STUDY OF THE RELATIONSHIP BACTERIZATION-SOWING PERIOD ON YIELD AND QUALITY OF PEA AND SOYBEAN IN TIMI PLAIN

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Abstract: *The experiment was carried out within the Didactic Station of Banat's University of Agricultural Sciences and Veterinary Medicine of Timisoara on a cambic chernozem slightly gleyied, slightly hyposalic and moderately hyposalty under 100 cm, slightly decarbonized on loess moderate fine deposits medium clay loam / medium clay loam. In the first part of the profile the soil reaction is neutral with a pH of 7.03-7.18, and in the second half the reaction is slightly alkaline with a pH of 8.25-8.49. The reserve of humus is low from 62.98 to 75.65 t / ha in the processed horizon, and very low under 60 t / ha for the underlying horizons. According to its composition, the soil falls within the class texture "fine textured", subclass medium clay loam, undifferentiated in profile. The two cultures have been organized in a trifactorial experiences, the A-factor was the cultivated variety (the genotype for pea are A1 - Dora, A2 - Montana and A3 - Monique; and the genotype for soybean are A1 - Felix, A2 - Neoplata and A3 - Venera), factor B - (B1 - non bacterized and B2 - bacterized) and factor C the planting period with two graduations (for pea C1- sown in 10 to 20 of March, C2 – sown in 1 to 10 of April; and for soybean C1-sown in 1 to 10 of April, C2 – sown in 20 to 30 of April). On average the three varieties and two planting dates obtained under bacterization conditions a 115% increase in yield, the difference of 225 kg/ha to non bacterized variant is to be provided as distinct significant. Of the three varieties variety Venera was noted. Bacterization of the seed proved to be a beneficial technological measure, helping to increase yields by over 277 kg/ha, even in an area with conditions of moisture deficiency.*

Key words**:** *Bacterization, planting dates, peas, soybeans, Plain Timis*

INTRODUCTION

Ensuring the necessary world protein is depending, increasingly, of the contribution of plants rich in these substances. "Protein Advisory Group" of the FAO mentions "a new green revolution, that of legumes", and as the main hope for solving world protein deficiency are considered legumes.

This is the main argument for expanding the area planted with legumes.

A second argument is the value of these crops as food, because of the high content of essential amino acids, protein from beans of lentils and chickpeas and their high digestibility.

MATERIAL AND METHODS

The research was conducted on the territory of USAMVB Timisoara Station staff on a chernozem soil type cambic gleyed weak, moderate salt restriction hiposalic weak and under 100 cm, poorly decarbonated on medium fine loess, loamy clay medium / medium loamy clay.

According to its composition, the soil falls within the class texture "fine textured", subclass medium clay loam, undifferentiated in profile. Chernozem cambic soils have a good fertility and are planted with cereal crops vegetables, vines and fruit trees. Applying irrigation water shortage supplementing during dry periods the administration of mineral and organic fertilizers contribute to achieving high yields.

To characterize the climate conditions we have used data from the Meteorological

Station Timisoara.

In conclusion, as the climate issue, were met all the conditions for obtaining experimental results, to the studied cultures, interpreted.

Trifactorial experiments were carried out in the two cultures, in which the factor A, was represented by the cultivated variety ((for pea Dosa, Montana and Monique, for soybean Felix, Neoplata and Venera), the factor B – represented bacterized - non bacterized, and the factor C represented the sowing period with two graduations.

RESULTS AND DISCUSSIONS

Trifactoriale experiments were organized according to the method parcels subdivided in three repetitions of the following factors graduations:

-Factor A-genotype, A1-Dora, A2-Montana, A3-Monique

- Factor B- seed bacterization using four doses of Nitragin for the quantity of the seed per hectare, B1-non bacterized, B2-bacterized,

- Factor C sowing period, C1-sown in 10 to 20 of March, C2 – sown in 1 to 10 of April.

Table 1 and Figure 1 presents the results obtained in pea harvest on chernozem cambic in Timisoara.

Table 1

Harvest results obtained in pea-Timisoara

Factor A	***Factor B***	***Factor C***		***Average factor A***			
		C1-Period I	*C2-Period II*	*Yield kg/ha*	*%*	*Difference kg/ha*	*Signiffication*
A_1 Dora	*B_1.non bacterized*	*1168*	*1078*	*1208*	*100*		
	B_2. bacterized	*1390*	*1195*				
A_2 Montana	*B_1.non bacterized*	*1665*	*1521*	*1716*	*142*	*508*	*XXX*
	B_2. bacterized	*1951*	*1727*				
A_3 Monique	*B_1.non bacterized*	*1860*	*1698*	*1908*	*158*	*700*	*XXX*
	B_2. bacterized	*2145*	*1929*				

DL5% = 173 kg/ha DL1% = 251 kg/ha DL 0,1% = 332 kg/ha

Average factor C

Specification	*C1-Period I*	*C2-Period II*
Yield kg/ha	*1690*	*1525*
%	*100*	*98*
Difference kg/ha		*- 165*
Signiffication		*0*

DL5% = 151 kg/ha DL1% = 198 kg/ha DL 0,1% = 208 kg/ha

Average factor B

Specification	*B_1.non bacterized*	*B_2. bacterized*
Yield kg/ha	*1498*	*1723*
%	*100*	*115*
Difference kg/ha		*225*
Signiffication		*XXX*

DL5% = 145 kg/ha DL1% = 195 kg/ha DL 0,1% = 215 kg/ha

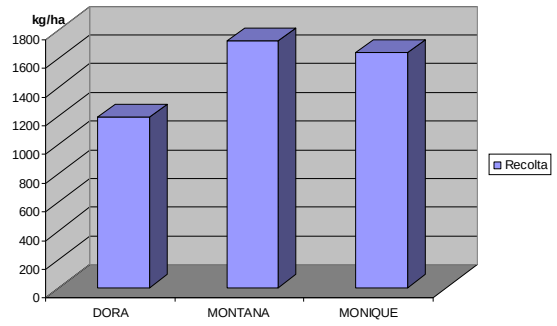

Figure 1: The results of the pea harvest

Analyzing the behavior of varieties it is found that results of at new varieties introduced in the area Montana and Monique are superior yield variety obtained at Dora. Differences in harvest of 508 kg / ha (variety Montana) and 700 kg/ ha (Monique variety) that are statistically very significant.

On average the three varieties and two planting dates under bacterization conditions has been obtained 115% increase in the yield the difference of 225 kg / ha to non bacterized variant it is ensured as distinct significant.

Thus because of the delaying the sowing from urgency I to urgency II it has been registered a loss of 165 kg / ha situated in error area.

The experiments were organized in soybean trifactorial type, the genotype was the factor A: A1-Felix; A2-Neoplata, A3-Venera, factor B was the seed bacterization using Nitragin: B1- non bacterized and B2-bacterized, and the factor C: C1-sown in 1 to 10 of April, C2 – sown in 20 to 30 of April.

Soybean harvest results obtained are listed in Table 2 and Figure 2.

Table 2

The results obtained from soy harvest Timisoara

FactorA	*Factor B*	*FactorC*		*Average of factor A*			
		C1-Period I	*C2-Period II*	*Yield kg/ha*	*%*	*Differenc e kg/ha*	*Signiffication*
FELIX	*B_1.non bacterized*	*1914*	*1811*	*2008*	*100*		
	B_2. bacterized	*2273*	*2033*				
NEOPLATA	*B_1.non bacterized*	*2279*	*2076*	*2315*	*115*	*307*	*XX*
	B_2. bacterized	*2555*	*2350*				
VENERA	*B_1.non bacterized*	*2305*	*2113*	*2342*	*116*	*334*	*XXX*
	B_2. bacterized	*2626*	*2323*				

DL5% = 171 kg/ha DL1% = 255 kg/ha DL 0,1% = 297 kg/ha

Average of factor C

Specification	*C1-Period I*	*C2-Period II*
Yield kg/ha	*2325*	*2218*
%	*100*	*95*
Difference kg/ha		*-107*
Signiffication		

DL5% = 183 kg/ha DL1% = 264 kg/ha DL 0,1% = 312 kg/ha

Average of factor B

Specification	*B_1.non bacterized*	*B_2. bacterized*
Yield kg/ha	*2083*	*2360*
%	*100*	*113*
Difference kg/ha		*277*
Signiffication		*XXX*

DL5% = 133 kg/ha DL1% = 162 kg/ha DL 0,1% = 218 kg/ha

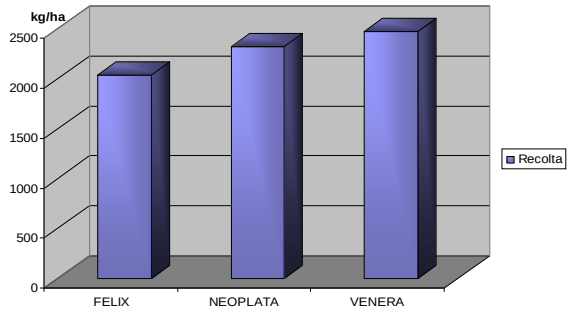

Figure 2: The results obtained in soybean harvest

Experimental results of this year set the crop between 1811 kg / ha and 2626 kg / ha. Of the three varieties variety Venera was noted. Bacterization of seed proved to be a beneficial

technological measure helping the increase of yield by over 277kg/ha even in an area with conditions of moisture deficiency.

Between the two periods of the sowing have not been recorded differences at level of significance because in this year and in the second period of the sowing the seeds have benefited from the water for germination and rising of plants, water critical phase of this species.

CONCLUSIONS

1. Among the pea varieties investigated, it was variety Monique that on average on the other factors investigated obtained an yield increase of 58% to Dora the control variety. Dora variety variety culture needs to be replaced by Monique in the plain of Banat

2. With reference to the bacterization conditions results show the effectiveness of such technological measures the difference being about 225 kg/ha.

3. Among the soybean varieties studied was imposed the the harvest Venera variety Felix was 16% higher returns than a difference from the 334 kg/ha.

4. Bacterization of seed averaged over three varieties determined the increase of the yield by 13%.

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