PERENNIAL GRASSES SPONTANEOUS IN THE GRASSLANDS FROM WESTERN ROMANIA WITH POTENTIAL FOR THEIR USE FOR TURF

GRAMINEE PERENE SPONTANE ÎN PAJIŞTILE DIN VESTUL ROMÂNIEI CU POTENȚIAL PENTRU UTILIZAREA LOR LA GAZON

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Abstract: *Perennial grasses are important mainly for forage and for turf. The purpose of this work is to highlight grass species that are growing spontaneously in our geographic area, which have features that make these species suitable for their use in turf mixtures. There are valuable populations that are best adapted to the ecological conditions of our country, they being resistant to a series of factors that are recommending them for the use in turf mixture. The features that make the grasses suitable for this purpose are: resistance to treading, fast recovery after mowing, resistance to drought, resistance to shading, resistance to diseases and pests, resistance to repeated mowing, turf density, the finesse of the leaves, facile setting, etc. The grass species considered in this research is Festuca valesiaca. In Romania weren't created yet autochthon turf grass varieties, all the seeds coming from import or being foreign varieties multiplied in our country. This type of research is very important because the turf has started to capture the interest of the municipalities and private owners from our country, they being interested to have turf covers with high esthetic and functional qualities. Also is important for them to have varieties adapted to the ecological conditions of the area where the turf will be set. This study is only a first step in the selection of germplasm resources for the creation of new turf grass varieties because in our country are created some small grass varieties, but they are suitable for forage.*

Rezumat: *Gramineele perene sunt importante în principal pentru furaj şi pentru gazon. Scopul acestei lucrări este de a evidenția speciile de graminee care cresc spontan în zona noastră geografică şi care au caractere ce le fac potrivite pentru utilizarea lor în amestecuri de gazon. În această privință se găsesc populații valoroase care sunt cel mai bine adaptate la condițiile ecologice ale țării noastre, acestea fiind rezistente la o serie de factori care le recomandă pentru folosirea în amestecuri de gazon. caracterele care fac aceste graminee adecvate pentru acest scop sunt: rezistența la trafic, refacerea rapidă după tundere, rezistența la boli şi dăunători, rezistența la tunderea repetată, densitatea gazonului, finețea foliajului, instalarea facilă etc. Specia de graminee considerată în această lucrare este Festuca valesiaca. În România nu au fost create încă soiuri de graminee de gazon, toate semințele venind din import sau fiind soiuri străine înmulțite la noi în țară. Acest tip de cercetare este foarte important deoarece gazonul a început să capteze interesul municipalităților şi al proprietarilor privați din țara noastră, aceştia fiind interesați să aibă un covor de gazon cu calități estetice şi funcționale deosebite. De asemenea pentru aceştia este important să aibă soiuri adaptate la condițiile ecologice ale zonei unde se va instala gazonul. Acest studiu este doar un prim pas în selectarea de resurse de germoplasmă pentru crearea de soiuri de graminee de gazon, deoarece la noi în țară sunt create câteva soiuri de graminee, însă acestea sunt adecvate pentru furaj.*

Key words: *turf, perennial grasses, spontaneous, grassland, vegetation.*
Cuvinte cheie: *gazon, graminee perene, spontane, pajişte, vegetație.*

INTRODUCTION

The over industrialization and the anthropisation of the environment makes the people wishing to have nearby the natural environment and starting from this idea he tends to build his own "nature". The most wanted for this purpose is the turf because it can be created quite

easily in comparison with other ecosystems. This needs some maintenance works that determinate the people to have activities in the open air and is conferring to him a sensation of freedom. We think that the desire to have the nature at home has developed another "nature art" as is the bonsai, which allows us having a miniature forest on right on the desk (MOISUC *et al.*, 2001).

In conformity with BEARD *et* GREEN (1994) *Poaceae* family is the most spread group of plants on the Earth. Considering the representation of the grasses in all the regions of the globe and the percentage of cover in report with the vegetation of the Earth, these are surpassing all the botanical families. Grasses are from the first species that are recovering after disasters as are the volcanic activities, prolonged drought, flooding, fire, explosions, abandoned urban areas or battlefield. Thus, the negative effects of many human activities (uncontrolled excavations with different purposes, agricultural activities *etc*.) will be more destructive and irreversible without the recovering capacity of the vegetation, and especially of the grasses.

The surface cultivated with turf in some areas of the world is greater, especially in the more developed countries from economical point of view, thus in the United states these are occupying between 12 – 15 millions of hectares and is continuing to grow accordingly with the increase of the population (MOISUC *et* SĂRĂȚEANU, 2008).

MATERIALS AND METHODS

In April 2008 were collected 10 clones of *Festuca pseudovina* from the grasslands of Grădinari locality (Caraş – Severin County). They were studied in *ex situ* condition in an experimental plot at the Young Naturalists Station of the Banat's University of Agricultural Sciences and Veterinary Medicine from Timişoara Romania.

The data were collected in 4 June 2008, 23 September 2008, and 28 October 2008. The features of the plants that were taken in account are: plants average height, leaf average height, leaf average width (finesse of the leaves), leaves color, bunch density, setting capacity, and resistance to diseases, after the 0 – 9 NTEP rating scale.

RESULTS AND DISCUSSIONS

In conformity with NYARADY (1966) the name of the species that is the topic of this work is *Festuca pseudovina* Hack ex Wiesb. In OBZ XXX (1882) 126, 1900 – *F. ovina ssp. sulcata* var. *pseudovina* Hack. Monogr. (1882) 102. – *F. valesiaca ssp. pseudovina* (Wiesb.) Hegi Illustr. Fl. Mitteler. I (1908) 334, 8, str. – *F. pulchra* Schur Enum. Pl. Transs. (1866) 785, nom. Dub. Lc.: Pl. 2, fig. 2a, b, var. *pseudovina*.

HORANSZKY *et al*. (1971) have used for the separation of *Festuca ovina, F. vaginata, F. glauca, F. pseudovina, F. valesiaca, F. sulcata* and *F. wagneri* the formation of leaf sclerenchyma. Other method used for the species delineation is the chromosome counts. In 1973 SOO have reported the chromosome number for this type of *Festuca* species from Hungary. Thus, *F. pallens* has 2n = 14, 28, 42; *F. vaginata* 2n = 14; *F. wagneri, F. dalmatica* and *F. pseudodalmatica* has 2n = 28; *F. valesiaca* has 2n = 14, 28, 42; *F. rupicola* has 2n = 42; *F. pseudovina* has 2n = 14, 28. TRACEY (1977) has suggested that *F. pseudovina* is better represented as *F. valesiaca ssp. parviflora*. Huff and Palazzo (1998) have placed *F. valesiaca* and *F. pseudovina* in the same taxon *F. valesiaca* (CASLER *et* DUNCAN, 2003).

After AIKEN *et al*. (1997) the nomenclature of this species is *F. valesiaca* subsp. Pseudovina (Hack. Ex Wiesb.) Hegi, Illustr. Fl. Mitteleuropa 2. 334. 1908. *F. ovina* var. *pseudovina* Hack. Bot. Centralb. 8: 405. 1881. *Festuca pseudovina* Hack. Ex Wiesb., Oesterr. Bot. Z. 30: 126. 1880. Type: *Im Thale der reichen Liesing zwischen Kalksburg und dem Rothen Stadel* (Austria). Holotype: Herbar. Kitaibel in Banat-Romania (CHASE and NILES 1962).

F. valesiaca is a perennial grass with great features for the use for turf. There exist some varieties of this species used as mostly as ornamental grasses, less for turf. The color of the leaves is bluish – gray – green and they are glabrous. They are forming a dense bunch, and most of the offshoots are short, respectively vegetative offshoots.

After AIKEN (1997) the sheaths of the leaves is glabrous, conspicuous at the base of the plant, persisting for more than 1 year (sometimes not very conspicuous), remaining entire, not conspicuously splitting between the veins, open more than half their length. The collars are also glabrous. The auricles are represented by distinct, erect, swellings. The auricular cilia are absent. The leaf blades are erect and plicate having 5 – 7 veins. The uppermost stem leaf sheaths aren't inflated.

In table 1 are presented some morphological features of the population of *F. valesiaca* from Grădinari in the *ex situ* condition in an experimental plot at the Young Naturalists Station of the Banat's University of Agricultural Sciences and Veterinary Medicine from Timişoara.

Table 1

Some features of the population of *F. valesiaca* from Grădinari in the *ex situ* condition

Feature	4 June 2008	23 September 2008	28 October 2008
Plants average height (cm)	18	22	21
Leaf average length (cm)	17	20	21
Leaf average width (mm)	0.4	0.5	0.5
Leaves color	bluish-green	bluish-green	bluish-green
Bunch density	9	9	9
Setting capacity	9	9	9
Resistance to diseases	9	9	9
Turf grass texture	9	9	9

The population of *F. valesiaca* from Grădinari in the *ex situ* condition shows a plants average height comprised between 18 – 22 cm, they never being mowed, so there isn't present the influence of this factor.

The leaf average length is close to the plants average height because this population has dominant the short (vegetative) offshoots, they being leafy offshoots.

The leaves average width is comprise between 0.4 – 0.5, these values being characteristic for the grasses with very fine leaves, this aspect being desired for some certain types of turf (e.g. ornamental, golf green *etc.*).

The leaves color is another aspect important for the selection of the turf for different purposes, this feature being genetically determined, but also it can be influenced by stressing factors or diseases and pests. The population of *F. valesiaca* studied in this work has a bluish-green color of the leaves that is maintaining during all the observations, even in summer because they were irrigated.

The bunch density feature was marked on the 0 – 9 NTEP rating scale, the mark accorded to that population showing a very good density, this being marked with the rating value of 9.

The setting capacity of the plants of the population of *F. valesiaca* from Grădinari in the *ex situ* condition was very good being marked with the rating value of 9.

Concerning the resistance to diseases in the *ex situ* conditions the population of *F. valesiaca* from Grădinari haven't shown any infection or disease signs being appreciated with the rating value of 9. In the conditions from Grădinari (*in situ*), the population of *F. valesiaca* manifested a slightly sensitivity for the fungal disease produced by *Epichlowe typhina*, this disease being important especially for the seed production because is blocking the ear in the flag lead, ant it is never emerging out from there. This disease isn't influencing this species as

turf because in that case isn't allowed to let the plant to form inflorescence because of the maintaining work represented by repeated mowing.

The texture of the turf of the population of *F. valesiaca* from Grădinari is very fine this being marked with the rating value of 9.

CONCLUSIONS

Analyzing the features of the population of *F. valesiaca* from Grădinari in the *ex situ* condition in from the Young Naturalists Station of the Banat's University of Agricultural Sciences and Veterinary Medicine from Timişoara we can conclude the followings:

- the leaves have very small width, this being characteristic for very fine leaves, this aspect determining also the very fine texture of the turf;
- the leaves color is bluish-green over the entire period studied;
- the density of the turf is very good, also being the resistance to diseases and the turf setting;
- in *in situ* conditions this grass has a slightly sensitivity to *Epichlowe typhina*, this fungal disease being important in the seed crops because they can destroy totally the harvest.

The features of the population of *F. valesiaca* from Grădinari recommend it for the continuation of the researches for the use of it for the creation of an autochthon new variety of turf grass suitable for the environmental conditions of our area.

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