

AGROSYM

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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ENHANCING SEED GERMINATION OF *OCIMUM BASILICUM* BY *BACILLUS* SPP.

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Abstract

Basil (*Ocimum basilicum* L.) is widely used in traditional medicine, pharmaceuticals, cosmetics, nutraceuticals, and food industries due to its aromatic profile and health benefits from its phenolic and flavonoid compounds. It is also a common spice for enhancing the aroma and flavour of meals in various cultures. Treating seeds with selected PGP (plant growth promoting) bacteria can enhance germination efficiency by inducing a physiological state favourable for seed germination through various mechanisms, such as nutrient solubilisation, production of growth hormones, and biocontrol of pathogens. Also, bio-inoculants based on these beneficial bacteria could reduce the dependency on chemical fertilizers and pesticides, thereby mitigating environmental pollution and promoting soil health. Therefore, the aim of this research was a preliminary evaluation of the effects of *Bacillus* spp. on seed germination of basil *in vitro*. Seed germination test was performed by filter paper methods on Petri dishes. Basil seeds were treated by *Bacillus* spp. soil isolates (BHC 2.3 and BHC 2.4), by soaking seeds in overnight bacterial culture. Bacterial isolates were selected based on their previously determined antifungal activity against different *Fusarium* phytopathogens and the ability to produce indole-3-acetic acid (IAA). After 10 days of experiment, the relative seed germination index (RSGI%) was determined by comparing the number of germinated seeds in treated seeds and untreated control. Results showed that basil seeds treated by isolate BHC 2.4 and BHC 2.3 had RSGI values of 108.69% and 96.65%, respectively. These results indicate the potential of selected *Bacillus* spp. isolates to enhance germination of basil seeds. Future research should focus on optimizing the application methods and formulations of bio-inoculants based on *Bacillus* spp. to maximize their effectiveness under semi-controlled conditions and field experiments in order to offer alternative approaches in sustainable agricultural practices.

Keywords: PGP bacteria, soil isolates, bio-inoculants, sustainable agriculture.

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