EXTERIORIZATION OF PRODUCTION CHARACTERS UNDER THE INFLUENCE OF CLIMATIC CONDITIONS FROM TIMISOARA IN SOME FOREIGN VARIETIES OF *DACTYLIS GLOMERATA*

Mihaela CORCHES, Al. MOISUC

Banat's University of Agricultural Sciences and Veterinary Medicine, Faculty of Agricultural Sciences, Timisoara, Aradului Street, no. 119, RO-300645, Romania
Corresponding author: corchesmihaela@yahoo.com

Abstract: Knowing the characteristics of the varieties of fodder have a great importance for growers, as only knowing can be recovered. The varieties of fodder plants must meet very different requirements of soil and climate, because is necessary to produce feed in any climate, any type of soil, dry or wet areas, in warm or cold zones, in irrigated and non-irrigated. This wide range of requirements can be covered by zoning of fodder plant species and within each species, by zoning varieties. This paper presents the behavior of foreign genotypes of Dactylis glomerata (cocksfoot), in pedo-climatic conditions of Timisoara, in the perspective of enriching the current assortment of fodder plants varieties. Experiences with varieties or hybrids have a permanent character, because for most species cultivated, in every year occur new varieties and hybrids both nationally and internationally, which require testing before being introduced into culture of a given area. These experiences have as main purpose, identifying the most valuable varieties in terms of growing capacity, quality and other traits of agricultural interest. The research was carried out in the experimental fields of discipline of Culture of grasslands and fodder plants, USAMVB Timisoara, the experience being placed on a chambic chernoziom weakly gleyed soil type, with salinisation in depth. Biological material studied is represented by three foreign varieties of Dactylis glomerata (cocksfoot), namely AMBA, AMERA and OTELLO. Experience is placed after the method of randomized blocks in three repetitions. A parcel surface is 20 m^2 (5m x 4m). Assessment of quantitative characters of the production was based on biometric measurements from 10 plants in each plot - repetition. Thus, was made determinations on plant about morphological characters, namely: the length of vegetative and generative shoots, the number of vegetative and generative shoots, the number of green leaves/ vegetative and generative shoots, weight of shrubs and leaf area /shoot. The data calculation and interpretation obtained from the performance measurements and calculations mentioned above were processed by conventional methods of statistical analysis. The significance of differences between graduations and combinations of various factors has been established through analysis of variance and u test.

Keywords: *Dactylis glomerata, foreign varieties, adaptation*

INTRODUCTION

Dactylis glomerata is one of the best grasses on pasture, it is very widespread on meadows (MOISUC, 2002). It is grown both in simple mixtures with alfalfa or red clovers, which operates under the meadow, and in complex mixtures for grazing, occupying alongside perennial ryegrass, the largest share of the 4.8 million ha of pastures and hayfields (VARGA ET AL., 1998). It is resistant in drought, therefore the growth is significant in summer. Also, it is middle-resistant in winter, but sensitive to temperature variation in the spring. (MOISUC, 2002).

The knowledge of characteristics of different fodder varieties has a great importance for growers, because only knowing them they can be exploited. The variety of fodder plants must meet very different requirements of soil and climate, because is necessary to produce forage in any climate, on all types of soil, in dry or wet areas, in warm or cold zones, in

irrigated and non-irrigated. This wide range of requirements can be covered by zoning the fodder plant species and within each species, by zoning the varieties (VARGA , 1998).

Experiences with varieties or hybrids have a permanent character, because for most cultivated species occur, in every year, new varieties and hybrids nationally and internationally. These varieties require testing before being introduced into culture of a given area. The main purpose of those experiences is to identify the most valuable varieties in terms of growing capacity, quality and other traits of agricultural interest (CIULCA, 2002).

MATERIAL AND METHOD

The research was carried out in the experimental fields of Culture of grasslands and fodder plants discipline, USAMVB Timisoara, the experience being placed on a chambic chernoziom weakly gleyed soil type, with salinisation in depth.

The studied material is represented by three foreign varieties of *Dactylis glomerata*, *na*mely OTELLO, AMBA and AMERA. Sowing was made on 03.10.2007, with a 12.5 cm distance between rows. Seeding density is 1800 germinable seeds/m^2. Sowing depth is 2 cm.

Experience is placed after the method of randomized blocks in three repetitions. A parcel surface is 20 m^2 (5m x 4m).

Assessment of quantitative characters of the production was based on biometric measurements from 10 plants in each plot - repetition. Thus, was made the determinations on plant about morphological characters, namely: the length of vegetative and generative shoots, the number of vegetative and generative shoots, the number of green leaves/ vegetative and generative shoots, weight of shrubs and leaf area /shoot.

The morphological characteristics have been determinate (length and width of leaves, plant height) with a graduated ruler.

The fraternity degree and the number of leaves / shoot were determined by making direct counts.

The weight determination was been performed by using a portable electronic scale.

To determine foliar surface was used the method of determining foliar area, using leaf parameters, after the formula:

$$A = b \times (L \times B)$$

where:

A-is the leaf area

L-the maximum length of leaf

B-maximum width of leaf

b-factor which is multiplied by the product of L and B and he is 0.905 for grasses.

The data calculation and interpretation obtained from the performance measurements and calculations mentioned above were processed by conventional methods of statistical analysis. The significance of differences between graduations and combinations of various factors has been established through analysis of variance and u test (CIULCA, 2006).

RESULTS AND DISCUSSION

Results regarding the length of the shoots

If we analyze the generative shoots length of *Dactylis glomerata* varieties, it is noted that at AMERA variety the length of generative shoots is very significantly lower compared with the control variety (OTELLO), and AMBA variety is not statistically significant. Regarding the vegetative shoots length, experimental results show that it is distinct significantly greater at the AMERA variety compared with the control variety and very significantly higher at the AMBA variety.

Comparing the generative shoots lengths at the studied varieties it is observed that the AMBA variety has the greater generative shoots length comparing with the other two varieties; if comparing the vegetative shoots length it can be observed that either of the two studied varieties, AMERA and AMBA, have a greater shoots length compared to the control OTELLO (Table 1).

Table 1

The length of generative / vegetative shoots of *Dactylis glomerata* varieties

Varianta **Lungimea lăstarilor generativi**	$\bar{x} \pm sx$	$s\%$	u	Semnificație
Mt. OTELLO	47.99±0.12	0.82		
AMERA	30.56±0.43	4.45	-38.89	ooo
AMBA	49.26±0.68	4.36	1.83	-
	DL 5%=2,26 (cm)	DL 1%=3,25 (cm)	DL 0,1%=4,78 (cm)	
Lungimea lăstarilor vegetativi	$\bar{x} \pm sx$	$s\%$	u	Semnificație
Mt. OTELLO	20.92±0.21	3.31		
AMERA	25.78±1.16	14.26	4.10	**
AMBA	29.76±0.48	5.11	16.54	***
	DL 5%=2,26 (cm)	DL 1%=3,25 (cm)	DL 0,1%=4,78 (cm)	

Results on the number of generative and vegetative shoots / plant

Studying the number of shoots at the *Dactylis glomerata* varieties, it is noted that in AMBA variety, the shoots number is very significantly higher than the control variety OTELLO, both in terms of generative and vegetative shoots. At AMERA variety the generative shoots number has not statistically significant compared to the control, and the number of vegetative shoots is significantly lower than the control variety OTELLO.

The analysis of the results on the shoots number of *Dactylis glomerata* varieties indicates that the AMBA variety has the highest number of shoots, vegetative and generative, followed by OTELLO variety, respectively AMERA variety. (Table 2, Fig. 1).

Table 2

The number of shoots of *Dactylis glomerata* varieties

Varianta **Nr. lăstari vegetativi/plantă**	$\bar{x} \pm sx$	$s\%$	u	Semnificație
Mt . OTELLO	67.8 ± 0.75	3.53		
AMERA	62.5 ± 3.75	19.48	-1.35	-
AMBA	89.4 ± 0.90	3.21	18.25	***
	DL 5%=2,26	DL 1%=3,25	DL 0,1%=4,78	
Nr. lăstari generativi/plantă	$\bar{x} \pm sx$	$s\%$	u	Semnificație
Mt . OTELLO	21.4 ± 0.16	2.41		
AMERA	18.35 ± 0.95	16.42	- 3.15	o
AMBA	35.2 ± 0.57	5.12	23.14	***
	DL 5%=2,26	DL 1%=3,25	DL 0,1%=4,78	

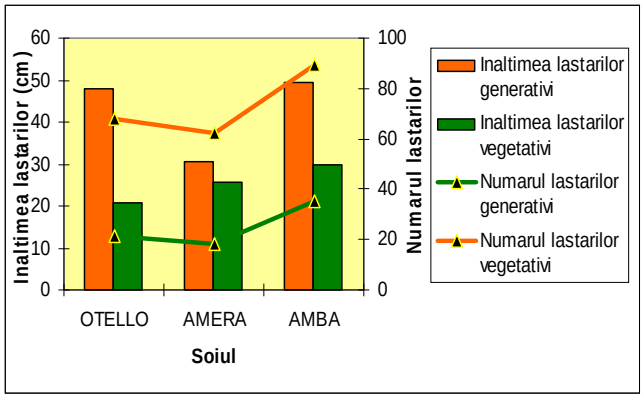

Fig.1. Graphical representation of the relationship between length/number of shoots of *Dactylis glomerata* varieties

Results on the number of leaves / shoot

From the analysis of statistical data regarding the number of leaves / shoot of *Dactylis glomerata* varieties, is observed that AMERA variety has a significantly greater number of leaves/ generative than control variety OTELLO, and the AMBA variety is not statistically significant compared to the control variety.

Studying the number of leaves / vegetative shoot is observed that it is distinct significantly greater as compared to the control variety (OTELLO), both in case of AMERA and AMBA variety. (Table 3, Fig. 2).

Table 3

The number of green leaves on the shoot of ***Dactylis glomerata*** varieties

Varianta / **Număr frunze verzi/lăstar generativ**	$\bar{x} \pm sx$	$s\%$	u	Semnificație
Mt. OTELLO	3.92±0.08	6.88		
AMERA	4.21±0.08	6.17	2.44	*
AMBA	3.81±0.05	4.18	-1.10	-
	DL 5%=2,26	DL 1%=3,25	DL 0,1%=4,78	
Număr frunze verzi/lăstar vegetativ	$\bar{x} \pm sx$	$s\%$	u	Semnificație
Mt. OTELLO	3.29±0.04	4.63		
AMERA	3.56±0.06	5.32	3.5	**
AMBA	3.5±0.02	2.69	3.70	**
	DL 5%=2,26	DL 1%=3,25	DL 0,1%=4,78	

Results on the leaf area

Analyzing the leaf area/generative shoot at the *Dactyllis glomerata* varieties, is observed that, compared to the control variety (OTELLO), in the case of AMERA variety this is very significantly greater. At AMBA variety the leaf area/generative shoot is statistically insignificant as compared to the OTELLO variety.

Comparing the leaf area/ vegetative shoot at the three *Dactylis glomerata* varieties, is observed that in case of AMBA variety, this is very significantly higher than the control variety OTELLO and distinct significantly higher for AMERA variety (Table 4).

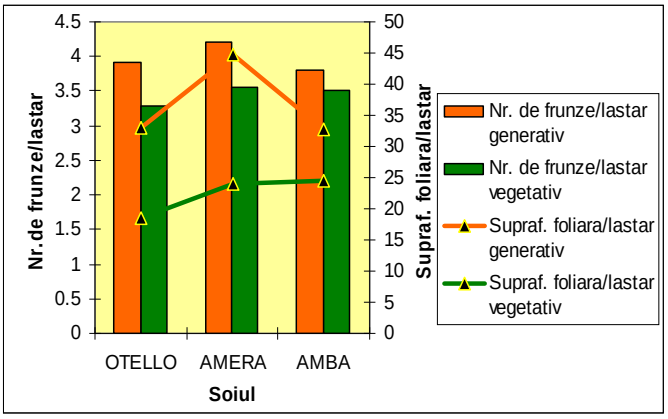

Fig.2. Graphical representation of the relationship between the number of leaves on the shoot and leaf area per shoot of ***Dactylis glomerata*** varieties

Table 4

Leaf area per shoot of *Dactylis glomerata* varieties

Varianta **Suprafața foliară/lăstar generativ**	$\bar{x} \pm sx$	$s\%$	u	Semnificație
Mt. OTELLO	32.02±0.73	7.21		
AMERA	44.69±2.00	14.15	5.95	***
AMBA	32.69±0.37	3.60	0.81	-
	DL 5%=2,26 (cm^2)	DL 1%=3,25 (cm^2)	DL 0,1%=4,78 (cm^2)	
Suprafața foliară/lăstar vegetativ	$\bar{x} \pm sx$	$s\%$	u	Semnificație
Mt. OTELLO	18.41±0.92	15.88		
AMERA	24.09±1.22	16.02	3.70	**
AMBA	24.50±0.51	6.65	5.75	***
	DL 5%=2,26 (cm^2)	DL 1%=3,25 (cm^2)	DL 0,1%=4,78 (cm^2)	

Results on the weight of a bush

The *Dactylis glomerata* bush weights vary for the three studied varieties. Thus, the AMERA variety bush weight is very significantly greater than the control variety (OTELLO). Instead, at AMBA variety the bush weight is significantly smaller than the control (OTELLO) (Table 5).

Table 5

The weight of a *Dactylis glomerata* bush

Varianta **Greutatea tufei (g)**	$\bar{x} \pm sx$	$s\%$	u	Semnificație
Mt. OTELLO	65.87±2.61	12.55		
AMERA	82.57±1.03	3.93	5.93	***
AMBA	57.84±1.35	7.39	-2.75	o
	DL 5%=2,26 (g)	DL 1%=3,25 (g)	DL 0,1%=4,78 (g)	

CONCLUSIONS

Analyzing the results obtained from *Dactylis glomerata* varieties, OTELLO, AMBA and AMERA, we can draw the following conclusions:

- AMBA variety was the best in terms of vegetative and generative shoots length, number of shoots/bush and foliar area/shoot. AMBA variety is a vigorous variety, with numerous and large shoots, but with few leaves on the shoot, which may explain the obtaining of the smallest value in what concerns the bush weight.

- AMERA variety - this variety is characterized by a high photosynthetic capacity, recording the highest values in what concerns the number of leaves/shoot and foliar area, aspects that explain the fact that in the case of AMERA variety was obtained the highest value of bush weight as compared to AMBA and OTELLO varieties. However, as compared to the AMBA variety, AMERA variety is characterized by a smaller size and a lower ability to shoot.

- OTELLO variety is a variety with medium vigor and ability to shoot, ranging between AMBA and AMERA in terms of bush weight.

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