RESEARCHES ON THE INFLUENCE OF THE PERIOD OF PRELEVATION ON THE PROPAGATION THROUGH CUTTINGS OF SUCCULENT PLANTS

CERCETĂRI PRIVIND ÎNFLUENŢA EPOCII DE PRELEVARE A BUTAŞILOR ASUPRA ÎNMULŢIRII PLANTELOR FLORICOLE SUCULENTE

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Abstract. *Propagation through cuttings is one of the most used methods of propagation of the succulent flower plants. In this work there are presented the results of the observations concerning the influence of the sampling period of cuttings (of shoots and leaves) on the multiplication of nine species of succulent plants .The observations and the measurements taken in three different period (November, April, August) aimed the rooting as well the evolution of increasing the rooted cuttings (at 30 and respectively 60 days from their planting in pots). From the researches made we observed that the period of sampling the cuttings influences the time of rooting (to all species for both types of cuttings), the percentage of rooting (for cuttings of leaves), but also the growth dynamic, the positive results obtaining on spring (April) and summer (August).*
Key words: succulents, propagation, cuttings, period

Rezumat. *Înmulţirea prin butasi este una din cele mai utilizate metode de inmultire a plantelor floricole suculente.În lucrarea de faţă sunt prezentate rezultatele observaţiilor privind influenţa epocii de prelevare a butaşilor (de lăstari şi frunze) asupra înmulţirii a nouă specii de plante floricole suculente. Observaţiile si măsurătorile efectuate în trei epoci diferite (noiembrie,aprilie şi august) au vizat atât procesul de inradacinare cât si evoluţia cresterii butaşilor înrădăcinaţi (la 30 respectiv 60 de zile de la plantarea la ghiveci). În urma cerceţărilor efectuate s-a observat că perioada de prelevare a butasilor influentează timpul de înrădăcinare (la toate speciile şi pentru ambele tipuri de butaşi), procentul de înrădăcinare (pentru butaşii de frunze), dar şi dinamica cresterii, rezultate pozitive obţinându-se primăvara (aprilie) şi vara (august).*
Cuvinte cheie: suculente, înmulţire, butaşi, epoci

INTRODUCTION

At present, 90% from the succulent flower plants commercialized are propagated in the profile greenhouses, specially on vegetative way (Grovers H.N. and collab. 2004).

From the methods of vegetative propagation the most effective is the propagation through cuttings, this representing a series of advantages, from the technical and economical point of view (Anton Doina, 2003). The vegetative organs used in cutting propagation differs, depending on the species, but the most frequently are used the cuttings of shoots and leaves.

The studies carried on demonstrate the fact that the propagation by cuttings for the succulent flower plants from the interior can be achieved throughout the year (Stephenson R., 2002).

The purpose of this study was represented by establishing the influence of the period of cuttings prelevation (shoots and leaves) on the rooting and the dynamic of plants growing (during 60 days) of nine species of succulent flower plants and the prominence of existing differences between different species.

MATERIAL AND METHODS

The researches expand in the greenhouse of the Floriculture discipline at the Faculty of Horticulture of Craiova.The biological material used was represented by cuttings that bellonged to nine species of succulent flower plants (*Crassula lycopodyoides, Crassula rupestris ssp. marnieriana, Sedum linearum, Sedum mexicanum, Sedum morganianum, Sedum pachyphyllum, Senecio kleiniformis, Senecio piramidatum, Senecio rowleyanu*s).

For establishing the influence of the period of cuttings prelevation upon the rooting cuttings they were reaped in three different periods (period I-November 2008, period II-April 2009, period III- August 2009). For the rooted cuttings it was used a standard substratum for the cactaceae and other succulent plants, employing containers of small dimensions with a diameter of 6 - 8 cm. After a week of planting the cuttings we carried out the observations concerning the formation of radicular system, which were performed regularly within two-three days, for catching out the rooting moment for each species (time and percentage of rooting). For the evaluation of the dynamics growth and development of rooted plants there were made some initial measurements after the planting into pots and afterwards every 30 and 60 days.

RESULTS AND DISCUSSIONS

The observations performed on rooting the cuttings of shoots have shown that the period of rooting was considerably lower for the cuttings sampled in April (period 2) and August (period 3), in comparison with November (period 1).

In period 2, the duration of root cuttings, was less than nine days (*Senecio kleiniformis, Senecio piramidatum*) until 27 days (*Crassula rupestris ssp. marnieriana*), compared with period 2. Between period 1 and 3 the differences were of six days (*Senecio kleiniformis, Senecio piramidatum*) until twenty-seven days (*Senecio rowleyanus*), in favour of period 3. For the periods 2 and 3, the rooting time was the same (*Crassula lycopodyoides, Sedum mexicanum*) or it varied with three days (to *Senecio kleiniformis and Senecio piramidatum, Senecio rowleyanus*) up to six days (to *Crassula rupestris ssp. marnieriana, Sedum pachyphyllum),* alternately for a period or other (fig.1). The rooting percentage for the cuttings of shoots was high (90%-100%), regardless the sampling period, for the species studied.

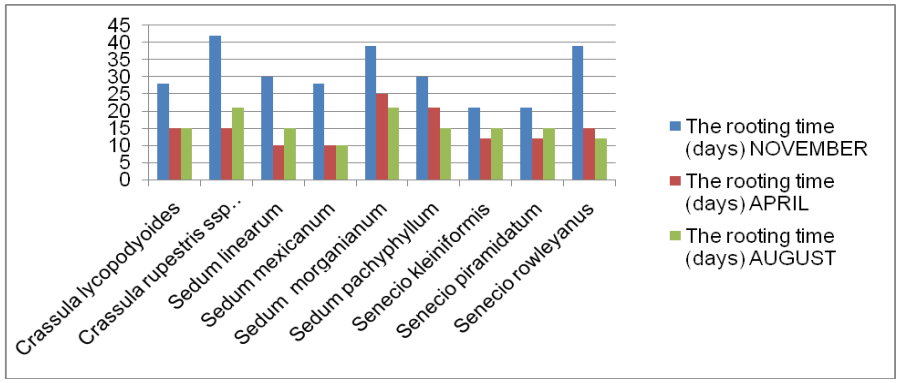

Fig.1. The rooting duration of the shoots cuttings

The dynamic of growing was also influenced by the period of cuttings sampling. The observations made at 30, respectively 60 days show that the speed of growing was twice bigger in the period 2 and period 3, for *Crassula lycopodyoides, Sedum linearum, Sedum mexicanum and Sedum pachyphylum*

For example, to *Crassula lycopodyoides*, the measurements carried on at 60 days indicates a growing of 0,9 cm in period 1, in comparison with 2,35 cm in period 2 and 2,2 cm in period 3.

Smaller differences registered to *Crassula rupestris ssp. marnieriana, Sedum morganianum* and *Senecio rowleyanus*. For *Senecio kleniformis* and *Senecio piramidatum* the evolution of cuttings after rooting were alike, regardless the period of prelevation (fig. 2,3,4). A better evolution of the cuttings of shoots planted in August, in comparison with April, have shown *Sedum mexicanum* and *Senecio piramidatum*. They root rapidly and have a fast grow, regardless of the period they prelevation, the cuttings of shoots at *Senecio kleiniformis and Senecio piramidatum;* root more difficultly and grow slowly the cuttings of shoots of *Crassula rupestris ssp. marnieriana, Sedum morganianum, Sedum pachyphyllum and Senecio rowleyanus* (fig. 2,3,4).

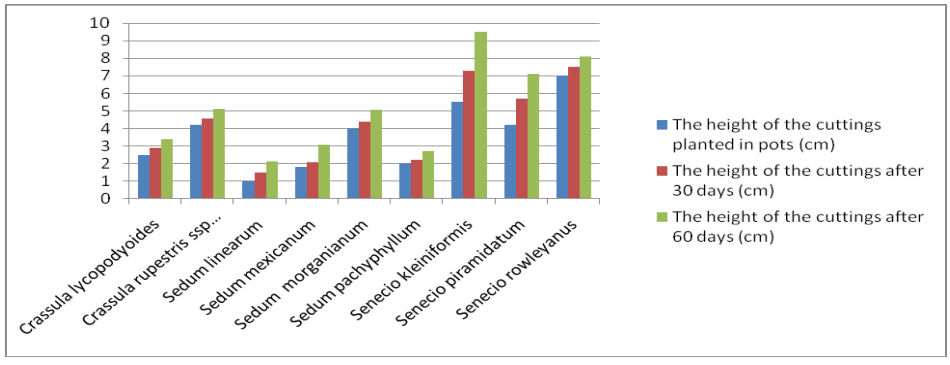

Fig.2. The growth dynamic of the shoots cuttings - NOVEMBER

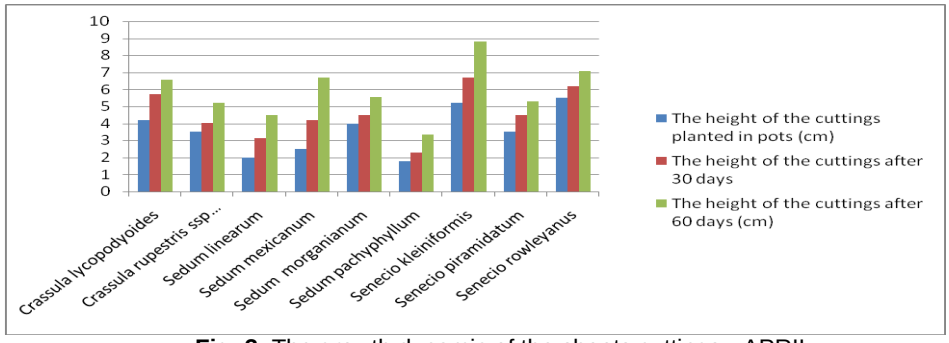

Fig. 3. The growth dynamic of the shoots cuttings - APRIL

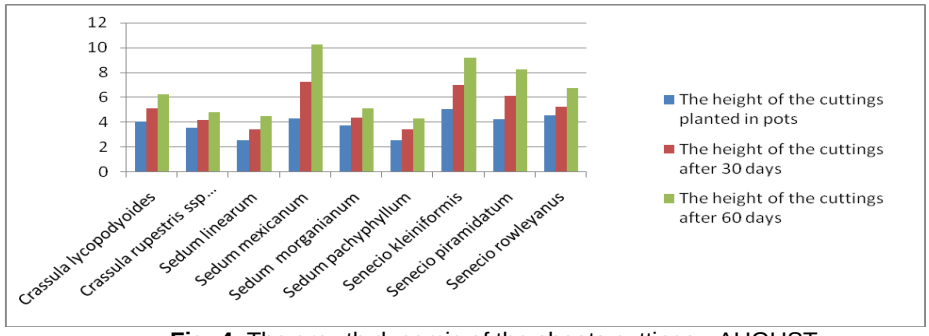

Fig. 4. The growth dynamic of the shoots cuttings - AUGUST

The rooting period for the cuttings of leaves was bigger in comparison with that of cuttings of shoots, but the reference to the three period is alike(fig. 5)

The cuttings of leaves of *Crassula lycopodyoides and Sedum mexicanum* did not root, and after their planting in the pots, their evolution was satisfying only to the species *Sedum morganianum*, *Sedum pachyphyllum and Senecio rowleyanus.*

The rooting percentage was small, varying, in period 1, from 10% (*Sedum linearum*) to 60% (*Senecio rowleyanus*), and in periods 2 and 3 between 20% (*Sedum linearum*) and 80% (*Sedum pachyphyllum*) (fig 6).

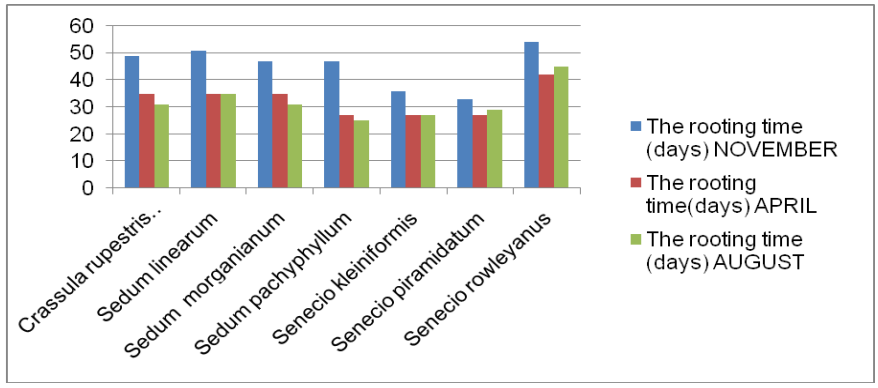

Fig.5. The rooting duration of the leaves cuttings

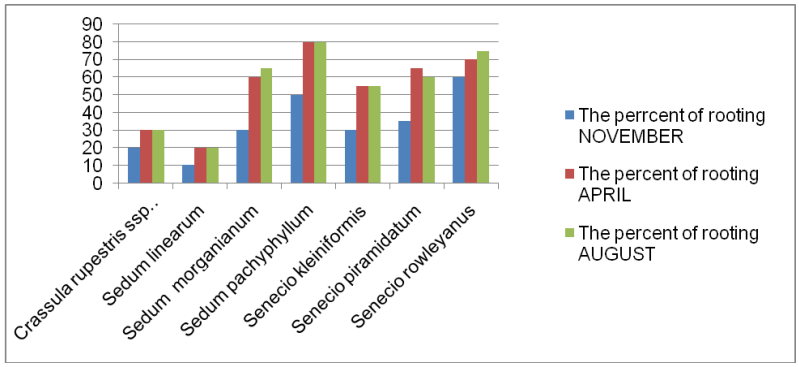

Fig. 6. The rooting percentage of the leaves cuttings

The dynamic of plants growth for the three species was slow, values slowly higher we can observe for the plantlets that come from leaves that are put to rooting in periods 2 and 3.

At one year, the plantlets of *Sedum morganianum* measures 2,05 cm (period 1), 2,2 cm (period 2) and 2,25 cm (period 3), those from *Sedum pachyphyllum* 1,82cm (period 1), 1,89 cm (period 2), 1,82 cm (period 3), and those from *Senecio rowleyanus* 1,34 cm (period 1), 1,46 cm (period 2), 1,4 cm (period 3) (fig. 7,8,9).

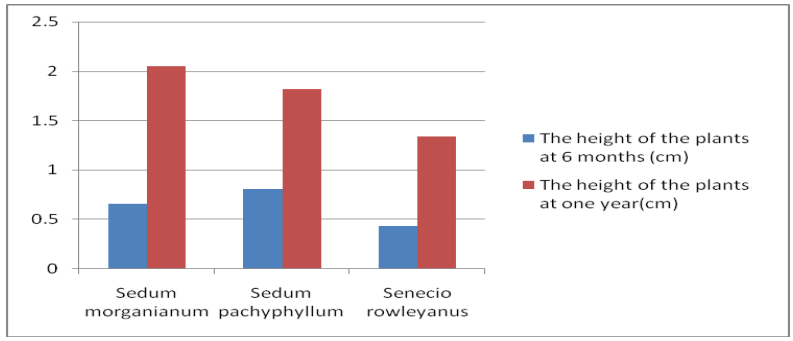

Fig.7- The growth dynamic of the leaves cuttings – NOVEMBER

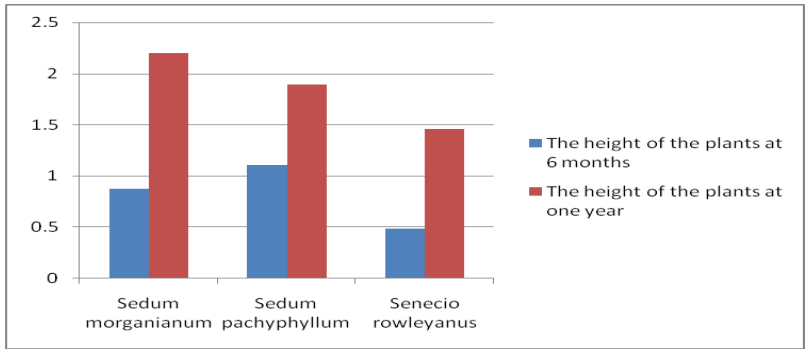

Fig. 8. The growth dynamic of the leaves cuttings – APRIL

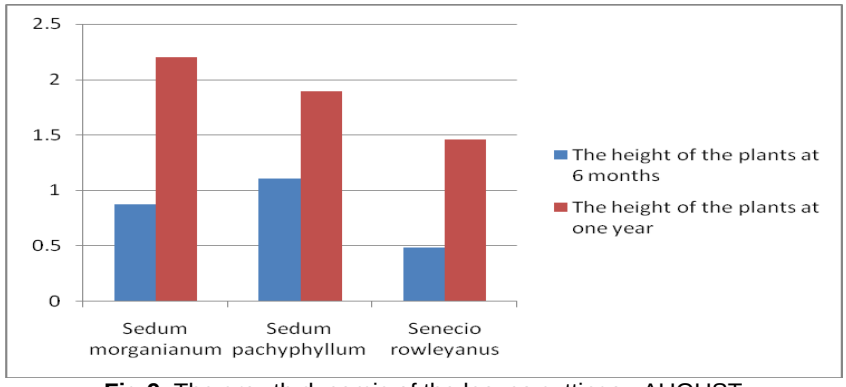

Fig.9. The growth dynamic of the leaves cuttings– AUGUST

CONCLUSIONS

1. Propagation by cuttings at succulent plants can be carried out all along the year, but with different efficiency, the periods April and August being a lot more favourable as for cuttings rooting but also for the subsequent plants evolution.

2. Cuttings of shoots at *Senecio kleiniformis* and *Senecio piramidatum* root easily and have a fast growth, regardless the period of prelevation .

3. Have a heavier rooting and a slow growth the cuttings of shoots at *Crassula rupestris ssp. marnieriana, Sedum morganianum, Senecio pachyphyllum* and *Senecio rowleyanus.*

4. The small percentaj of rooting and the slow growth of plants does not recommend the propagation by cuttings of leaves of the species studied for obtaining merchantable plants, but it can be used as an alternative method when there is not enough vegetal material for propagation by cuttings.

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