



**XII INTERNATIONAL SYMPOSIUM ON  
AGRICULTURAL SCIENCES**

**BOOK OF ABSTRACTS**

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**24-26, May, 2023  
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Bosnia and Herzegovina**

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XII International Symposium on Agricultural Sciences "AgroReS 2023"  
24-26. May, 2023; Trebinje, Bosnia and Herzegovina

*Publisher*

University of Banja Luka  
Faculty of Agriculture  
University City  
Bulevar vojvode Petra Bojovića 1A  
78000 Banja Luka, Republic of Srpska, B&H

*Editor in Chief*

Branimir Nježić and Biljana Kelečević

*Technical Editors*

Danijela Kuruzović

*Edition*

Electronic edition

CIP - Каталогизacija у публикацији  
Народна и универзитетска библиотека  
Републике Српске, Бања Лука

631(048.3)(0.034.2)

INTERNATIONAL Symposium on Agricultural Sciences (12 ;  
Trebinje ; 2023)

Book of Abstracts [Електронски извор] / XII International  
Symposium on Agricultural Sciences "AgroReS 2023", 24-26 May,  
2023, Trebinje, Bosnia and Herzegovina ; [editor in chief Branimir  
Nježić and Biljana Kelečević]. - Banja Luka : Faculty of Agriculture  
= Poljoprivredni fakultet, 2023. - 1 USB

Sistemski zahtjevi: Nisu navedeni. - Dostupno i na:  
<https://agrores.net/>. - Nasl. sa nasl. ekrana. - Na nasl. str.: AgroRes  
2023. - El. publikacija u PDF formatu opsega 260 str. - Tiraž 200.

ISBN 978-99938-93-88-2

COBISS.RS-ID 138380545

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PI\_12

## **Evaluation of combining abilities of local maize landraces for starch, protein and oil content in grain**

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### **Abstract**

Plant genetic resources of any country represent its natural wealth. Gene Bank of the Maize Research Institute "Zemun Polje" with over 5,000 samples represents national guardian of such. Local maize populations, tributing to their diversity, represent a key source of desirable traits for breeding programs, such as nutritional values for protein, starch and lipids. Today's corn hybrids are based on a narrow genetic base, where in race for yield, often insufficient attention is paid to the nutritional composition of the hybrids themselves. Correct selection of material from the Gene Bank can only be achieved with pre-breeding selection. Such prebreeding would cover wide material and should detect and reduce it to a desirable and more acceptable volume that can further be introduced into commercial breeding programs. This paper covered analysis of protein, starch and lipid content in grain of 31 local maize populations, crossed with two commercial testers ZPL-217 (BSSS) and ZPL-255/75-5 (Lancaster Sure Crop) with line x tester method used for combining ability calculation. According to the results the best combiner for higher lipid content is A3 landrace with a GCA value of 0.33\*, for protein content landraces A9 and A 38 with GCA values of 0.51\* and 0.57\*, respectively, were found. As for populations A 17 and A 37 with the GCA values of 1.52\* and 1.36\*, respectively, they proved to be the best combiners for starch. Mentioned populations showed significant GCA values with a probability level of 0.05, showing their possible significance in further breeding application.

*Key words:* maize landraces, nutritional values, combining abilities