

# Study of some productive and quality traits of winter triticale varieties in Montenegrin conditions

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## Abstract

Productivity and grain quality characteristics of winter triticale varieties were tested in field conditions in northern Montenegro, in the vicinity of Bijelo Polje. The trial, carried out in a random block system in four repetitions, on river alluvium type soil, included five winter triticale varieties (Odysseus, Kg-20, Triumph, Rtanj and Tango). During the three-year study, all tested varieties were fertilized with the same amount of NPK fertilizer in the ratio 90:80:80. During the research, grain yield, mass of 1000 grains, hectoliter mass and protein content of grains were monitored. The obtained results showed that the highest grain yield as well as the mass of 1000 grains were recorded in the Tango variety, while the highest values of hectoliter mass and protein content of the grain were found in the Triumph variety. The lowest yield and mass of 1000 grains were in the Kg-20 variety.

Guided by the fact that triticale is a high quality food and an important component in the preparation of concentrated fodder, and thanks to its nutritional value, we wanted the results of the research to provide reliable recommendations to fodder producers when choosing the cultivation variety. In addition, agro-ecological conditions in the area favor triticale cultivation, so the results of the study would also contribute to the popularization of this species, which is still unknown to fodder producers and livestock holders.

**Keywords:** triticale, productive traits, variety, quality, yield.

## Introduction

Triticale is a great component for compounding feeds and can partially or completely replace other, more expensive, nutrients. The aim of the research was to analyze the yield, yield components as well as protein content of the grains on acidic soil in agroecological conditions of northern Montenegro in the above-mentioned triticale varieties.

## Material and method

The field trial, with five winter triticale varieties (Odysseus, Kg-20, Triumph, Rtanj and Tango) was conducted in the vicinity of Bijelo Polje in northern part of Montenegro over a three-year period (2009-2012) on the soil which belongs to the type of Eutric Cambisol (CM-eu) on alluvial coating. The experiment was set up by random block system in four repetitions. common practice was used in the experiment. All tested varieties were fertilized with the same amount of NPK fertilizer in the ratio 90:80:80. Sowing was carried out by manual method in optimal term. The harvest was conducted also, manually at the full maturity stage. The 1000 grain mass, hectolitre weight and grain yield was measured from each plot. Also, the protein content in the grain was determined with the Kjeldahl method. The yield of protein was calculated based on the grain yield and content of protein in the grain.

The obtained results were processed by the variance analysis method, using the statistical package WASP 2.0, and the differences of the mean values were tested by the LSD test.

## Conclusions

- The highest grain yield and hectolitre weight of all varieties were in the first year.
- The Tango variety had the highest grain yield and the maximum 1000 grain mass.
- The Triumph had the highest hectolitre weight and the highest protein content in the grain.
- The Kg-20 had the lowest total grain yield
- The Tango and Triumph varieties had approximately the same average protein yield per ha.
- The Tango variety can be recommended for wider production in the mentioned production area.

## Soil and climatic conditions

The total content of carbonate - 2.4 – 2.44 %

The humus content in the surface layer of the soil 3,35-3,96%

Acidity ( pH u H<sub>2</sub>O=6,61-5,53 u KCl=5,01-4,94)

Available phosphorus (5.12 – 4.24 mg/100g soil) and potassium (7.5 – 3.8 mg/100g soil)

Table.1. Meteorological data (Bijelo Polje – Hidrometeorological Institute Podgorica)

Year	Months											Average
	X	XI	XII	I	II	III	IV	V	VI	VII		
2010-11	65	131	147	36	76	31	46	121	33	79		765
2011-12	36	7	55	79	183	57	47	46	34	8		552
1961-90	80	115	91	87	68	60	70	76	72	64		783
Precipitation (mm)												
Average monthly air temperature (°C)												
2010-11	10,12	8,54	2,05	-0,65	0,94	6,03	10,54	14,5	18,9	21,23		9,2
2011-12	9,3	3,25	2,17	-1,72	-3,52	5,96	10,8	15,02	20,67	24,63		8,7
1961-90	9,4	4,7	0,2	-1,3	0,7	4,9	9,0	13,3	16,3	17,9		7,5

## Results

