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RESEARCHES CONCERNING THE ECONOMIC EFFICIENCY ACHIEVED SUCCESSIVE TO THE APPLICATION OF BIOLOGICALLY-ACTIVE PRODUCTS IN SMOOTH BROME CROP

CERCETĂRI PRIVIND EFICIENŢA ECONOMICĂ REALIZATĂ ÎN URMA APLICĂRII UNOR PRODUSE BIOLOGIC ACTIVE LA CULTURA DE OBSIGĂ NEARISTATĂ

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Within any branch of material production, the supervision of the economic effects caused by the applied technologies is an essential requirement. Not only related to the productive activity, but also related to scientific research, designing and other fields of activity, the final goal is represented by the achievement of immediate or far off economic effects. The introduction and generalization into production of the newest technologies of forage production must rely upon calculations of economic efficiency, too. The objective of these calculations is to offer to any producer the possibility to choose among the optimal technologic variants, with great productions per surface unit, of high quality and low costs. The calculations of economic efficiency were carried out during the three years of experimentation. The economic efficiency obtained after the application of biostimulants in smooth brome *during the first year of production is expressed through the achievement of a profit per surface unit of 75.85 – 127.00 €/ha. Successive to the calculations of economic efficiency, during the second year of production, the profit per surface unit recorded values between 79.10 – 153.10 €/ha depending upon the applied biostimulant, and during the third year of production the profit obtained per surface unit was 211.05 – 270.70 €/ha.*

***Key words**: biologically-active products, economic effects, smooth brome*

Introduction

In any branch of material production, the supervision of the economic effects of the applied technologies is an essential requirement. The final objective is represented by the achievement of some short-term or long-term economic effects, not only in the directly-productive activity, but also in scientific research, designing and also other activity fields.

The introduction and generalization into production of the newest technologies of forage production must rely upon calculations of economic efficiency, too. The aim of these calculations is to give each producer the possibility to choose the optimal technological variants, with big yields per unit of surface, with high quality and low costs. The calculations of economic efficiency have been done during the three years of researches.

Materials and Methods

The indicators used to assess the economic efficiency for the red clover crop are:

- expenses (€/ha);
- average hay yield (t/ha);
- income (€/ha);
- profit per unit of surface (€/ha);
- profit per unit of product (€/t);
- profit rate (%); (Nica S. et al. 1995; Zahiu Letitia 1999)

Usually, there is not always a direct correlation between the level of the achieved yields and the size of the economic indexes within the classical technologies of plant cultivation, because the economic efficiency is much influenced by the expenses value.

The expenses carried out per unit of surface in the variants with application of biostimulants have values that vary with the cost of each biostimulant and with the number of applications. The cost of the applied biostimulants was: Green fuse 4.75 €/ha, Stimupro 19.2 €/ha, Agrostemin 8.75 €/ha, Sea start 10 €/ha, Super plant 8.82 €/ha, Bionat 3.5 €/ha, Mega grow 3.05 €/ha, for each crop.

The average sale price for graminaceous hay it was 0.065 euro/kg.

Results and Discussions

The economic efficiency resulted after the application of some biologically-active products in smooth brome, during the first year of production, is represented by the achievement of a profit per land unit of 75.85-127.00 €/ha, depending on the biostimulant used. The highest profit per land unit was recorded in the variant with application of Mega grow (127,00 €/ha), being with 12.93% higher than the one recorded in the control variant (112.45 €/ha). A higher profit than in the control variant, per land unit, was also achieved in the variants with application of Bionat (117.70 €/ha) and Green fuse (121.90 €/ha). In the other experimental variants, the profit per land unit was lower than that recorded in the control variant (Table 1).

The highest profit per product unit was recorded in the variant with application of Mega grow (14.33 €/t), a variant for which we achieved the highest profit rate, too (28.29%).In this experimental variant, the profit per product unit

was higher than that recorded in the control variant with 2.1%, and the profit rate with 2.7%.

Table 1

Economical efficiency in the first year of production, in smooth brome

Specification	Expenses (€/ha)	Average hay yield (t/ha)	Income (€/ha)	Profit per land unit (€/ha)	Profit per product unit (€/t)	Profit rate (%)
Control	408.20	8.01	520.65	112.45	14.03	27.54
Green fuse	454.00	8.86	575.90	121.90	13.75	26.85
Stimupro	497.30	9.18	596.70	99.40	10.82	19.90
Agrostemin	465.20	8.42	547.30	82.10	9.75	17.64
Sea start	487.70	8.67	563.55	75.85	8.74	15.55
Super plant	466.30	8.78	570.70	104.40	11.89	22.38
Bionat	471.20	9.06	588.90	117.70	12.99	24.97
Mega grow	448.90	8.86	575.90	127.00	14.33	28.29

During the second year of production, the profit per land unit in smooth brome recorded values between 79.10–153.10 €/ha, depending on the biostimulant applied. The highest profit per land unit was recorded in the variants with application of Green fuse (153.10 €/ha) and Mega grow (140.65 €/ha); in these variants, the profit per land unit was higher than in the control variant (139.10 €/ha) with 10.06%, respectively 1.1%. In the other variants with application of biostimulants, the profit achieved per land unit was lower than that recorded in the control variant (Table 2).

The values of the profit per product unit and of the profit rate recorded in the variants with application of biostimulants were lower with up to 54.9% respectively 47.57% than those recorded in the control variant.

Table 2

Economical efficiency in the second year of production, in smooth brome

Specification	Expenses (€/ha)	Average hay yield (t/ha)	Income (€/ha)	Profit per land unit (€/ha)	Profit per product unit (€/t)	Profit rate (%)
Control	408.20	8.42	547.30	139.10	16.52	34.07
Green fuse	454.00	9.34	607.10	153.10	16.39	33.72
Stimupro	497.30	9.62	625.30	128.00	13.30	25.73
Agrostemin	465.20	8.81	572.65	107.45	12.19	23.09
Sea start	487.70	8.72	566.80	79.10	9.07	16.21
Super plant	466.30	8.86	575.90	109.60	12.37	23.50
Bionat	471.20	9.16	595.40	124.20	13.55	26.35
Mega grow	448.90	9.07	589.55	140.65	15.50	31.33

The calculations of economic efficiency performed for the third year of production proved that, successive to the application of biostimulants, the profit per

land unit may increase up to 270.70 €/ha. The highest profit per land unit was achieved in the experimental variants with application of Green fuse (270.70 €/ha), Mega grow (254.40 €/ha), Stimupro (246.95 €/ha), Bionat (243.15 €/ha) and Super plant (237.00 €/ha). In the experimental variants with application of Agrostemin (227.05 €/ha) and Sea start (211.05 €/ha), the profit per land unit was lower than that recorded in the control variant (233.35 €/ha) (Table 3).

The profit per product unit and the profit rate were lower than in the control variants in most experimental variants, excepting the variant with application of Green fuse, where the profit per product unit was 24.27 €/t and the profit rate was 59.62%.

Table 3.

Economical efficiency in the third year of production, in smooth brome

Specification	Expenses (€/ha)	Average hay yield (t/ha)	Income (€/ha)	Profit per land unit (€/ha)	Profit per product unit (€/t)	Profit rate (%)
Control	408.20	9.87	641.55	233.35	23.64	57.16
Green fuse	454.00	11.15	724.70	270.70	24.27	59.62
Stimupro	497.30	11.45	744.25	246.95	21.56	49.65
Agrostemin	465.20	10.65	692.25	227.05	21.81	48.80
Sea start	487.70	10.75	697.75	211.05	19.63	43.27
Super plant	466.30	10.82	703.30	237.00	21.90	50.82
Bionat	471.20	10.99	714.35	243.15	22.12	51.60
Mega grow	448.90	10.82	703.30	254.40	23.51	56.67

The calculations of the average economic efficiency for the entire experimental period, in smooth brome, made evident the efficacy of the biostimulants Green fuse and Mega grow on this species. Successive to the application of these two biostimulants, we recorded the highest average profit per land unit (Green fuse 181.70 €/ha, Mega grow 173.80 €/ha) (Table 4).

Table 4.

Average economic efficiency during the three years of production, in smooth brome

Specification	Expenses (€/ha)	Average hay yield (t/ha)	Income (€/ha)	Profit per land unit (€/ha)	Profit per product unit (€/t)	Profit rate (%)
Control	408.20	8.76	569.40	161.20	18.40	39.49
Green fuse	454.00	9.78	635.70	181.70	18.57	40.02
Stimupro	497.30	10.08	655.20	157.90	15.66	31.75
Agrostemin	465.20	9.28	603.85	138.65	14.92	29.80
Sea start	487.70	9.38	609.70	122.00	13.00	25.01
Super plant	466.30	9.48	616.20	149.90	15.81	32.14
Bionat	471.20	9.73	632.45	161.25	16.57	34.21
Mega grow	448.90	9.58	622.70	173.80	18.14	38.71

In the experimental variant in which we applied the biostimulant Green fuse, we recorded the highest average profit per product unit (18.57 €/t), and also the highest profit rate (40.02%); in the other variants with application of biostimulants, the average profit per product unit and the profit rate as well recorded lower values than the control variant.

Conclusions

Successive to the calculations of economic efficiency for the first year of production, the highest profit per land unit was recorded in the variant with application of Mega grow (127.00 €/ha), being with 12.93% higher than the one recorded in the control variant (112.45 €/ha).

In the second year of production, the profit per land unit in smooth brome recorded values between 79.10 and 153.10 €/ha, depending on the biostimulant applied. The highest profit per land unit was recorded in the variants with application of Green fuse (153.10 €/ha) and Mega grow (140.65 €/ha); in these variants, the profit per land unit was higher than in the control variant (139.10 €/ha) with 10.06%, respectively 1.1%.

The calculations of economic efficiency performed for the third year of production proved that, successive to the application of biostimulants, the profit per land unit may attain 270.70 €/ha, in the case of the experimental variant with application of Green fuse.

The calculations of economic efficiency performed for the entire experimental period (2002-2004), in smooth brome) made evident the efficiency of the products Green fuse and Mega grow on this species. Successive to the application of these two biostimulants, we recorded the highest average profit per land unit (Green fuse with 181.70 €/ha, Mega grow with 173.80 €/ha).

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