

THE VARIETY, FERTILIZATION AND DENSITY ON GRAIN YIELD IN TRITICALE (*TRITICOSECALE WITTMACK*) UNDER THE RĂCĂȘDIA

Pavel NEFIR, Valeriu TABĂRĂ

Universitatea de Științe Agricole și Medicină Veterinară a Banatului, Timișoara

REZUMAT. Având în vedere faptul că fertilizarea este una din măsurile care, aplicate corespunzător, duc la creșterea producției și implicit a calității acestora, multe cercetări efectuate în ultimul timp s-au axat pe găsirea unor formule optime pentru aceasta. Lucrarea de față își propune să analizeze efectul solurilor, fertilizării și densității asupra producției de boabe la triticale (*Triticosecale Wittmack*) în condițiile de la Răcășdia. Din analiza rezultatelor privind producția de boabe, se constată că aceasta e influențată mai mult de fertilizare decât de soi și densitate. Diferențele dintre variante privind producțiile de boabe la triticale sunt mai evidente în cazul variantelor sub efectul fertilizării luate în studiu. Din analiza rezultatelor privind producțiile de boabe se constată că în majoritatea variantelor experimentale realizate prin utilizarea fertilizării, producția de boabe depășește 5400 kg/ha. Cele mai mari valori ale producției de boabe se înregistrează la varianta fertilizată N160P06K60 - 5495 kg/ha, la soiul românesc Stil - 5302 kg/ha, la densitatea de 750bg/m² - 5187 kg/ha.

Cuvinte cheie: triticale, soi, fertilizare, densitate, producție, calitate.

ABSTRACT. Given the fact that fertilization is one of the measures which, properly applied, lead to increased production and hence its quality, more research carried out lately have focused on identifying the optimal formula. This paper aims to analyze the effect of varieties, fertilization and density on grain yield in triticale (*Triticosecale Wittmack*) under the Răcășdia. The analysis results on the production of grain, it appears that it is influenced more fertilizer than the variety and density. Differences between versions of the triticale grain yields are more obvious if under the effect of fertilization variants studied. The analysis results on grain production is found in most versions made by using experimental fertilization, grain yield than 5400 kg/ha. The highest values of grain yield recorded in the variant fertilized N160P06K60 - 5495 kg/ha, the Romanian variety Style - 5302 kg/ha, the density of 750 bg/m² - 5187 kg/ha.

Keywords: triticale, variety, fertilization, density, production, quality.

1. INTRODUCTION

Cereals (wheat, triticale, rye, barley, oats, corn, sorghum, millet, rice etc.) is group of plants growing importance to human existence and activity. They are irreplaceable in human food and animal feed due to the chemical composition of grains containing: carbohydrates (60%), protein substances (10-16%), minerals, fats, vitamins.

Cereals are important in terms of plant production: are good and very good preceding crops, enrich the soil by stimulating nitrification processes (by early harvesting of grain straw) protects the land against soil erosion in hilly areas if seeding be made on the contours, capitalizes the land on which other cultures are not productive (triticale).

Due to advances in genetic improvement of triticale varieties have been developed commercially viable (with high production potential and stability) competitive with other cereals and even corn, especially in hilly areas with infertile soils and low

pH. New varieties of triticale are equal or superior performance to other cereal crops, forage and biomass production for human food, animal feed or industrial applications.

Species, triticale, although he had a short development being created by a man recently became an important cereal in the world occupying approximately 4 million ha, of which over 70% in Europe. New varieties of triticale are equal or superior performance to other cereal crops, forage and biomass production for human food, animal feed or industrial applications. Recent research shows that protein energy ratio is generally higher when obtained from forage triticale forage than the traditional focus. Triticale protein has higher value as the wheat, being rich in potassium, phosphorus, sodium, magnesium and zinc. From this conclusion it is necessary and an adaptation of the milling and bakery industry, the processing triticalei is noted for the fact that all techniques used so far have been made for wheat. Triticale grains have a composition that allows their

use in the production of malt for brewing the beans quality. Of triticale can be done in the alcohol extract average 400 l / t grain.

Cereal grains for feeding humanity provides 55-60% of total calories consumed, 60% protein, 15% from fat and 70% from carbohydrates. In human nutrition it provides over 90% of calories from 30 species of cultivated plants. Grain foods can be consumed daily body requirements are appropriate and appreciated both in terms of taste and their nutritional value. Cereal grains is the raw material for other industries such as beverages industry (manufacture of spirits and beer from corn, triticale, barley, rice etc.), pharmaceuticals (chemical substances in scleroții antihemoragice *Cleviceps purpurea* fungus obtained from the rye, rice etc. of drugs). Straw (stems) cereal grain used in pulp and paper industry, in small industry (knitting) and other manufacturing activities.

Cereals are the main raw material for production of meat, milk and eggs. No concentrate feed intake can not be deprived of corn, oats, barley etc. triticale. The most effective juicy fodder obtained from corn mash even feed fibers are made up of a cereal straw. Among cereals are good bee plants (corn). Manufacturing scraps cereals (bran, marcs etc.) is an excellent feed and not least secondary production of cereals (straw, stems) are used as bedding or even feeding. Recently gaining worldwide cultivation of cereals in the energy (sorghum as energy mass green), but the cultivation of cereals for biofuels production (triticale, corn etc.). Grains are a rich source of trade. The physical and chemical properties of grains allow their transport over long distances and keeping them without difficulty. You can eat in harvest, or after several years without spoiling or significantly change their nutritional qualities. Interaction of variety, density, fertilization strongly influences production.

2. MATERIAL AND METHOD

Experience has been placed in specific climatic conditions Caraș-Severin Răcașdia village. Experimental field was located on a brown soil type, I-mezogleizat moderate slope deposits formed from decomposition and alteration of basic metamorphic rocks. Experience is the type trifactorial, with annual repeat. Densities: 250 bg/m², 500 bg/m², 750 bg/m² were used in the experiment, and following fertilization systems.

Factor A – varieties of triticale used for zoning and their influence on grain yield.

A₁- CASCADOR

A₂- HAIDUC

A₃- TITAN

A₄- STIL

A₅- GORUN

Factor B – seeding density

B₁- 250 bg/mp

B₂- 500 bg/mp

B₃- 750 bg/mp

Factor C – fertilization system

C₁- UNFERTILIZED (N₀P₀K₀)

C₂- N₈₀P₆₀K₆₀

C₃- N₁₆₀P₆₀K₆₀

3. RESULTS

In table 1. production are presented results obtained from the interaction of variety with planting density and fertilization level considered.

Among the three factors, variety and density play a role in increasing the triticale grain production in 2010 at Răcașdia experimental Caraș-Severin.

In Style has been a variety 5302 kg/ha production is 18% higher than the production version is made witness to a production increase of 810 kg/ha provided statistically very semnifativ.

The variety was a Titan production 5045 kg/ha that made a positive difference in production compared to the control being provided statistically significantly distinct.

Sowing density on the analysis of results shows that differences in production between variants is small.

Thus by increasing the density from 250 to 500 bg/m² production increased by 373 kg / ha increase being provided statistically significant and increasing density to 750 bg/m² production of 5167 kg / ha more than the production version control with 691 kg / ha provided statistically very significant increase.

Analysis of the production potential of the two variants fertilized production compared with control variant (N₀P₀K₀) shows that all variants are considered superior to that witness.

The version N₁₆₀P₆₀K₆₀ 5499 kg/ha achieved a production with a production increase of 1696 kg/ha, being provided statistically very significant.

Production increase obtained in the variant fertilized with 80N kg/ha (1116 kg/ha) is provided ststistic to witness the very significant production.

Analysis results from the interaction of variety with planting density and fertilization level indicates that the highest grain yield in triticale varieties are obtained from the density 750bg/m² Style on fertilization N₁₆₀P₆₀K₆₀ - 5302 kg/ha.

THE VARIETY, FERTILIZATION AND DENSITY ON GRAIN YIELD IN TRITICALE

Table 1.

Triticale production obtained under the influence of variety, density and fertilization in the experimental field from Răcășdia in 2010

Factor A Variety	Factor B Density [bg/m ²]	Factor C Fertilization			A Factorial averages			
		N0P0K0	N80P60K60	N160P60K60	Production [kg/ha]	Production [kg/ha]	Diference	Semnification
CASCADOR	250	2890	4156	5026	4492	100	-	
	500	3372	4689	5367				
	750	4100	4870	5960				
HAIDUC	250	3801	4652	5163	4785	107	293	
	500	3942	4965	5398				
	750	4223	5050	5876				
TITAN	250	3837	4786	5231	5045	112	553	xx
	500	4625	5100	5766				
	750	4807	5265	5984				
STIL	250	4256	4996	5575	5302	118	810	xxx
	500	4487	5325	5990				
	750	4950	5900	6236				
GORUN	250	3785	4298	4688	4529	101	37	
	500	3968	4762	4976				
	750	4056	4978	5247				

DI 5% - 326 kg/ha; DI1% -469 kg/ha; DI0,1% - 711 kg/ha;

B Factorial averages

	N0P0K0	N80P60K60	N160P60K60
Production [kg/ha]	3803	4919	5499
%	100	129	145
Diference	-	1116	1696
Significance		xxx	xxx

DI 5% -202 kg/ha; DI1% 385 kg/ha; DI0,1% -605 kg/ha.

C Factorial averages

	250 bg/m ²	500 bg/m ²	750 bg/m ²
Production [kg/ha]	4476	4849	5167
%	100	108	115
Diference	-	373	691
Significance		x	xxx

DI 5%-211 kg/ha; DI1%-387 kg/ha; DI0,1%-609 kg/ha.

4. CONCLUSIONS

In the experimental field of Caraș-Severin Răcășdia there were good results in the production of triticale grains.

Having only one year of research results can not yet draw conclusions knowing that triticale generally react differently to the climatic conditions of the culture.

Climatic conditions during sowing and harvest were largely favorable influence on the level of grain yield in triticale.

The soil that was placed for nutritional support experience ensure good plant growth and development of triticale.

Triticale grain production to vary the influence of the factors taken into study (variety, density and fertilization).

Plant density interaction, strongly influences fertilization experimental production in 2010.

BIBLIOGRAPHY

- [1] Bilteanu Gh., Birnaure V. (1979), *Fitotehnie*, Ed. Ceres, Bucuresti.
- [2] Bilteanu G, Roman G. (1981), *Producția vegetală*. Cereale și Plante tehnice nr. 3.
- [3] Bilteanu Gh. (2003), *Fitotehnie*, Ed. Ceres, București.
- [4] Dragomir N. și colab (2004), *Culturi furajere*, Ed. Waldpress, Timișoara.
- [5] Gaspar L, Butnaru G (1985), *Triticale – o nouă cereală*. Ed. Academiei Romane, București.

Despre autor

Drd. ing. Pavel NEFIR

Director executiv al Camerei Agricole, O.J.C.A. Caraș Severin din 2005 până în prezent. Coordonator de activități de informare, formare și organizarea agricultorilor. Acordă consultanță agricolă, consiliere tehnică, predă cursuri de formare profesională.