

THE INFLUENCE OF THE SUBSTRATUM ON ROOT FORMING OF CUTTINGS OF COTONEASTER DAMMERI

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Abstract

Through a research conducted at S.C. Orser S.A. Oradea we established the substratum (50 % peat and 50 % pearl stone) for root forming of cuttings of *Cotoneaster dammeri* form root in a proportion of 92 %.

Keywords: *Cotoneaster dammeri*, rooting substrate variants, cuttings, striking roots

INTRODUCTION

Cotoneaster dammeri is an ornamental bush with a shrub shape and a 0.5 – 1 m length, with thorny limbs, semipersistent, oval lanced (1.0-1.5 cm/0.4-0.6 cm) and bright dark green leaves. It blooms richly in may-june, having a white inflorescence of small flowers.

The remarkable beauties of the species are the plentiful fruits, alive colored in red-orange, small (0.2-0.5 cm) and spherical.

It vegetates very well in the green plots of the field and hill, being resistant to frost, drought and dust environment.

In our country is not so common, situation that can be attributed also to the absence of planting material, as a consequence of the low rated capacity at multiplication.

MATERIAL AND METHODS

To increase the rated capacity at multiplication on a vegetative way between 2007-2009 we followed the substratum's influence on root forming of cuttings ingathered in the vegetative period.

We ingathered cuttings long of 10-15 cm, the experiment had 4 variants:

- V1 – root forming in sand
- V2 – root forming in pearl stone
- V3 – root forming in peat
- V4 – root forming in peat 50% and pearl stone 50%

Were used 500 cuttings at each variant.

The planting of the cuttings for root forming was made in the first decade of June, at a distance of 5 x 6 cm and a depth of 3.5 – 5 cm, with the adequate ram of the substratum to eliminate the air space from the root forming zone.

In time of the root forming the temperature oscillated between 15-20 °C in the substratum and 16-26 °C in air, and the humidity between 75-85 % in air and 60-65 % in the substratum.

To differentiate the variants were made observations and analysis regarding the duration of the root forming period, the percent of cuttings deeply rooted and the dimensions of the roots.

The process of root forming of the cuttings started in appropriate periods of time for all the variants studied, but with a small advance for the fourth variant.

The complete period of root forming of the cuttings lasted for 129 days.

After the root forming, the cuttings were dislocated from the substratum and put in flower pots with the diameter of 6-8 cm, in a mixture made of : 2 parts leaves soil, one part knapsacks, a part celery soil and a part sand.

RESULTS AND DISCUSSION

The number of the root forming cuttings from the total of the ones put to root forming registered values between 302 pieces for first variant and 461 pieces for fourth variant (Table 1).

Table 1

The number of root forming cuttings (medium values 2007-2009)

Variants	Root forming cuttings		±D	Difference meaning
	pieces	(%)		
V1 – root forming in sand	302	100	-	-
V2 – root forming in pearl stone	370	122	68	**
V3 – root forming in peat	369	122	67	**
V4 – root forming in peat 50% and pearl stone 50%	461	152	159	***

LSD 5% = 42

LSD 1% = 66

LSD 0.1% = 108

Under relative aspect the number of root forming cuttings is higher with 59% at fourth variant, and with 22% at second and third variants, toward first control variant.

The root forming substratum influenced also the quality of the root forming material through the number and the dimension of the roots.

From Table 2 results that the medium number of roots on a cutting grew from 7.2 pieces at first variant deeply rooted in sand, to 14.2 pieces cuttings at fourth variant, cuttings deeply rooted in pearl stone 50% and peat 50%.

Table 2

The medium number of roots on a cutting
(medium values 2007-2009)

Variants	Root forming cuttings		±D	Difference meaning
	pieces	(%)		
V1 – root forming in sand	7.2	100	-	-
V2 – root forming in pearl stone	9.3	129.1	2.1	*
V3 – root forming in peat	11.1	154.1	3.9	**
V4 – root forming in peat 50% and pearl stone 50%	14.2	197.2	7.0	***

LSD 5% = 2.1

LSD 1% = 3.2

LSD 0.1% = 5.2

Under relative aspect resulted that the root forming substratum grew the number of roots on a cutting with 197 % at fourth variant, 154 % at third variant and with 29 % at second variant, toward first control variant.

The increasing of the root forming capacity of the seedlings emerge also from the length and thickness of the plant roots new formed.

At first control variant the roots new formed registered variable lengths between 0.5-9.2 cm, while at the fourth variant the values were higher, between 0.8-13.7 cm (Table 3).

Table 3

The length and thickness of the roots to the root forming cuttings of *Cotoneaster dammeri* (medium values 2007-2009)

Variants	Length of roots Extreme limits (cm)	The grouping of roots after thickness		Total
		No< 1 mm Ø	No<1 mm Ø	
V1 – root forming in sand	0.5-9.2	4.2	3.0	7.2
V2 – root forming in pearl stone	0.6-11.1	4.9	4.4	9.3
V3 – root forming in peat	0.7-12.3	6.1	5.0	11.1
V4 – root forming in peat 50% and pearl stone 50%	0.8-13.7	7.9	6.3	14.2

After the thickness the roots until 1 mm in diameter registered values of 4.2 pieces at first variant and of 7.9 pieces at fourth variant and the roots with thickness higher than 1.1 mm registered values from 3.0 pieces at first variant to 6.3 pieces at fourth variant.

CONCLUSIONS

- The increase of the multiplication rate through cuttings of *Cotoneaster dammeri* species as ornamental plant with useful economical implications can be stimulated by using a proper substratum;
- The substratum made of peat and pearl stone in equal parts increases the percent of root forming. So in a substratum made of peat 50 % and pearl stone 50 % can be deeply rooted in proportion of 92 % toward 73 % in peat and 74 % in pearl stone.

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