

AGROSYM

# BOOK OF ABSTRACTS



*XV International Scientific Agriculture Symposium  
"Agrosym 2024"  
Jahorina, October 10-13, 2024*

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# **BOOK OF ABSTRACTS**

**XV International Scientific Agriculture Symposium  
“AGROSYM 2024”**



**Jahorina, October 10 - 13, 2024**

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## PREFACE

Dear colleagues,

It is with great pleasure that we present the Book of Abstracts for the 15th International Scientific Agricultural Symposium, "AGROSYM 2024." This collection features nearly 800 contributions, reflecting a diverse array of research and insights across the full spectrum of agricultural disciplines. The themes of AGROSYM 2024 are organized 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.

In today's rapidly evolving agricultural landscape, technology plays a pivotal role in enhancing production, improving food security, and minimizing environmental impacts. Particularly in the cultivation of annual crops like maize, rice, soybean, wheat, and cotton, technological advancements have proven essential. While breeding programs for trees may require longer timelines, new plant breeding techniques are emerging to enhance productivity, sparking important discussions within the academic community about their benefits and challenges.

Historically, agricultural research has predominantly focused on the production side of the food chain. However, there is a growing recognition of the importance of the consumption side and the intermediate stages such as processing and distribution. This shift towards a "farm to fork" approach reflects consumers' increasing demand for higher-quality, healthier, safer, and more flavorful products. Consequently, agri-food companies are actively exploring innovative strategies to gain better control over production processes and ensure the quality and safety of final products. Additionally, evolving investment strategies are emphasizing sustainability and social responsibility, as investors recognize the long-term benefits of supporting environmentally and socially conscious practices.

Agri-food systems are integral to the global discourse on sustainable development and the pursuit of the Sustainable Development Goals (SDGs) by 2030. These systems face numerous challenges, including climate change, poverty, food insecurity, biodiversity loss, and ecosystem degradation. One of the primary objectives of the sustainable agriculture movement is to develop farming systems that mitigate or eliminate the environmental harms associated with industrial agriculture. Enhancing the resilience of food systems in the face of crises, shocks, and pandemics is also crucial for future stability.

We extend our heartfelt gratitude to all the authors, reviewers, and colleagues who contributed to the preparation of this Book of Abstracts. Special thanks go to our co-organizers and partners for their unwavering support and collaboration. We hope this compilation serves as a valuable resource for all participants and contributes to the ongoing dialogue in the agricultural sector.

Welcome to AGROSYM 2024!



East Sarajevo, 07 October 2024

Prof. Dušan Kovačević, PhD

Editor in Chief, President of the Scientific Committee of AGROSYM 2024

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### Abstract

The research objective is the application of new bacterial isolates as an alternative to chemical pesticides for controlling plant diseases caused by *Fusarium* spp., aiming to reduce reliance on conventional interventions, minimize environmental impacts, thus fostering a shift towards environmentally friendly plant disease management strategies. In this study, the effects of four *Bacillus* spp. (BHC 2.3, BHC 2.4, BHC 4.5, BHC 4.7) isolated from two soil samples on suppressing *F. poae*, *F. proliferatum*, *F. oxysporum* and *F. graminearum*, as well as their effect on seed germination (wheat, oat and barley) during the fungal infection were determined. Basic chemical analyses of soil samples used for bacterial isolation and plant growth promoting experiments were performed. Antifungal activity of isolates was tested *in vitro* on PDA medium, seed germination test was performed in Petri dishes on filter paper, while the ability of isolates to promote plant growth under semi-controlled conditions was also tested. Inhibition of mycelial growth of *F. poae* was 15% to 20% (for isolate BHC 4.7 and BHC 4.5, respectively). Seed germination test indicated the effectiveness of seed inoculation by selected bacterial isolates. In the case of infected seeds, germination percentage was up to 80% (wheat) and up to 90% (barley and oat), without bacterial inoculation. On the other hand, germination percentage for infected seeds inoculated by all four applied isolates was increased (up to 75%). Results of the experiment performed under semi-controlled conditions showed that bacterial isolate BHC 4.5 had the best overall effect on the shoot length of all used cereals. The results of this study indicate the potential of different *Bacillus* spp. soil isolates for formulating new biofertilizers to be used in plant protection and plant growth promotion of cereals.

**Keywords:** *Bacillus* spp., PGP bacteria, seed germination, oat, barley and wheat seedling shoots.