

RESEARCH ON CLOVER CROP MIXED WITH PERENNIAL GRASS FORAGE IN THE CENTRAL AREA OF OLTENIA

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Keywords: red clover, yield, mixture, chemical fertilizers, ratio

ABSTRACT

In the central area of Oltenia, *Trifolium pratense* specie can be used as perennial legume mixed with *Dactylis glomerata* or *Lolium hybridum* for temporary meadow. Between these two experimented mixtures the best results were obtained by *Trifolium pratense* and *Lolium hybridum* that realized 6.25 t/ha dry matter as an average value on three experimental years. The meadow including 80 % *Dactylis glomerata* + 20% *Trifolium pratense* without fertilization, lead to the lowest forage yielded, while the yield obtained by the mixture 40 % *Lolium hybridum* + 60% *Trifolium pratense* was much higher.

INTRODUCTION

In natural experimental conditions the response of red clover to nitrogen fertilization is low. The assessment of nitrogen supply might be done according with few general aspects (Barbulescu C. et al., 1991). On the soils with low dry organic matter content and total nitrogen, on acid soils previously corrected, using moderate nitrogen rates lead to yield increases (Cotiga, C. 1997). On the neutral pH soils or with low acid pH, with high organic matter content and total nitrogen, it is not recommended the nitrogen supply for red clover (cotiga, C. 2012). On the acid soils previously corrected are recommended urea and nitro calcar while on the neutral pH soils or slightly alkaline is recommend ammonium nitrate (Moga, I. et al., 1993).

MATERIAL AND METHOD

The trial was laid out on the experimental field from Agrotechnics Laboratory in Agriculture Research and Development Station Simnic, Dolj county, Romania, in 2014 year following split plots method, in three replications:

Factor A – fodder mixture: a₁ – *Trifolium pratense* + *Dactylis glomerata*

a₂ - *Trifolium pratense* + *Lolium hybridum*

Factor B – fodder mixture ratio: b₁ – 20% *Trifolium pratense* + 80% perennial grass

b₂ – 40% *Trifolium pratense* + 60% perennial grass

b₃ – 60% *Trifolium pratense* + 40% perennial grass

Factor C – nitrogen fertilizer rate: c₁ – without fertilization

c₂ – 60 kg N/ha

c₃ – 120 kg N/ha

The nitrogen fertilization was applied on the layout of P50K50 burred once with tillage previous autumn.

RESULTS AND DISCUSSIONS

Analyzing the results regarding the effect of fodder mixtures on the yield level on three years average emphasized that *Trifolium pratense* + *Lolium hybridum* lead to 6.25 t/ha dry matter, recording a very significant yield increase of 1.65 t/ha dry matter comparatively with the control variant (table 1).

Table 1

The influence of fodder mixture on the biomass yield of the temporary meadow (2015-2017) t/ha dry matter

Fodder mixture	Average yield (2015-2017)	Yield %	Difference	Significance
Trifolium pretense + Dactylis glomerata	4.60	100	Control	-
Trifolium pretense + Lolium hybridum	6.25	136	1.65	***
DL 5%			0.41 t/ha dry m.	
DL 1%			0.73 t/ha dry m.	
DI 0.1%			1.26 t/ha dry m.	

The best fodder mixture for a temporary meadow is the one that includes *Trifolium repens* and *Lolium hybridum* (ryegrass) in the environmental conditions from ARDS Simnic (Fig.1).

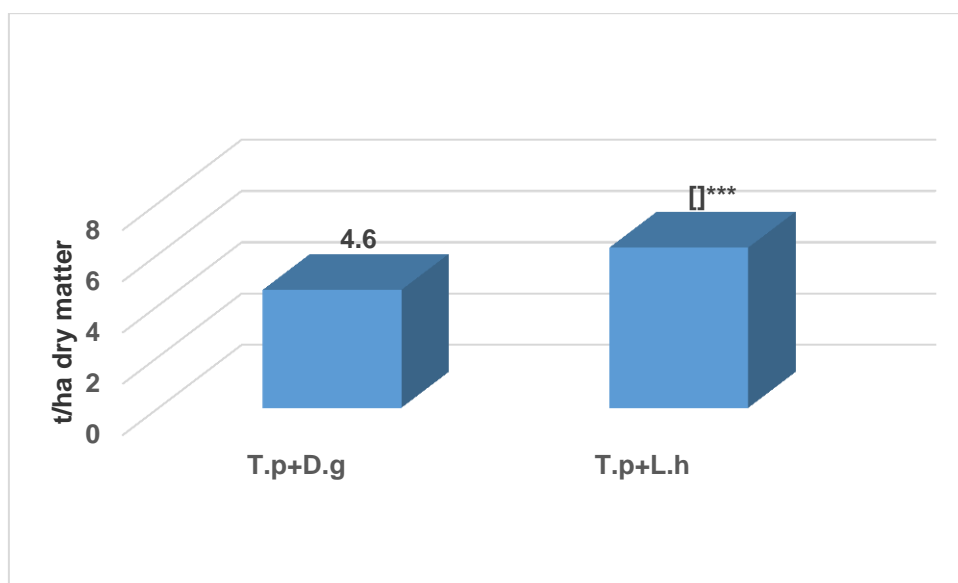


Fig.1. The yield of fodder mixture obtained on reddish soil from ARDS Simnic for temporary meadow (average 2015-2017)

The influence of fodder mixture ratio on the yield it was noticed that the mixture including higher legumes ratio lead to higher yields comparatively with the control (Table 2). Thus, for the mixture ratio of 60/40 (legumes/perennial grass) the yield was 6.35 t/ha dry matter, recording an yield increase of 2.15 t/ha dry matter comparatively with the control, while the variant with mixture ratio of 40/60 (legumes/perennial grass) recorded 5.1 t/ha dry matter with an yield increase of 0.9 t/ha dry matter comparatively with the control (Table 2).

This aspect may be noticed also in the Fig.2 where is evident that the highest yield was recorded when the mixture ratio included 60 % legumes.

Table 2

The influence of fodder mixture ratio (legumes and perennial grass) on the biomass yield of the temporary meadow from ARDS Simnic (2015-2017) t/ha dry matter

Fodder mixture ratio % (legumes/perennial grass)	Average yield (2015-2017) t/ha dry matter	Yield %	Difference	Significance
20/80	4.20	100	Control	-
40/60	5.10	121	0.90	**
60/40	6.35	151	2.15	***
DL 5%			0.32 t/ha dry m.	
DL 1%			0.61 t/ha dry m.	
DI 0.1%			1.15 t/ha dry m.	

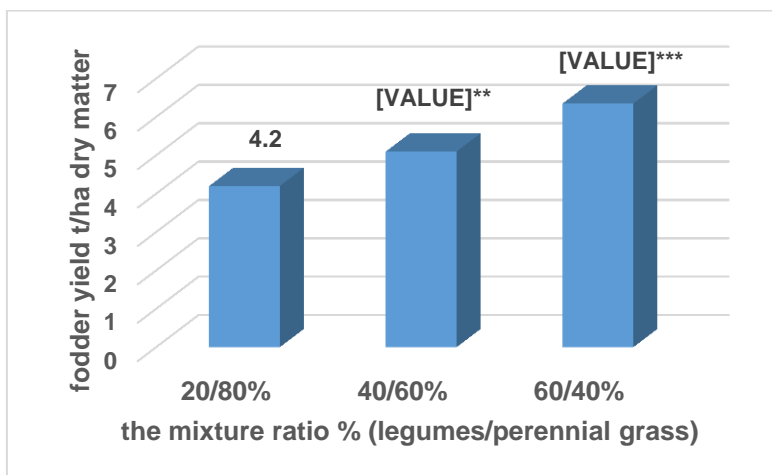


Fig.2. The fodder yield of temporary meadow depending of mixture ratio (average 2015-1017)

Depending of the nitrogen fertilizing effect on fodder yield the highest level was recorded to the highest nitrogen supply, respectively 6.6 t/ha dry matter comparatively with 5.4 t/ha dry matter for a nitrogen level of 60 kg/ha (Fig.3).

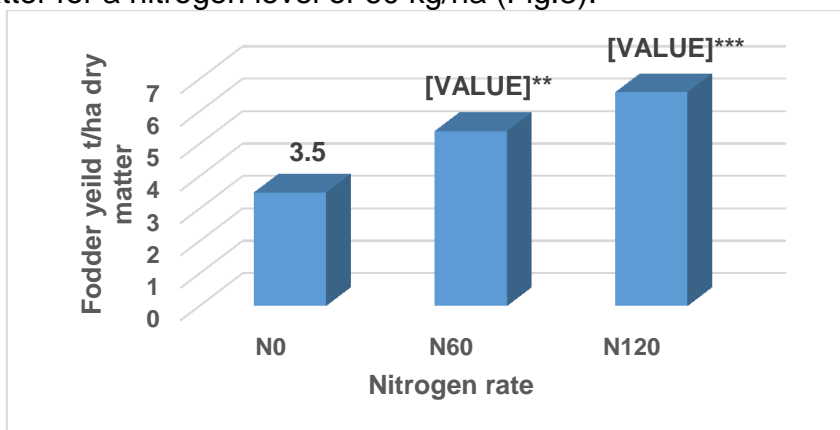


Fig.3. The fodder yield of temporary meadow depending of nitrogen fertilizer rate (average 2015-1017)

CONCLUSIONS

For the environmental conditions from experimental area the fodder mixture including *Trifolium pretense* and *Lolium hybridum* is the best option for a long lasting temporary meadow. The highest yields may be achieved only when is applied a good fertilizing management including P₅₀N₁₂₀ with nitrogen fractionated for each mower. The most balanced fodder mixture includes 60/40 ratio (legumes/perennial grass).

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