# PERRENIAL GRASSES CROPS YIELDS AS A RESULT OF APPLICATION OF GRADUADED DOSES OF NITROGEN

Stanciu Alina Ștefania\*, Lazăr Andra\*\*, Cărbunar Mihai\*

\*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea, Romania, e-mail: as1stanciu@yahoo.com

\*\* University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea, Romania, e-mail: ienciuandra@yahoo.com

\*\*\*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea, Romania, e-mail: carbunar@yahoo.com

#### Abstract

Pure culture productivity of perennial grasses differs, such productivity being correlated with the used species production potential with the quantity of applied chemical fertilizers and weather conditions. Regarding the reaction of vegetable cover for the chemical fertilizers application, during our experience time there have been found the progressive harvest increase of DM having the dose applied, the highest value being registered for Lolium multiflorum.

Key words: productivity, fertilizers, perennial grasses.

# **INTRODUCTION**

In recent decades, increasing attention has been given knowledge about the effectiveness of nitrogen absorption by certain crops fertilized. A potential threat to the quality of the environment is the excessive nitrogen fertilization, so its use should be limited. In this context, developed in recent years the concept of organic farming, leaders of this concept in our country, the teachers PUIA John SORAN Viorel. Praticultura is one of the areas where this concept may find applicability.

Although numerous studies have demonstrated strong reaction grasslands application of chemical fertilizers with nitrogen there are still a number of unresolved issues regarding the production of feed and organizing intensive animal husbandry, raising yields obtained based on natural grasslands. However, the use of nitrogen fertilizers is one of the great possibilities of this and a big question mark for the future. The question mark is highlighted two aspects of the application of nitrogenous fertilizers, namely, first given the economic aspect of the extremely high cost price of these fertilizers in our country, and seconLSDy, not unimportant ecological aspect, which highlights the need to stop the pollution of soils and groundwater with nitrates.

### MATERIAL AND METHOD

Experience factors were:

-factor A - doses of chemical fertilizers with the following degrees: - NoPoKo -  $N_{100}P_{50}K_{100}$  -  $N_{200}P_{50}K_{100}$ .

-factor B - pure cultures of perennial grasses: *Dactylis glomerata* - variety Glade, *Bromus inermis* – varietz Orpheus and *Lolium multiflorum* Ryegrass variety - Ariana.

Experience is placed after the two factors of type 3x3 block method in basic plots and annual subdivizate.Fertilizarea was performed according to the experimental protocol. It should be noted that in the experience of setting up (2011) were performed only maintenance and harvesting of uniformity. From the first year of use were performed three year sew recorded SU harvest obtained per hectare development floristic composition and chemical composition of forage obtained, and the results were interpreted statistically.

### **RESULTS AND DISSCUSIONS**

Statistically analyzing data obtained from species of grasses studied under conditions of differentiated fertilization with nitrogen can be seen that the yield of DM in both years of use in all species tested progressively increased dose of nitrogen. Among the species of grasses used in our experience, *D.glomerata* respond well to nitrogen fertilization, requiring doses of 250 kg / ha ( Bărbulescu et al., 1984). The percent recovery of nitrogen from such doses are between 65 and 70. Also, some authors (Kellner et al., 1982) showed the influence of the village, species, variety and harvest time on yield and quality of SU percentage crude protein in species ranging from 8.4 to 19.13 D.glomerata. Another species that can be successfully sown grassland establishment is L.multiflorum, which due to its high production capacity, high quality forage and many opportunities to be cultivated, the main crop or cropping (which is a bisannual grasses) can be exploited both mowing and grazing. In our case, as regards the reaction of various species of perennial grasses at graduation nitrogen dose can be observed without exception raising yields compared with No N200 ranges from 27% (the lowest recorded at *D.glomerata* in 2012) and 213% (the highest value recorded at L.multiflorum 2013). In all species tested purposes reaction is the same (increase crop progressively applied dose), but different in terms of quantity. The strongest reaction we made it to the maximum dose L.multiflorum where yields increased by 2 times and seconLSDy to D.glomerata where SU harvest maximum dose doubled. Burcea and col. (2007) argues that the species L.multiflorum, SU yields obtained in the same

quantities of seed per hectare are higher only for fertilization with high doses of fertilizers ( $N_{300} P_{100} K_{100}$ ).

Statistically analyzing the data obtained in the three experimental years, we can see that all three perennial grass crops (*D.glomerata*, *B.inermis and L.multiflorum*) production differences are obtained as statistically significant positive pure culture SU *B.inermis* harvest obtained as 10.23 t / ha DM. We can say that this level of harvest obtained from *B.inermis* species was generally due to climatic conditions in experimental year (year considered dry), knowing that this species is recommended for drier areas, exposed to the south. The same level of production that is 10.43 t / ha DM, the species *B.inermis* (Orpheus variety) were obtained and Motca et al., (1988) using the 200 (100 + 50 + 50) kg N / ha.

Also comparing the yields obtained in experimental species we emphasize that if the species *L. multiflorum* although high yields were obtained in the first year from seed or 12.19 t / ha, in II - The yields are very low even in the case of the variant of the nitrogen fertilized with high doses (N<sub>200</sub>).

Table 1

DM average annual yields (t / ha) pure perennial grasses crops depending on nitrogen doses applied (2012)

Factor A – doses nitrogen	Factor B - species	DM t/ha	Difference	%	Significance
No	Dactylis	5.11	0.00	100.00	-
N <sub>100</sub>	glomerata	6.49	1.38	127.60	-
N <sub>200</sub>		8.30	3.18	162.30	**
No	Bromus	6.15	0.00	100.00	-
N <sub>100</sub>	inermis	6.86	0.52	109.40	-
N <sub>200</sub>		9.17	3.32	154.00	**
No	Lolium	6.65	0.00	100.00	-
N <sub>100</sub>	multiflorum	10.01	3.35	150.40	**
N <sub>200</sub>		12.19	5.53	183.20	***

LSD (p5%) = 2.10LSD (p1%) = 3.03LSD (p=0.1%) = 1.63

# Table 2

Facorul A – doses nitrogen	Factorul B - species	Yield SU t/ha	Difference	%	Significance
No	Dactylis	3.19	0.00	100.00	-
N <sub>100</sub>	glomerata	6.17	3.28	202.60	**
N <sub>200</sub>		6.82	3.63	213.50	**
No	Bromus	3.94	0.00	100.00	-
$N_{100}$	inermis	6.27	2.34	159.70	*
N <sub>200</sub>		10.01	6.08	254.90	***
No	Lolium	1.95	0.00	100.00	-
$N_{100}$	multiflorum	3.77	1.83	193.80	*
N <sub>200</sub>		4.14	2.19	212.50	*

DM average annual yields (t / ha) pure perennial grasses crops depending on nitrogen doses applied (2013)

LSD (p5%) = 1.65 LSD (p1%) = 2.50

LSD (p= 0.1%) = 4.13

# CONCLUSIONS

Productivity pure cultures of perennial grass is different, which is in correlation with the productive potential of the species and the variety used, the amount of fertilizer applied and walking time.

DM highest yields were obtained in monocultures in *L. multiflorum* II of existence by using a dose of 200 kg / ha nitrogen in the third when *B.inermis* species.

Therefore, pure culture of perennial grasses species, given that experienced only in cases where it has sufficient fertilizer doses ( $N_{200}$ ) give the corresponding production economically.

## REFERENCES

- 1. Bărbulescu, C., Motcă, Gh., 1984, Pășunile munților înalți, Ed. Ceres;
- 2. Bărbulescu, C., Burcea, P., Motcă, Gh., Marinică, D., 1980, Pajiștile de la Davidești și ameliorarea lor, Casa Agronomului Argeș
- 3. Burcea, P., Maruşca, T., Neagu, M., 2007, Pajiştile montane din Carpații României, Ed. Amanda Edit, București
- 4. Cardașol, V., Simtea, N., Proca, M., Razec, I., Hermenean, I., 1989, Măsuri tehnico- organizatorice pentru sporirea producției pajiștilor, Redacția de propagandă tehnică agricolă, București
- 5. Kellner, E., Schitea, Maria, Culică, S., Moga, Rodica, 1980, Studiul unui sortiment de specii de graminee perene în condiții de irigare. an. iccpt, 1980, xlvi: 119-126.