

**FACULTY OF AGRICULTURE
GOCE DELCEV UNIVERSITY, STIP**



**4th INTERNATIONAL MEETING
AGRISCIENCE & PRACTICE
(ASP 2024)**

BOOK OF ABSTRACTS

**July 2024
Stip, Republic of North Macedonia**

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**4th INTERNATIONAL MEETING AGRISCIENCE & PRACTICE
ASP 2024**

Organized by

**FACULTY OF AGRICULTURE
GOCE DELCEV UNIVERSITY, STIP, REPUBLIC OF NORTH MACEDONIA
13 June 2024, Stip, Republic of North Macedonia**

Faculty of Agriculture organizes the 4th International Meeting Agriscience & Practice (ASP 2024), giving an opportunity to the participants for presentation and discussion of original scientific and practical results in different fields of agriculture.

The 4th International Meeting Agriscience & Practice (ASP 2024) is organized with an intention to bring together all agricultural stakeholders for sharing their knowledge, experience and obstacles. One of the main aims is to link research and field work in agricultural sector in the country and abroad, giving it an international dimension.

The main goal of the Meeting was to connect and promote scientific achievements and practical knowledge presented in different thematic areas.

The scientific and applicative presentations are conducted in sections:

1. Agricultural economics, 2. Plant biotechnology, 3. Plant production, 4. Plant protection, 5. Quality control and food safety, 6. Soil science and hydrology 7. Viticulture, enology and fruit production

with a possibility for poster presentation. Nevertheless, the needs of the agricultural sector entail organization of plenary presentation on the most actual topic in the field of agriculture and panel discussions, where invited speakers and panellists have a possibility to share their experience with the Meeting participants.

Dear colleagues, let's again gather together in one place with one joint idea - to combine agricultural science and practice with a purpose to share information, knowledge, experiences and solutions to exceed the problems. The main objective of this Meeting is successful establishment of continuous and valid communication and collaboration among scientific, research and practical activities in agriculture sector in our country, neighboring countries and on broader international level. We will achieve the main goal of the Meeting as well as our common objective only by virtue of synergic connections on which we have been working intensively in the past years.

Every science has its significance and value in the given social context, but agricultural production has a special place of vital significance.

With great joyfulness we thank you for your active participation in the Meeting!

Emilija Arsov, PhD

**Dean of the Faculty of Agriculture
&
Chair of the Organizing Committee**

July, 2024, Stip, Republic of North Macedonia

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THE ROLE OF ESSENTIAL OILS IN PLANT PROTECTION: EFFECTIVE BIOPESTICIDES OR JUST A MYTH? Biljana Kovacevik^{1*}, Sasa Mitrev¹, Emilija Arsov¹, Natalija Markova Ruzdik², Daniela Todevska²

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Abstract

Essential oils (EOs) are naturally produced by higher plants in oil sacs or oil glands present in the leaves, flowers, and fruit peels. They are complex mixtures predominantly consisting of secondary metabolites such as terpenes, terpenoids, and phenylpropanoids and may also contain other compounds, such as fatty acids, alcohols, oxides, aldehydes, acyclic esters, lactones, or sulfur derivatives. Known for their antioxidant, antimicrobial, and anti-inflammatory properties, EOs are widely used in cosmetics, the food industry, and traditional medicine. The antimicrobial properties of essential oils have garnered significant scientific interest, positioning them as potential alternatives to synthetic and harmful pesticides. While the literature is rich with data demonstrating the effectiveness of essential oils against plant pathogens, pests, and weeds, their application in agriculture remains surprisingly limited. The most used and evaluated EOs for their bioactive properties against plant pathogens, pests, and weeds are citrus oils, lavender oil, thyme oil, peppermint oil, cinnamon oil, clove oil, eucalyptus oil, sage oil, tea tree oil and oregano oil. The aim of this review is to compile and discuss the latest scientific literature on the biological activities of essential oils (EOs) against plant pathogens, pests, and weeds, their chemical composition, as well as their mode of action. The positive and negative aspects of EOs as alternatives to synthetic pesticides have also been explored. Furthermore, the regulatory and approval procedures are discussed.

Key words: biopesticides, bioactive properties, chemical composition, mode of action, regulations.