

RESEARCH ON THE LEVEL OF NITROGEN FERTILIZATION ON THE PRODUCTIVITY OF MIXTURES OF PERENNIAL SPECIES SPECIFIC TO THE ECOPEDOLOGICAL AREA OF EXPERIMENTATION S.C.D.A. ȘIMNIC-CRAIOVA

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ABSTRACT

The use of fertilizers is an important measure to increase production and improve the quality of feed obtained from temporary grasslands.

If we refer to the mixtures of grasses and perennial fodder legumes studied and to the doses of nitrogen fertilization applied, for a first stage the mixture is highlighted: *Medicago sativa* 40%. As a level of nitrogen fertilization, the dose of N120 with fractional application for each harvest cycle and which can give over 6.7 t / ha s.u.

INTRODUCTION

The establishment of a temporary meadow involves, first, the creation of a mixture of perennial species to be sown and corresponding to the technical and economic possibilities and the proposed purpose (Burcea P. Et al. 1975).

Mixtures of grasses and perennial legumes can be used, less often mixtures consisting only of grasses or pure grass crops (Bărbulescu C. et al. 1991).

From the multiple researches carried out in our country, in different

ecopedological conditions, the opinion was derived according to which the mixtures of perennial grasses and legumes are superior to the other variants (Bărbulescu C. end al. 1991, Cotigă C. 2012).

The use of chemical nitrogen fertilizers on temporary grasslands is a mandatory measure as it exerts an importance in increasing production but also in increasing the protein content of plants. (Cardeșal V. and al. 1988, Cotigă C. 2004, Dragomir N. and al. 2012).

MATERIAL AND METHOD

The experiments were performed on the luvosol from S.C.D.A. Șimnic-Craiova, being capitalized starting with 2020.

The method of location of the experiment was in the plots subdivided with two factors, namely:

- Factor "A" - type of mixture, with three graduations:
 - a₁ - *Dactylis glomerata* 40% + *Festuca arundinacea* 30 % + *Lolium perenne* 30%

The agrofund used was P₅₀ K₅₀. Phosphorus and potassium were applied under the basic soil work (plowing).

- a₂-*Dactylis glomerata* 20% + *Festuca arundinacea* 20% + *Lolium perenne* 20% + *Medicago sativa* 40%)

-a₃-*Dactylis glomerata* 20% + *Festuca arundinacea* 20% + *Lolium perenne* 20% + *Lotus corniculatus* 40%

- Factor "B" - nitrogen doses, with four graduations:

-b₁-N₀

-b₂-N₆₀

-b₃-N₁₂₀

-b₄-N₁₈₀

At harvesting from each variant-repetition we used green mass samples to determine the dry matter by ovens.

RESULTS AND DISCUSSIONS

The results obtained and presented in Table 1 on the effect of the type of

mixture of perennial herbs and nitrogen doses on the production of dry matter, highlight the following:

Table 1.

The effect of the type of perennial herb mixture and nitrogen doses on the production of s.u. (t / ha) 2020.

MIXTURE TYPE	NITROGEN DOSES	ABSOLUTE PRODUCTION	RELATIVE PRODUCTION%	DIFFERENCE	SIGNIFICANCE
Dactylis glomerata 40% Festuca arundinacea 30% Lolium perenne 30%	N ₀	2,5	100		-
	N ₆₀	3,8	152	1,3	*
	N ₁₂₀	5,9	236	3,4	***
	N ₁₈₀	6,7	268	4,2	***
Dactylis glomerata 40% Festuca arundinacea 30% Lolium perenne 30% Medicago sativa 40%	N ₀	3,6	144	1,1	-
	N ₆₀	5,8	232	3,3	**
	N ₁₂₀	7,6	304	5,1	***
	N ₁₈₀	7,9	316	5,4	***
Dactylis glomerata 40% Festuca arundinacea 30% Lolium perenne 30% Lotus corniculatus 40%	N ₀	3,4	136	0,9	-
	N ₆₀	4,7	188	2,2	*
	N ₁₂₀	6,6	264	4,1	***
	N ₁₈₀	6,9	276	4,4	***

DI 5% 1,2 t/ha s.u.

DI 1% 2,3 t/ha s.u.

DI 0,1% 3,4 t/ha s.u.

- depending on the type of mixture and the level of nitrogen fertilization, the crop had values between 2,5 t / ha s.u. in the case

of the mixture consisting of Dactylis glomerata 40% + Festuca arundinacea 30% + Lolium perenne 30% at the dose of No and 7,9 t / ha s.u. in the

case of the mixture *Dactylis glomerata* 20% + *Festuca arundinacea* 20% + *Lolium perenne* 20% + *Medicago sativa* 40% which received the nitrogen dose of N₁₈₀;

- a production very close to the maximum, namely 7,6 t / ha s.u. was obtained from the mixture *Dactylis glomerata* 20% + *Festuca arundinacea* 20% + *Lolium perenne* 20% + *Medicago sativa* 40% and which received a lower dose of nitrogen, namely N₁₂₀;
- in the mixture of which the guide (*Lotus corniculatus* 40%) was part, at the level of nitrogen

fertilization of N₁₂₀ the harvest was of 6,6 t / ha s.u. -smaller harvests were obtained for the mixture consisting only of perennial grasses (*Dactylis glomerata* 40% + *Festuca arundinacea* 30% + *Lolium perenne*), ie ranging between 2,5t / ha s.u. (No) and 6,7t / ha s.u. (N₁₈₀).

The separate influence of the type of mixture studied on the production of s.u. (Figure.1.) Highlights the superiority of the alfalfa-based mixture (*Medicago sativa*) which gave 6,2 t / ha s.u. and a significantly different increase from the control considered.

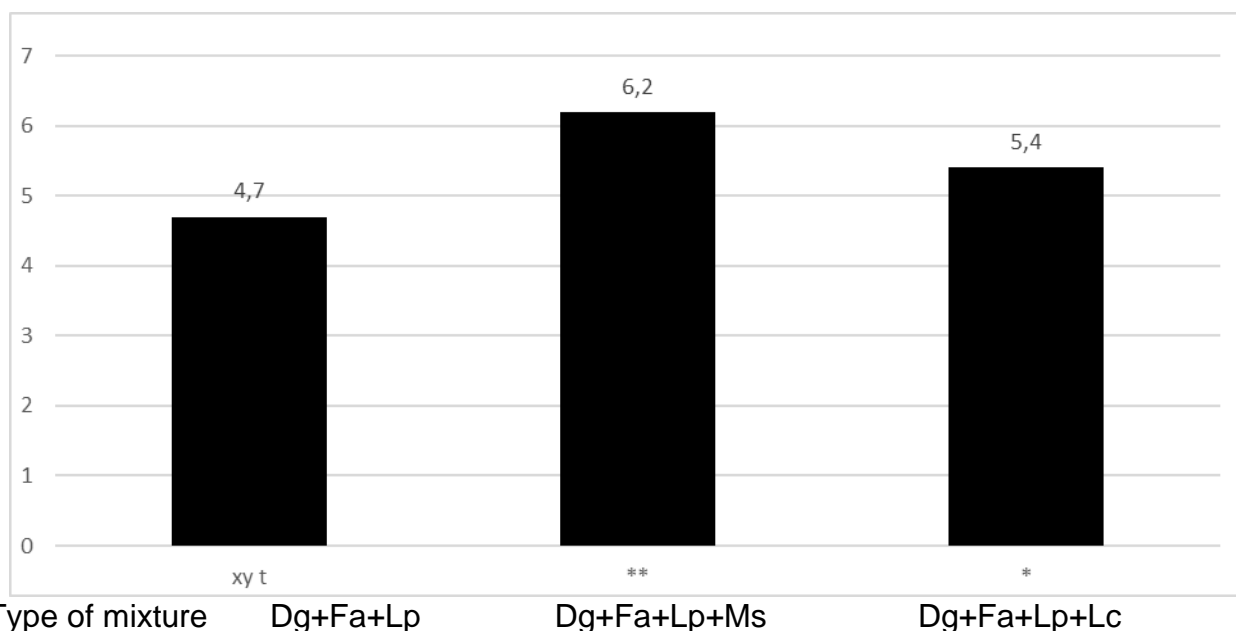


Fig.1. The effect of the type of mixture of perennial herbs and nitrogen doses on the production of s.u.(t/ha) 2020

When the guide (*Lotus corniculatus*) was part of the mixture, the production was 5,4 t / ha s.u. obtaining a statistically significant increase compared to the control.

If we refer to the separate influence of nitrogen doses on the production of s.u.

(Figure 2.), it is found that between the two harvests obtained 6,7 t / ha s.u. and 7,2 t / ha s.u. performed at doses of N₁₂₀ and N₁₈₀, the difference is only 0,5 t / ha s.u. and with the same distinct significance as the witness considered.

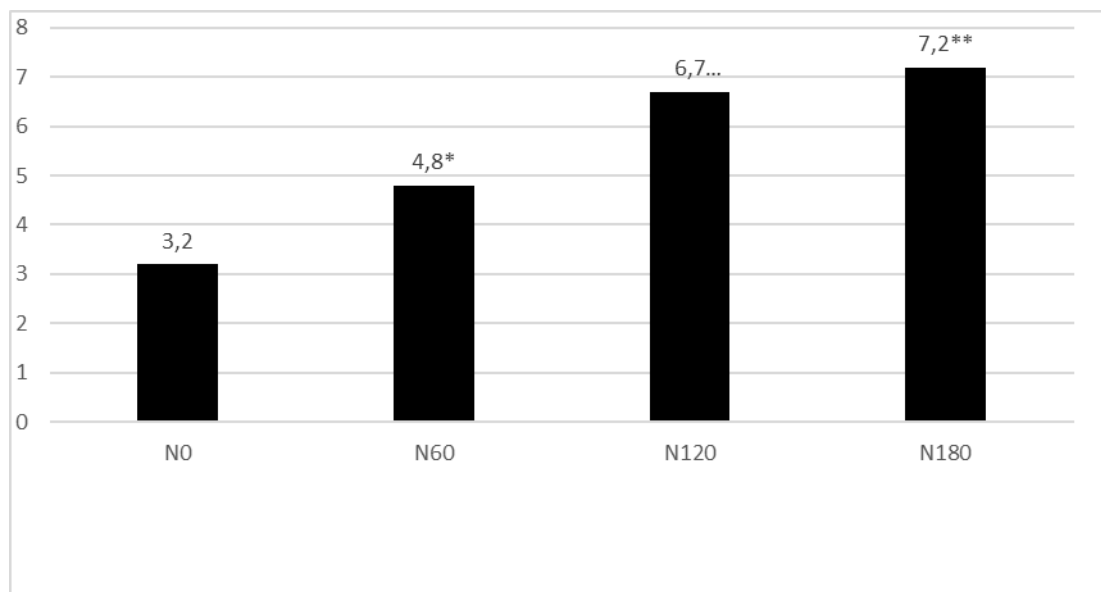


Fig.2. The effect of nitrogen doses on the production of s.u. to grass mixtures (t/ha) s.u. 2020

We can also see that a lower dose of Neo nitrogen increase was significantly compared to the control variant.

CONCLUSIONS

Concluding those presented above we can see for a first stage the following:

- mixtures consisting of grass and perennial fodder legumes are superior to mixtures consisting only of grasses;

- since alfalfa (*Medicago sativa*) is a legume specific to the ecological area, in the mixture with perennial grasses it adapts very well, with the long-awaited results;
- the guide (*Lotus corniculatus*) is also suitable for the ecopedological conditions in the research area, especially if we take into account the fact that the luvosol from S.C.D.A. Șimnic - Craiova has a weak acid pH value.

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