

RESEARCHING RESULTS ON THE FERTILIZER APPLYING ON SOWN PASTURES ON LUVISOIL FROM ARDS SIMNIC

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ABSTRACT

The sown pastures that are made of valuable grasses and leguminous fodder species have a high productive potential which can only be capitalized by proper fertilization.

The mineral fertilizers are applied on a large scale due to their easy absorption by plants because they are

soluble and immediate effect. The nitrogen fertilizers applied on several rates substantially contributes to the obtaining of high harvests of fodder of good quality ensuring a better rescheduling of production.

INTRODUCTION

The current status of pastures from Romania is, generally, inadequate providing only 50% of total fodder need (Cotigă C., 2003; Cotigă C., 2012). The fodder yields are low, rarely overpassing 7-8 t/ha green fodder of mediocre quality. Rather high surfaces of these pastures are found in plain and hilly zones of

Romania which are, in fact, low productive (Bărbulescu C. Motcă Gh. 1987).

The problem of pastures from our country must be such way that the linkage soil-plant-animal should be reconsidered (Moga I. and colab. 1983).

MATERIAL AND METHOD

In this respect, on the luvisoil from A.R.D.S. (Agricultural Research and Developing Station) of Simnic there was set up an experiment consisting of sowing mixtures of perennial grasses which has been researched during 2015-2017 period. The sown pasture had *Medicago sativa* 40 % + *Dactylis glomerata* 20 % + *Lolium hybridum* 20 % + *Festuca*

arundinacea 20 % and it has been fertilized by two rates of nitrogen (N_{90} and N_{150} kg / ha) applied in different phases and proportions and combinations with P_{50} K_{40} . All these treatments have been compared with control treatment which has not fertilized.

RESULTS AND DISCUSSIONS

On average over three years of researching the control treatment which has been not fertilized has given a very low yield of fodder, of only 2.1 t/ha of

green fodder. This fact emphasizes the need a fertilizer applying on these lands and crops (table 1).

Table 1
The influence of nitrogen, phosphorus and potassium rates on dry matter yield of sown pasture cropped on luvisoil from ARDS Simnic (average of 2015-2017 period)

Annual nitrogen rate		Nitrogen splitting rate			P rate	K rate	Yield t/ha d.m.	Yield %	Diff
		Spring	After C _I	After C _{II}					
V ₁	0	0	-	-	0	0	2.1	100	-
V ₂	90	90	-	-	-	-	6.5	309	4.4
V ₃	90	90	-	-	50	-	6.7	319	4.6
V ₄	90	90	-	-	50	40	6.3	300	4.2
V ₅	90	50	40	-	50	40	6.6	314	4.5
V ₆	90	45	45	-	50	40	5.4	257	3.3
V ₇	90	30	30	30	50	40	4.2	200	2.1
V ₈	150	100	50	-	50	40	7.9	376	5.8
V ₉	150	75	75	-	50	40	7.2	343	5.1
V ₁₀	150	50	50	50	50	40	6.9	329	4.8

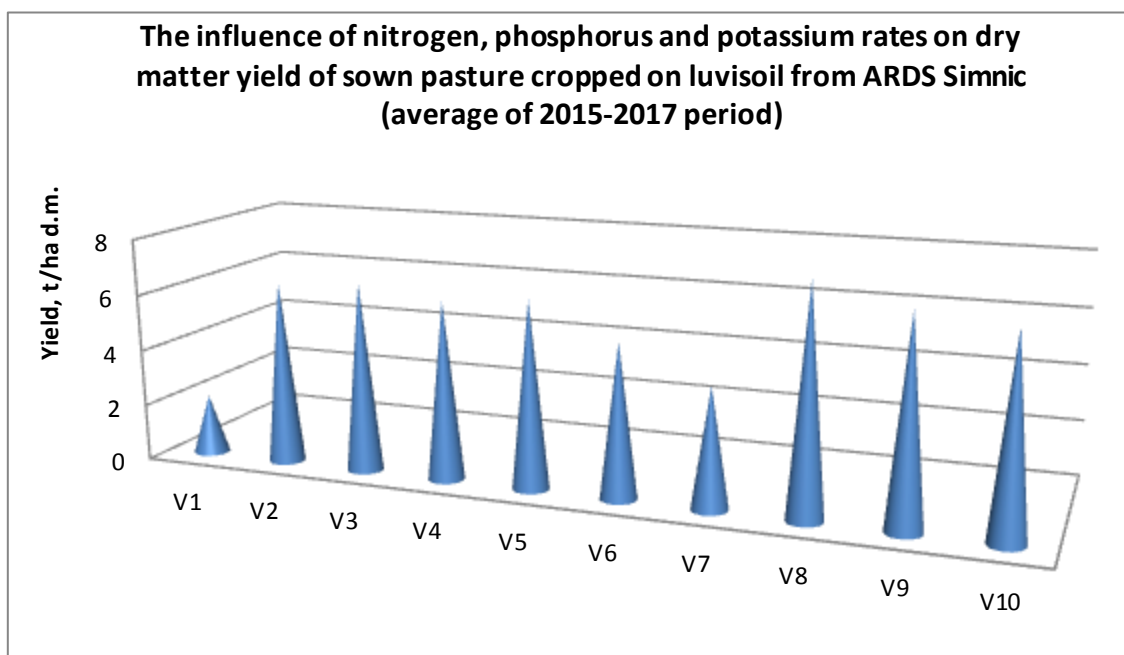


Figure 1. The influence of nitrogen, phosphorus and potassium rates on dry matter yield of sown pasture cropped on luvisoil from ARDS Simnic (average of 2015-2017 period)

As a result of fertilizer applying the fodder yield of sown pastures from ARDS Simnic has been much higher. This way, on average, the applying of N₉₀ there were obtained 6.0 t/ha dry matter (d.m.) recording an output of 3.9 t/ha d.m. which

is very significant statistically in comparison with the control treatment while the N₁₅₀ rate has given a higher yield, of 7.3 t/ha d.m. recording an output of 5.2 t/ha d.m. which is statistically very significant (table 2).

Table 2

The separate influence of fertilizers on yield of dry matter on sown pasture from luvisoil of ARDS Simnic (average 2015-2017)

Annual rate of nitrogen	Dry matter yield t / ha	Percent yield %	Diff.	Significance
0	2.1	100	-	-
90	6.0	286	3.9	xxx
150	7.3	348	5.2	xxx

DL 5 % = 1.3 t/ha s.u.

DL 1 % = 2.2 t/ha s.u.

DL 0.1% = 3.7 t/ha s.u.

Within the two rates of nitrogen the yields varied in function of the combination and the way the fertilizer has been applied. At N₉₀ rate the maximal yield (6.7 t/ha d.m.) has been obtained on P₅₀ background when the entire rate of nitrogen has been applied in spring time. At N₁₅₀ nitrogen rate, the highest yield, of 7.9 t/ha d.m. has been obtained on P₅₀K₄₀ background yet, when the nitrogen rate has been split on two doses, during the

spring time (N₁₀₀) and after first cutting (N₅₀).

This trial has allowed the possibility of sowing pastures in researched areas and it has emphasized the possibility of using fertilizers, especially the nitrogen ones.

Also, there has resulted that the N₉₀ rate with split applying is not necessary yet at N₁₅₀ rate there can be obtained higher yields the splitting of the entire rate in several doses has determined the increasing of the yield.

CONCLUSIONS

In soil and climate conditions of ARDS Simnic the sown pastures can give high yields of fodder only when they are fertilized by moderate rates of fertilizers.

There must be accounted that before sowing to apply, before last tillage of seedbed preparation, 1/3 of annual nitrogen rate accounting that the soil water reserve is higher in early spring.

REFERENCES

1. **Bărbulescu C., Motcă Gh.**, 1987 – Pajiștile de deal din România. Ed. Ceres București.
2. **Cotigă C.**, 2003 – Cultura plantelor furajere. Ed. Sitech Craiova.
3. **Cotigă C.**, 2012 – Cultura pajiștilor și a plantelor furajere. Ed. Sitech Craiova.
4. **Moga I. și colab.** 1983 – Plante furajere perene. Ed. Academiei R.S.R.