Scientific Papers. Series A. Agronomy, Vol. LV-2012
ISSN Online 2285-5793; ISSN-L 2285-5785

RESEARCH REGARDING QUALITY OF LUCERNE IN ECOLOGICAL CULTURE

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Abstract

Carpet plant used as temporary grassland is an essential component of forage systems applied in regions lacking natural grasslands (permanent), as is Burnazului plain. It provides the cheapest animal feed during the growing and most balanced in terms of nutrient feed for a period of calves. For quality measurements and analyzes I performed in the dynamic field floristic composition, the vegetation cover density, the permanence, the aesthetic appearance of the vegetation and landscape and I have harvested plant material for laboratory testing and the amount of dry matter content of macro and micronutrients. Based on botanical analysis I found that the mixtures in organic fertilized variants, lucerne reaches a weight of 70-80%. Structure determinations on the vegetative organs of the species yield components shows that both the pure culture of lucerne, and mixtures with Dactilis glomerata variants leaf share increase from cycle 1 to cycle 3-century. Crude fibre content of plants, indicator of consumption and digestion, is very low, 20-28% of dry matter. The lowest values of 20-22%, occurred in pure culture variant lucerne and Trifolium alexandrinum version, fertilized with manure. Microelement content in plants falls within normal parameters.

Key words**:** *grassland, lucerne, testing, quality.*

INTRODUCTION

Carpet plant used as temporary grassland is an essential component of forage systems applied in regions lacking natural grasslands (permanent), as is Burnazului plain. It provides the cheapest animal feed during the growing and most balanced in terms of nutrient feed for a period of calves [1, 3].

Medicago sativa, *Trifolium alexandrinum* and *Dactilys glomerata* are three species feed has an imporant economic and ecological value [5].

Lucerne is the most important perennial legumes for forage-use composition of the vegetation in lowland areas or in pure culture or mixed with perennial grasses [2].

Has a high resistance to frost and drought, high production capacity, outstanding quality for animal nutrition, good longevity (5-6 years) and the ability to enrich the ground-nitrogen biologically [4].

Clover of Alexandria is a legume forage with an architecture similar to that of lucerne, but with a growth rate more intensely, covering the ground after a short period of emergence. Clover is valuable forage quality by the high content of protein and digestible energy. It is also a valuable honey plant. Has an important role in preventing pollution by excluding nitrogen fertilizers.

Dactilys glomerata is the species with the greatest ecological plasticity in Romania, is resistant to drought and feed use in all know forms: mowing, grazing, mixed. Form a closed vegetation cover, with great longevity.

MATERIAL AND METHOD

For quality measurements and analyzes I performed in the dynamic field floristic composition, the vegetation cover density, the permanence, the aesthetic appearance of the vegetation and landscape and I have harvested plant material for laboratory testing and the amount of dry matter content of macro and micronutrients.

Experimental variants were the culture system (*Medicago sativa*-pure culture; mix 1: *Medicago sativa* - 18 kg/ha + *Trifolium alexandrinum* - 4 kg/ha; mix 2: *Medicago*

sativa - 16 kg/ha+*Dactylis glomerata* - 6 kg/ha; mix 3: *Medicago sativa* - 16 kg/ha+*Dactylis glomerata* - 6 kg/ha+ *Trifolium alexandrinum* - 4 kg/ha) and fertilization system (N_0P_0 kg/ha; N_0P_{70} kg/ha; $N_{70}P_{70}$ kg/ha; manure-40 t/ha).
For comparison were placed in 2 variants of conventional culture (N_0P_{70} kg/ha, $N_{70}P_{70}$ kg/ha), a variant without fertilization, considered organic (N_0P_0 kg/ha) and one organic fertilized variant (manure-40 t/ha). The varieties used were: Pomposa for lucerne, Tigri for *Trifolium alexandrinum* and Magda for *Dactylis glomerata*.

RESULTS AND DISCUSSIONS

Based on botanical analysis I found that the mixtures in organic fertilized variants, lucerne reaches a weight of 70-80%.
Structure determinations on the vegetative organs of the species yield components shows that both the pure culture of lucerne, and mixtures with *Dactilis glomerata* variants leaf share increase from cycle 1 to cycle 3-century.
At harvest, 1-2005 cycle, the average fertility variants, biomass structure is differentiated on the two components of mixtures studied species. Thus, the *Dactilys glomerata* leaves predominantes (52%) to the mix *Medicago sativa*-16 kg/ha+*Dactylis glomerata*-6 kg/ha and 60% in the mix *Medicago sativa*-16 kg/ha+*Dactylis glomerata*-6 kg/ha+ *Trifolium alexandrinum*-4 kg/ha (Fig. 1).
At lucerne strains although prevail (53-54%), the difference is quite small that it can be said that the report leaves/stem close to the value 1 (Fig. 2). Cycles II and III are found in the structure prevailing lucerne leaves harvested biomass that is, increasing the percentage of leaves about 50% from cycle I to 60-65% in the third cycle (Fig. 3).
There were no significant differences in fertilization variants in terms of report leaves/stems. These results lead us to suggest that dry matter yields are good quality in terms of animal nutrition.
Based on chemical analyzes performed at the first harvest in 2005, that in terms of animal nutrition all experimental variants fall within normal parameters.

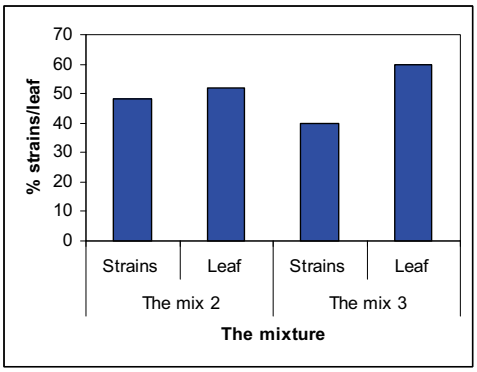

Fig.1. Production components in *Dactylis glomerata*, the first cycle-2005

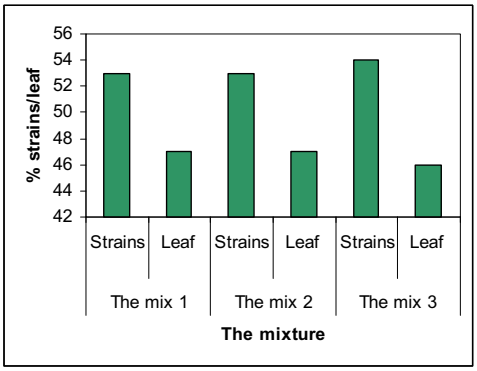

Fig.2. Production components in *Medicago sativa*, the first cycle-2005

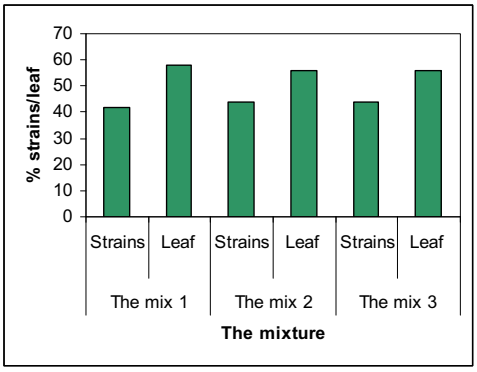

Fig. 3. Production components in *Medicago sativa*, the third cycle-2005

Table 1. The chemical composition of plants, first harvest cycle, 2005

Variant fertilization	(%)	K	Ca	Mg	Na	Fe	Zn	Mn	Cu	Al	B	Ba	Pb
Medicago sativa-pure culture													
	Minerals	mg/100 g SU											
Unfertilized	7.17	1329	1894	342	176.51	19.47	11.84	3.47	0.63	26.97	3.89	2.82	0.09
$N_{70}P_{70}$	7.12	1299	1938	346	178.61	19.37	11.07	3.39	0.89	20.78	3.89	2.74	0.10
Manure 40 t/ha	7.24	1369	1947	372	160.34	22.90	11.28	3.69	0.98	36.39	3.97	3.02	0.10
Medicago sativa + Trifolium alexandrinum													
Unfertilized	8.28	1938	418	187	44.49	5.50	12.14	7.93	0.66	3.62	0.42	0.65	0.10
$N_{70}P_{70}$	8.01	1983	401	186	46.55	5.26	12.92	7.92	0.36	4.24	0.48	0.74	0.09
Manure 40 t/ha	9.02	2190	469	213	62.54	7.59	12.44	8.84	0.40	15.33	0.52	0.83	0.10
Medicago sativa + Dactylis glomerata													
Unfertilized	7.21	1474	1538	311	121.70	22.31	9.86	4.88	0.65	29.03	2.94	2.54	0.16
$N_{70}P_{70}$	7.07	1484	1566	307	145.65	23.28	9.47	4.35	0.75	31.53	3.03	2.91	0.16
Manure 40 t/ha	7.28	1469	1529	308	134.47	22.02	9.85	4.41	0.68	32.33	2.82	2.75	0.17
Medicago sativa + Trifolium alexandrinum + Dactylis glomerata													
Unfertilized	7.21	1229	1620	321	162.27	21.63	11.12	5.13	0.63	40.47	3.35	2.53	0.16
$N_{70}P_{70}$	7.22	1303	1677	320	145.94	22.26	11.31	5.31	0.63	45.95	3.18	2.91	0.15
Manure 40 t/ha	7.26	1393	1695	332	134.06	19.77	10.77	4.97	0.63	18.43	3.19	2.73	0.18

Crude fiber content of plants, indicator of consumption and digestion, is very low: 20.0-28.0% of dry matter. The lowest values (20.0-22.0%) were recorder in variant pure culture lucerne and in variant with *Trifolium alexandrinum* fertilized with manure. All chemical elements assayed (Table 1) some of which are essential in plant nutrition (Ca, K, Mg) were insignificant deviations from the critical level specific to each element. Microelement content in plants is normally.

Ecological compensation capacity is one of the most important attributes of ecological culture systems, essentially characterized by multifunctionality, biodiversity, environmental compatibility, stability yields, soil sustainability of natural resources. The ability of ecological compensation areas planted with lucerne and lucerne mixtures and perennial grasses are flora and fauna biodiversity severely affected by prevailing technologies arable land prevailing in the agricultural area of the plain Burnazului.

Regarding the spontaneous flora diversity, floral and analysis of report botanical collection made on each cycle revealed the protective role of vegetation cover consisting of lucerne and orchard grass for survival and perpetuation unite large number of wild grass species. For example in variant of lucerne pure culture and mixed with *Trifolium alexandrinum* variant has been the presence of 15-20 species of plants (other than those sown), 90% of them nonexistent in the neighbouring field experimental cultures. Species with higher abundence-dominance (15-25%) were *Taraxacum officinale* and *Veronica persica*, the laster being tackled weed permanent crops on arable land, but harmless in the carpet of grass and leguminous perennial plant.

Landscape quality of the carpet plant species varies with species. Thus, increased drought orchard grass growth stalling, losing their green colour and the leaves are dried in a high proportion, depending on the length of drought. Most resistant species is Medicago sativa. Carpet plant dominantes lucerne (ecological variants) retains density, leaf color and viability.

CONCLUSIONS

In terms of production components in ecological variants data suggest that in pure culture of lucerne at harvest, leaf weight in the structure of yield increases from about 50.0%

of the first cycle to 60.0-65.0% in third cycle. These results demonstrate the high quality of feed, which is confirmed by chemical analysis.

Based on chemical analyzes performed at the first harvest in 2005 that in terms of animal nutrition all experimental variants fall within normal parameters. Crude fiber content of plants, indicator of consumption and digestion is very low, 20.0-28.0% of dry matter.

In variant of lucerne pure culture and mixed with *Trifolium alexandrinum* variant has been the presence of 15-20 species of plants (other than those sown), 90% of them nonexistent in the neighboring field experimental cultures.

In period of severe drought *Dactylis glomerata* growth stalling, losing their green color and the leaves are dried in a high proportion, depending on the lenght of drought.

Vegetal cover consists of *Medicago sativa* and lucerne mixtures retain density, leaf color and viability regardless of years of growing season rainfall.

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