RESEARCHES CONCERNING THE ALIMENTARY AND AGRONOMIC VALUE OF THE MAIN GRASSLAND ECOSYSTEMS FROM BANAT UNDER THE INFLUENCE OF SUSTAINABLE MANAGEMENT AND MAINTAINING OF VEGETATION CARPET BIODIVERSITY

CERCETĂRI PRIVIND VALOAREA AGRONOMICA SI ALIMENTARA A PRINCIPALELOR ECOSISTEME PRATICOLE DIN BANAT IN CONDIȚIILE GESTIONARII DURABILE SI MENȚINERII BIODIVERSITATII COVORULUI VEGETAL

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Abstract: *Banat region has an important heritage represented by grasslands; from these 69,423 hectares are places in plain area, 269,120 hectares are in hill area and 26,483 in mountain area. Grassland productivity is usually determined by the natural soil fertility, by their humus content, by their rainfall regime, and by other environmental factors. Phosphorus content is important for the realisation of a balance between Ca and P. The surfaces with well supplied soils with P are 48% and the soils well supplied with K are 56% from the total surface covered with grasslands.*

Rezumat: *Banatul dispune de o zestre importantă de pajişti din care 69.423 ha sunt amplasate în zona de câmpie, 269.120 ha în zona colinară şi 26.483 ha în zona de munte. Productivitatea pajiştilor, în general este determinată de fertilitatea naturală a solurilor, de conţinutul în humus, de regimul de precipitaţii şi alţi factori. Conţinutul de fosfor joacă şi el un rol important la realizarea echilibrului între Ca şi P. Suprafeţele cu soluri bine aprovizionate cu fosfor reprezintă 48%, iar cele aprovizionate bine cu potasiu 56% din totalul suprafeţelor ocupate cu pajişti.*

Key words**:** *grassland, nutrients supply, chemical fertilisation, organic fertilisation, mixed fertilisation.*
Cuvinte cheie: *pajişte, aprovizionare cu elemente nutritive, fertilizare chimică, fertilizare organică, fertilizare mixtă.*

INTRODUCTION

Grassland ecosystems are representing land surfaces (agro-biotopes) covered with herbaceous vegetation (agro-phytocoenosis) composed by a annual plant species complex belonging to the therophytes, and perennials that are belonging to the geophytes and hemicryprophytes, in general being plants from different botanical families, perennial grasses (*Poaceae*) being usually dominant, but also leguminous plants (*Fabaceae*), *Cyperaceae, Juncaceae,* and other families plant species.

Exploitation of these ecosystems through mowing determinates important changes at their level. Periodically is exported an important phyo-mass quantity through harvesting, this fact determining the vegetation carpet composition change. Aerial trophic chains are affected, and their integrator role is powerful diminished.

MATERIAL AND METHOD

Experimental plots are placed in Beba Veche (Timiş County), Vârciorova and Brebu Nou (Caraş-Severin County), and the data were collected during 2005-2006 period. The experimental plot comprises three fertilisation experiences: organic, chemical and mix.

Every fertilisation experience is organized in ten variants and five repetitions. These were set after blocks method. The surface of a plot is 20 m^2 (4m x 5m).

Experience I – organic fertilizers

1. Control
2. 10 t manure - applied once
3. 20 t manure - applied once
4. 30 t manure - applied once
5. 40 t manure - applied once
6. 10 t manure - applied annual
7. 20 t manure - applied annual
8. 30 t manure - applied annual
9. 40 t manure - applied annual
10. 40 t manure + 10 t manure - applied annual

Experience II – mineral fertilizers

1. Control ($N_0P_0K_0$)
2. $N_{100}P_0K_0$
3. $N_{200}P_0K_0$
4. $N_{200}P_{50}K_0$
5. $N_{200}P_{50}K_0$
6. $N_{200}P_{50}K_{50}$
7. $N_{200}P_{50}K_{50}$
8. $N_{100+100}P_0K_0$
9. $N_{100+100}P_{50}K_{50}$
10. $N_{100+50+50}P_{50}K_{50}$

Experience III – organic and mineral fertilizers

1. Control
2. 10 t + $N_0P_{50}K_{50}$
3. 10 t + $N_{100}P_{50}K_{50}$
4. 10 t + $N_{50+50}P_{50}K_{50}$
5. 20 t + $N_0P_{50}K_{50}$
6. 20 t + $N_{100}P_{50}K_{50}$
7. 30 t + $N_0P_{50}K_{50}$
8. 30 t + $N_{100}P_{50}K_{50}$
9. 40 t + $N_0P_{50}K_{50}$
10. 40 t + $N_{100}P_{50}K_{50}$

For yield determination there is used direct method, repeated cuttings. Thus can be realised the analysis of dry matter yield.

RESULTS AND DISCUSSIONS

Beba Veche grassland

Yield results obtained on Beba Veche grassland for all these three experiences are presented in table 1. The best results concerning the dry matter content are registered on the background of chemical fertilisation in the most part of the variants, the best values being registered for $N_{100+100}P_{50}K_{50}$ (4488 kg/ha dry matter), this being near $N_{200}P_{50}K_0$ variant (4392 kg/ha dry matter).

Table 1

Dry matter yield (kg/ha) and dry matter content (%) in Beba Veche grassland during 2005-2006

Dry matter	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Mixed fertilisation										
kg/ha	2916	4203	3161	3726	3287	3370	3485	3946	3506	3816
%	36	37	32	36	34	35	34	39	36	36
Chemical fertilisation										
kg/ha	2916	3977	3468	4392	4147	4347	4305	4488	3933	4147
%	36	32	30	36	35	35	36	37	34	35
Organic fertilisation										
kg/ha	2916	3735	3552	3049	3762	4147	3409	3362	3379	3232
%	36	33	35	32	36	37	35	34	33	32

Vârciorova grassland

Yield results obtained on Vârciorova grassland for all these three experiences are presented in table 2. The best results concerning the dry matter content are registered on the background of chemical fertilisation in the most part of the variants, the best values being registered for $N_{100+50+50}P_{50}K_{50}$ (3980 kg/ha dry matter), this being near to mixed fertilization variant 40 t manure + + $N_{100}P_{50}K_{50}$ (3922 kg/ha dry matter).

Table 2

Dry matter yield (kg/ha) and dry matter content (%) in Vârciorova grassland during 2005-2006

Dry matter	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Mixed fertilisation										
kg/ha	2072	2376	2945	2912	2558	3135	2688	2983	3512	3922
%	25	26	26	25	25	26	24	23	25	24
Chemical fertilisation										
kg/ha	2072	2546	2323	2793	2810	3133	2584	2932	3836	3982
%	25	27	22	26	24	25	24	27	27	25
Organic fertilisation										
kg/ha	2072	2184	2254	2716	2432	1901	2405	2586	2805	2892
%	25	24	23	26	22	21	24	25	25	26

Brebu Nou grassland

Yield results obtained on Brebu Nou grassland for all these three experiences are presented in table 3. The best results concerning the dry matter content are registered on the background of chemical fertilisation in the most part of the variants, the best values being registered for $N_{200}P_{50}K_{50}$ (3536 kg/ha dry matter), this near to $N_{100+100}P_{50}K_{50}$ variant (3384 kg/ha dry matter).

Table 3

Dry matter yield (kg/ha) and dry matter content (%) in Brebu Nou grassland during 2005-2006

Dry matter	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Mixed fertilisation										
kg/ha	1804	2063	2457	2926	2134	3144	3163	3180	2635	2822
%	24	21	21	23	22	24	25	24	23	22
Chemical fertilisation										
kg/ha	1804	2300	2608	2955	2976	3289	3536	3212	3384	3208
%	24	24	23	25	24	26	26	25	24	23
Organic fertilisation										
kg/ha	1804	2187	2282	2665	3039	2179	2290	2546	2950	2975
%	24	25	25	26	26	24	25	24	25	25

CONCLUSIONS

Analysing the results obtained these three grassland experiences during 2005-2006 we have elaborated the next conclusions:

a. in case of Beba Veche grassland the best values are registered for $N_{100+100}P_{50}K_{50}$ (4488 kg/ha dry matter);
b. in case of Vârciorova grassland the best values are registered for $N_{100+50+50}P_{50}K_{50}$ (3980 kg/ha dry matter);
c. in case of Brebu Nou grasslands the best values are registered for $N_{200}P_{50}K_{50}$ (3536 kg/ha dry matter).

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