

## GREEN MASS CORN – AN IMPORTANT SOURCE IN ASSURING ANIMAL NUTRITION

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### Abstract

*Corn for green mass represents a source for succulent fodder, especially during the dry periods in summer and fall. The research was conducted in order to establish the most productive corn hybrid, the cultivation technique and the optimal fertilization. As biological material we used Fundulea 376 and Fundulea 322 hybrids, sowed in pure culture, mixed with soybean on same rows and on alternative rows (4 corn rows – 4 soybean rows). Bigger productions resulted for Fundulea 322 hybrid, sowed in alternative rows with soybean, fertilized with manure 30 t/ha + complex fertilizer 100 – 200 kg/ha (11,4 – 12,6 t/ha d.s. for Fundulea 322). The highest protein content and the lowest cellulose content was registered when cultivating the mixture on same rows, for both hybrids, fertilized with 30 t/ha + complex fertilizer 200 kg/ha (16,02 % PB and 24,35 % CB for Fundulea 376, respective 16,70 % PB and 23,55 % CB for Fundulea 322). We recommend, for the target area, the Fundulea 322 corn hybrid, sowed in mixture with soybean.*

**Key words:** corn, green mass, hybrids, fertilization

### INTRODUCTION

Corn is one of the fodder plants used in animal nutrition as green mass, too, being well consumed and with a high digestibility coefficient. The corn for green mass can be sowed in main culture or following a plant that cleared the land in the last half of spring or first half of summer and it is fed to the animals from late July until the end of October [2, 3]. Considering its low protein content, green mass corn can be mixed with soybean on the same row or in alternative rows, in order to compensate this deficiency [1, 2].

This paper aims the increase of green mass corn production in the Moldavian Plain, by cultivating some productive hybrids, fertilization and by using a mixture of corn and soybean.

### MATERIAL AND METHOD

The experiment is a 2 x 3 x 6 type, placed in accordance to the subdivided lots method, in three repetitions, and it was established at SD Iași's Ezăreni Farm, belonging to USAMV Iași, during 2005-2007, on a cambic chernozem soil type, with a humus content of

2.8-2.93%, medium assured with mobile phosphorus and potassium.

#### Experimental factors:

#### **Factor A – corn hybrids:**

a<sub>1</sub> – Fundulea 373; a<sub>2</sub> – Fundulea 322.

#### **Factor B – cultivation type:**

b<sub>1</sub> – sowed in pure culture;

b<sub>2</sub> – sowed in mixture, corn (50 kg/ha) + soybean (45 kg/ha), on the same row;

b<sub>3</sub> – sowed in alternative rows (4 rows corn + 4 rows soybean)

#### **Factor C – fertilization:**

c<sub>1</sub> – control;

c<sub>2</sub> – cattle manure 30 t/ha;

c<sub>3</sub> – complex fertilizer (22-22-0) 100 kg/ha;

c<sub>4</sub> – complex fertilizer (22-22-0) 200 kg/ha;

c<sub>5</sub> – cattle manure 30 t/ha + complex fertilizer (22-22-0) 100 kg/ha;

c<sub>6</sub> – cattle manure 30 t/ha + complex fertilizer (22-22-0) 200 kg/ha.

The production results were expressed in dry substance and the statistic calculus was made through the variance analysis. The dry substance content was determined oven heating method at 105<sup>0</sup>C, the total nitrogen content was determined with the Kjeldahl method and the raw cellulose content with the Schasser-Kürschner method.

**RESULTS AND DISCUSSIONS**

Production. Analyzing the average production values (tab. 1), obtained for the two corn hybrids under the influenced of the studied factors, we observed the following:

- For Fundulea 376 corn hybrid the productions varied as follows: for the pure culture, the production yields were of 6.2-10.1 t/ha d.s., for the corn + soybean mixture on the same row we registered bigger production yields, of 6.5-10.3 t/ha d.s., and

for the mixture corn + soybean in alternative rows we registered the biggest productions, of 8.4-11.5 t/ha d.s.;

- Fertilization made with manure alone lead to production increases of 5%, 9% and 14%, for all three cultivation types.
- Fertilization made with complex compounds 100-200 kg/ha lead to very significant production increases (18-29%, 20-29%, respectively 24-32%).

Table 1.  
The influence of hybrid, cultivation type and fertilization on average production 2005-2007

Hybrid	Cultivation type	Fertilization	Production t/ha	% comp. to control	Diff. t/ha	Signif.
Fundulea 376	Pure culture	Control	6.2	100	-	
		30 t/ha c.m.	6.5	105	0,3	
		Complex 100 kg/ha	7.3	118	1,1	***
		Complex 200 kg/ha	8.0	129	1,8	***
		30 t/ha c.m.+100 kg	8.8	142	2,6	***
	Mixture	30 t/ha g.g+200 kg	10.1	163	3,9	***
		Nefertilizat	6.5	100	-	
		30 t/ha c.m.	7.1	109	0,6	**
		Complex 100 kg/ha	7.8	120	1,3	***
		Complex 200 kg/ha	8.4	129	1,9	***
	Alternative	30 t/ha c.m.+100 kg	9.6	148	3,1	***
		30 t/ha g.g+200 kg	10.3	158	3,8	***
		Control	7.4	100	-	-
		30 t/ha c.m.	8.4	114	1,0	***
		Complex 100 kg/ha	9.2	124	1,8	***
Fundulea 322	Pure culture	Complex 200 kg/ha	9.8	132	2,4	***
		30 t/ha c.m.+100 kg	10.7	145	3,3	***
		30 t/ha g.g+200 kg	11.5	155	4,1	***
		Control	6.9	100	-	-
		30 t/ha c.m.	7.5	109	0,6	*
	Mixture	Complex 100 kg/ha	8.4	122	1,5	***
		Complex 200 kg/ha	8.9	129	2,0	***
		30 t/ha c.m.+100 kg	9.8	142	2,9	***
		30 t/ha g.g+200 kg	10.8	156	3,9	***
		Control	6.8	100	-	-
	Alternative	30 t/ha c.m.	7.8	115	1,0	***
		Complex 100 kg/ha	8.2	121	1,4	***
		Complex 200 kg/ha	9.0	132	2,2	***
		30 t/ha c.m.+100 kg	9.6	141	2,8	***
		30 t/ha g.g+200 kg	10.8	159	4,0	***
Alternative	Control	7.4	100	-	-	
	30 t/ha c.m.	8.3	112	0,9	***	
	Complex 100 kg/ha	9.4	127	2,0	***	
	Complex 200 kg/ha	10.5	142	3,1	***	
	30 t/ha c.m.+100 kg	11.4	154	4,0	***	
		30 t/ha c.m.+200 kg	12.6	170	5,2	***
DL 5 % = 0.8 t/ha; DL 1 % = 1.2t/ha; DL 0.1 % = 1.5 t/ha						

- For Fundulea 322 hybrid, the obtained productions were of 6.9-10.8 t/ha d.s. sewed in pure culture, 6.8-10.8 t/ha d.s. sewed in mixture corn + soybean on the same row and

7.4-12.6 t/ha d.s. sowed in mixture corn + soybean in alternative rows.

- The biggest production increases were registered for the fertilization with complex compounds (22-29%, 21-32% and 27-42%) and for the combined fertilization manure + complex fertilizer (42-56%, 41-59%, respectively 54-70%), considering the cultivation type.

Raw protein. For Fundulea 376 hybrid, the highest raw protein content was obtained by cultivating corn mixed with soybean on

the same row and on alternative rows, for the fertilization with complex compounds and with manure + complex fertilizer (14.75-16.02%, respectively 14.60-15.95%) (fig. 1).

For Fundulea 322 hybrid, a higher raw protein content was registered for the same cultivation and fertilization conditions as for the Fundulea 376 hybrid (14.96-16.70%, respectively 13.25-15.95%) (fig. 2).

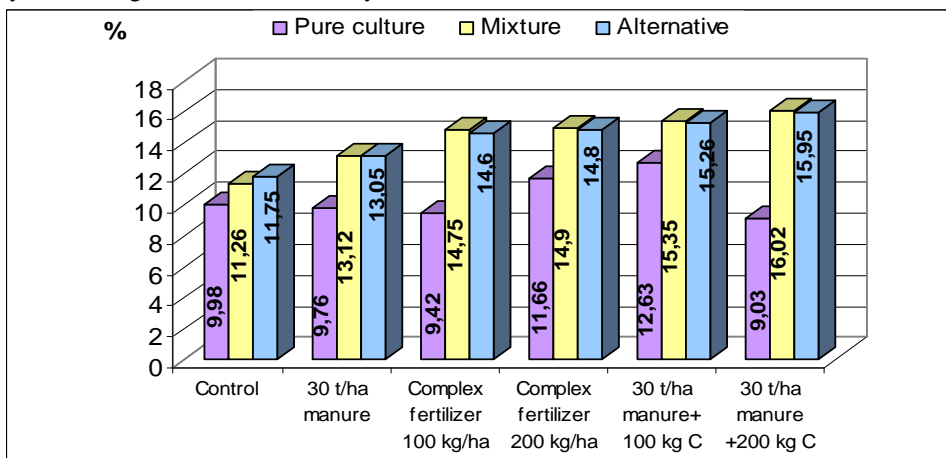


Fig. 1. Evolution of crude protein content in hybrid Fundulea 376, under the influence of fertilization and cultivation method

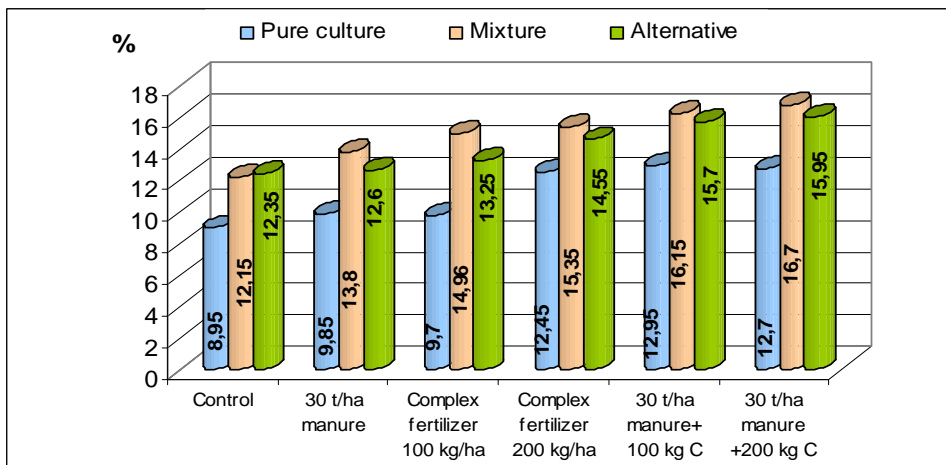


Fig 2. Evolution of crude protein content in hybrid Fundulea 322, under the influence of fertilization and cultivation method

Raw cellulose. For Fundulea 376 hybrid, the lowest cellulose content was obtained when we cultivated corn mixed with soybean

on the same row, fertilized with complex compounds and with manure + complex fertilizer (24.5-25.30%) (fig. 3).

For Fundulea 322 hybrid, the same contents (23.55-25.60%) (fig. 4). conditions lead also to the lowest cellulose

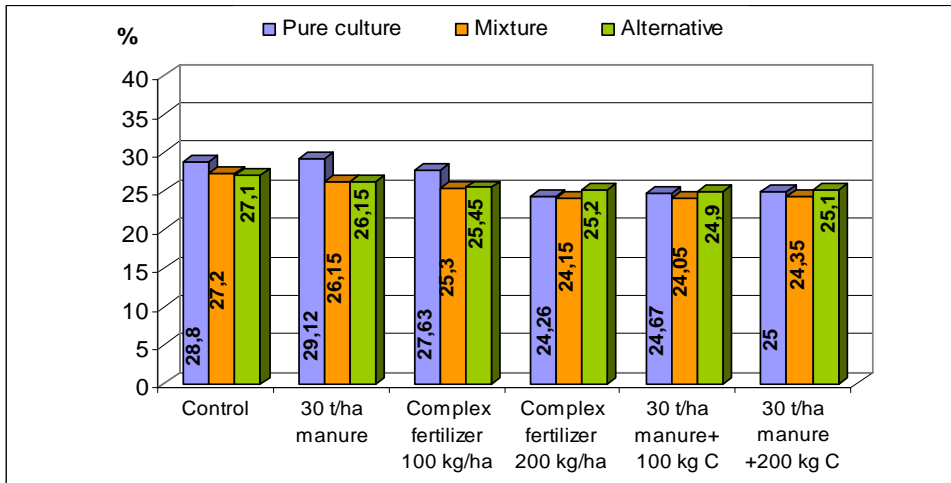


Fig. 3. Evolution of crude fiber content in hybrid Fundulea 376, under the influence of fertilization and cultivation method

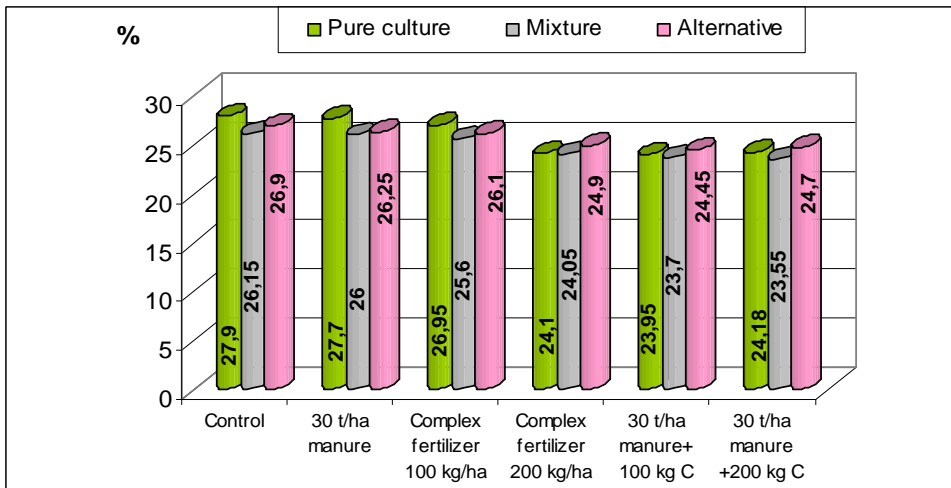


Fig. 4. Evolution of crude fiber content in hybrid Fundulea 332, under the influence of fertilization and cultivation method

## CONCLUSIONS

- Green mass corn represents an important component of the fodder ratios during summer – autumn period.
- The culture of green mass corn in the Moldavian Plain can be established in main culture or in mixture with soybean, sowed on the same row or in alternative rows.
- For the studied area, we recommend cultivating Fundulea 322 hybrid, in alternative rows with soybean and fertilized

with complex compounds and with cattle manure + complex fertilizer.

## REFERENCES

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