ON THE BEHAVIOUR OF AN ASSORTMENT OF PROSPECTIVE TRITICALE CULTIVARS IN THE SOIL AND CLIMATE CONDITIONS OF THE HILL AREA IN NORTH-WEST MEHEDINTI COUNTY (ROMANIA)

COMPORTAREA UNUI SORTIMENT DE SOIURI DE PERSPECTIVĂ DE TRITICALE ÎN CONDIȚIILE PEDOCLIMATICE DIN ZONA COLINARĂ DIN NORD-VESTUL JUDEȚULUI MEHEDINȚI

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Abstract: *In the hill area of north-west Mehedinti County we studied the behaviour of five triticale cultivars at different levels of nitrogen and phosphorus fertilisation, on a constant agri-fund of potassium. Results pointed out yields of over 4,800 kg/ha in the Garant and Impact cultivars, and of over 3,500 kg/ha in the Galant cultivar.*

Rezumat*: În zona colinară din nord-vestul județului Mehedinți s-a cercetat comportarea a cinci soiuri de triticale pe diferite niveluri de fertilizare cu azot şi fosfor, pe fond constant de potasiu. Rezultatele au evidențiat recolte de peste 4800 kg/ha la soiurile Garant şi Impact şi de peste 3500 kg/ha la soiul Galant.*

Key words: *Triticale, cultivars, and fertilising levels*
Cuvinte cheie: *Triticale, soiuri şi niveluri de fertilizare*

INTRODUCTION

Triticale is a new cereal, a prospective one, for the boundary area of wheat crops. For field areas, it plays an important role in foraging cereals.

Fertilising represents in this crop too an important technological step both in getting higher yields and from the point of view of grain quality features.

We have to point out the fact that, in the reference area, in wheat cultivation, the level of the crops is low, below the economic threshold.

MATERIAL AND METHOD

Trials have been tri-factorial ones, set after the sub-divided plot method, with three replications. We have taken into account six new triticale cultivars considered to be prospective, two phosphorus fertilisation levels (P_{40} and P_{80}) and three nitrogen fertilisation levels (N_0, N_{50}, and N_{100}).

In order to point out the need for expanding triticale cultivars in this area, we took as control the Alex winter wheat cultivar, a cultivar adapted to the soil and climate conditions in the hill area.

Grain pea was the pre-emergent crop. The technology we applied is specific to triticale crops, with the following additional mentions:

-sowing was done in the last decade of September, with a sowing density of 500 germinating grains per square meter;

-during vegetation, it was not necessary to chemically control weeds, as the triticale crop choked them.

RESULTS AND DISCUSSIONS

Table 1 shows results in the mentioned area, on a eutricambisoil.

It is important to note that in this area with poor soils we could get yields of over 4,800 kg/ha in two triticale cultivars, Garant and Impact, by fertilising with $N_{100}P_{80}K_{60}$.

On the average for the other experimental factors, we can say that doubling the phosphorus rate from P_{40} to P_{80} lead to an increase of the yield with over 900 kg/ha, a very significant difference.

Nitrogen fertilisation resulted in an increase of the yield with 56.00% for a rate of N_{50} and with 93.00% for a rate of N_{100}, the differences being statistically ensured as very significant.

Among prospective cultivars, it is to note the Garant and Galant cultivars: the yields in these cultivars, on the average per fertilisation levels, were over 3,500 kg/ha.

Figure 1 shows the variation of the relative volume of 1,000 grains. We can see that the triticale cultivars under study were between 38.00 and 41.00 g. The highest values, ranged between 41.00 and 42.00 g, were in the Galant and Garant cultivars.

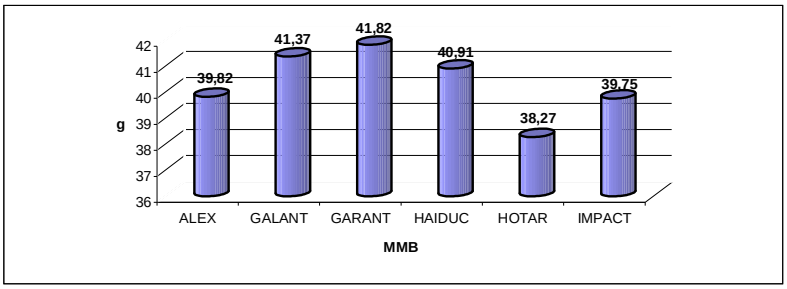

Fig. 1. The variation of the volume of 1,000 grains depending on cultivar on the Podeni land (Mehedinti County, Romania)

Figure 2 shows the variation of hectolitric mass. Results point out that all the cultivars ranged below the value of the wheat cultivars taken as controls.

Among the triticale cultivars, it is to note the Haiduc cultivar with over 67.00 kg/hl, and the cultivars Hotar and Impact, with over 66 kg/hl.

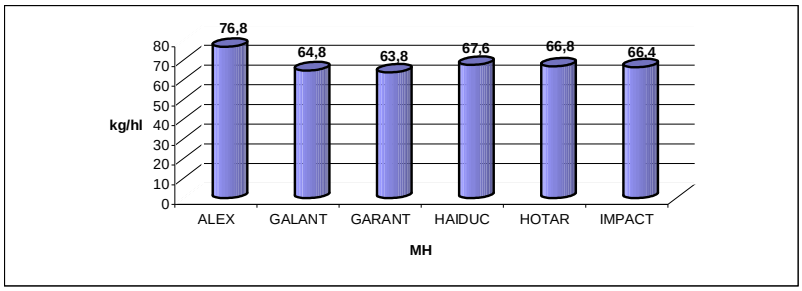

Fig. 2. The variation of the hectolitric volume depending on cultivar on the Podeni land (Mehedinti County, Romania)

Table 1.

Yield results in the hill area in north-west Mehedinți County in 2006 in the perspective cultivars

A Factorial Phosphorus doses	B Factorial Nitrogen doses	C Factorial- variety					
		ALEX	GALANT	GARANT	HAIDUC	HOTAR	IMPACT
$P_{40}K_{60}$	N_0	1047	2514	2635	1242	1327	1619
	N_{50}	1131	3709	3429	2131	2487	1812
	N_{100}	1778	3926	4094	2626	2303	2213
$P_{80}K_{60}$	N_0	1100	2534	2830	1947	1905	1316
	N_{50}	1568	4020	3827	3529	3117	3515
	N_{100}	2423	4525	4805	4637	4400	4800

A factorial averages			
Crop kg / ha	%	Difference kg / ha	Significance
2211	100		
3155	143	944	XXX

DL 5 % = 132 kg / ha;
DL 1% = 176 kg / ha,
DL 0.1 % = 229 kg / ha

C factorial averages

Specification	ALEX	GALANT	GARANT	HAIDUC	HOTAR	IMPACT
Crop kg / ha	1508	3538	3603	2685	2590	2546
%	100	243	239	178	172	169
Difference kg/ha		2030	2095	1177	1082	1038
Significance		XXX	XXX	XXX	XXX	XXX

DL 5 % = 324 kg / ha;
DL 1 % = 431 kg / ha;

B factorial averages

Specification	N_0	N_{50}	N_{100}
Crop kg / ha	1835	2856	3544
%	100	156	193
Difference kg / ha		1021	1709
Significance		XXX	XXX

DL 5 % = 145 kg / ha;
DL 1 % = 193 kg / ha;

DL 0.1 % = 560kg / ha

DL 0.1 %= 250 kg /

CONCLUSIONS

1. Introducing the new triticale cultivars into cultivation is motivated, as they yield 1,000 kg-ha more than the Alex wheat cultivar (the Hotar and Impact cultivars), and up to 2,000 kg/ha more than the Alex wheat cultivar (the Garant and Galant cultivars).

2. Phosphorus fertilisers have been well valorised, so that doubling the phosphorus rate from P_{40} to P_{80} resulted in an increase of the yield level with over 40.00%.

3. In the conditions of the soil poorly supplied with nitrogen, applying a rate of N_{50}, on the average per each of the studied cultivars, increased the yield with over 50%. Doubling the nitrogen rate amplified the share of the yield increase with over 90.00%.

4. Analysing quantity features points out that the cultivars under study are adapted to the reference area. The values of the volume of 1,000 grains were between 38.00 and 42.00 g, and the values of the hectolitric volume are between 63.00 and 68.00 kg/hl.

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