Volume 16(3), 60- 62, 2012
JOURNAL of Horticulture, Forestry and Biotechnology
www.journal-hfb.usab-tm.ro

Pelargonium Zonale Cuttings Rooting in Different Substrates during summer at the Teaching Facility of the Faculty of Horticulture and Forestry of Timisoara

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Abstract Cutting propagation is a vegetative propagation method of flower plants (Cantor Maria, Plante ornamentale de apartament, 2008). This method is of interest because plants are obtained which accurately depict the decorative characteristics of the female plant, but also because grown plants are obtained in a much shorter time than by seed multiplication (Anton Doina, Floricultură generală, 2003; Băla Maria, Floricultură generală şi specială, 2012).

For this study, we have used top plant cuttings of Pelargonium Zonale: Blanka, Jitka, Alena and mixed, of different lengths and different rooting substrates.

We aimed to follow the type of rooting depending on the length of the cutting and rooting substrate composition.

The study was conducted at the Teaching Facility of the Faculty of Horticulture and Forestry of Timisoara in 2012, in the discipline of Floriculture.

Key words

length of cuttings, substrate, Pelargonium Zonale, Blanka, Jitka, Alena

In the trial, we used different length tip cuttings of areal Pelargonium – 3, 5, 8, and 10 cm – and five rooting substrata:

- substratum 1 of Sand (witness),
- substratum 2 of Peat + Perlite 2:1,
- substratum 3 of Sand + Peat + Flower soil 1:1:1,
- substratum 4 Flower soil + Peat 1:1,
- substratum 5 of Peat + Manure 1:1.

We aimed at identifying the most efficient rooting substrata depending on the best cutting length and the cutting rooting period in temperatures below 35° C, specific to the summer.

Material and Method

The work method used to interpret the results was variance analysis (Ciulcă Sorin,Tehnică experimentală, 2002): each substratum was a variant with 3 replicas of 15 areal Pelargonium cuttings each depending on the 4 cutting length studied.

Results and Discussions

In 3-cm long cuttings, there were significantly negative differences compared to the control in the cuttings planted on the substratum of Sand + Peat + Flower soil 1:1:1, and significantly positive differences in the cuttings planted on the substratum of Flower soil + Peat 1:1.

Table 1

Rooting areal Pelargonium cuttings 3 cm long

Substratum	R1	R2	R3	The average	%	The difference with the witness	The significance
Sand (witness)	2	2	1	2.66	100	0	0
Peat + Perlite 2:1	1	2	1	1.66	62.5	-1	-
Sand + Peat + Flower soil 1:1:1	7	7	6	1.33	50	-1.33	o
Flower soil + Peat 1:1	2	1	2	6.66	250	4	***
Peat + Manure 1:1	2	3	3	1.66	62.5	-1	-

DL 5%=1,14 DL 1%=1,66 DL 0.1%=2.49

Table 2

Rooting areal Pelargonium cuttings 5 cm long

Substratum	R1	R2	R3	The average	%	The difference with the witness	The significance
Sand (witness)	8	7	8	7.66	100	0	0
Peat + Perlite 2:1	1	2	2	1.66	21.73	-6	ooo
Sand + Peat + Flower soil 1:1:1	4	4	5	4.33	56.52	-3.33	ooo
Flower soil + Peat 1:1	15	15	13	14.33	186.95	6.66	***
Peat + Manure 1:1	4	3	4	3.66	47.82	-4	ooo

DL 5%=1,52 DL 1%=2,21 DL 0,1%=3,31

In 5-cm long cuttings, there were significantly negative differences compared to the control in the cuttings planted on the substrata of Peat + Perlite 2:1, of Sand + Peat + Flower soil 1:1:1, and of Peat + Manure 1:1, and significantly positive differences in the cuttings planted on the substratum of Flower soil + Peat 1:1.

Table 3

Rooting areal Pelargonium cuttings 8 cm long

Substratum	R1	R2	R3	The average	%	The difference with the witness	The significance
Sand (witness)	15	14	15	14.66	100	0	0
Peat + Perlite 2:1	15	15	14	14.66	100	0	-
Sand + Peat + Flower soil 1:1:1	13	14	12	13	88.63	-1.66	-
Flower soil + Peat 1:1	12	12	14	12.66	86.36	-2	o
Peat + Manure 1:1	12	13	12	12.33	84.09	-2.33	o

DL 5%=1,70 DL 1%=2,47 DL 0,1%=3,71

In 8-cm long cuttings, there were significantly negative differences compared to the control in the cuttings planted on the substrata of Flower soil + Peat 1:1 and of Peat + Manure 1:1, with no significantly positive differences in the cuttings planted on the other substrata.

Table 4

Rooting areal Pelargonium cuttings 10 cm long

Substratum	R1	R2	R3	The average	%	The difference with the witness	The significance
Sand (witness)	6	4	4	4.66	100	0	0
Peat + Perlite 2:1	3	2	3	2.66	57.14	-2	o
Sand + Peat + Flower soil 1:1:1	9	9	8	8.66	185.71	4	***
Flower soil + Peat 1:1	9	8	10	9	192.85	4.33	***
Peat + Manure 1:1	3	3	3	3	64.28	-1.66	o

DL 5%=1,39 DL 1%=2,03 DL 0,1%=3,05

In 10-cm long cuttings, there were significantly negative differences compared to the control in the cuttings planted on the substrata of Peat + Perlite 2:1 and of Peat + Manure 1:1, and very significantly positive differences in the cuttings planted on the substrata of Sand + Peat + Flower soil 1:1:1 and of Flower soil + Peat 1:1.

Table 5

Number of rooted cuttings depending on length and rooting substratum

Substratum	L=3 cm	L=5 cm	L=8 cm	L=10 cm	**Total** (depending on the substratum)
Sand (witness)	5	23	44	14	86
Peat + Perlite 2:1	4	5	44	8	61
Sand + Peat + Flower soil 1:1:1	20	13	39	26	98
Flower soil + Peat 1:1	5	43	38	27	113
Peat + Manure 1:1	20	11	37	9	77
Total (depending on the length of cuttings)	54	95	202	84	

Conclusions

As shown in Table 5, the largest number of rooted cuttings was in 8-cm long cuttings, while the smallest number of rooted cuttings was in 3-cm long cuttings.

As for the rooting substratum, the largest number of rooted cuttings was on the substratum Flower soil + Peat 1:1, while the smallest one was on the substratum Peat + Perlite 2:1.

Rooting time was between 22-27 days.

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