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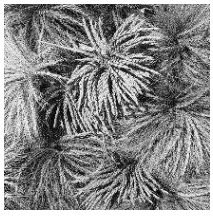

# International Conference

# The Frontiers of Science and Technology in Crop Breeding and Production Conference

**8 – 9 June, 2021**
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# BOOK OF ABSTRACTS

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## IWMS IN MAIZE WEED CONTROL - THE ROLE OF CROP ROTATION AND HERBICIDES

Milena Simić*, Milan Brankov, Vesna Dragičević, Miodrag Tolimir, Milena Šenk, Marijenka Tabaković

Maize Research Institute, Zemun Polje, Slobodana Bajića 1, 11185 Belgrade, Serbia

*Corresponding author e-mail address: smilena@mrizp.rs

The Integrated Weed Management System has been applied with variable success in many crops since its establishment in 1991. Environmental awareness, growing problems with herbicide resistance and a lack of new active ingredients, resulted in weed control not only with chemicals but also other measures. The aim of the study was to examine long-term IWM measures - combined application of crop rotation and herbicides on weed biomass and maize yield. The trial has been conducted since 2009, encompassing maize continuous cropping (MC), maize-winter wheat (MW), maize-soybean-winter wheat (MSW) and maize-winter wheat-soybean (MWS) rotations. The isoxaflutole + acetochlor mixture at recommended (RR), half of the recommended rate (0.5RR) and no-herbicides (C) were pre-emergence treatments applied in maize. Weed biomass was recorded from two randomly selected sites in the middle of each plot by square meter method, 6-7 weeks after the application of herbicides. Maize grain yield was calculated at 14% moisture at the end of the growing season. The data were processed by ANOVA and LSD-test ($\alpha = 0.05$). According to the 10-year average, weed biomass had decreased with the application of herbicide 0.5RR by 69.2%, 90.0%, 83.2% and 70.9% and of RR by 79.2%, 94.2%, 93.9% and 81.3% in MC, MW, MSW and MWS rotation, respectively. Herbicide RR was in average more effective than 0.5RR by 8.8% while the most effective in weed biomass reduction in average for both herbicide rates were MW and MSW rotations - 94.2% and 93.9%, respectively. Herbicide weed control contributed to the grain yield increase even in MC by 31.0% and 43.1% with 0.5RR and RR, respectively, while MSW was the most effective rotation and increased yield by 36.1% and 30.5% with 05.RR and RR, respectively. This indicates a significant correlation between the weed biomass decrease and the maize yield increase, as well as the importance of a preceding crop for maize productivity in integrated crop production systems with reduced herbicide use.

Key words: *maize, weed control, herbicides rate, crop rotation, yield.*