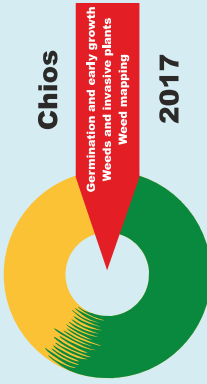




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**PROCEEDINGS**

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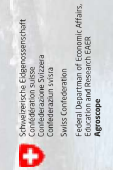
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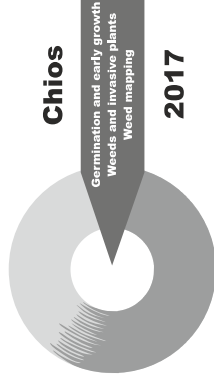
Germination and early growth  
 Weeds and invasive plants  
 Weed mapping

**2017**

Editors

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12/12 h night/day regime. In general, long awn biotype had high seed germination, nearly close to 90-96% in all depths at the beginning of experiment either flooded or non-flooded conditions. This is proving that it has weak or no primary seed dormancy. Contrary to long awn biotype, short awn had low seed germination and it did not exceed 54 % at the first month of exhuming. Seeds of this biotype have a moderate level of primary dormancy. Seasonal changes in germination of awnless seeds in the burial experiments differed significantly among depths ( $P < 0.001$ ). The seeds of this biotype buried in the field were dormant at the beginning of the experiment from October to March in non-flooded conditions. This biotype was germinated in spring, become dormant in fall and again germinated in spring in both conditions. This seed showed strongly cyclic behavior and typical cyclic changes in germination were repeated with slight variations in the subsequent months.

**Keywords:** Seasonal germination, weedy rice, burial depth, dormancy

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## Oral 6

### Long-term fertilization and crop rotation effects on weed seedbanks

<sup>1</sup>Saulić M., <sup>2</sup>Đalović I., <sup>1,3</sup>Savić A., <sup>1</sup>Božić D., <sup>1</sup>Vrbničanić S.

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Weed seed banks may reflect the status of weed population in the present and the past, and could be regarded as an indicator of the impact of soil and crop management. Crop rotation and fertilization system are among the many agronomic variables that interact with weed management to affect the size and composition of the weed seedbank. Knowledge of the effects of agricultural practices on weed seedbank dynamics is essential for predicting future problems in weed management. The aim of this study was to determine how the impact of the different growing system: monocultures of maize, 2-year crop rotation (maize, wheat) and 3-year crop rotation (wheat, maize, soyabeans) and the application of different fertilization systems: 2-year crop rotation (unfertilization and fertilization with NPK) and 3-year crop rotation (unfertilization, fertilization with manure and fertilization with NPK) affects the composition of the weed seed bank. For these surveys the plots of stationary experiment "Plodoredi", Institute of Field and Vegetable Crops, Novi Sad, Serbia (N 45° 19', E 19° 50') were used (plots were established in 1969/70). In each fertilized crop rotation was used 100 kg ha<sup>-1</sup> mineral N (50 kg in autumn and 50 kg in spring). In order to determine the weed seed bank, soil samples were taken for three years (2014-2017) in the autumn (after harvest) and spring (before sowing) and from three depths: 0-15 cm, 15-30 cm and 30-40 cm. The seedling emergence method was used to assess the emergence of the 432 soil samples. The method was carried out under controlled conditions of

greenhouses for 12 weeks with the daily determination of seedling. The largest number of seedling was observed between 3 and 6 weeks, in samples taken from the ploughlayer (0-15 cm). It was concluded that the smallest number of species present (8) in maize monoculture samples was recorded (at the depth 0-15 cm there were 6 species, at 15-30 cm 5 species and at 30-40 cm 4 species). While the change in maize with wheat increased the number of weed species to 12 (0-15 cm: 11 species; 15-30 cm: 9 species; 30-40 cm: 5 species) and 17 respectively in the rotation of maize, wheat and soybeans (0-15 cm: 10 species; 15-30 cm: 9 species; 30-40 cm: 7 species). There are 14 weed species (0-15 cm: 9 species; 15-30 cm: 9 species; 30-40 cm: 8 species) on the plots of the 2-year crop rotation where no fertilizer is applied, and in the fertilizer variant with NPK nutrients 12. In the samples with three plots of the 3-year crop rotation and different varieties of fertilization, a similar number of weed species were observed, but they differ in the floristic manner. Thus, in the non-fertilizer samples (0-15 cm: 12 species; 15-30 cm: 10 species; 30-40 cm: 7 species) the most important species were *Ajuga chamaepytus* L., *Anagalis arvensis* L., *Sorghum halepense* L., *Stachys annua* L. In the plots where a manure is applied every three years in the amount of 40 t ha<sup>-1</sup> *Ambrosia artemisiifolia* L., *Chenopodium hybridum* L., *Chenopodium album* L. *Veronica hederifolia* L. are dominated. At the depth 0-15 cm there were 8 species, at 15-30 cm 12 species and at 30-40 cm 7 species. Only during the using samples at this locality, a large populations of invasive species *Helianthus tuberosus* L. is observed. In the area of Serbia in occasional years when climatic conditions permit this species is propagated generatively. Normally it is maintained in the form of tubers in the soil weed seedbank. In the samples where only NPK fertilizer was applied, the state of weed species was similar (17 species) but *Datura stramonium* L., *Polygonum aviculare* L., *Portulaca oleraceae* L. occurred, too.

**Keywords:** weed seedbank, maize, seedling emergence method, crop rotation, fertilization.

## Session 2

### Invasive alien plants and ecological aspects

Chaired by Sava Vrbnicanin