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 absorbtion 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 rate splitting			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

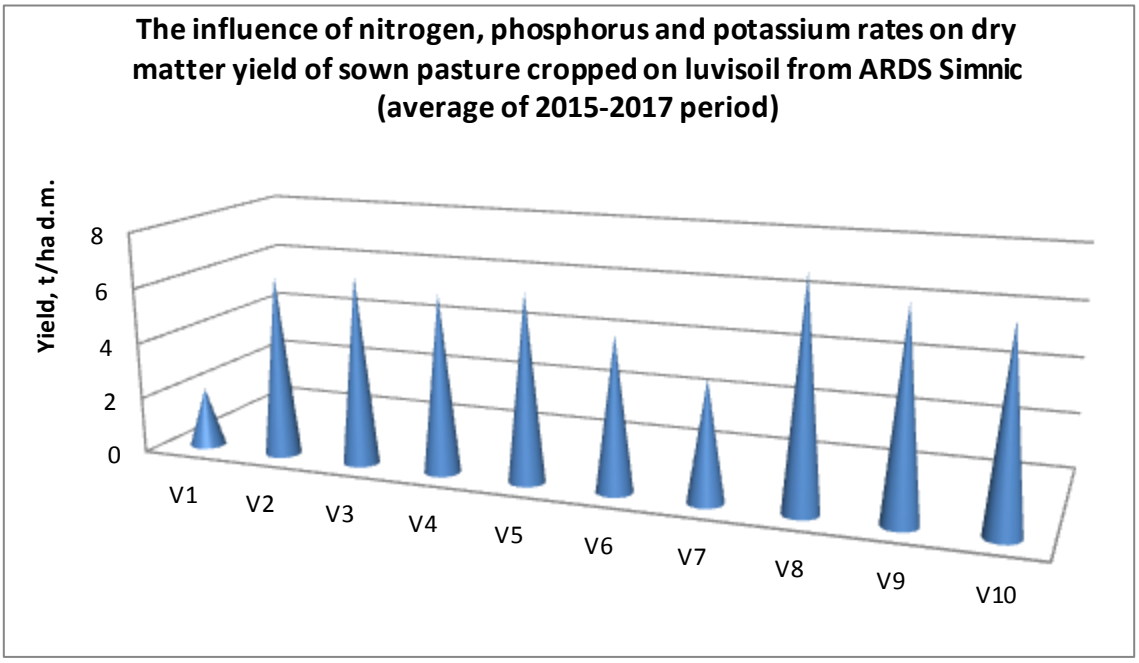

Figure 1. The influence of nitrogen, phosphorus and potassium rates on dry matter yield of sown pasture cropped on luvisoil from ARDS Simnic (average of 2015-2017 period)

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 N_{90} 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 N_{150} 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 N_{90} rate the maximal yield (6.7 t/ha d.m.) has been obtained on P_{50} background when the entire rate of nitrogen has been applied in spring time. At N_{150} nitrogen rate, the highest yield, of 7.9 t/ha d.m. has been obtained on $P_{50}K_{40}$ background yet, when the nitrogen rate has been split on two doses, during the spring time (N_{100}) and after first cutting (N_{50}).

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 N_{90} rate with split applying is not necessary yet at N_{150} 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 clime 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.

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