

Book of Abstracts



# 19<sup>th</sup> EUROPEAN WEED RESEARCH SOCIETY SYMPOSIUM

**Lighting the Future  
of Weed Science**

**20-23 June 2022 Athens, Greece**

**EWRS**  
2022  
Athens



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## Contribution of long-term crop rotation to weed control in maize

**Milena Simić; Milan Brankov; Vesna Dragičević**

*Maize Research Institute Zemun Polje, Zemun-Belgrade, Serbia*

### Poster

Crop rotation is an essential part of IWM system proposed to be implemented in maize weed control. It is especially appropriate to be used in sustainable maize production in order to suppress weed abundance on ecological and low-pesticide way. In comparison to maize continuous cropping, which is not suggestible, two- and three-years crop rotation with legume crop is more efficient in weed biomass reduction, including basic herbicide application. The aim of the study was to investigate the efficacy of combined application of crop rotation and mixture of soil (PRE) herbicides on weed species distribution. A long-term field trial organized as split-plot experiment has started in 2009 with maize sown in all four fields at the Maize Research Institute, Belgrade, Serbia. The basic treatment was a rotation system: maize continuous cropping (MC), maize-winter wheat rotation (MW), maize-soybean - w. wheat (MSW) and maize - w. wheat - soybean rotation (MWS). A pre-emergence herbicide mixture of isoxaflutole and metolachlor (Merlin 750-WG+Dual Gold 960 EC) in recommended rates ( $105 \text{ g a.i. ha}^{-1} + 672 \text{ g a.i. ha}^{-1}$ ) was applied immediately after drilling with a  $\text{CO}_2$  backpack sprayer with a four nozzle boom, using extended range nozzles (XR11002-SS, Tee Jet Spraying Systems, Wheaton, IL, USA) calibrated to deliver a spray volume of  $140 \text{ L ha}^{-1}$  of solution at 275.8 kPa. Herbicides were not applied in the control plot. After twelve years and completion of four rotations, maize was present again in all fields in 2021. Weed infestation level was estimated six to seven weeks after the application of herbicides. Samples were drawn randomly by the one square meter and number of weed individuals (WI) and their biomass (WB) were calculated. The data were processed by ANOVA. Our results indicated that in comparison to 2009, WI were increased in 2021 in untreated control by 44.2% in MC, 23.6% in MW, 24.6% in MSW and 18.6% in MWS. On the other hand, in treated plots WI have increased only in MC, by 62.5% and lowered by 7.7% in MW, 29.4% in MSW and 60.0% in MWS. WB has been reduced in 2021 significantly on treated as well as untreated plots in all rotation systems. The highest reduction of WB was achieved in untreated control of MWS (42.6%) and treated plot in MC (45.6%). Conclusively, it was proved that even with basic herbicide treatment with soil herbicides crop rotation could be very effective in weed control. On the other hand, maize continuous cropping has to be avoided in order to reduce potentials for weed infestation.

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