

СЕКЦИЯ 1
**ПОВЫШЕНИЕ КОНКУРЕНТНОЙ УСТОЙЧИВОСТИ
ОРГАНИЗАЦИЙ АПК НА ОСНОВЕ ИННОВАЦИОННОЙ
МОДЕРНИЗАЦИИ ПРОИЗВОДСТВА**

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**AGRONOMIC PERFORMANCE OF RYE-TYPE TRITICALE
VARIETIES, GROWN IN AGRO-CLIMATIC CONDITIONS OF
SOUTHERN BULGARIA**

Keywords: triticale, yield, spike.

Ключевые слова: тритикале, урожайность, колос.

Summary: The experiment have been carried out in the experimental field of Agricultural University — Plovdiv. Studied are 7 varieties of triticale. Differences in genotypes of triticale, measured by average yield of grain allows them to be displayed in the following ascending order — Alter <Rakita <Frontera <Scudo <Kolorit <Attila <Accord.

Аннотация: Эксперимент был проведен в экспериментальной поле Аграрный Университет — Пловдив. Изучены 7 сортов тритикале. Различия в генотипах тритикале, измеренная средняя урожайность зерновых позволяет им быть отображаются в следующем порядке возрастания — Алтер <Ракита <Фронтера <Скудо <Колорит <Атила <Акорд.

High potential for grain yield in triticale can be best appreciated when comparing yields the best performance between varieties. One of the main advantages of triticale is precisely its high productive potential. This is mainly due to higher productivity of the structural elements of the culture — a highly productive tillering and the large number of grains in spike [1–5].

The selection of the more distinguished triticale varieties with higher participation of rye genome as a highly productive, so the purpose of the study was to determine productivity and its components of rye type triticale varieties in agricultural and climatic conditions of South Bulgaria.

The experiment have been carried out in the period 2007-2009 in the experimental field of Department of Crop science in Agricultural University — Plovdiv. Studied are 7 varieties of rye type triticale. Grain yield was determined by harvesting plots 10 m². The experiment was conducted on the block method in 4 replications in total adopted agrotechnics culture after predecessor grain maize [6].

The study used rye triticale varieties established in different selection centers:

- Rakita, Attila, Accord, Kolorit, created in Dobroudja Agricultural Institute — Gen. Toshevo, Bulgaria.
- Frontera, Alter and Scudo, created in selection company PRO.SE.ME. — Italia.

Dispersion analysis was applied for establishing statistically significant effects and the differences between the tested variants.

In the three years of study triticale realize its productive potential by the magnitude of grain yield to varying degrees under the influence of tested factors (Table. 1).

Table 1. Grain yield by the years and an average for the period

Variety	Years			Average (2007-2009)
	2007	2008	2009	
Rakita	316	419	308	348
Attila	336	559	326	407
Accord	345	543	338	409
Kolorit	322	506	312	380
Frontera	308	453	285	349
Alter	301	460	248	336
Scudo	326	438	297	354
LSD 5%	20.3	18.3	21.1	19.7

The yield of grain of triticale varieties tested in terms of Plovdiv, varies by year as follows: between 301 (variety Alter) and 345 kg / da (Accord variety) in the harvest in 2007, among 419 (Rakita variety) and 559 kg / da (Attila variety) in 2008 and between 248 (variety Alter) and 338 kg / da (variety Accord) in 2009 (Table 1). Therefore, differences in productivity of the tested varieties are susceptible: 44 kg / da in the first, 140 kg / da in the second and 90 kg / da in the third year of study. These differences relative to the average yield of triticale up in three consecutive years, respectively, 14.6, 33.4 and 36.3%.

Maximum yields in years in the conditions of Plovdiv are obtained as follows: 345 kg/da — in 2007 from a variety Accord; 559 kg/da — in 2008 from a variety Attila; 338 kg/da — in 2009 from a variety Accord. During the first year at the lower yield is obtained from a variety Alter — 301 kg/da and the average yield for triticale is 322 kg / da. Second year, characterized by favorable agro-climatic conditions for growth and development of culture is the highest average yield — 483 kg/da and with the lowest yield this year is Rakita — 419 kg/da.

Lowest yield in the third year is obtained from a variety Alter — 248 kg/da and the average crop yield is 302 kg/da. Data on minimum and maximum yields of grain in quite fully characterize the productive capacity of the tested varieties and their implementation in the agricultural and climatic conditions of Plovdiv. It is therefore not accidental that the average period for a variety Accord realize the highest grain yield — 409 kg/da, which exceeds by 10.8 % average for the conditions of the study yield of triticale (369 kg/da). The lowest average yield for the period of the study was obtained from a variety Alter — 336 kg/da, with 9.8 % below the average of three years of general study of all varieties of triticale. As components of yield in this study recognized the structural elements — height of plants and the components of the spike — the spike length and number of spikelets per spike. As for the three years of study and research period average, as the short variety can be distinguished Frontera — 107 cm, and the highest — variety Kolorit form — 129 cm, it confirms the thesis that the height of the stem is a sign of varieties.

Table 2. Structural elements of the plants

Variety	Height of the plants, cm	Length of spike, sm	Number of spikelets per spike
Rakita	114	14.1	32,7
Attila	127	15.1	33,3
Accord	120	14.0	35,0
Kolorit	129	13.0	34,7
Frontera	107	17.5	27,3
Alter	120	16.4	23,3
Scudo	112	15.0	26,3
LSD 5%	3,3	14,1	32,7

With the shortest spike features a variety Kolorit — 13 cm on average 3 years of study, and the longest spike — Frontera — 17.5 cm. Varieties, created

in terms of Bulgaria have a shorter spike, which, however, seems to be no negative determinant of their performance.

Variation in the length of spike by years in each of the varieties is very low, from which it can be concluded that this feature is genetically determines and is influenced to a greater extent by genotype, rather than the climatic conditions of the year. Averages for the three years of study with most spikeletts per spike is distinguished variety gave the highest grain yield — Accord, with the average number spikeletts per spike 35, but as the lowest yield variety Alter 23.3 spikeletts per spike are formed.

Differences in genotypes of triticale, measured by average yield of grain allows them to be displayed in the following ascending order — Alter < Rakita < Frontera < Scudo < Kolorit < Attila < Accord.

Plant height is a sign of varieties, as the lowest variety can be distinguished Frontera, while the highest variety is Kolorit. Variation in the length of spike by years in each of the varieties is very low, from which it can be concluded that this feature is genetically determines and is influenced to a greater extent by genotype, rather than the climatic conditions of the year. More spikeletts per spike formed variety gave the highest grain yield — Accord, while the lowest yield variety Alter formed less spikeletts per spike.

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