THE INDUCEMENT AT THE ROOTEDNESS PROCESS OF KERRIA JAPONICA CUTTING USING RADISTIM TYPE BIOACTIVE SUBSTANCE

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Abstract

Kerria japonica is a shrub cultivated as decorative plant for its small, lasting and shining leaves,oval-elongated (3-5 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 (Cuisance P; 1992). In present it is known as a decorative plant cultivated in field. In areas with less favorable climate conditions where the minimal temperature goes down during winter below the resistance limit, they are cultivate in pots placed outdoor during the summer and indoor during the cold season (Thome S; 2002). In our country Kerria japonica is no very spread because of the shortage of cutting caused by the low rate of multiplication. In order to increase the efficiency of multiplication on vegetative way, between 2009-2011, in the green houses from Oradea we have wached over the Kerria japonica cuttings rootedness process using stimulating substances of Radistim type.

Key words: Kerria japonica, rooting substrate, variants, cuttings.

MATERIAL AND METHOD

In order to increase the efficiency of multiplication on vegetative way in the green houses of Oradea, between 2009 and 2011, we studied the rootedness process of Kerria japonica cuttings using stimulating substances of Radistim type.

8-10 cm long semi-wooden cuttings were gathered. The experiment was organized in two variants: V_1 - untreated standard and V_2 - treatment with Radistim 2, using 1000 cutting per variant in four different times.

Plant cutting to sprout roots was 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 applied before planting. First there was a renewed 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 to sprout roots in the first decade of May. The distance between cuttings was 6x6 cm and the depth was 2-3 cm. The soil was well rammed in order to remove the air from the rootedness zone (Vlad I.; 2004).

During the rootedness period, the temperature oscillated between 18-27 degrees Celsius in the air and 20-21 degrees Celsius in substratum. The

substratum's humidity was 65-75% of the total capacity of retaining and the relative humidity was 75-85% (Iliescu A.; 1998).

The light was directed by covering the cuttings with paper and 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 newly formed roots (Vlad I.; 2011).

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 lasted for 127 days (04.06-07.11).

After the root sprouting process the cuttings were dislocated from the rootedness substratum and they were planted in clay flower pots which had the diameter of 6-8 cm. In these pots the substratum was formed of two parts peat, one part earth or 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 652 cuttings for V_1 (control, standard variant) to 796 cuttings for V_2 when the cuttings were treated with Radistim 2 (Table 1).

Table 1

The sprouting roots proportion of Kerria japonica cuttings at Oradea's green houses (Average values 2009-2011)

Variants	Number of rooted cutting		±D	Signification of the difference
	Absolute (pcs.)	Relative (%)		
V1 - untreated standard (control variant)	652	100	-	-
V2 - treatment with Radistim	796	122	144	xxx

LSD 5% - 25.6 LSD 1% - 50.7 LSD 0.1% - 82.4

In relative terms, the treatment with Radistim 2 increased the rate of sprouting roots of the cuttings by 22% comparatively with the untreated variant. From a statistic point of view, this difference is considered as very meaningful.

The treatment with Radistim 2 also stimulated the quality of rooted cutting through the number and the dimension of the roots.

From table no.2 it follows that the average number of roots per cutting increased from 9.6 pieces at V_1- untreated to 12.8 pieces per cutting at V_2-treated with Radistim 2.

In relative terms, the treatment with Radistim 2 increased the number of roots per cutting by 39% in comparison with the untreated variant. From a statistic point of view, this difference is considered as very meaningful.

Table 2

Average number of roots per cutting (average values 2009-2011)

Variants	Average number of roots		±D	Significance of the difference
	Absolute (pieces)	Relative (%)		
V1 - untreated standard (control variant)	9.6	100	-	-
V2 - treatment with Radistim	12.8	139	3.2	xxx

LSD5% - 2.8 LSD 1% - 3.10 LSD 0.1% - 4.52

The increasing capacity of sprouting roots also results from the number and the thickness of the newly formed roots of the plants.

From the table no.3 we can see that the length and the thickness of Kerria japonica cutting varies between large limits, yet favoring those treated with Radistim.

Table 3

The length and the thickness of Kerria japonica rooted cuttings
(Average values 2009-2011)

Variants	The length of roots-extreme limits (cm)	Grouping the roots in accordance with its thickness		Total
		Pcs.<1mm	Pcs.>1mm	
V1 - untreated standard (control variant)	0.3-10.1	5.2	3.4	8.6
V2 - treatment with Radistim	0.4-14.5	6.8	5.0	11,8

For the control variant the newly formed roots registered variable lengths between 0.3 and 10.1 cm. For the cuttings treated with Radistim 2 the values were higher, between 0.4 and 14.5 cm.

When grouping the newly formed roots in accordance with their thickness, for the roots with a smaller diameter than 1 mm, there were registered increasing values from 5.2 pcs. for V_1 to 6.8 pcs. for V_2. For the roots with bigger diameter than 1 mm there were registered increasing values from 3.4 pcs. for V_1 to 5.0 pcs. for V_2.

CONCLUSIONS

* Kerria japonica, as decorative species with useful economic implications, can be multiplied through vegetative cuttings.

* The multiplication rate of Kerria japonica through cuttings can be stimulated by using bioactive substances of Radistim type.

* Stimulating the rootedness process of semi wooden cutting of Kerria japonica with bioactive substances of Radistim type guarantees a highly vegetative potential for newly formed plants.

* The stimulating substance Radistim increases the rate of the sprouting roots. Thus, the treated cuttings stroke roots in proportion of 78.3% comparatively to 65.2% for those untreated.

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