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STUDIES CONCERNING THE INFLUENCE OF SOME TECHNOLOGICAL CARE UPON THE PRODUCTION, GROWING AND BLOSSOMING OF PELARGONIUM PELTATUM PLANTS

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Abstract

Pelargonium peltatum is one of the most popular flower species used in setting balconies during the warm season. Obtaining a plant bloom as rich and long-term target of the most research in this area. Our research focused on the one hand, the study of influence factors on rooting cuttings rizogen on the other hand, study the influence of fertilization regime on growth and flowering plants. To experience producing rooted cuttings was achieved trifactorial experience, the variation factors: type seedlings (seedlings, cuttings and seedlings tip sprouts fragments), the type of stimulus applied rizogen (without stimulating rizogen and Radistim rizogen) and type rooting substrate (peat fully and perlite and sand, in equal proportions). Experience tracking the type of fertilizer effect on growth and flowering plants included three variants of fertilization (Osmocote integrated mix of land used for planting, fertilizer NPK 7:4:5 and fertilizer NPK 7:5:6). The results showed that the cuttings settling down tip cuttings of shoots had a higher percentage of rooting cuttings compared with fragments of shoots, the best being the rooting substrate made of equal parts peat and perlite. It also was better at rooting cuttings treated with Radistim. Growth and flowering plant fertilizer applied according to the highest values were from plants fertilized with 7:5:6 NPK fertilizer, followed by 7:4:5 NPK fertilizer.

Keywords: *care, cuttings, fertilization, growing, blossoming*

INTRODUCTION

Pelargonium peltatum is one of the most popular flower species used in setting balconies during the warm season [5, 6]. Obtaining a plant bloom as rich and long-term target of the most research in this area [1, 2, 3, 4]. Period of cuttings is very important to obtain high quality plants, the end of August for mother plants and plants for sale in March are considered the best times [2, 4].

Treatment plants with the growth retardations stimulators is a very important link to obtain plants with compact growth and rich blossoming [3, 4].

Fertilization regime on plants is also of major importance in achieving growth and flowering plants with high [5, 6].

In this reason, our research focused on the one hand, the study of influence factors on rooting cuttings rizogen on the other hand, study the influence of fertilization regime on growth and flowering plants.

MATHERIAL AND METHOD

Biological material was the peak cuttings and seedlings sprout shoots of *Pelargonium peltatum* fragments, variety 'Ruby'. Each of the two types of seedlings were distributed into two groups: half of them were treated with Radistim before planting in the rooting substrate and the other half were not treated.

Each of these four types of cuttings were planted on two types of rooting substrate (sand and peat + perlite), resulting in eight experimental variants (Photo 1, Table 1).

Photo 1. The cuttings in the rooting substrate

Table 1. The experimental variants for rooting of cuttings

Variant	Type of cutting	Roots stimulator	Rooting substrate	Percent substrate (%)
V1	shoots	Radistim	sand	100
V2	shoots	Radistim	peat+ perlite	50:50
V3	shoots	-	sand	100
V4	shoots	-	peat+ perlite	50:50
V5	shoots fragments	Radistim	sand	100
V6	shoots fragments	Radistim	peat+ perlite	50:50
V7	shoots fragments	-	sand	100
V8	shoots fragments	-	peat+ perlite	50:50

To assess the quality of rooting, at the cuttings out of the rooting substrate was determined using the root volume of a cylinder with water. Rooted cuttings were planted in culture substrate made of equal parts of ground leaves, ground celery, peat and sand, in pots of 10 cm diameter (Photo 2).

Photo 2. Planting the rooted cuttings in culture substrate

Planting rooted cuttings used had an average length of 7 cm and 3 leaves. At planting, the one we built Osmocote variations in substrate culture in a 10 g to 1 kg substrate for the other versions we made fortnightly fertilization with fertilizers Agro and Vital Green (Table 2).

Table 2. The experimental variants for fertilizer regime of plants

Variant	Fertilizer	NPK ratio
V1	Agro	7:4:5
V2	Green Vital	7:5:6
V3	Osmocote	15:15:15

Observations were taken into account: the number of leaves per plant, number of shoots, number of inflorescences per plant, flower stem length, flower diameter, number of flower buds, number of open flowers.

RESULTS AND DISCUSSIONS

From Table 3, that settling down was superior to variants that had the rooting substrate mixture of peat + perlite variants compared with the rooting substrate was the sand, regardless of type of cuttings and the fact that they have or not treated with rooting stimulus (photo 3 and 4).

Table 3. The variation of percent of cuttings rooted and the roots volume

Variant	Percent of rooted cuttings	Roots volume (cmc)
V1	70,25 %	2,25
V2	92,50 %	3,50
V3	65,75 %	2,25
V4	70,00 %	3,00
V5	65,75 %	2,00
V6	80,25 %	2,50
V7	62,75 %	2,25
V8	74, 25 %	2,75

Photo 3. The rooted cuttings in sand substrate

Photo 4. The rooted cuttings in peat + perlite substrate

The shoot tip cuttings treated with Radistim had a higher rooting percentage than cuttings sprout fragments untreated with Radistim. This hierarchy of values remains sin for root volume.

Analyzing data from Table 4 is found that the evolution of plants after planting rooted cuttings is different depending on the type of fertilizer applied (Photo 5).

Table 4. The variation of vegetative growing of plants

Time after planting of rooted cuttings	Variant V1 of fertilizer		Variant V2 of fertilizer		Variant V3 of fertilizer	
	Length of shoots (cm)	Leav. no.	Length of shoots (cm)	Leav. no.	Length of shoots (cm)	Leav. no.
one month	7,2	3,1	8,0	3,6	7,5	3,5
wo months	8,0	4,6	8,8	4,8	8,2	4,5
hree months	8,8	5,4	9,5	5,7	8,5	5,6
our months	9,6	6,5	10,2	6,9	9,2	6,4
ive months	10,0	7,2	10,8	8,5	9,8	7,0
ix months	10,7	8,6	11,6	9,6	10,7	7,8
even onths	11,5	9,2	12,4	10,0	11,3	8,5
ight months	12,3	10,5	13,2	11,2	11,9	9,7
ine months	13,5	11,0	14,0	12,0	12,8	10,5

Photo 5. The aspect of experience after two months of planting of rooted cuttings in pots

Thus, in the number of leaves is found that one month after planting rooted cuttings in pots it varies between 3.1 to version V1 (Agro fertilizer N7: P4: K5) and 3.6 V version 2 (Vital Green fertilizer N7: P5: K6).

At the end of the heating season, before the introduction of plants in the rest relatively correlated with the intended fertilization, number of leaves varies from 10.5 to version V 3 (Osmocote fertilizer N15: P15: K15) and 12.0 V version 2 (Vital Green fertilizer N7: P5: K6).

Average length of shoots range from 7.2 (version V 1 fertilization) and 8.0 (version V 2 fertilization) at one month after planting rooted cuttings in pots and 11.0 (fertilization variant V 1) and 12.8 (version V 3 fertilization) to nine months after planting rooted cuttings in pots.

Analyzing correlations between the two elements of vegetative growth - length of shoots and number of leaves - it is found that for all three linear correlations fertilization, direct and very strong between the length of shoots and number of leaves (Fig. 1, 2, 3) .

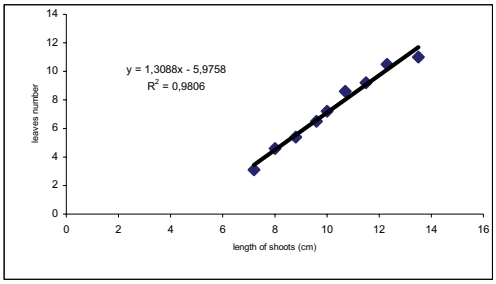

Fig. 1. The correlation between the length of shoots and leaves number for variant V 1 of fertilizer

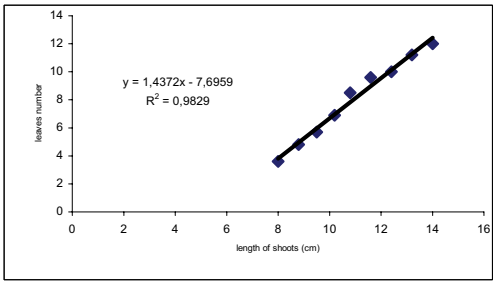

Fig. 2. The correlation between the length of shoots and leaves number for variant V 2 of fertilizer

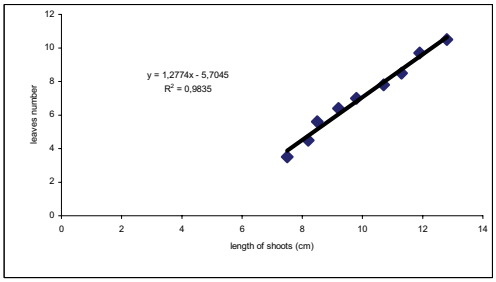

Fig. 3. The correlation between the length of shoots and leaves number for variant V 3 of fertilizer

In terms of flowering plants found in Table 5, the variant V2 is the earliest in terms of onset of flowering and presents the highest values of elements flowering.

Table 5. The variation of quality of plants flowering

Time after planting of rooted cuttings	Variant V1 of fertilizer			Variant V2 of fertilizer			Variant V3 of fertilizer		
	No. of fl. stem	Leng. of fl. stem (cm)	Infl. diam. (cm)	No. of fl. stem	Leng. of fl. stem (cm)	Infl. diam. (cm)	No. of fl. stem	Leng. of fl. stem (cm)	Infl. diam. (cm)
two months	0,0	0,0	0,0	0,3	5,2	5,0	0,0	0,0	0,0
three months	1,0	5,3	4,8	1,0	5,4	5,3	1,0	5,0	4,0
four months	1,3	6,0	5,2	1,4	6,5	6,0	1,2	6,2	4,8
five months	1,6	6,8	5,9	1,7	7,2	6,5	1,5	7,8	5,4
six months	1,6	7,3	6,3	1,8	8,6	7,1	1,4	9,0	5,0
seven onths	1,7	7,6	6,4	2,0	8,6	7,0	1,4	8,5	5,3
eight months	1,4	6,2	5,7	1,6	7,8	6,3	1,0	7,6	5,0
nine months	1,0	5,1	5,0	1,2	6,2	5,2	0,8	6,0	4,6

Thus, since the second month after planting rooted cuttings in pots this variant is distinguished by 0.3 inflorescences per plant with flower stem length of 5.2 cm and a diameter of 5 cm of the flower, the only one which presents flowers at this time. For version V1, bloom maximum is reached after seven months from planting rooted cuttings in pots (1.7 inflorescences per plant with flower stem length of 7.6 cm and 6.4 cm diameter flower) - Photo 6.

Photo 6. The flowered plants from variant V 1 in the moment of maximum blossoming

All seven months after planting rooted cuttings in pots and the peak flowering plants for fertilization variant V 2 (2.0 inflorescences per plant with flower stem length of 8.6 cm and 7.0 cm diameter flower) - Photo 7.

Photo 7. The flowered plants from variant V 2 in the moment of maximum blossoming

For plants fertilization variant V 3 but maximum flowering is reached after five months from planting rooted cuttings in pots (1.5 inflorescences per plant with flower stem length of 7.8 cm and 5.4 cm diameter flower) - Photo 8. These results show that Osmocote fertilizer applied at planting cuttings rooted determine substrate brought forward the timing of flowering within two months, even if this time is low volume as compared with other variants of fertilization.

Within each fertilization variants found that for every element of flowering - the number of flower stems per plant, flower stem length and flower diameter - no linear correlation, direct and very strong (Fig. 4, 5, 6).

Photo 8. The flowered plants from variant V 3 in the moment of maximum blossoming

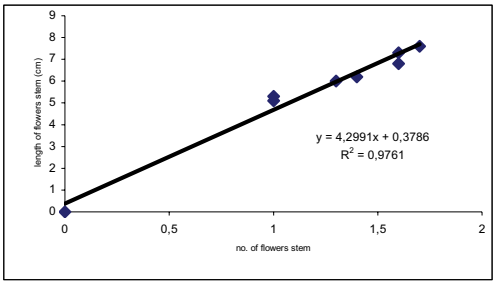

Fig. 4. The correlation between the number of flowers stem and length of flowers stem for variant V 1 of fertilizer

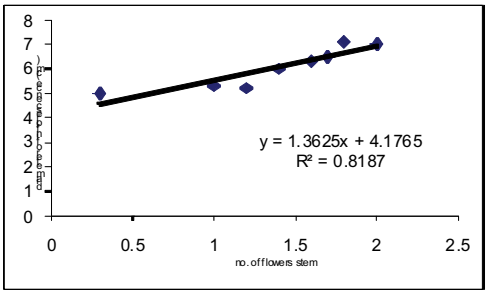

Fig. 5. The correlation between the number of flowers stem and diameter of inflorescence for variant V 2 of fertilizer

Analyzing correlations between the number of inflorescences per plant and number of flower buds and open flowers is found that linear correlations exist, direct and in between each of these elements (Fig. 7, 8, 9).

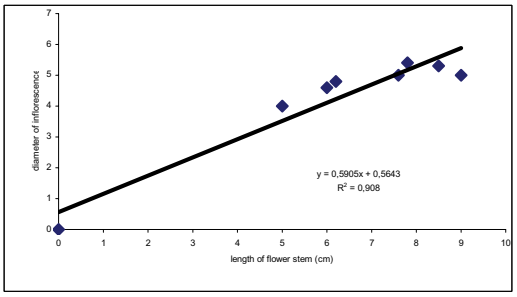

Fig. 6. The correlation between the length of stem flowers and diameter of inflorescence for variant V 3 of fertilizer

In the number of flowers in bloom can be seen from Table 6, the fertilization variant V 2 presents the highest values of total number of flowers - flower buds or open flowers throughout the observations.

Table 6. The variation and dynamical of number of florwers in inflorescence

Time after planting of rooted cuttings	Variant V1 of fertilizer		Variant V2 of fertilizer		Variant V3 of fertilizer	
	No. of bud flowers	No. of opened flowers	No. of bud flowers	No. of opened flowers	No. of bud flowers	No. of opened flowers
two months	0,0	0,0	4,5	3,2	0,0	0,0
three months	4,8	5,6	6,1	5,9	4,3	5,4
four months	6,4	7,5	7,0	7,6	5,4	7,2
five months	7,2	8,6	8,0	8,7	6,2	8,0
six months	7,3	8,8	8,1	9,0	6,5	8,2
seven onths	7,2	8,0	8,0	8,9	6,0	7,9
eight months	6,3	7,4	7,3	8,0	5,4	7,0
nine months	5,0	6,0	5,1	6,7	4,3	6,1

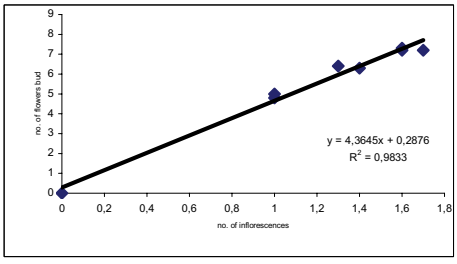

Fig. 7. The correlation between the number of inflorescence per plant and the number of flowers bud in inflorescence for variant V 1 of fertilizer

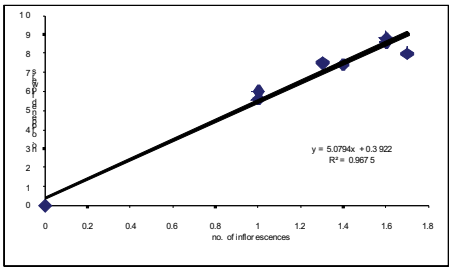

Fig. 8. The correlation between the number of inflorescence per plant and the number of opened flowers in inflorescence for variant V 1 of fertilizer

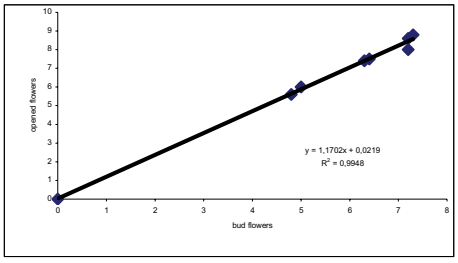

Fig. 9. The correlation between the number of Bud flowers and the number of opened flowers in inflorescence for variant V 1 of fertilizer

CONCLUSSIONS

Obtaining a maximum rooting percentage and a higher quality of rooting cuttings of *Pelargonium peltatum* are possible when using tip cuttings of cuttings treated with Radistim and planted in a rooting substrate composed of equal parts peat and perlite.

Obtain plants with high vegetative growth is possible when a product is used as fertilizer with NPK ratio in favor of nitrogen and potassium (7:5:6 - Vital Green, followed closely by the ratio 7:4:5 product - Agro) .

Use a fertilizer with NPK ratio in favor of nitrogen and potassium determined and the highest values in terms of quantitative and qualitative elements of the bloom, the best results for this question was obtained from plants fertilized with fertilizer N 7: W 5: K 6.

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MISCELLANEOUS


EX·TERRA·AVRVM