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Influence of compound fertilisers and their doses on organic components and crude ash content in two spring triticale cultivars¹

Emilia Rzążewska**Faculty of Agricultural Sciences,
University of Siedlce, Poland**

Abstract

The research material consisted of spring triticale harvested in a three-year field experiment carried out in 2017-2019 at Borki-Wyrki, Zbuczyn commune. The objective of the study was to evaluate organic composition and crude ash content in the grain of two spring triticale cultivars, with a focus on the impact of different mineral fertilisers (conventional compound fertilisers versus silicon-enriched fertilisers) and NPK-S application doses. The following three experimental factors were examined: the main factor was spring triticale cultivar (Milewo, Doublet), the sub-plot factor was mineral fertiliser type (conventional compound fertiliser 6% N, 8.7% P, 24.9% K, 2.8% S, silicon-containing fertiliser 6% N, 5.2% P, 28.2% K, 4% S, 0.5% Si), and the sub-sub-plot factor was mineral fertiliser dose (0, 140, 280, 420 kg ha⁻¹). Compound (macronutrient) solid inorganic fertilisers were used. Organic components and ash content in spring triticale grain dry matter were significantly affected by study years, cultivars and fertiliser doses. Total protein content was higher in the grain of cv. Milewo compared with Dublet, and crude fat content was greater in the grain of cv. Dublet than in cv. Milewo. Increasing fertiliser application doses were followed by an increase in the spring triticale grain content of total protein. Regardless of experimental factors, grain crude contents of fibre and crude ash were similar. Analysis of the content of organic components and ash in the dry matter of spring triticale cultivars revealed no significant effect of fertiliser type on grain quality. Fertilisation with a conventional compound fertiliser (Polifoska 6) and a silicon-containing compound fertiliser (Polifoska Krzem) supplemented with nitrogen fertiliser positively affects organic components (mainly total protein) and ash content in spring triticale grain.

Keywords: total protein, crude fat, crude fibre, crude ash

Emilia Rzążewska, PhD, University of Siedlce, Faculty of Agricultural Sciences, Institute of Agriculture and Horticulture, e-mail: emilia.rzazewska@uws.edu.pl

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