CONTRIBUTIONS TO PERFORMING OF TEMPORARY PASTURES ESTABLISHMENT TECHNOLOGIES FUNCTION BY SOME FODDER PLANTS USED LIKE PRECURSORY PLANTS IN INTRA MOUNTAINS DEPRESSIONS CONDITIONS FROM SUCEAVA COUNTY

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The researches were accomplished during period 2002-2007 at Agricultural Research Center of Pojorâta, Suceava county and were developed in two stages. The first stage was during 2002-2004 and was studied the rotation and fertilizers influence upon some annual and perennial fodder plants. The studied factors were: A –rotation with five graduates, a1- fodder beet - faba bean- fodder turnip; a2- faba bean – fodder beet – potato; a3 – red clover – red clover – red clover; a4 – potato – fodder turnip – faba bean a5 - fodder turnip – potato – fodder bee . B – agro fond with five graduation: b1 – unfertilized; b2 – 100 N b3 – 150 N 90 P 2 O; b4 – 150 N 90 P2O5 90 K2O; b5 – 50 t/ha rother, annually applied. In the second stage (2005-2007) was sowed on whole surface of the experiment from the first stage a mixture formed by: Phleum pretense 60 % (Tirom) + Dactylis glomerata 15 % (Gorom) + Festuca pratensis 25 % (Braşov) + Trifolium repens 10 % (Ladino) + Lotus corniculatus 10 % (De Transilvania). It was accomplished a fertilization with unique agro fond on 50 P2O5, 50 K2O applied during autumn period and 100 N (50 N in spring time + 50 N after first mowing). During experiment period it was studied the precursory plant influence and the retentivity effects of the fertilizers upon the dry harvests of the sowed pastures.

The temporary pasture achieved the biggest yields when was sowed after rotation potato-fodder turnip- faba bean fertilized with 50 t/ha rother, applied annually, on 96.7 q / ha dry substances, the yield increases being very significant (11.2 q/ha s.u).

***Key words**: fertilizers, rother fodder plants*

The natural meadows from the mountain area in Suceava extends on a surface of about 90.000 h, from which some are situated, along the meadows of the rivers from the intramountains depressions. Lately along with the natural meadows, there are surfaces of sowed meadows extending, instead of the permanent meadows that are damaged and also on the arable fields of the particular producers. This is because of the fact that the fodder obtained is from both the quantity and the quality points of view superior to the one obtained from the natural meadows, and

in the case of arable fields of the private producers, the introduction in the rotation of the sowed meadows represents an breeding method of the biological, physical and chemical features of these landraces.

Thanks to the fact that these meadows maintain themselves in culture for many years, one of the main issues is represented by the establishment of the best precursory for the area, that could assure average conditions of seedling and breeding of the young plants, in order to obtain a vegetal layer finished and well structured, with a maximum of capacity during the whole exploitation period.

This work is meant to contribute to the establishment of the best precursory plant in order to set up sowed meadows in the mountain conditions of the Suceava county.

MATERIAL AND METHOD

The researches have been carried during 2000-2005 at the CCAP at a height of over 700 m, on a litic alluvial soil associated on reduces surfaces with the litosoils, situated on the terrace of the Moldova river, having a argilo sandy texture, with a pH, of 5,4 mobile phosphor of 53,7 ppm, mobile potassium of 81,7 ppm and a humus content of 3,57%.

The researches have been carried out during two periods. The first period took place during 2004-2005 and there has been observed the influence of the rotation and the one of the fertilizers on production of some annual perennial fodder plants. The experience was placed following the method of the sub graduated plots of 5 x 5 in three replications. The studied factors were:

A. The five graduation rotation:

a1 – fodder beet – faba bean – fodder turnip;

a2 –faba bean – fodder beet – potato;

a3 – red clover – red clover- red clover;

a4 potato- fodder turnip- faba bean;

a5- fodder turnip – potato – fodder beet.

B. Agrofond with five graduation:

b1 – unfertilized;

b2 – 100 N;

b3 – 150 N 90 P 2 O5;

b4 – 150 N 90 P2O5 90 K2O;

b5 – 50 t/ha rother, annually applied.

In the first period, during 2002-2004 there has been followed the influence of the rotation and the one of the fertilizers on the production of some annual and perennial plants.

In the second period (2005-2006) there has been sowed on all the surface of the experience a mixture formed by: Phleum pretense 50 % (Tirom) + Dactylis glomerata 10 % (Goro) + Festuca pratensis 20 % (Braşov) + Trifolium repens 10 % (Ladino) + Lotus corniculatus 10 % (De Transilvania). It was accomplished a fertilization with unique agro fond on 50 P2O5, 50 K2O applied during autumn period and 100 N (50 N in spring time + 50 N after first mowing).

The preparing of the field has been made using discs and repeated harrowing, steamrollers before and after sowing.

During the experience there has been observed the influence of the precursory plants and the remaining effect of the fertilizers on the production of dry substance of the sowed meadow.

From a climatic point of view, that area is characterized by a multiannual average of the rains of 762,2mm, from which 531,0 mm in the vegetation period. Having this into consideration, the year 2007 has place himself above the average multiannual with 31,5 mm during the whole year and close to average in the vegetation period. The years 2005 and 2006 have registered low values in comparison with the normal one but un significant during the whole year and significant values above the normal on the vegetation period with 83 mm, respectively 106,9 mm. The average multiannual temperature in this area is of 6,4°C during the whole year and of 12,7° C during the vegetation period.

From this point of view the years 2005 and 2006 were normal during the whole year and only a little above the average multiannual during the vegetation period. The year 2007 has situated above the normal with 2,5°C during the whole year and with 3,4°C during the vegetation period.

RESULTS AND DISSCUSIONS

1) **The influence of the rotation and the one of the precursory plant**

The dry substance yield, on an average on agro fund and the years of experience, were held between 75,7q/ha and 99,1 q/ha. The biggest yields, have been reached when the meadow followed the rotations: potato – fodder turnip-horde bean. The smallest dry substance production has been reached when the meadow followed the red clover exploit for three years, the minus of the production, in comparison with the average of the rotation taken as a standard, being significantly different from the 11,2 q/ha d.s. (*tab. 1*).

Table 1

The influence of the rotation and the one of the precursory plant on the dry substance yield of the sowed meadow. (2005-2007)

Rotation (A)	Yield in d.s.			Significat
	Q /ha	%	Dif. q/ha	
a1 – fodder beet – faba bean – fodder turnip	85.4	98.3	-1.5	
a2 –faba bean – fodder beet – potato	88.1	101.3	1.2	
a3 – red clover – red clover- red clover	75.7	87.1	- 11.2	ooo
a4 potato- fodder turnip- faba bean	99.1	114.0	12.2	xxx
a5- fodder turnip – potato – fodder beet	93.2	107.2	6.3	xx
Average	86,9	100		

Dl 5% = 3.5 q/ha s.u ; Dl 1% = 5.3 q/ha s.u. ; Dl 0,1 % = 7.1 q/ha s.u.

2) **The remaining effect of the fertilizers**

Thanks to the annual fertilization of all the sowed meadows with 50 P2O5 50 K2O applied in the autumn and 100 N (50 N during the spring + 50 N after first mowing), the level of the standard yields has been quite raised by 79,6 q/ha dry substance. The remaining effect of the fertilizers applied to the precursory plant has influenced differently the production of the sowed meadow. The interaction between the remaining effect and the fertilization of the precursory plant and the

annual fertilization of the sowed meadow was unsignificant for the 100 N fertilization, significant in the case of fertilization with 150N 90P2O5 and 150N 90P2O5 90 K2O and very significant for the organic fertilization with 50 t/ha rother applied annually.

Table 2

The effect of the fertilizer applied on the precursory plant on the dry substance production of the sowed meadow (2005-2007)

Agrofond (B)	Yield in DS		Dif.	Signif.
	q / ha	%		
b1 – unfertilized;	79.6	100		
b2 – 100 N;	81.1	103.1	1.5	
b3 – 150 N 90 P 2 O5;	84.1	106.9	4.5	x
b4 – 150 N 90 P2O5 90 K2O;	84.2	107.0	4.6	x
b5 – 50 t/ha rother, annually applied	90.0	113.0	10.4	xxx

DL 5% = 3,1 q/ha ; DL 1% = 4,8 q/ha ; DL 0,1% q/ha ;

This way averagely on rotations, the annual fertilization with 50t/ha rother of the plants from the rotation, has determined the obtaining of a 90,q/ha dry substance production for a sowed meadow, with a very significant increase of production in comparison with the standard variant of 10,4q/ha d.s. In the case of the fertilization with mineral fertilizers the plants from the rotation have been significant of 4,5 q/ha respectively 4,6 q/ha d.s. It should be outlined the fact that by adding at variant with 150 N 90 P2O5 of one dose with 90 K2O to the plants from rotation did not reach any yield increase.

3) **The interaction between the rotation influence, the precursory plant and the remaining effect of the fertilizers**

The analyses of the interaction of the rotation influence, of the precursory plant and of the remaining of the agrofund outlines the fact that the best variants for the setting up of the temporary meadows are the rotations in which the row crops annual fodder plants and fertilized could fit using rother in doses on 50t/ha.The biggest production has been reached when the temporary meadow was set up after the rotation of potato – fodder turnip and faba bean, fertilized with 50 t/ha rother from which we could obtain a middle yield on 96,7 q/ha d.s. the yield increase in comparison with the average of variants taken as standard, being very significant on 11,2 q/ha d.s. respectively 13,1 %. The very high significant yield in comparison with standard it was accomplished at the same rotation and in the case of fertilization with minerals fertilizers with 150 N 90P2O5 90 K2O on 7,0 q/ha d.s. respectively 8,2 %.

It must be taken into consideration the rotation fodder turnip – potato – fodder beet that for the organic fertilization with 50 t/ha rother, the temporary meadow has reached a production of 91,6 q/ha d.s, the production increase in comparison with the standard being very significant 6,1 q/ha d.s respectively 7,1 %. When the sowed meadow has followed the rotation red clover- red clover – red clover, there has been obtained a production between the 75,2 and 86,5 q/ha d.s.,

depending on the fertilization variant applied to the precursory plant, the minuses in the production in comparison with standard yield being significant and very significant.

Table 3

Interaction between the rotation influence, the precursory plant and the remaining effect of the fertilizers for the setting up of the temporary meadows (Suceava, 2005-2007)

Rotation (A)	Plant precursory agro fond (B)	Yield (d.s.)		Difference in comparison with standard	Signif.
		q/ha	%		
a1 – fodder beet faba bean fodder turnip	b1 – unfertilized;	79.0	92.3	-6.5	ooo
	b2 – 100 N;	81.2	94.9	-4.3	o
	b3 – 150 N 90 P 2 O5;	85.3	99.7	-0.2	
	b4 – 150 N 90 P2O5 90 K2O;	88.6	103.6	3.1	
	b5 – 50 t/ha rother, annually applied.	90.4	105.7	4.9	xx
a2 - faba bean fodder beet potato	b1 – unfertilized;	81.1	94.8	-4.4	o
	b2 – 100 N;	85.6	100.1	-0.1	
	b3 – 150 N 90 P 2 O5;	87.1	101.8	1.6	
	b4 – 150 N 90 P2O5 90 K2O;	87.8	102.7	2.3	
	b5 – 50 t/ha rother, annually applied.	89.5	104.7	4.0	x
a3 - red clover red clover red clover	b1 – unfertilized;	75.2	87.9	-10.3	ooo
	b2 – 100 N;	78.3	91.5	-7.2	ooo
	b3 – 150 N 90 P 2 O5;	81.5	95.3	-4.0	o
	b4 – 150 N 90 P2O5 90 K2O;	85.2	99.6	-0.3	
	b5 – 50 t/ha rother, annually applied.	86.5	101.2	1.0	
a4- potato fodder turnip faba bean	b1 – unfertilized;	85.5	100.0	0.0	
	b2 – 100 N;	86.7	100.7	1.2	
	b3 – 150 N 90 P 2 O5;	89.4	104.5	3.9	x
	b4 – 150 N 90 P2O5 90 K2O;	92.5	108.2	7.0	xxx
	b5 – 50 t/ha rother, annually applied.	96.7	113.1	11.2	xxx
a5- fodder turnip potato fodder beet	b1 – unfertilized;	85.7	93.8	0.2	
	b2 – 100 N;	86.1	97.2	0.6	
	b3 – 150 N 90 P 2 O5;	88.6	103.6	3.1	
	b4 – 150 N 90 P2O5 90 K2O;	88.7	103.7	3.2	
	b5 – 50 t/ha rother, annually applied.	91.6	107.1	6.1	xxx
AVERAGE		85.5	100		

DL 5% = 3,4 q/ha ; DL 1% = 4,9 q/ha ; DL 1% = 6,0 q/ha.

CONCLUSIONS

1. In the conditions offered by the intra mountain conditions of the Suceva county, the temporary meadows can represent an important source of the necessary that should be provided of fresh and fibrous fodders for animals and can be set up after the majority of row crops specific for this area.

2. The temporary meadow has reached the highest production when it was sowed after the three years rotations consisted of annual row crops plants, the

biggest production has been reached after the rotation potato – fodder turnip – faba bean on 96,7 q/ha d.s. the yield increase in comparison with the average of the variants, being very significant on 11,2 q/ha d.s.

3. The smallest production has been reached after the perennial fodders (red clover exploit three years), when the minuses of the production in comparison with the standard were significant.

4. The organic fertilization, applied to the precursory plants from the rotation, have determined, through its remaining effect, the obtaining of some middle yields increase very significant up to 11,2 q/ha dry substance, while the remaining effect of the chemical fertilizers was really felt only in the situation of the potato – fodder turnip – faba bean rotation.

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