FERTILISATION INFLUENCE ON GRASSLAND FROM ABANDONED ARABLE LAND

INFLUENTA FERTILIZĂRII ASUPRA VEGETAȚIEI PAJIȘTILOR DE PÂRLOAGA

G. D. LAIEȘ*, Al. MOISUC**

**Bardeau Holding – Grădinari, Caraș-Severin, Romania*
***Agricultural and Veterinary University of the Banat, Timișoara, Romania*
Corresponding author: Alexandru MOISUC, e-mail: alex_moisuc@yahoo.de

Abstract: *Very different soil and climate conditions that determinates grassland formation and the powerful anthropic influences determinate a great variability from botanical composition point of view but also from forage yield and quality. Having in view the low level of the permanent grasslands yield there is needed the applying of a technical and organisational measures complex with the purpose of the improvement of nutritive quality and its rational use. Depending by these aspects the vegetation can be changed fundamentally concerning the improvement or depreciation of botanical composition in a very short time.*

Rezumat: *Condițiile pedoclimatice foarte diferite în care s-au format pajiștile, la care se adaugă influențele puternic antropice au determinat o mare variabilitate a acestora atât din punct de vedere floristic cât și a producției și calității furajelor. Având în vedere nivelul încă scăzut al producțiilor pajiștilor permanente, se impune aplicarea unui complex de măsuri tehnice și organizatorice în direcția îmbunătățirii calității nutritive și a folosirii ei raționale. În funcție de acestea vegetația se poate schimba fundamental în sensul îmbunătățirii sau deprecierii compoziției floristice și aceasta în scurt timp.*

Key words**:** *grassland, fertilisation, abandoned arable land, vegetation.*
Cuvinte cheie: *pajiște, fertilizare, teren arabil abandonat, vegetație.*

INTRODUCTION

Permanent herbaceous formations known as grasslands are permanently under the influence of climate, soil, slope, and anthropic factors.

Permanent grassland main role is to offer feed necessary for herbivore animals. Grassland must to be the main forage resource for sheep, bovines, horses because grazed grass is the cheaper forage type. The animal is harvesting, transporting, consuming and transforming himself the forage while is grazing (CARLIER, 1989). Grassland must to provide bovine, sheep and horses feed except concentrate forages (MOISUC *et* DUKIC, 2002).

There must be underlined that the yields obtained in grasslands are usually low, under the natural productive potential of these land surfaces.

Mineral fertilizers applied on grasslands, as is for every crop, are based on nitrogen, phosphorus and potassium, and nitrogen has the main role on the vegetative mass increase (CAPUTA, 1971)

MATERIAL AND METHOD

Experimental plots are placed in Grădinari (Caraș-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

Yield results obtained on Grădinari grassland for all these three experiences are presented in table 1.

In the case of mixed fertilisation the greatest yield is registered in 30 t + $N_{100}P_{50}K_{50}$ (14440 kg/ha green mass), 40 t + $N_0P_{50}K_{50}$ (14120 kg/ha green mass) and 40 t + $N_{100}P_{50}K_{50}$ (113480 kg/ha green mass) variants, thus an enough good yield is found in the variant fertilized with 10 t + $N_0P_{50}K_{50}$ (12520 kg/ha green mass).

Concerning the yield distribution on cuttings we can notice the fact that the most important participation in yield is due to first cut, indifferent by the doses of fertilisers used there.

Table 2

Yields realised in Grădinari grassland during 2005-2006 (kg/ha green mass)

Cut	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Mixed fertilisation										
1st cut	7452	9765	9150	8753	9080	9210	9290	11407	11296	10380
2nd cut	1748	2755	2890	2327	2560	3070	2470	3033	2824	3100
Total	9200	12520	12040	11080	11640	12280	11760	14440	14120	13480
Chemical fertilisation										
1st cut	7452	8983	8652	9656	8434	8745	9214	9130	9018	8914
2nd cut	1748	5276	3708	4544	3446	4505	4336	3550	4442	4195
Total	9200	14260	12360	14200	11880	13250	13550	12680	13460	13110
Organic fertilisation										
1st cut	7452	10934	10309	13728	12176	10731	12520	8525	11004	12073
2nd cut	1748	5146	4211	3872	4504	3389	4400	3315	4716	3607
Total	9200	16080	14520	17600	16680	14120	16920	11840	15720	15680

In case of chemical fertilisation experience we have obtained the greatest yield in case of $N_{100}P_0K_0$ (14260 kg/ha green mass), this being followed very close by $N_{200}P_{50}K_0$ fertilisation variant. Concerning the yield repartition on cuttings we are noticing the same trend as in case of mixed fertilisation.

Concerning the green mass yields obtained in case of organic fertilised variant we are noticing as best fertilisation variant the plot fertilised with 30 t/ha manure applied once(17600 kg/ha green mass), this being close followed by the plot fertilised with 20 t/ha manure applied annual (16920 kg/ha green mass), respectively the variant fertilized with 40 t/ha manure applied once (16080 kg/ha green mass). An important yield is also registered in case of variant fertilised with 20 t/ha manure applied once (16080 kg/ha green mass). Yield repartition on cuttings has the same evolution as in case of the previous fertilisation types (mixed and chemical) because the first cut has the most important participation in total yield.

During those two years (2005-2006) Grădinari grassland had the best results concerning dry matter yield in case of fertilisation with manure, while mixed and chemical fertilisation had near results.

The results concerning dry matter yield and dry matter content realised on Grădinari grassland in case of these three experiences are presented in table 2.

Table 2

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

Dry matter	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Mixed fertilisation										
kg/ha	3036	4006	4093	3434	3608	3684	3763	4909	4942	4448
%	33	32	34	31	31	30	32	34	35	33
Chemical fertilisation										
kg/ha	3036	4420	4202	4686	4276	4240	4200	4311	4172	3933
%	33	31	34	33	36	32	31	34	31	30
Organic fertilisation										
kg/ha	3036	5306	4501	5104	4837	4518	5245	3788	5502	4547
%	33	33	31	29	29	32	31	32	35	29

The greatest results concerning dry matter yield are registered in case of organic fertilisation variants, the best values being noticed in case of the variant fertilised with 40 t/ha

manure applied annual (5502 kg/ha dry matter), this being followed by the variant fertilised with 20 t/ha manure applied once (5306 kg/ha dry matter).

CONCLUSIONS

Analysing the results obtained on Grădinari grassland experience during 2005-2006 we have the next conclusions:

- the plot fertilised with 30 t/ha manure applied once have the best production (17600 kg/ha green mass);
- during 2005-2006 Grădinari grassland had the best results concerning green mass yield on the background of fertilisation with manure, while mixed and chemical fertilisation had near results;
- the best values for dry matter yield is noticed on the background of 40 t/ha manure applied annual (5502 kg/ha dry matter);
- the greatest results concerning dry matter yield are registered in case of organic fertilisation variants in comparison with chemical and mixed fertilisation.

LITERATURE

BĂRBULESCU C., MOTCĂ Gh., 1987, *Pajiştile de deal din România*, Ed. Ceres Bucureşti.

BĂRBULESCU C., MOTCĂ GH., PUIA I., MOISUC A., 1991, *Cultura pajiştilor şi a plantelor furajere*, Ed. Did. Şi Ped. Bucureşti

CAPUTA, J., 1971 – *Aplications d'azote sur les paturages d'altitude*. Experiences fourrageres, pag.14.

CARLIER, L., 1989 – *Nos prairies. Ministerie van Landbouw*, Rijksstation voor Plantenveredeling, Merelbeke.

IONESCU I., 1997 – *Cultura pajiştilor şi a plantelor furajere*, Reprografia Universităţii din Craiova.

MOISUC, AL., DUKIC, D., 2002 – *Cultura plantelor furajere*. Editura Orizonturi Universitare, Timişoara.

MOISUC A., I.SAMFIRA, HORABLAGA M,COJOCARIU LUMINIŢA., 2002, *Interrelaţia compoziţie floristică – valoare pastorală a unor pajişti din Banat*, Sesiunea anuală omagială „80 de ani de la naşterea Prf.dr.doc.şt. Iulian Drăcea", vol.XXXIV, Pg.207-214.

MOISUC A., LUMINIŢA BREAZU, SAMFIRA I., 1994, *Lucrări practice „Cultura pajiştilor şi a plantelor furajere"*, Editura Euroart.

MOISUC A., LUMINIŢA COJOCARIU, I. SAMFIRA, 1998, *Rezultate preliminarii privind sisteme de îmbunătăţire a pajiştilor din Vestul ţării*, Lucr.şt.,USAB Timişoara, vol.XXX, Pg.237-244.

NIEDERMAIER, K., 1962 – *Cercetări asupra dinamicii producţiei unor pajişti situate la altitudini diferite*, Analele ICCPT Fundulea, seria B, vol. XXX, Editura Agrosilvică Bucureşti, p. 135-147.