4.8	11.7

For the control variant the newly formed roots registered variable length between 0.4 and 9.5 cm. For the cuttings treated with radistim 2 the value were higher, between 0.5 and 12.7 cm.

Grouping the newly formed roots in accordance with its thickness, for the roots with diameter smaller than 1 mm there were registered values in growth from 4.7 pcs. for V1 to 6.9 pcs. for V2. For the roots with diameter bigger than 1 mm there were registered values in growth from 3.5 pcs. for V1 to 4.8 pcs. for V2.

CONCLUSIONS AND RECOMMENDATIONS

- *Deutzia scabra* "Rosea Carminea" as decorative species, with useful economic implications, can be multiplied through vegetative way by cuttings.
- The multiplication rate of *Deutzia scabra* "Rosea Carminea" through cuttings can be stimulated by using bioactive substances of Radistim type.
- Stimulating the rootedness process of semiwooden cuttings of *Deutzia scabra* "Rosea Carminea" with bioactive substances of Radistim type guarantee a highly vegetative potential for newly formed plants.
- The stimulating substance Radistim increase the stiking roots rate. So the treated cuttings stroke roots in proportion of 74.2 % comparatively to 60.4 % for those untreated.

REFERENCES

1. Boucherin D., Bron G., 1999, Multiplication des plantes horticoles, Ed. Technique et Documentation Lavoisier, Paris.
2. Bouvarel A., 1994, L'adaptation ecologique des arbres forestiers, Paris-Bruxelles-Montreal.
3. Bush-Brown J., Garden Book, 1995, Charles Seribners's and Sons, USA.
4. Florincescu A., 1997, Arhitectura Peisajului; Ed. Dacia, Cluj-Napoca.
5. Iliescu A., 1996, O metodă de mare randament pentru butăŃirea în teren deschis a arbuŃilor ornamentali; Horticultura nr. 5.
6. Parantjothy K ș.a., 1990, Clonal multiplication of woody perennials Plant tissue culture applications and limitations, Ed. SS. Bhaljwani Elsevier.