STUDY REGARDING THE ACLIMATISATION OF SOME PLANTS OF DECORATIVE INTEREST FROM THE SPECIFICAL FLORA OF OLTENIA

STUDIU PRIVIND ACLIMATIZAREA UNOR PLANTE DE INTERES DECORATIV DIN FLORA SPONTANA A OLTENIEI

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Abstract. *Spontaneous flora is a source of plants with decorative qualities which can be cultivated, in respect of ecology, in the individual gardens and green areas around houses in urban and rural areas, having some special agro biological features (ecologic plasticity, high rustic character etc). The introduction of new ornamental species of the spontaneous flora represents an important purpose in the sustainable development context. This paper presents the partial results regarding the behaviour of some spontaneous species which have decorative features from the spontaneous flora, studied with a view to their possibilities of acclimatization in field (in different light conditions) and in greenhouses (in pots or directly in the ground). After a year, a big part from the species introduced in the study were maintained in the experimental field, and some of them acted as good both outside and inside. At the colected species there were made descriptive papers, were established the decorative elemens, at the end of the study, there will be established the utilisation directions.*

Key words: spontaneous flora, decorative features, acclimatization

Rezumat. Flora spontana este o sursa de plante cu calitati decorative, care pot fi cultivate, respectand ecologia, in gradinile individuale si in spatiile verzi din mediul urban si rural, avand unele caracteristici agrobiologice deosebite (plasticitate ecologica, rusticitate ridicata, etc). Introducerea de noi specii decorative din flora spontana in peisajul urban, reprezinta un obiectiv important in contextul dezvoltarii durabile. Lucrarea de fata prezinta rezultatele partiale privind comportarea unor specii spontane cu potential decorativ din punct de vedere al posibilitatilor de aclimatizare în camp (in diferite conditii de lumina) sau în spații protejate (in ghivece sau la solul serei). Dupa un an, o mare parte din speciile introduse în studiu au fost mentinute in campul de experimentare, iar cateva s-au comportat bine atat in exterior cat si in interior. La speciile colectate s-au intocmit fise de descriere, s-au stabilit elementele decorative în funcție de care, se vor stabili directiile de utilizare.

Cuvinte cheie: flora spontana, potențial decorativ, aclimatizare

INTRODUCTION

An important direction in floriculture is the diversification of the assortment, the introduction of new species and cultivars; this can be done both by classical research programmes and by introducing new species from the spontaneous flora,

which have decorative features and high adaptability to environment conditions, an important feature in the sustainable development context.

Of the over 3000 spontaneous species existing in Romania's flora, more than 500 species can be used in green areas, along with plants already cultivated for decorative purpose. (Ciocarlan V., 2000).

On international level there are multiple studies regarding the diversification of the decorative plants assortment by introducing in culture of some herbaceous species from the spontaneous flora, as well as setting-up other ways to use them. (Heiko Koester - 2008, Maloupa E. si col.-2005, Noordegraaf C.V. -2005, Halevy A.H. -2005, Chimonidou D. si col.-2005).

Also in Romania, at the Horticulture Faculty from the main universities, it is shown a special interest to identify, preserve and development, with ornamental purpose, species from spontaneous flora, even if at present the researches undertaken in this direction are very few.

This paper has as a purpose the identification of some spontaneous species with decorative features and the research regarding their development in different crop conditions, for the assessment of their adaptation to the antropic and environment factors, specific to the urban aggregations.

MATERIAL AND METHOD

This paper presents the partial results, obtained in the first year, at the acclimatization in field or in protected spaces of some spontaneous species which have decorative features. The colecting, identification and description were made in collaboration with the collective from the Botany discipline as part of the Horticulture Faculty.

The biological material was represented by 10 species of spontaneous flora: *Arabis procurrens* Waldst. & Kit., *Asarum europaeum* L., *Asplenium adianthum-nigrum* L., *Asplenium ruta-muraria L., A. Scolopendrium L., A. trichomanes subsp. quadrivalens, Blechnum spicant L., Luzula luzuloides* (Lam) Dandy & Wilmott, *Polypodium vulgare L., Saxifraga cuneifolia subsp. Robusta*.

The plants were collected, together with their ground bed and were transplanted in the didactic station of the department of Floriculture in different conditions: in the field (rocks in different light conditions) and in greenhouse (in pots or directly in the ground).

The used substrates were determined on the basis of the soil tests performed according to plants' demands, indicated by the speciality literature.

RESULTS AND DISCUSSIONS

From June to September 2007 there were transplanted in the experimental field the following species from spontaneous flora:

1. Arabis procurrens Waldst. & Kit. - Fam. *Brassicaceae*.

Perennial plant; the stalk is upright or ascending, at the base with numerous **thin**, whitish, procumbent, finished in rosette of leaves procumbent stalks. The rosette's leafs are obovat elongated, at the top with a small mucron, stalk leaves, 2-8, are ovoid or lanceolate ellipticals, with the base narrow, without leafstalk.

The inflorescence is a bunch. White petals of 8-10 mm length. It prefers reven grounds, but it also tolerates drought, sunny exposition or semi-shade.

The material has been collected from the stones, from Călimăneşti area (Vâlcea district).

It decorates through the white flowers and leaves' rosettes and it yields to rocky arrangements, alpine gardens, representing a great covering for small areas.

2. *Asarum europaeum* L. (Asarabacca) - Fam. *Aristolochiaceae*

Short perennial plant, of 8-30 cm height, with crawling rhizomes. The leaves are reniform, glossy, dark green, of 10 cm height. The leaves are produced in pairs and the small, greenish-brown drooping flowers are rarely noticed, being hidden by the foliage. It prefers soils full of nutritive substances, weak acid-neutrofil, full of humus, damp, and they allow the shading.

The material has been collected from the mezofil forrest from Lunca Jiului, Bucovat (Dolj).

It is decorative through its leaves, can be used for soil's garnishing in the dark places from the gardens, parks and, where it forms compact carpets (even in the cold season), easy to maintain. *A. europaeum* combines nicely with bleeding heart (*Dicentra*) and other shade-loving plants.

3. *Asplenium adianthum-nigrum* L. (Black spleenwort) - Fam. *Aspleniaceae*

Perennial plant, with rhizomes, of 10(40) cm height with fronds 2-3 pinnatisect, long acuminate, a bright green and a brown petiole. The primar segments are aproximately streight, and the last ovat-eliptice segments have a round base. Silicic rocks and walls, can be found in forests, rocky places; it prefers wet soils.

The material has been collected from the stones, Călimăneşti area (Vâlcea).

It decorates through its leaves, can be used for the rocky arrangements.

4. *Asplenium ruta-muraria* L. (Wall-rue) - Fam. *Aspleniaceae*.

Perennial species, with short rhizomes, of 5-15 cm height. The leaves, of 10 cm length, pinnately divided two or three times, green, glabrous. Pinnules spatulate, erose or just toothed at the apical margin. Frequent from the area of forest steppe till the subalpine level, it preferes partial shade, the moist soils and can grow in very alkaline soil.

The material has been collected from the stones, Călimăneşti area (Vâlcea).

It decorates through its leaves, can be used for the rocky arrangements.

5. *Asplenium scolopendrium* L. (Hart's Tongue Fern)-Fam. *Aspleniaceae*

Perennial species, with short scaly rhizomes. The plants are unusual in being ferns with simple, undivided fronds. The leaves are 20-60 cm long and 3-6 cm broad, with sori arranged in rows perpendicular to the rachis. The plants grow on neutral and lime-rich substrates, including moist soil and damp crevices in old walls, most commonly in shaded situations but occasionally in full sun; plants in full sun are usually stunted and yellowish in colour, while those in full shade are dark green and luxuriant.

The material has been collected from the stones, Călimăneşti area (Vâlcea).

Decorates through its leaves, can be used for the rocky and alpine gardens.

6. *Asplenium trichomanes* L. subsp. *quadrivalens* D. E. Meyer (Maidenhair spleenwort) - Fam. *Aspleniaceae*

Perennial species, 5-15 cm height, the leaves are simple pinnate divided, stems brownish-black, shiny and leaflets oblong-rounded, easy dental, mostly colored in green. Supports large oscillations of the water, prefers half-shade, soil reaction of strongly acid-acid, but also tolerates slightly calcareous soils.

The material has been collected from the stones, Călimăneşti area (Vâlcea).

It is a rustic fern, does not need winter protection, suitable for use in rock gardens and old walls.

7. *Blechnum spicant* (L.) Roth (Deer fern, Hard fern)-Fam. *Blechnaceae*

Perennial species of 25-60 cm height. Deer ferns are distinctive because they have two different types of fronds: fertile leaves more erect and longer than sterile leaves; frond evergreen sterile fronds, dimorphic, fertile leaves appearing later, more erect than sterile, blade/stipe ratio: 3:1 in the sterile fronds, but the fertile frond stipe is longer. It prefers the soils with low trophicity, moderate acid, calcifuge, with moderate humidity, from moist humid, of shade (sciophile), but also stands a partial shade.

The material has been collected from the stones from the Rânca Mountain.

It decorates by leaves, can be used in rock gardens.

***8. Luzula luzuloides* (Lam) Dandy & Wilmott (**White Wood-rush)-Fam. *Juncaceae*

Herbs, perennial, usually cespitose, strongly rhizomatous and stoloniferous; erect stems, 30-60 cm tall. Leaves flat, linear, densely ciliate, bright green and grass-like, 10-25 cm long. Inflorescences terminal; the flowers are in clusters of two to eight and are whitish to pinkish in color. Flowering: late spring-summer. Most species prefer a moist position but are not fussy about soil type or aspect provided they are not in deep shade.

It decorates by leaves, it can be used in gardens combined with other perennial species.

9. *Polypodium vulgare* L. (Common polypody) - Fam. *Polypodiaceae*.

Perennial species, small, has a short rhizome, which develops compound leaves, pinnatisect to pinnatifid, 10-25 cm long, persistent, deeply divided, lacy, green. It is a rustic fern, prefers partial shade, a neutral or slightly acidic soils, increases especially among stones or on the rocks, at altitudes of above 600 m.

The material has been collected from the stones from Rânca Mountain and also from Călimăneşti (Vâlcea district)

It decorates by leaves, can be used in rock gardens, alpine gardens; may grow in large colonies, forming extensive, dark green ground cover.

10. *Saxifraga cuneifolia* L. subsp. *Robusta* D. A. Webb.-Fam. *Saxifragaceae*.

Perennial plants, evergreen rosettes of leathery leaves produce panicles of small white flowers in spring. It grows in shade to part shade in humus rich, moist soil. Frequent in the beech subfloor and the spruce fir floor, on shaded, siliceous, humid rocky zones.

The material has been collected from the stones, Călimăneşti area (Vâlcea).

Decorate by leaves, can be used rock gardens, alpine gardens, miniature gardens.

The acclimatization of the species described in different crop conditions.

The plantation of the ten spontaneous species, in the field and in protected places was made with an ballot of earth all around the roots. After an year from plantation, the percentage of rooting of all the species was established, depending of the conditions of the crop such as the directions of using in decorative purpouse (Fig. 1). In the case of plants transplanted on the greenhouse soil the acclimatization occurred in 7 of the 10 species that have been studied; of which the best adapted species was *Arabis procurens* (95%) followed by *Asplenium trichomanes* (86%) and as *Asarum europaeum* (86%). Plant which have not acclimatized on the greenhouse soil are *Asplenium scolopendrium, Blechnum spicant* and Luzula luzuloides.

After transplanting into pots there have been obtained very good results, from this point of view, for the majority of the species - *Arabis procurrens* (100%), *Luzula luzuloides* (100%), *Asplenium trichomanes* (90%), *Saxifraga cuneifolia* (90%), *Asplenium ruta-muraria* (85%), with the exception of the *Asplenium adianthum-nigrum* species, whose acclimatization was difficult in all of the four locations.

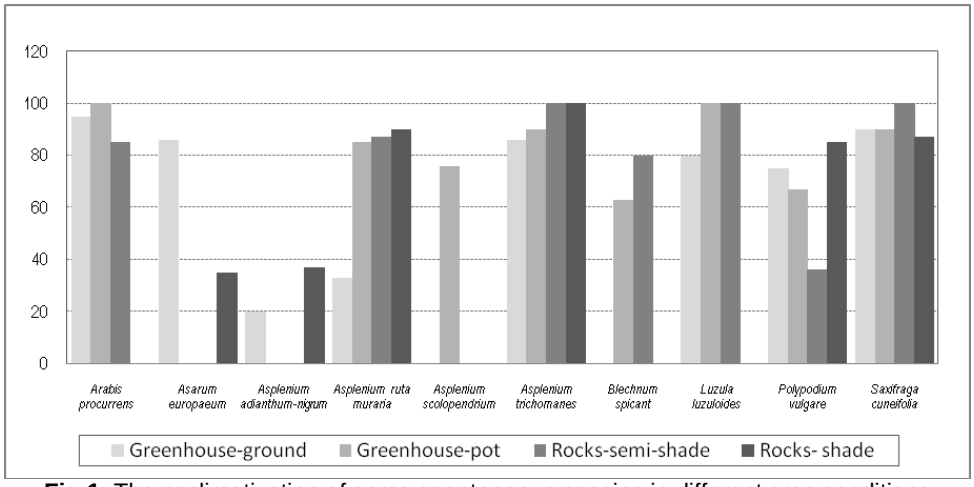

Fig.1. The acclimatization of some spontaneous species in different crop conditions (percentage of rooting)

In the field, according to the requirements of the plants, there have been chosen two exhibitions in the shade and semi-shade, in arranged rocks, it has been found that 7 from the 10 species have acclimatized to the low light, and 8 to the shade.

There are found, none the less, large differences regarding the percentage of acclimatization; thus, for both situations the behaviour was shown by *Asplenium trichomanes* (100%), *Saxifraga cuneifolia* (100% to 87%); *Asplenium Scolopendrium* has not maintained in none of the two locations, and species like as *Asarum europaeum*, *Asplenium adianthum-nigrum*, have acclimatized in low percentage in the arranged rocks in the shadow.

Based on the observations made in this stage, we consider that the species *Arabis procurrens, Asplenium ruta muraria, Asplenium trichomanes, Blechnum spicant, Luzula luzuloides, Polypodium vulgare, Saxifraga cuneifolia*, are suitable for arranged rocks in shade conditions or semi-shade; *Arabis procurrnes* for borders, *Asplenium scolopendrium, Asplenium trichomanes, Luzula luzuloides, Saxifraga cuneifolia* can be used as pot plants or in different combinations, and the small size and low growth, as are *Asplenium ruta muraria, Saxifraga cuneifolia* and *Asplenium trichomanes* for container minigardens.

The presence of these plants in arranged rocks or container minigardens, can give a almost natural look to the composition.

CONCLUSIONS

From the description of the species taken into study it apears that they are perennial and the higher majority have in common modest requirements regarding temperature, light and soil fertility.

Most of the studied species have shown a good or very good behaviour in the field as well as in the greenhouse, in at least 2 locations.

Out of the analized species the best rezults came from *Asplenium ruta muraria, Asplenium trichomanes, Polypodium vulgare* and *Saxifraga cuneifolia,* which have acclimatized in all of the four crop conditions.

The weakest behaviour has been noticed at *Asplenium scolopendium*, which has acclimatized in the greenhouse only as a pot plant, as well as from *Asplenium adianthum-nigrum*, species which rezisted in low proportion only on the greenhouse soil and in the rocks, in shade conditions.

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