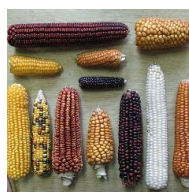




Maize Research Institute
ZEMUN POLJE
Serbia, Belgrade



International Conference

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

8 – 9 June, 2021
Belgrade, Serbia

BOOK OF ABSTRACTS

International Conference The Frontiers of Science and Technology in Crop
Breeding and Production
June 8 - 9, 2021; Belgrade, Serbia

Publisher

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

Printing

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

Year of publishing

June, 2021

Editor in Chief

Dr. Vesna Kandić

Technical Editors

Dr. Vesna Kandić
Milena Šenk, MSc
Marko Mladenović, MSc

Circulation

60 USB flash drive
Online on the website <http://zpconference75.com>

CIP - Каталогизacija u publikaciji - Narodna biblioteka Srbije,
Beograd

631.52/.53(048)(0.034.2)

INTERNATIONAL Conference The Frontiers of Science and Technology in
Crop Breeding and Production (2021 ; Beograd). Book of Abstracts
[Elektronski izvor] / International Conference The Frontiers of Science and
Technology in Crop Breeding and Production, June 8 - 9, 2021; Belgrade,
Serbia; [editor in chief Vesna Kandić]. – Belgrade. Maize Research Institute
"Zemun Polje", 2021 (Belgrade : Maize Research Institute "Zemun Polje"). - 1
USB fleš memorija: ilustr.; 1 x 2 x 6 cm

Sistemska zahtevi: Nisu navedeni. - Nasl. sa nasl. strane dokumenta. - Tiraž 60.

ISBN 978-86-80383-12-5

a) Пољопривредне биљке - Оплеменивање - Апстракти

COBISS.SR-ID 40455433

03 - 02 Invited Lecture

EFFECTS OF CLIMATE CHANGES ON MYCOPOPULATIONS IN CEREAL GRAIN IN SERBIA

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In recent years, global climate variability and changes have affected agro-climatic conditions, which have contributed to the spread of new fungal species in cereal grains in Serbia. These changes can affect the synthesis of higher concentrations of mycotoxins in cereal grains during the growing season and can cause economic losses in production, as well as increased risk to human and animal health. The following new species of the genera *Fusarium* and *Aspergillus* have been identified in cereal grains in Serbia: *Fusarium vorosii* in wheat, *Fusarium boothii* in maize, *Fusarium verticillioides* in triticale and wheat, as well as the species *Aspergillus parasiticus* in maize, wheat and barley. These species have been identified on the basis of morphological, pathogenic, toxicological and molecular methods. DNA isolation was performed using DNeasy Plant Mini Kit-a. Species *F. vorosii* and *F. boothii* were detected using three genomic regions (*TEF-1 α* , histone *H3* and β -tubulin) that were sequenced and obtained sequences were deposited in NCBI. *A. parasiticus* was detected by the RFLP method using a primer pair IGS-F/IGS-R specific for the IGS region of genes *aflJ* and *aflR* involved in the aflatoxin biosynthesis. *A. parasiticus* CBS 100926 was used as a reference isolate. In order to prove the presence of the species *F. verticillioides* in triticale, a pair of primers FV-F2/FV-R was used. This pair of primers amplifies the sequence of the *gaoB* gene, and proved to be specific for the stated species. Moreover, for the same purpose, a pair of primers VER1-VER2 designed based on the calmodulin partial gene was used. The stated reasons, as well as the fact that new species of the *Fg* complex had been identified in the surrounding of Serbia, have indicated the need for continuous monitoring of these toxigenic species in the production of cereals.

Key words: *F. vorosii*, *F. boothii*, *F. verticillioides*, *A. parasiticus*, climate change.



ISBN 978-86-80383-12-5