

# **XXVth EUCARPIA Maize and Sorghum Conference**

*Current Challenges and New Methods for Maize and Sorghum  
Breeding*

## **Book of Abstracts**

May 30 – June 2, 2022.

Belgrade – Serbia



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### **Publisher**

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

### **Multiplied by**

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

### **Number of e-copies**

150 USB flash drive

Online on the website <https://eucarpia maize sorghum 2022.com>

ISBN-978-86-80383-15-6

Financially supported by Ministry of Education, Science and Technological Development of the Republic of Serbia

CIP - Каталогizacija u publikaciji

Народна библиотека Србије, Београд

633.15/.17:631.527.53(048)(0.034.2)

#### **EUCARPIA Maize and Sorghum Conference Current Challenges and New Methods for Maize and Sorghum Breeding (25 ; 2022 ; Beograd)**

Book of abstracts [Електронски извор] / XXVth EUCARPIA Maize and Sorghum Conference Current Challenges and New Methods for Maize and Sorghum Breeding, May 30 – June 2, 2022. Belgrade – Serbia ; [organizers EUCARPIA (European Association for Research on Plant Breeding) [and] Maize Research Institute Zemun Polje] ; [editors Violeta Anđelković, Jelena Srdić, Milica Nikolić]. - Zemun Polje : Maize Research Institute, 2022 (Zemun Polje : Maize Research Institute). - 1 USB fleš memorija ; 4 x 2 x 1 cm

Sistemski zahtevi: Nisu navedeni. - Nasl. sa naslovne strane dokumenta. - Tiraž 150. - Registri.

ISBN 978-86-80383-15-6

a) Кукуруз -- Оплењивање -- Апстракти б) Сирак -- Оплењивање -- Апстракти

COBISS.SR-ID 66525961

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## TOXICOLOGICAL PROFILE OF PATHOGENIC SPECIES ON MAIZE IN SERBIA

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*Fusarium* and *Aspergillus* toxigenic species are considered to be the most common pathogens in maize. Agroecological conditions in Serbia favour the development of numerous pathogenic and toxigenic species of the genus *Fusarium* and *Aspergillus*. Global climate change may favour the contamination of maize with high levels of aflatoxins and fusariotoxins in temperate areas, such as Serbia. *Fusarium graminearum* synthesises mycotoxins from which the most important are type B trichothecene - deoxynivalenol (DON), its acetyl-ester derivatives (3-ADON and 15-ADON) and nivalenol (NIV). The two most important species of fungi responsible for aspergillois kernel and ear rot are *Aspergillus flavus* and *Aspergillus parasiticus*, producers of aflatoxins (B1, B2, G1, and G2).

Isolates of *F. graminearum* and *A. parasiticus* identified from maize grain samples collected over 12 years from 40 localities in Serbia were analyzed. Production potential of isolates were determined by high-performance liquid chromatography method (HPLC).

Results of perennial research showed high variability in the concentrations of mycotoxins deoxynivalenol and aflatoxins in maize kernels. Detected concentrations of DON varied from 10,9 to 154.6 µg/g (average 47,2 µg/g), while 3ADON concentrations ranged from 3.42 to 71.6 µg/g (average 15,6 µg/g) and 15ADON from 5.4 to 121.3 µg/g (average 29,8 µg/g). Mycotoxin 15ADON were predominant in observed samples. The average synthesis of aflatoxin B1 was 4145.97 µg/kg (range 14.24 to 7361.03 µg/kg) by which the isolates of this group were classified into strong producers of AFB1. The average synthesis of aflatoxin B2 was 403.55 µg/kg, aflatoxin G1 3490.07 µg/kg and G2 198.29 µg/kg averaging, respectively.

**Keywords:** *Fusarium*, *Aspergillus*, Maize, Mycotoxins