

# STUDY REGARDING THE INFLUENCE OF GROWING AND IRRIGATION CONDITIONS OVER DIFFERENT ORNAMENTAL FEATURES OF SOME TAXA OF WILD PLANTS AT VEGETABLE RESEARCH-DEVELOPMENT STATION BACAU

## STUDIUL INFLUENȚEI UNOR CONDIȚII DE CREȘTERE ȘI IRIGARE ASUPRA UNOR CARACTERE ORNAMENTALE ALE UNOR TAXONI SPONTANI LA STAȚIUNEA DE CERCETARE-DEZVOLTARE PENTRU LEGUMICULTURĂ BACĂU

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**Abstract.** The researches and experimentations were accomplished at VRDS Bacau during 2011 year. The results obtained at *Allium ursinum* demonstrate that the plant can be cultivated both in open field and in shadow, but when is cultivated in open field different morphological modifications may appear: the plants are smaller, the color of leaves is lighter and the decorative effect is smaller. At *Artemisia annua*, the variant cultivated in not-irrigation conditions, due to its smaller port and the lighter color of leaves is more decorative, framing better in the flower species associations from parks and gardens. At *Anthemis tinctoria*, the variant cultivated in irrigation conditions, due to its larger bush and richness in branches, was more decorative than the other one. At *Malva sylvestris*, the variant cultivated in irrigation conditions, the leaves are darker colored, the flowers are larger and more numerous, thus being more decorative.

**Key words:** culture, field, effect, decorative, flowers, leaves

**Rezumat.** Cercetările și experimentările s-au efectuat la SCDL Bacău în anul 2011. Rezultatele obținute la *Allium ursinum* arată că planta se poate cultiva atât în plin câmp cât și la umbră, dar în plin câmp apar modificări morfologice, plantele sunt mai mici, culoarea frunzelor este mai deschisă, iar efectul decorativ este mai mic. La *Artemisia annua*, varianta cultivată în condiții de neirigare datorită portului mai mic și culorii frunzelor mai deschise este mult mai decorativă, încadrându-se mai bine în asociații de specii florifere din parcuri și grădini. La *Anthemis tinctoria*, varianta cultivată în condiții de irigare, datorită tufei mai mari și mai bogate în ramificații a fost mai decorativă. La varianta de *Malva sylvestris* cultivată în condiții de irigare, frunzele sunt de culoare mai închisă, florile mai multe și mai mari, fiind mai decorativă.

**Cuvinte cheie:** cultură, câmp, efect decorativ, flori, frunze

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## INTRODUCTION

Numerous scientists are preoccupied with finding the way and means through which the biodiversity of spontaneous flora can be conserved and utilized as source of new plants for horticultural sector, especially the ornamental one (Rowley and Edwards, 1997, Skinner and Stebbins, 1997, Tibor, 1997, Wolberg, and Reinard, 1997). Primack R. și Drayton B. (1997) recommends, in “The experimental ecology of reintroduction“, some practical methods for the re-introduction of different plant species. Other studies demonstrate that the populations of spontaneous species, with decorative effect can be adapted to live in different geographic areas (Primack, 1996). The native plants with decorative effect are preferable because they have a larger adaptability to local and regional conditions. Thus, the durability of regional genetic resources with decorative effect can be increased, the species being easy to cultivate and maintained during a larger period of time.

Regarding the potential of cultivation of spontaneous ornamental species from the Romanian flora different studies in various geographic areas were accomplished. Floristic researches were developed in Moldavia area: districts Vrancea, Vaslui, Neamt, Bacau, Botosani (Creola Brezeanu et al., 2010; Brezeanu et al., 2010). At all these studies on add the present paper that deals with the influence of different cultivation methods over the decorative effect of some spontaneous species.

## MATERIAL AND METHOD

The experimentations accomplished in the field aimed toward the determination of influence of cultivation conditions as well as of irrigation over the ornamental characters of taxons cultivated at V.R.D.S. Bacau. The researches and experimentations were accomplished at VRDS Bacau during 2011 year.

The following species were studied: *Anthemis tinctoria*, *Antemis annua*, *Malva sylvestris* and *Allium ursinum*.

Thus, for the identification of morphological modifications of studied species, with influence over the decorative value and adaptability to environment, the following cultivation variants were investigated (table 1).

Table 1

**Variants studied at VRDS Bacău during 2011 year**

Nr.	Variant/specie	Specification
1.	V1 - <i>Allium ursinum</i>	Stationary 1 – in research field
2.	V2 - <i>Allium ursinum</i>	Stationary 2 – in dendrology sector, in shadow
3.	V1 - <i>Anthemis annua</i>	Stationary 1 – in irrigation conditions
4.	V2 - <i>Anthemis annua</i>	Stationary 2 – without irrigation
5.	V1 - <i>Anthemis tinctoria</i>	Stationary 1 – in irrigation conditions
6.	V2 - <i>Anthemis tinctoria</i>	Stationary 2 – without irrigation
7.	V1 - <i>Malva sylvestris</i>	Stationary 1 – in irrigation conditions
8.	V2 - <i>Malva sylvestris</i>	Stationary 2 – without irrigation

The main decorative characters were determined: plant's height (cm), plant's diameter (cm), height/diameter, no. of main ramifications and no of secondary ramifications.

## RESULTS AND DISCUSSIONS

The studies regarding the quantitative and qualitative characteristics of the biological material are presented in table 2, representing the main criteria in judging the decorative effect of plants.

Table 2

**Quantitative and qualitative determinations of taxons introduced in culture**

Variant	Plant's height (cm)	Plant's diameter (cm)	Height/diameter	Main ramifications	Secondary ramifications
V1 - <i>Allium ursinum</i>	17 -18	15 - 17	1,1 - 1	5 – 11 flowering stem	x
V2 - <i>Allium ursinum</i>	21 -24	19 - 21	1,1 – 1,1	7 – 12 flowering stem	x
V1 - <i>Arthemisia annua</i>	95 - 112	49- 63	1,9 – 1,8	12 - 14	23 - 27
V2 - <i>Arthemisia annua</i>	36-40	19-20	1,9 - 2	6 - 7	14 – 16
V1 - <i>Anthemis tinctoria</i>	33	26	1,3	19	18
V2 - <i>Anthemis tinctoria</i>	24	19	1,3	4	10
V1 - <i>Malva sylvestris</i>	51	35	1,2	19	22
V2 - <i>Malva sylvestris</i>	34	15	2,3	4	10

The accomplished biometrical determinations demonstrate that:

- *Allium ursinum*, at the variant cultivated in shadow, the plant's height and bush diameter is larger. Also the number of flowering stems increases from 5-11 to 7-12. The color of leaves is lighter at variant cultivated in the field and darker at variant cultivated in the shadow, under trees or shrubs (fig. 1 and 2). The results obtained demonstrate that the plant can be cultivated both in open field and in shadow, but in open field appears different morphologic modifications, the plants are smaller, the leaves color is lighter and the decorative effect is smaller.



**Fig. 1 - *Allium ursinum* (V1)**



**Fig. 2 - *Allium ursinum* (V2)**

- *Artemisia annua*, cultivated in conditions of irrigation has a larger height, 95 - 112 cm, the bush diameter is higher, 49 - 63 cm, the number of main ramification is 12 - 14 and the secondary ones is 23 - 27, comparing with the variant cultivated in non-irrigated conditions, with the height 49 - 63 cm, bush diameter 19 - 20 cm, number of main ramification 6 - 7 and the secondary ones 14 - 16. The variant V2 due to its smaller height and lighter colored leaves is much more decorative, framing very well in the flower species associations from parks and gardens (fig. 4).



**Fig. 3 - *Artemisia annua* (V1)**



**Fig. 4 - *Artemisia annua* (V2)**

- *Anthemis tinctoria* cultivated in irrigation conditions has a higher height - 33 cm, the bush diameter is larger- 26 cm, the number of main ramifications - 19 and secondary ones - 18, comparatively with the variant cultivated in not-irrigated conditions with a height of 24 cm, bush diameter 19 cm, the number of main ramifications 4 and secondary ones 10.



**Fig. 5 – *Anthemis tinctoria* (V1)**



**Fig. 6 - *Anthemis tinctoria* (V2)**

The variant V1 due to its larger and richer in ramifications bush is more decorative than variant V2 (fig. 5 and 6).



**Fig. 7 - *Malva sylvestris* (V1)**



**Fig. 8 - *Malva sylvestris* (V2)**

- *Malva sylvestris* cultivated in irrigation conditions has a higher height - 51 cm, the bush diameter is larger - 35 cm, the number of main ramifications 19 and secondary ones 22, comparatively with the variant cultivated in not-irrigated conditions with a height of 34 cm, bush diameter 15 cm, the number of main ramifications 4 and secondary ones 10.

In this case also at variant V1 the leaves are darker colored, the flowers are more numerous and larger in size (fig. 7).

## CONCLUSIONS

1. *Allium ursinum* at the variant cultivated in shadow, the plant's height and bush diameter is larger. Also the number of flowering stems increases from 5-11 to 7-12. The color of leaves is lighter at variant cultivated in the field and darker at variant cultivated in the shadow, under trees or shrubs. The results obtained demonstrate that the plant can be cultivated both in open field and in shadow, but in open field appears different morphologic modifications, the plants are smaller, the leaves color is lighter and the decorative effect is smaller.

2. *Artemisia annua*, cultivated in conditions of irrigation has a larger height, 95 - 112 cm, the bush diameter is higher, 49 - 63 cm, the number of main ramification is 12 - 14 and the secondary ones is 23 - 27, comparing with the variant cultivated in non-irrigated conditions, with the height 49 - 63 cm, bush diameter 19 - 20 cm, number of main ramification 6 - 7 and the secondary ones 14 - 16. The variant V2 due to its smaller height and lighter colored leaves is

much more decorative, framing very well in the flower species associations from parks and gardens.

3. *Anthemis tinctoria* cultivated in irrigation conditions has a higher height - 33 cm, the bush diameter is larger- 26 cm, the number of main ramifications - 19 and secondary ones - 18, comparatively with the variant cultivated in not-irrigated conditions with a height of 24 cm, bush diameter 19 cm, the number of main ramifications 4 and secondary ones 10. The variant cultivated in irrigated conditions is more decorative due to its larger and more branched bush.

4. *Malva sylvestris* cultivated in irrigation conditions has a higher height - 51 cm, the bush diameter is larger - 35 cm, the number of main ramifications 19 and secondary ones 22, comparatively with the variant cultivated in not-irrigated conditions with a height of 34 cm, bush diameter 15 cm, the number of main ramifications 4 and secondary ones 10. Also, in irrigation conditions the leaves are darker colored, the flowers are more numerous and are larger in size, thus being more decorative.

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