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Aspects Regarding the Production of Planting Material at Some Ornamental Species from Spontaneous Flora

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Abstract. The paper presents data regarding the possibility of generative multiplication of some ornamental species provided from the Dobrogea spontaneous flora (*Allium flavum* L., *Dianthus nardiformis* L., *Silene compacta* L., *Teucrium polium* L. and *Alyssum murale* L.). Seeds were gathered in 2010 from the plants in their own natural habitat and establishment of crops was made with seedling produced in glasshouse: transplanting and without transplanting. Germination varied between 16-76%, maximum values being recorded at *Alyssum murale*, and the minimum ones at *Teucrium polium*. Subsequent determinations and observations done on obtained biologic material and on the established crops with it lead to the conclusion that great majority of the species could be used as transplanting seedling and also as seedling without transplanting, function of the growers possibilities and the usage way of plants. Exceptions were species *Dianthus nardiformis*, at which is not recommended the transplanting of the seedling (due to the sensibility of root system) and species *Silene compacta* at which, on contrary, is preferred the variant of transplanting the seedling, having in view the small size of the seeds.

Keywords: spontaneous flora, ornamental value, Dobrogea, *Allium, Dianthus*, *Silene, Teucrium, Alyssum,* seed germination.

INTRODUCTION

Introduction in crop of some plants with those features could be a gain not only for diversify the assortment of ornamental plants but also for enrichment of germplasm fund and preserving the biodiversity (Halevy, 2003; Heywood, 2003; Moreno de las Heras *et al.*, 2008).

Region between Danube and the Black Sea, Dobrogea include on the territory of Romania two counties: Constanţa and Tulcea. Novel relief and pedo-climatic particularities specific to this area contribute to a special floral diversity and richness, some species of plants pointing out by special ornamental qualities.

The present paper propose to continue a series of studies which have in view as a main target to identify and to capitalize some species with ornamental features from spontaneous flora from South and South-East of Romania (Chelariu *et al.*, 2010; Draghia *et al.*, 2010). In studies conducted to date, in Dobrogea area were identified and collected several species of ornamental interest: *Dianthus nardiformis***;** *Campanula romanica***;** *Thymus zygioides; Achilea coarctata; Allium flavum; Allium saxatile; Silene compacta; Silene supina; Echinops ruthenicus; Globularia punctate; Statice latifolia*; *Alyssum murale; Jasminum fruticans; Teucrium polium, Sedum urvillei; Sempervivum ruthenicus; Sedum maximum.*

In this paper research aimed to determine the multiplication capacity, in crop conditions quite different from the natural habitat, to next species: *Allium flavum* L., *Dianthus nardiformis* L., *Silene compacta* L., *Teucrium polium* L. şi *Alyssum murale* L.

The studied species are decorative especially through flowers but also interested in what the leaf and port look like.

MATERIALS AND METHODS

Experiences took place on the didactic field of Floriculture Discipline from USAMV Iasi. As multiplication material were used seeds gathered in 2010 from five species of plants with ornamental features identified in Dobrogea (in localities Turcoaia, Cheile Dobrogei and Greci): *Allium flavum* L., *Dianthus nardiformis* L., *Silene compacta* L., *Teucrium polium* L. and *Alyssum murale* L.

Sowing was made in glasshouse, in March, and crop establishment was realised in field with transplanting seedling of (V_1), and also with seedling without transplanting (V_2).

Effectuated determinations and measurements focused on: germination percentage of seeds, growing rhythm of plants and their height. The obtained results for the two variants were compared and statistical interpreted, to be able to establish the optimal modalities for producing planting material to establish the crops for the studied species.

***Allium flavum* L.** is a perennial geophyta plant, from *Alliaceae* family, with the underground organ tunicate bulb. Have low height (25 - 30 cm) and decorate by flowers with a nice fragrance, coloured in yellow, dispose in planed spherical inflorescences (Ciocârlan, 2000; Fritsch, Friesen, 2002). Seeds are small-sized, elongated, slightly flattened and tegument black and dull. Seeds were gathered from plants identified in Turcoaia village, Tulcea County.

***Alyssum murale* L.**, *Brassicaceae* family, is a herbaceous plant, annual, biennial or perennial, with erect strain, ramified and with a high between 25 - 70 cm (Ciocârlan, 2000). Decorate by the aspect of compact bush and by the dense inflorescences (compound corymb), gold yellow. Seed is plane by around 3 mm length, and all around wing, with wing of almost ¼ - ½ from seed width. Plants from which seeds were gathered were identified in Cheile Dobrogei, Constanţa County.

***Dianthus nardiformis* L.,** *Caryophyllaceae* family, is a perennial plant, with an aspect of small bush, of around 10 – 15 cm, having numerous straight strains, at the top being dichotomic ramified and with 2 - 3 closed flowers (Ciocârlan, 2000). Decorate through flowers of light purple or lilac-pink. Seeds are small, planed, black colour. Characteristic for *Dianthus nardiformis* is the fact that from the main root numerous underground thin runners are formed, without leaf, with a length of 4 - 5 cm, which could be used also for vegetative multiplication. Natural habit of the plants from which seeds were gathered is represented by Greci village from Constanţa County.

***Silene compacta* L.,** *Caryophyllaceae* family, is a perennial plant with erect strain, height of 20 - 40 cm (Ciocârlan, 2000). Decorate through ramified inflorescences, compact, with an aspect of capitulum and with pink flowers. Seeds are very small, on the dorsal side are streaked and on the lateral side are plane.

Teucrium polium L. is part of *Labiatae* family and it is perennial specie, with white strains, height of 10 - 40 cm, very ramified at base (Ciocârlan, 2000). Decorate through port and white-yellow flowers, grouped in globular and dense inflorescences. Also the whole plant has a pleasant fragrance. For generative multiplication are used the fruits, represented by brown nucule, with cross-linked ornamentation.

RESULTS AND DISCUSSIONS

The results regarding seed germination are presented in Fig. 1. Percentage of germinated seeds was between 16 and 76% maximum values were recorded at *Alyssum murale*, and the minimum ones at *Teucrium polium.* Could be remarked a low germination

capacity at *Allium flavum* (16%), while *Dianthus nardiformis* and *Silene compacta* recorded intermediate values (35, respectively 54%).

The differences between specie appeared also on the necessary duration for plants' emergence. So at *Alyssum murale*, *Dianthus nardiformis* and *Silene compacta* emergence start at three days after sowing, at *Teucrium polium* after 5 days, and at *Allium flavum* after 10 days (Fig. 2). The necessary time for a complete emergence (calculated from sowing) was of 8 days at *Silene compacta*, 13 days at *Alyssum murale*, *Dianthus nardiformis* şi *Teucrium polium* and 20 days at *Allium flavum* (Fig. 2).

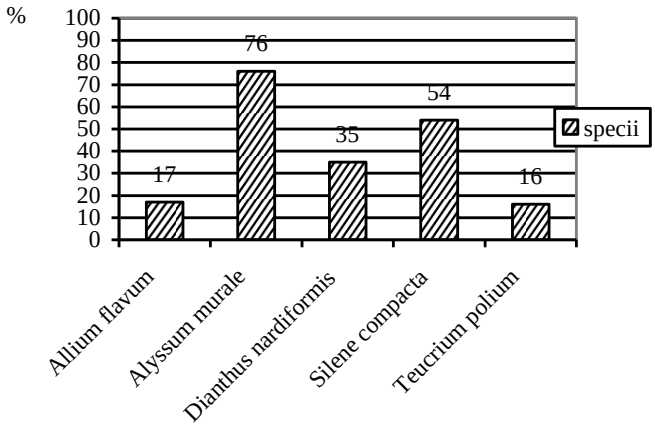

Fig. 1. Germination percentage

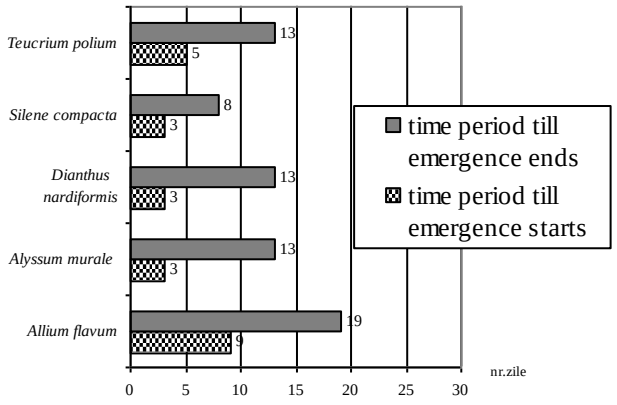

Fig. 2. Time period for emergence start and complete emergence (nr. of days from sowing)

In the next stage, with the plants obtained from seeds were establish two variants at each specie, respectively the variant with transplanting plants and the variant with plants without transplanting. Exception was *Silene compacta* at which the small seeds and dense sowings impose that all the plants to be transplanting and *Dianthus nardiformis* at which transplanting plants didn't resist to planting.

The growing dynamics was different for each specie and variant.

So at *Allium flavum*, *Alyssum murale* and *Teucrium polium* could be observe that the growing rhythm is close on the two variants. The increases recorded on a time period of four months (May – August) were of 30 - 31cm at *Allium flavum* (Fig. 3), 24 - 26 cm at *Alyssum murale* (Fig. 4) and 26 - 27cm at *Teucrium polium* (Fig. 5).

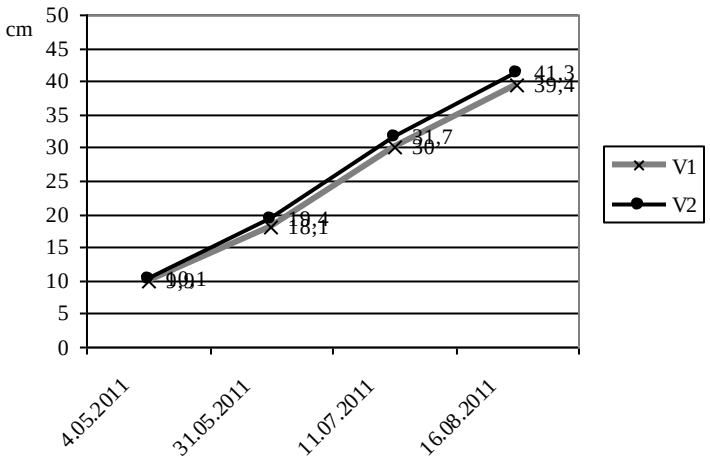

Fig. 3. Growing dynamics at plants of *Allium flavum*

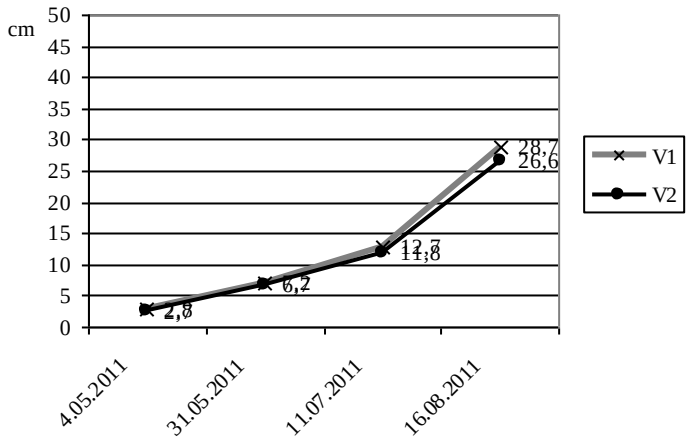

Fig. 4. Growing dynamics at plants of *Alyssum murale*

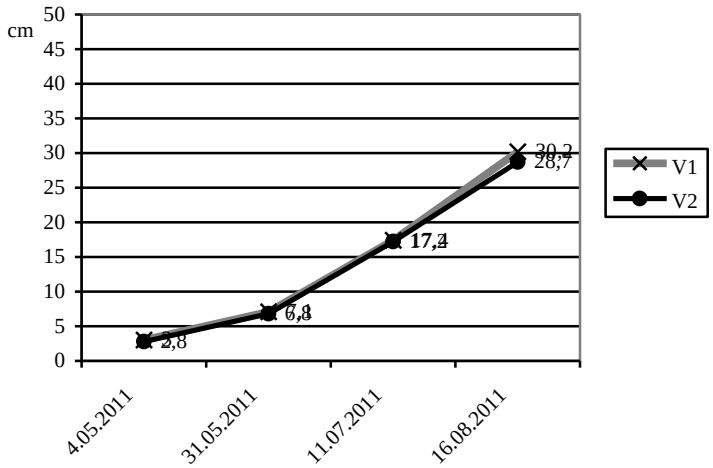

Fig. 5. Growing dynamics at plants of *Teucrium polium*

At *Dianthus nardiformis* crop realised only with seedlings without transplanting, plants grow in the analysed period was around 9 cm (Fig. 6).

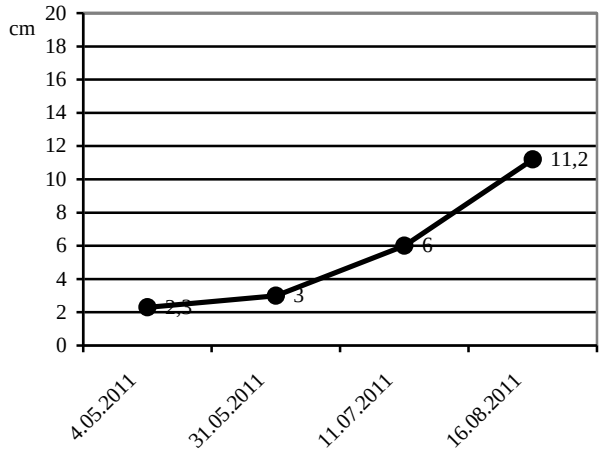

Fig. 6. Growing dynamics at plants of *Dianthus nardiformis*

At *Silene compacta*, characterized by a slow rhythm of growing, the increases were low, not over-passing 2.5 cm in the analysed period (Fig. 7).

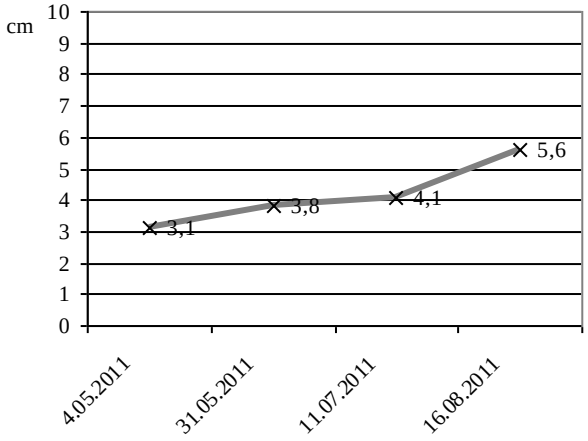

Fig. 7. Growing dynamics at plants of *Silene compacta*

Tab. 1

Results of plant growth

Species	Variant	Average length cm	% face to control	Differences	Signification
Allium flavum DL 5%= 1.3 cm DL 1%= 3.0 cm DL 0.1%= 9.7 cm	V_1	39.4	95.40	-1.9	0
	V_2	41.3	100	0.0	Control
Alyssum murale DL 5%= 1.5 cm DL 1%= 3.4 cm DL 0.1%= 10.9 cm	V_1	28.7	107.89	2.1	x
	V_2	26.6	100	0.0	Control
Teucrium polium DL 5%= 1.1 cm DL 1%= 2.6 cm DL 0.1%= 8.4 cm	V_1	30.2	105.23	1.5	x
	V_2	28.7	100	0.0	Control

Data regarding strains' length (recorded at the last observations in August) were statistical processed at species at which the crops were established with seedlings with and without transplanting (*Allium flavum, Alyssum murale, Teucrium polium*). Even, from statistical point of view, the difference between transplanting variant and the variant without transplanting (control) is significant (positive at *Alyssum murale* and *Teucrium polium*, respectively negative at *Allium flavum*), relative small differences recommend in practice the both variants (Tab. 1).

CONCLUSIONS

Multiplication through seeds could be applied at all the studied species, but at species with a low germination percentage (*Allium flavum* and *Teucrium polium*) could be replace with vegetative methods which have a higher performance at multiplication (eg. through bulbs at *Allium flavum*) or must impose the identification of the possibilities which will favour seeds' germination by special treatments.

At *Allium flavum, Alyssum murale* and *Teucrium polium* could be used both transplanting seedling and also seedling without transplanting, function of the possibilities of the plant breeder and the usage way of plants.

For *Dianthus nardiformis* it is recommended seedling without transplanting, due to the plants' sensibility at planting.

At *Silene compacta* is recommended to transplanting the seedlings due to the small dimensions of the seeds and low growing rhythm of plants.

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