# Influence of variety and fertilizer Fe and Zn in the agronomic traits of winter wheat

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## Abstract

The aim of the experiment was to determine the winter impact on wheat species ( Srpanjka, Divana, Katarina, Zdenka) and impact of Zn and Fe fertilization on yield, as well as yield components and agronomic traits of wheat species.

The experiment was set up in the vegetation year 2010/2011 at two locations in Beravci and Novi Grad. The basic fertilization and nitrogen fertilization was standard performance based on soil chemical analysis. The Zn and Fe fertilization was carried out in 7 different treatments: 1.control, 2. Fe application to the soil in autumn ( 5kg/ha Fe), 3. Zn (5 kg/ha Zn), 4. foliar Fe fertilization 0,5% solution in bladding up to earring phases, 5. Zn foliar, 6. Fe+Zn in the soil and 7. Fe+Zn foliar.

The wheat grain yield significantly differed (P< 0,0001) in localities in Novi Grad (5,98 t/ha) and Beravci (4,69 t/ha). There were, also, identified significantly different (P= 0,0148) yields for wheat species, the largest was Katarina (5,72 t/ha), and the lowest Zdenka (5,25 t/ha) and Divana (4,98 t/ha). The micronutrients treatment did not significantly affect the wheat grain yield.

The species Katarina had the largest number of seeds per stalk (965), and Divana smallest (687), while there were no differences between treatments with Fe and Zn. The opposite was the species influence on1000 seeds weight, as determined by the greatest Divan (46,2), and lowest for the species Zdenka (36,2). Among the researched species it was found a significantly different number of blades/m$^2$, with the largest number of blades by Zdenka (543,5), followed by Srpanjka (534.4), Katarina (439,9) and Divana (433,8).The micronutrients treatment did not statistically influenced the number of blades.

The species significantly influenced the diversity of studied agronomic traits, while Fe and Zn treatments did not affect yield components. However, the largest average wheat grain yield was determined after Fe foliar application (5,59 t/ha), and lowest after Zn application in soil (5,19 t/ha), but differences were not significant. The micro fertilizer treatment affected only plant height, straw length, weight and leaf weight.

Key words: locality, wheat, species, statistical differences, the treatment

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# Utjecaj sorte i gnojidbe Fe i Zn na agronomska svojstva ozime pšenice

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**Sažetak**

Cilj pokusa bio je utvrditi utjecaj sorte ozime pšenice (Srpanjka, Divana, Katarina, Zdenka) i gnojidbe Zn i Fe na prinos, komponente prinosa i agronomska svojstva sorti pšenice.

Pokus je postavljen u vegetacijskoj godini 2010/11. na dvije lokacije Beravci i Novi Grad. Osnovna gnojidba i prihrana dušikom obavljeni su standardno na osnovi kemijske analize tla. Gnojidba Zn i Fe je provedena u 7 različitih tretmana: 1. kontrola, 2. aplikacija Fe u tlo u jesen (5 kg/ha Fe), 3. Zn (5 kg/ha Zn), 4. folijarna prihrana Fe 0,5% otopinom u fazi vlatanja do klasanja, 5. folijarno Zn, 6. Fe+Zn u tlo i 7. Fe+Zn folijarno.

Ostvareni prinosi zrna pšenice značajno (P< 0,0001) su se razlikovali na lokalitetima Novi grad (5,98 t/ha) i Beravci (4,69 t/ha). Utvrđeni su i značajno (P= 0,0148) različiti prinosi po sortama, najveći je ostvarila Katarina (5,72 t/ha), a najmanji Zdenka (5,25 t/ha) i Divana (4,98 t/ha). Tretman mikroelementima nije značajno utjecao na prinos zrna pšenice.

Sorta Katarina imala je i najveći broj zrna po vlati (965), a Divana najmanji (687), dok razlika između tretmana s Fe i Zn nije bilo. Suprotan je bio utjecaj sorte na masu 1000 zrna jer je najveća utvrđena za sortu Divana (46,2), a najmanja za sortu Zdenka (36,2). Između istraživanih sorata utvrđen je i značajno različit broj vlati/m$^2$, pri čemu je najveći broj utvrđan za sortu Zdenka (543,5), slijede Srpanjka (532,4), Katarina (439,9) i Divana (433,8 Tretman aplikacije mikroelemenata nije statistički značajno utjecao niti na broj vlati.

Sorta je značajno utjecala i na različitost istraživanih agronomskih svojstava, dok tretmani Fe i Zn nisu značajno utjecali na komponente prinosa. Ipak, najveći je prosječni prinos zrna pšenice utvrđen nakon folijarne aplikacije Fe (5,59 t/ha), a najniži nakon aplikacije Zn u tlo (5,19 t/ha), ali razlike nisu značajne. Tretman mikrognojivima značajno je utjecao samo na visinu stabljike, duljinu slame, masu slame i masu lista.

Ključne riječi: lokalitet, pšenica, sorta, statistička razlika, tretman

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