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RESEARCH ON INFLUENCE OF AGROFUNDS ON THE FODDER PRODUCTION AT PREAJBA – GORJ

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Abstract

It is important that pastoral fund of our country has to be preserved, provided that there is a tendency for degradation quite pronounced. Best grassland biodiversity is conserved if it uses mainly organic fertilizers, as agro funds so I experienced several models of fertilization. Experiences that take place in the Experimental Center for Culture of grasslands Preajba - Gorj County, are supported by strategic project "Support Scholarships University in Romania by the European Doctoral and Post-doctoral (SCHOLARSHIPS DOC-POSDOC)", ID 133255, making it one on natural grassland and the other on natural meadow over seeded. I used Red clover for over seeding and noticed that in the first year of experimentation (2014), total production was closely related to the amount of manure used, being less influenced by the amounts of nitrogen, phosphorus and potassium compound fertilizers.

***Key words*:** *clover, fertilizer, pastures, total production*

INTRODUCTION

Approximately 70% of grasslands are spread out in the hillside, being represented mostly by type *Agrostis capillaris*.
These meadows, mostly characterized by low productivity (5-7 t/ha green mass) are mediocre in terms of quality, with the production unevenly distributed during the growing season.
As a result of modest quantity and quality of forage, meadows provide food for grazing season more than 1 LU / ha, which is very little if we take into consideration the potential natural vegetation and specific conditions. [3]
On pastures nor does it apply a work of care practiced a rudimentary and inappropriate use, which determines the vegetation and soil degradation.
Animals are introduced immediately after snowmelt, when the ground is still wet and maintained continuously until very late autumn, and if there is snow, even in the early part of the winter, the only exploitation methods known being free grazing or grazing in front. [4]

MATERIALS AND METHODS

The Oltenia hilly area, known as the Subcarpaţii Olteniei is comprised between Olt Valley and Tismanei including:
- Carpathian Basin Tismana - Polovragi;
- Carpathian hills;
- Depression intrahill Tg. Jiu – Câmpul Mare;
-Carpathian hills outside of Ciuperceni and Sârbești.
The system consists of alternating hills lower in altitude to the south and depressions developed in the form of continuous corridors. Between Motru and Gilort is the largest Carpathian basin intrahill - Tg. Jiu - Câmpu Mare, where is. Tg Jiu and rural areas as: Drăguțești, Băleşti, Câlnic, Ciuperceni. [1]
The Hilly region includes two categories genetically generated by tectonic movements (the folded hills) and piedmont regions formed by erosion by rivers (hillocks).
In the first category are included two rows of hills forks from Măgura Slatioarei and cross entirely The Carpathian area at West of the Olteţ river, dividing it into two valleys. The second category, the erosion hills, includes the Northern edge of the Piedmont getic, some of them bordering to South the intrahilly depression Tg. Jiu - Câmpu Mare (Bujorăscu Hill) and others closed smaller erosion depressions (Cărbunești, Mira, Muierii, etc).
The climate of Oltenia hill is milder and drier than one encountered in the mountains, being

influenced by the movement of air masses south and south - western and western. Meanwhile, anticyclonic air masses from the north, lose baseline characteristics, reaching Tg. Jiu with a higher temperature and lower movement speed. [2]

Researchers describes the climate in the Carpathian area of Oltenia based on meteorological data obtained at Apa Neagră stations (latitude 45 ° 00; longitude 22 ° 49; altitude 360 m), Targu-Jiu (45 ° 02; 23 ° 17 ; 210 m) and Râmnicu Vâlcea (45 ° 06; 24 ° 22; 242 m) and through Glogova and Novaci weather stations. [6]

The amplitude of the annual air temperature is 22.5 ° C at Apa Neagră, 24.1 ° C to 23.7 ° C Târgu Jiu and the station Ramnicu Valcea and monthly averages of daily maximum temperatures range from 9.7 ° C in January and 34.7 ° C in August, while for the minimum variation is from -16.9 ° C in January to 9.4 ° C in July. [7]

Average rainfall that occurred in the area reaches 901.9 mm at Apa Neagră, 726.0 mm at Glogova, 798.0 mm at Târgu Jiu, 863.0 mm and 707.3 mm at Novaci. [6]

Submission of snow is differentiated because of wind, accumulated quantities cannot be recorded in the general area. The data recorded at Târgu Jiu station shows that the average snowfall increases from late autumn to late winter, with a maximum in the first decade of February (14.8 cm).

The hilly area of Oltenia presents a wide range of soil types due to heterogeneity factors pedogenesis. [8]

Reserchers considers that from the southern boundary of Getic Plateau to the piedmont hills are found, mainly preluvisols and luvisols representative on hilly area. [10]

Preluvisols are found on well-drained slopes, exposed to the south and were formed under forests (*Quercus cerris*) and flasks (*Quercus frainetto*), making it the characteristic clays, conglomerates and sandstones, as parental material. [9]

Type characteristic pasture, spread on important areas, including the Experimental Center for Crops and Pasture land from Preajba, is *Agrostis capillaris* with *Festuca rubra*. The two species are in a relationship of co-dominant, depending on some factors exhibition or stationary, such as soil moisture. [5]

For solving the objectives in the spring of 2014, were two experiences placed into the field of Preajba Experimental Center - Gorj, taking into account the selection of land area representative in terms of floristic composition and terrain orography.

Placement of experiences was in blocks, each experience with 8 variants 3 repetitions.

The 8 variants were similar in all the two experiences:

Var. 1 = Witness unfertilized;
Var. 2 = 5 t/ha manure;
Var. 3 = 10 t/ha manure;
Var. 4 = 15 t/ha manure;
Var. 5 = 20 t/ha manure;
Var. 6 = 10 t/ha manure + 50 kg/ha N + 50kg/ha P_2O_5 + 50kg/ha K_2O;
Var. 7 = 15 t/ha manure + 50 kg/ha N + 50kg/ha P_2O_5 + 50kg/ha K_2O;
Var. 8 = 20 t/ha manure + 50 kg/ha N + 50kg/ha P_2O_5 + 50kg/ha K_2O.

Experiment 1 was placed on *Agrostis capillaris* natural grassland, aiming at improving it through organic and chemical fertilizers.

Experience 2 was placed on natural meadow over-seeded with Red clover, 15 kg / ha.

As complex fertilizers were used 15-15-15 so calculated and completed as to achieve the rates established by thematic and manure from cattle older than 2-3 years.

Preparing the ground for no experience. 2 consisted of multiple passes perpendicular to the disc harrow over permanent grassland until it was found that the land is partially mobilized, allowing over-seeding.

Trifolium pratense was used for over-seeding (Red clover) Merviot variety.

Sowing was done manually and the incorporation of seeds with a ring roller towed by tractor U 445 DT. After seeding was applied chemical and organic fertilizers.

RESULTS AND DISCUSSIONS

In 2014, permanent grassland of Agrostis capillaris from Preajba - Gorj gave a yield of 2.34 t / ha dry matter (Table 1, Figure 1).

Table 1. Influence of chemical and organic fertilizers on permanent pasture production *Agrostis capillaris* in 2014 (t / ha dry matter)

Variant	Absolut prod. t/ha d.m.	Relative prod. (%)	Diff. (±) t/ha d.m.	Signif.
unfertilized	2,34	100	-	Whitens
5 t/ha manure	2,70	115	0,36	-
10 t/ha manure	2,81	120	0,47	-
15 t/ha manure	3,10	132	0,76	-
20 t/ha manure	3,30	141	0,96	-
10 t/ha manure + 50N + 50 P_2O_5 + 50K_2O	4,35	186	2,01	***
15 t/ha manure + 50N + 50 P_2O_5 + 50K_2O	4,92	210	2,58	***
20 t/ha manure + 50N + 50 P_2O_5 + 50K_2O	5,50	235	3,16	***

DL 5% = 0,97 t/ha, DL 1% = 1,35 t/ha, DL 0,1 % = 1,88 t/ha
Source: Own calculation.

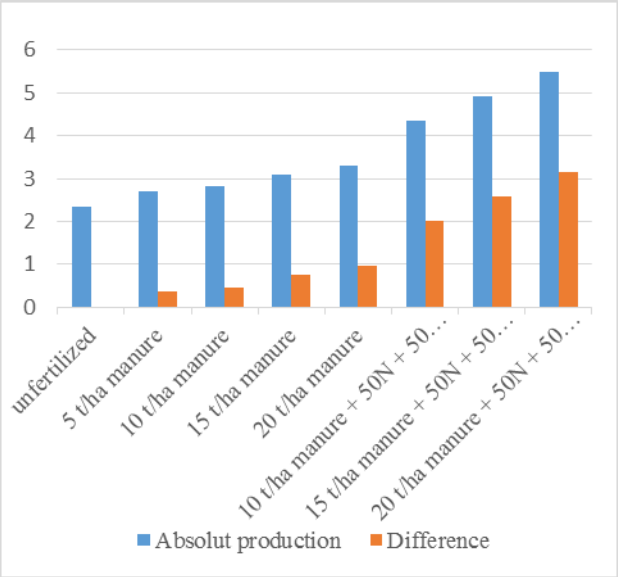

Fig. 1. Production of dry matter (permanent pasture)
Source: Own calculation.

The 7 treatments with different doses and combinations of chemical or organic fertilizers have achieved higher production, at 2.70 (manure 5 t / ha) to 5.50 t / ha d.m. (manure 20 t / ha + 50 kg N, 50 kg P2O5 and 50 kg K2O). In relative numbers, increases ranged between 15 to 135% and in absolute terms, from 0.36 to 3.16 t / ha d.m. 3 of the 6 treatments production increases distinctly significant (variant 10 t / ha manure + 50N + 50P_2O_5 + 50K_2O, version 15 t / ha manure + 50N + 50P_2O_5 + 50K_2O and fertilized variant with manure 20 t / ha manure + 50N + 50 P_2O_5 + 50K_2O).

Highest production of 5.50 t / ha dry substance was recorded in organic and mineral combination treatment with 20 t / ha manure + 50N + 50P_2O_5 + 50K_2O.High yields, close to the maximum, gave variants 15 t / ha manure + 50N + 50P_2O_5+ 50K_2O (4.92 t / ha) and 10 t / ha manure + 50N + 50P_2O_5+ 50K_2O (4 35 t / ha).Other variants with manure single dose of 5, 10, 15 or 20 t / ha gave lower yields but good enough: from 2.70 to 3.30 t / ha d.m.

Gains made by these treatments were not significant.

In the case of over-seeded grassland from Preajba we obtained productions from 3.93 to 8.89 t / ha d.m. according to the treatment with chemical fertilizers and / or organic (Table 2, Figure 2).

Table 2. Influence of chemical and organic fertilizers on permanent grassland of Agrostis capillaris over-seeded in 2014 (t / ha dry matter)

Variant	Absolut prod. t/ha d.m.	Relative prod. (%)	Diff. (±) t/ha d.m.	Signif.
unfertilized	3,93	100	-	Whitens
5 t/ha manure	4,74	121	0,81	-
10 t/ha manure	5,56	141	1,63	*
15 t/ha manure	5,97	152	2,04	**
20 t/ha manure	7,51	191	3,58	***
10 t/ha manure + 50N + 50 P_2O_5 + 50K_2O	8,31	211	4,38	***
15 t/ha manure + 50N + 50 P_2O_5 + 50K_2O	8,89	226	4,96	***
20 t/ha manure + 50N + 50 P_2O_5 + 50K_2O	8,22	209	4,29	***

DL 5% = 1,26 t/ha, DL 1% = 1,75 t/ha, DL 0,1 % = 2,43 t/ha
Source: Own calculation.

The smallest amount of dry matter was carried to over-seeded and fertilized variant, and the

highest to treatment with 15 t / ha manure + 50N + 50P_2O_5+ 50K_2O.

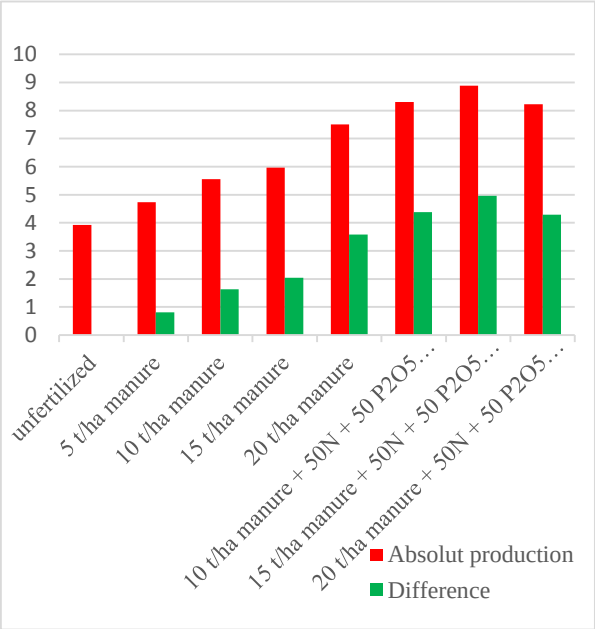

Fig. 2. Production of dry matter (over-seeded pasture)
Source: Own calculation.

The latest treatment has recorded an increase of 4.96 t / ha compared with whitens, very significant.

High yields, close to the maximum, of more than 7 t / ha d.m gave variants 4, 5, 6 and 8 respectively treatments with 10 t / ha manure + 50N + 50P_2O_5+ 50K_2O (8.31 t / ha), 20 t / ha manure + 50N +50P_2O_5 + 50K_2O (8.22 t / ha) and 20 t / ha manure (7.51 t / ha). At these 3 treatments production were superior to the witness by 3.58 to 4.38 t / ha d.m.

Lower yields, but good, were performed for treatments with 15 t / ha manure (5.97 t d.m) and 10 t / ha manure (5.56 t d.m) to which increase in production compared with the witness was over 1.5 t d.m

CONCLUSIONS

The data obtained show that permanent grassland production can be greatly improved by using fertilizers. The best results were obtained with mixed organic-mineral treatment (manure + NPK), where the production was situated between 4.35 t / ha d.m to 5,50 t / ha d.m (10 t/ha manure + 50N + 50 P_2O_5 + 50K_2O and 20 t/ha manure + 50N + 50 P_2O_5 + 50K_2O).

The results of *Agrostis capillaris* grassland highlight the effectiveness of over-seeding pastures as specific method for improving the weakly productive, degraded and also demonstrates the important role of fertilizers, especially the organic and the plants sown in raising overall productive grassland.

Best results were found at variants fertilized with 15 t/ha manure + 50N + 50 P_2O_5 + 50K_2O (8,89 t / ha dry matter) and 10 t/ha manure + 50N + 50 P_2O_5 + 50K_2O (8,31 t / ha dry matter).

The floristic structure of both types of grassland has been enhanced by the appearance of valuable species, especially because of the effect it has on manure;

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