INFLUENCE OF FERTILIZATION ON GREEN PEAS CROP AND PROTEIN CONTENT IN THE PEDOCLIMATIC CONDITIONS OF THE TIMIS PLAIN

INFLUENTA FERTILIZARII ASUPRA RECOLTEI ŞI CONŢINUTULUI DE PROTEINĂ LA CÂTEVA SOIURI DE MAZARE CULTIVATE IN CONDIŢIILE PEDOCLIMATICE DIN CÂMPIA TIMIŞULUI

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Abstract: *Research carried out in the Timiş Plain concerning the behaviour of some green peas cultivars in conditions of differentiated fertilising pointed out the possibility of getting yields above 2,700 kg/ha. Protein content varied between 24.6% and 27.3%, and protein yield varied between 343 kg/ha and 773 kg/ha.*

Rezumat: *Cercetările desfăşurate în Câmpia Timişului privind comportarea unor soiuri de mazăre cultivate în condiţii de fertilizare diferenţiată au pus în evidenţă posibilitatea obţinerii unor recolte de peste 2700 kg/ha. Conţinutul de proteină a variat între 24,6 şi 27,3%, iar producţia de proteină între 343 şi 773 kg/ha.*

Key words*: green peas, protein content and protein yield*
Cuvinte cheie*: mazăre, conţinut de proteină şi producţie de proteină*

INTRODUCTION

Green peas cultivated for its beans has at present a small share in the structure of crops in Timiş Plain, Soil conditions in this area justify the expansion of this crop, which made us identify the most suitable cultivars and fertilisers.

MATERIAL AND METHOD

Experiments were of the bi-factorial type in which Factor A - the cultivar - had four graduations (Baccara, Loto, Eiffel, Profi), and Factor B - nitrogen dose applied on a constant fund $P_{60}K_{60}$ - also had four graduations (N_0, N30, N_{60}, and N_{90}).

RESULTS AND DISCUSSIONS

Table 1 shows yield results during the experimental cycle 2002-2004 on the experimental field in the Timiş Plain. On the average for the four fertilising levels the Eiffel cultivar was remarkable with an average yield of above 2,200 kg/ha, followed by the Baccara and Profi cultivars, both with yield above 2,100 kg/ha. To note that the fourth cultivar experimented - Loto - yielded about 1,900 kg/ha, which point out that the cultivars under study were well chosen.

Nitrogen fertilisers were well valorised, yield increases being between 21% in the variant fertilised with N30 and 63% in the variant fertilised with N90. Yield differences of 348 kg/ha (N30) and 1,024 kg/ha (N90) are statistically ensured as very significant. As a conclusion, in the area we refer to it is advisable to cultivate the Eiffel, Baccara, and Profi cultivars. Response curves of the crop to nitrogen fertilisers are shown in Figure 1. Regression functions we calculated are as follows: it is obvious that in the area on which we carried out our research it is justified to fertilise green peas with $N_{30\text{-}60}P_{60}K_{60}$- N90 dose results in an increase of the yield, but this is a risk dose for the years in which there are conditions to valorise fertilisers. During the experimental cycle we refer to, two of the three years has a water deficit.

Table 1

Synthesis of yield results of pea in experimental cycle 2002-2004 in the Timişoara

A factorial - variety	B Factorial Averages- Nitrogen doses $P_{60}K_{60}$				A Factorial Averages			
	N_o	N_{30}	N_{60}	N_{90}	Crop (kg/ha)	%	Difference (kg/ha)	Significance
Baccara	1725	2040	2391	2673	2207	100		
Loto	1434	1762	2222	2517	1983	90	-224	
Eiffel	1663	2098	2449	2771	2245	102	38	
Profi	1712	2027	2293	2669	2175	98	-132	

DL 5 % = 280 kg/ha;
DL 1 % = 373 kg/ha;
DL 0.1 % = 491 kg/ha.

B Factorial Averages

Specification	N_0	N_{30}	N_{60}	N_{90}
Crop (kg/ha)	1633	1981	2338	2657
%	100	121	143	163
Difference (kg/ha)		348	705	1024
Significance		xxx	xxx	xxx

DL 5 % = 140 kg/ha; DL 1 % = 186 kg/ha; DL 0.1 % = 243 kg/ha

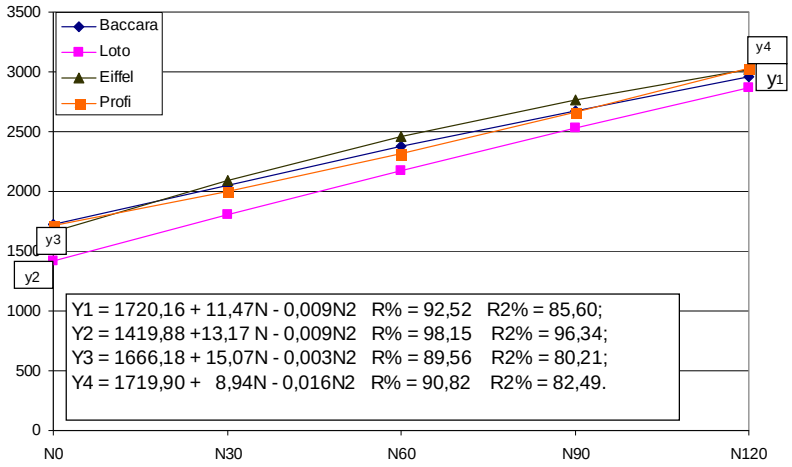

Fig. 1 Response curve to nitrogen fertilisers applied on a $P_{60}K_{60}$ fund in experimental cycle 2002-2004 in pea at Timişoara

Synthesis of the results concerning protein content for the four green pea cultivars are shown in Figure 2, which shows that for the four cultivars protein content increased with nitrogen dose from 25.7% (N_0) to 27.1% (N_{90}) in the Baccara cultivar, from 24.6% (N_0) to 26.4% (N_{90}) in the Loto cultivar, from 25.6% (N_0) to 26.8% (N_{90}) on the Eiffel cultivar, and from 25.6% (No) to 27.3% (N_{90}) in the Profi cultivar.

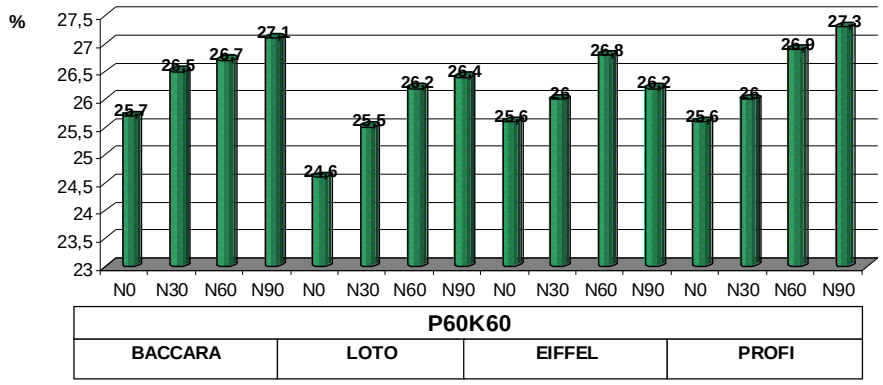

Figure 2. Synthesis of protein content registered in the Timişoara in experimental cycle 2002-2004

Protein yield at the Timiş Plain is shown in Table 2.

Table 2

Synthesis of yield protein in pea in experimental cycle at Timişoara

A factorial - variety	B Factorial Averages- Nitrogen doses $P_{60}K_{60}$				A Factorial Averages			
	N_o	N_{30}	N_{60}	N_{90}	Crop (kg/ha)	%	Difference (kg/ha)	Significance
Baccara	444	540	639	725	587	100		
Loto	352	448	582	665	512	87	-75	0
Eiffel	425	545	655	755	595	101	8	
Profi	437	526	617	728	577	98	-10	

DL 5 % = 73 kg/ha;
DL 1 % = 97 kg/ha;
DL 0.1 % = 128 kg/ha.

B Factorial Averages

Specification	N_0	N_{30}	N_{60}	N_{90}
Crop (kg/ha)	N_0	N_{30}	N_{60}	N_{90}
%	414	515	623	731
Difference (kg/ha)	100	124	150	176
Significance		101	209	317

DL 5 % = 36 kg/ha; DL 1 % = 48 kg/ha; DL 0.1 % = 96 kg/ha

We can see that on the average for the four agro-funds the highest yield in protein per ha (595 kg) was in the Eiffel cultivar, followed with very close values by the Baccara cultivar (587 kg) and by the Profi cultivar (577 kg).

Nitrogen fertilisers resulted in an increase of protein yield both manifest in both protein content increase and in yield increase. In these conditions compared to the yield of 414 kg/ha in the control variant, we got in the variant fertilised with N30 an increase of 24%, in the variant fertilised with N_{60} an increase of 50%, and in the variant fertilised with N_{90} an increase of

76%.

Yield differences compared to the N_0 variant were of 101 kg/ha in the variant fertilised with N30, 209 kg/ha in the variant fertilised with N_{60}, and 317 kg/ha in the variant fertilised with N_{90} are statistically ensured as very significant

CONCLUSIONS

The highest average yield during the experimental cycle in pea (2,771 kg/ha) was in the Eiffel cultivar fertilised with $N_{90}P_{60}K_{60}$. The Profi and Baccara cultivars yielded between 2,600 and 2,700 kg/ha.

Nitrogen fertilisers applied on a fund of $P_{60}K_{60}$ increased the yield with 349 kg/ha (N_{30}) to 1,524 kg/ha (N_{90}) on the average for the 4 experimental cultivars.

Protein content in pea depending on area, cultivar, and fertilisation level was at the Timişoara area between 24.6% (N_0) in the Loto cultivar and 27.3% (N_{90}) in the Profi cultivar.

Protein yield in the Timişoara area was between 352 kg/ha and 755 kg/ha.

LITERATURE

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