

DRUŠTVO GENETIČARA SRBIJE  
SEKCIJA ZA OPLEMENJIVANJE ORGANIZAMA

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SERBIAN GENETIC SOCIETY  
SECTION OF THE BREEDING OF ORGANISMS

DRUŠTVO SELEKCIONERA I SEMENARA  
REPUBLIKE SRBIJE

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SERBIAN ASSOCIATION OF PLANT  
BREEDERS AND SEED PRODUCERS

# ZBORNİK APSTRAKATA

X SIMPOZIJUMA DRUŠTVA SELEKCIONERA I SEMENARA  
REPUBLIKE SRBIJE

i

VII SIMPOZIJUMA SEKCIJE ZA OPLEMENJIVANJE ORGANIZAMA  
DRUŠTVA GENETIČARA SRBIJE

VRNJAČKA BANJA, 16.-18. OKTOBAR 2023.

# BOOK OF ABSTRACTS

X SYMPOSIUM OF THE SERBIAN ASSOCIATION OF PLANT  
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AND

VII SYMPOSIUM OF THE SERBIAN GENETIC SOCIETY  
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## POTENCIJAL KOMERCIJALNIH HIBRIDA KUKURUZA ZA FORMIRANJE AKRILAMIDA

Beka Sarić<sup>1</sup>, Marijana Simić<sup>1</sup>, Valentina Nikolić<sup>1</sup>, Danka Milovanović<sup>1</sup>, Slađana Žilić<sup>1</sup>

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Kukuruz (*Zea mais L.*) je jedan od najsvestranijih useva za ishranu ljudi u brojnim zemljama i može se uzgajati u različitim uslovima životne sredine i ima raznovrsnu upotrebu kao hrana za ljude. Kukuruz mora biti termički obrađen za ishranu, što stvara rizik od kontaminacije. Jedan od kontaminenata je akrilamid, koji je najverovatnije kancerogen za ljude. Cilj ovog rada bio je da se utvrdi potencijal komercijalnih hibrida za formiranje akrilamida u hrani, odnosno da se analizira sadržaj prekursora akrilamida – sadržaj slobodnog asparagina i redukujućih šećera. Ova studija je obuhvatila devetnaest genotipova kukuruza gajenih 2021. i 2022. godine. Biljni materijal razvijen u MRIZP-u obuhvatao je četrnaest genotipova standardnog zrna, jedan beli kukuruz, tri kokičara i jedan genotip kukuruza šećerca. Rezultati su pokazali da nije bilo statistički značajne razlike između dve godine u pogledu sadržaja slobodnog asparagina, ali se uticaj spoljašnje sredine odrazio na sadržaj šećera. Sadržaj fruktoze, glukoze, saharoze i maltoze bio je oko 42%, 21%, 31%, odnosno 33% manji kod genotipova uzgajanih 2022. godine. Genotipovi su se statistički razlikovali na osnovu detekcije slobodnog asparagina i sadržaja šećera. Prema sadržaju slobodnog asparagina mogu se razlikovati tri grupe genotipova. Četiri genotipa su imala sadržaj asparagina od 200-300 µg/kg, jedanaest genotipova je imalo 300-400 µg/kg, a još četiri genotipa su imala više od 400 µg/kg. ZP427 je imao najveći potencijal za proizvodnju akrilamida, dok je ZP504su imao 50% manji sadržaj aparagina.

**Ključne reči:** kukuruz, akrilamid, asparagin, šećeri, HPLC

**Zahvalnica:** Ovu studiju je podržalo Ministarstvo za nauku, tehnološki razvoj i inovacije Republike Srbije (Grant br. 451-03-47/2023-01/200040).]

## POTENTIAL OF COMMERCIAL CORN HYBRIDS FOR ACRYLAMIDE FORMATION

Beka Sarić<sup>1</sup>, Marijana Simić<sup>1</sup>, Valentina Nikolić<sup>1</sup>, Danka Milovanović<sup>1</sup>, Slađana Žilić<sup>1</sup>

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Maize (*Zea mays L.*) is one of the most versatile human food crop in a number of countries crops and can be grown in diverse environmental conditions and has diversified uses as human food. Maize must be thermally processed into food, which creates a risk of contamination. One of the contaminants is acrylamide, which is probably carcinogenic to humans. The aim of this work was to determine the potential of commercial hybrids for the formation of acrylamide in food i.e. to analysis the content of acrylamide precursors - free-asparagine and reducing sugar content. This study included a nineteen maize genotypes grown during the seasons of 2021 and 2022. The plant material developed at the MRIZP encompassed fourteen yellow dent, one white dent, three popping, and one sweet maize genotype. The results showed that there was no statistically significant difference between the two years in terms of asparagine content, however the effect of the environment conditions was reflected in the sugar content. The content of fructose, glucose, sucrose, and maltose was approximately 42%, 21%, 31%, and 33% lower in genotypes cultivated in 2022, respectively. The genotypes were statistically different based on the detection of the free-asparagine and sugar content. According to the content of free-asparagine, three groups of genotypes can be distinguished. Four genotypes had an asparagine content of 200-300 µg/kg, eleven genotypes had 300-400 µg/kg, and another four genotypes had more than 400 µg/kg. ZP427 had the largest potential for acrylamide production, while ZP504su had a 50% lower asparagine content.

**Key words:** maize, acrylamide, asparagine, sugar, HPLC

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