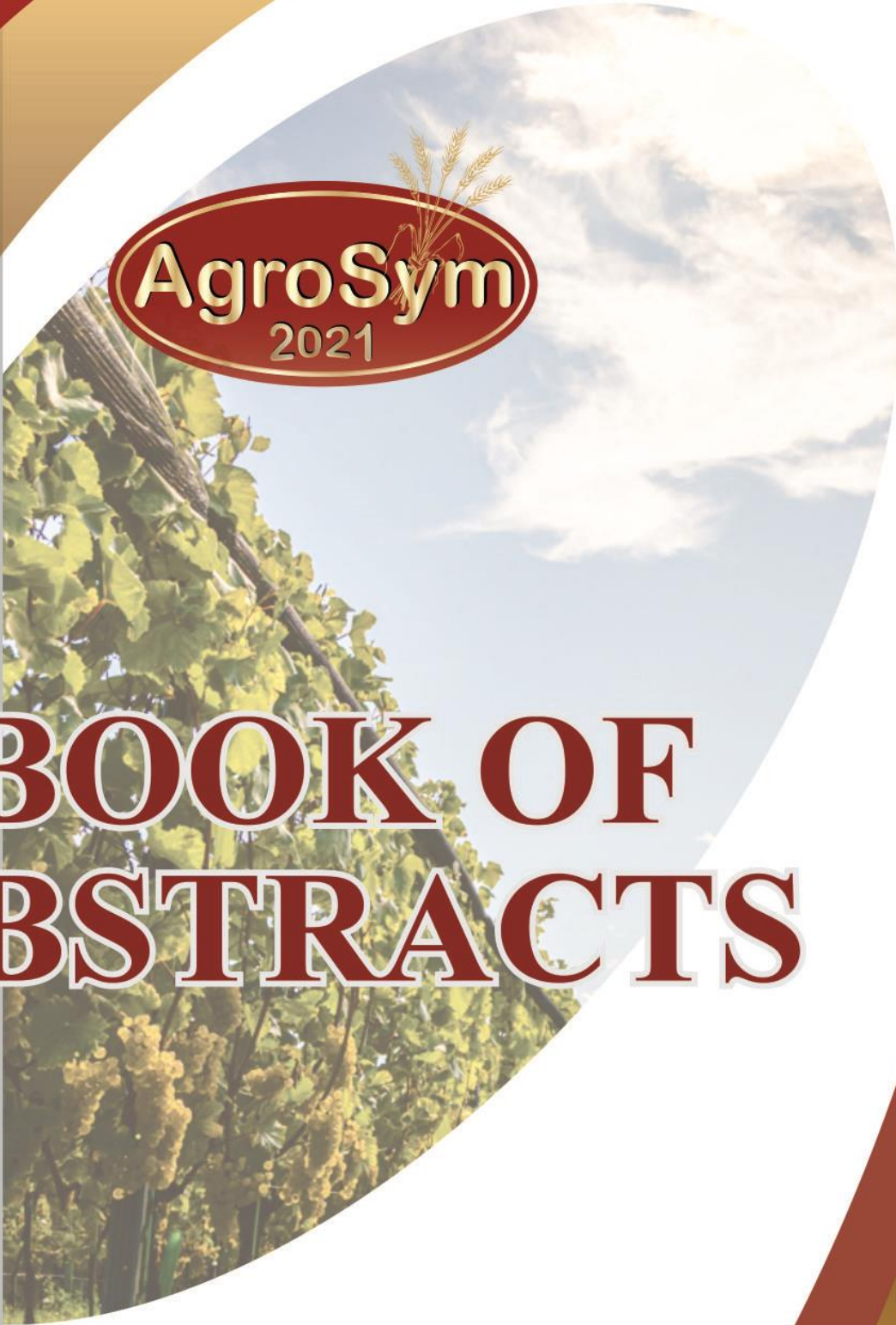




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2021



BOOK OF ABSTRACTS

*XII International Scientific
Agriculture Symposium
"AGROSYM 2021"
October 7-10, 2021*



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“AGROSYM 2021”**



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PREFACE

Dear colleagues,

In your hands is the Book of Abstracts of the 12th International Scientific Agricultural Symposium "AGROSYM 2021", which I hope you will find useful in your work. As many as 700 contributions have been accepted for the Book of Abstracts. The themes of AGROSYM 2021 cover all branches of agriculture and are divided into seven sessions: 1) Plant production, 2) Plant protection and food safety, 3) Organic agriculture, 4) Environmental protection and natural resources management, 5) Animal husbandry, 6) Rural development and agro-economy, and 7) Forestry and agroforestry.

The multi-functionality of agriculture (viz. crop production, animal production and fisheries) and the central role it plays in food production, food security, rural development, bio-economy (e.g. production of fibres and raw materials for industries) and green economy (e.g. production of biofuels) determine its importance in all countries; especially nowadays, with the second year of the COVID-19 pandemic.

Many scholars and practitioners argue that technology will increase production and feed more people while reducing the variability as well as the environmental impacts of agricultural production. Technology has been particularly important for improving production in non-tree crops such as maize, rice, soybean, wheat and cotton. Because trees have longer cycles, they take longer to improve through traditional breeding programs. New techniques of plant breeding can improve productivity further, but there is a lively academic debate about their pros and cons.

While the focus has been in the past on the production side (cf. productivity, efficiency), more and more attention is nowadays paid to the consumption side as well as the intermediate stages (e.g. processing, distribution) of the food chain thus moving towards a 'farm to fork' approach. Globally, consumers are sending clearer signals than ever before about what they want on their tables i.e. higher quality as well as healthier, safer, and tastier products. Therefore, most companies in the food industry are currently exploring different ways to ensure that they have more control over the production processes for agricultural commodities as well as final products quality. Changes in investment strategy also have the potential to reduce the environmental and social costs of agriculture. It is now apparent to most investors that companies that pay more attention to sustainability and social responsibility, even with the same financial rating, will have better returns both in the short term and over time.

Agri-food systems have been central in the global debate on sustainable development and the achievement of the Sustainable Development Goals (SDGs) as shown by the recent United Nations' Food Systems Summit held in September 2021 in New York. Indeed, agri-food systems are at the center of various global challenges such as climate change, poverty, vulnerability, food insecurity, biodiversity loss, resource scarcity and ecosystem degradation. In this context, one of the goals of the sustainable agriculture movement is to create farming systems that mitigate or eliminate environmental harms associated with industrial agriculture.

Many thanks to all the authors, reviewers and colleagues for their help in editing the Book of Abstracts. Special thanks go to all co-organizers and partners for their unselfish collaboration and comprehensive support.

East Sarajevo, 07 October 2021

Prof. Dušan Kovačević, PhD

Editor in Chief, President of the Scientific Committee of AGROSYM 2021



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HYBRID × LOCATION INTERACTION IN A MAIZE EARLY TESTING USING FACTOR ANALYTIC APPROACH

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Abstract

In early stages of maize breeding program, large number of new genotypes are grown in a set of field trial locations. The best ones are identified to move to the next stage so that in the final stages of breeding program small number of superior hybrids are grown in a pre-registration and post-registration field trials across set of locations. Field trials were conducted in a partially replicated design, each genotype with two replications per location at six locations in 2020. The experiments included 150 hybrids obtained by crossing different S2 progenies with an elite inbred tester. These field trials were conducted to identify the best performing genotypes using appropriate statistical model. The factor analytic (FA) model accommodates the heterogeneity of genetic variance for locations and heterogeneity of genetic covariance between pairs of locations. Assuming that data from our field trials had high degree of the heterogeneity, we applied the FA model approach which resulted in accurate prediction of the hybrid by location effects. The FA(1) was identified as the best fitting model explaining about 80% of the hybrid × location interaction. The resulted genetic correlation matrix indicates moderate to high positive association among the locations. Using the FA (1) model, the most promising genotypes in terms of grain yield and yield stability were identified.

Keywords: *Grain yield, Yield stability, Maize breeding, Early testing, Hybrid × location interaction, Factor analytic model (FA).*