

**Faculty of Agriculture
Goce Delcev University - Stip**



**3rd INTERNATIONAL MEETING
AGRISCIENCE & PRACTICE
(ASP 2023)**

BOOK OF ABSTRACTS

19-20th April 2023

Stip, Republic of North Macedonia

**Faculty of Agriculture
Goce Delcev University - Stip**



**3rd INTERNATIONAL MEETING
AGRISCIENCE & PRACTICE
(ASP 2023)**

BOOK OF ABSTRACTS

**19-20th April 2023
Stip, Republic of North Macedonia**

BOOK OF ABSTRACTS
3rd International Meeting AGRISCIENCE & PRACTICE
(ASP 2023)

Publisher:
Faculty of Agriculture, Goce Delcev University - Stip

Editor
Prof. d-r Liljana Koleva Gudeva

Technical editors
Prof. d-r Biljana Kovacevik
Prof. d-r Fidanka Trajkova

English language editor
Biljana Petkovska Ivanova (MA, Senior lecturer)

The abstracts are technically edited according to the 'Template for Abstracts', without additional editing of the abstract text. The results and writing style are presented in the original form provided by the authors.

CIP-Каталогизација во публикација Национална и универзитетска библиотека "Св. Климент Охридски", Скопје

631/635(062)(084.3)

INTERNATIONAL meeting agriscience & practice (ASP 2023) (3 ; 2023 ; Stip)

Book of abstracts / 3rd international meeting agriscience & practice (ASP 2023), 19-20th April 2023 Stip, Republic of North Macedonia. - Текст во пдф формат, содржи 63 стр. - Stip : Goce Delcev University, Faculty of agriculture, 2023

Начин на пристапување (URL):

<https://zf.ugd.edu.mk/index.php/mk/agronauka-i-praksa>. - Наслов преземен од екран. - Опис на изворот на ден 09.05.2023 година

ISBN 978-608-244-969-2

а) Земјоделство -- Собири -- Апстракти

COBISS.MK-ID 60284421

**3rd INTERNATIONAL MEETING AGRISCIENCE & PRACTICE
ASP 2023**

Organized by

**FACULTY OF AGRICULTURE
GOCE DELCEV UNIVERSITY - STIP, REPUBLIC OF NORTH MACEDONIA
19-20 April 2023, Stip, Republic of North Macedonia**

Faculty of Agriculture organizes the 3rd International Meeting Agriscience & Practice (ASP 2023), giving an opportunity to the participants for presentation and discussion of original scientific and practical results in different fields of agriculture.

The 3rd International Meeting Agriscience & Practice (ASP 2023) 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 broader, 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 oral or poster presentation. Nevertheless, the needs of the agricultural sector entail organization of panel discussions, where invited speakers and panelists 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 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.

“Only one who knows the way of food movement, from field to table, really respects it”.

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

Prof. d-r Emilija Arsov

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

SCIENTIFIC AND EDITORIAL COMMITTEE

1. Emilija Arsov, PhD, North Macedonia (Chair)
2. Aco Kuzelov, PhD, North Macedonia
3. Biljana Balabanova, PhD, North Macedonia
4. Liljana Koleva Gudeva, PhD, North Macedonia
5. Ljupco Mihajlov, PhD, North Macedonia
6. Sasa Mitrev, PhD, North Macedonia
7. Violeta Dimovska, PhD, North Macedonia
8. Alen Mujčinović, PhD, Bosnia and Hercegovina
9. Dragomir Vlčev, PhD, Bulgaria
10. Stefan Georgiev Dragoev, PhD, Bulgaria
11. Velichka Nikolova Rodeva, PhD, Bulgaria
12. Marijan Bubola, PhD, Croatia
13. Sanja Radeka, PhD, Croatia
14. Musaj Pacarizi, PhD, Kosovo
15. Goran Škatarić, PhD, Montenegro
16. Danijela Raičević, PhD, Montenegro
17. Kiril Bahčevandziev, PhD, Portugal
18. Dejan Pljevljakusić, PhD, Serbia
19. Dragan Nikolić, PhD, Serbia
20. Jordana Ninkov, PhD, Serbia
21. Jovica Vasin, PhD, Serbia
22. Radivoje Jevtić, PhD, Serbia
23. Slavča Hristov, PhD, Serbia
24. Hatice Gülen, PhD, Turkey
25. Maryna Mardar, PhD, Ukraine
26. Taras Levsjukov, PhD, Ukraine

ORGANIZING COMMITTEE

1. Emilija Arsov, PhD (Chair)
2. Biljana Balabanova, PhD
3. Biljana Kovacevik, PhD
4. Daniela Todevska, PhD
5. Dimitar Nakov, PhD
6. Fidanka Ilieva, PhD
7. Fidanka Trajkova, PhD
8. Natalija Markova Ruzdik, PhD
9. Sanja Kostadinovik Velickovska, PhD
10. Elizabeta Davitkovska Barbareeva, BSc
11. Ivan Donev, BSc

English language editor

Biljana Petkovska Ivanova (MA, Senior lecturer)

TABLE OF CONTENTS

PLENARY PRESENTATIONS	10
CONSTRUCTIVE ALIGNMENT BETWEEN OBJECTIVES, TEACHING AND LEARNING ACTIVITIES, STUDENT COMPETENCIES AND ASSESSMENT METHODS IN HIGHER EDUCATION Slavča Hristov, Dimitar Nakov, Jelena Miočinović.....	11
PLENARY PRESENTATIONS WITHOUT ABSTRACT	12
CURRENT SITUATION WITH GRAIN CROPS PRODUCTION IN REPUBLIC OF NORTH MACEDONIA Ognen Orovčanec.....	12
VARIABILITY OF AGROECOLOGICAL SYSTEMS AND ITS EFFECT ON SMALL GRAINS PRODUCTION IN SERBIA Radivoje Jevtić.....	12
AGRICULTURAL ECONOMICS	13
ANALYSIS OF THE STATE OF TOBACCO PRODUCTION IN MACEDONIA WITH SPECIAL REFERENCE TO THE YOUNG WORKING POPULATION Silvana Pashovska, Katerina Kareska	14
PLANT BIOTECHNOLOGY	15
MOLECULAR EVALUATION OF FOUR PEPPER ANDROGENIC REGENERANTS Marija Pockovska, Svetalana Glogovac, Ankica Kondić Špika, Fidanka Trajkova, Liljana Koleva Gudeva	16
MICROTUBERIZATION – POSSIBILITY FOR DEVELOPMENT OF SEED MATERIAL FROM POTATO (<i>Solanum tuberosum</i> L.) Irena Petrova, Liljana Koleva Gudeva, Fidanka Trajkova	17
DETERMINATION OF PHOTOSYNTHETIC PIGMENTS IN FRUITS FROM PEPPER ANDROGENIC PLANT Marija Pockovska, Fidanka Trajkova, Liljana Koleva Gudeva	18
DEVELOPMENT OF AN EFFICIENT <i>in vitro</i> CALLUS PROLIFERATION PROTOCOL FOR ENDANGERED MEDICINAL PLANT (<i>Ferula tadshikorum</i> Pimenov) Dilafruz Jamalova.....	19
PLANT PRODUCTION	20
OPPORTUNITIES – ALTERNATIVES FOR APPLICATION OF AGROECOLOGICAL MEASURES AND USE OF POST-HARVEST RESIDUES Ljupco Mihajlov, Natalija Markova Ruzdik.....	21
INTRODUCTION AND DETERMINATION OF NEW TOMATO HYBRIDS Daniela Todevska, Sanja Kostadinovic Velickovska, Igor Iljovski, Biljana Kovacevik, Fidanka Ilieva, Marjan Crvenkovski	22
USING THE BBCH SCALE AND GROWING DEGREE DAYS TO IDENTIFY THE GROWTH STAGES OF WINTER OILSEED RAPE GENOTYPES IN THE SKOPJE REGION Igor Iljovski, Ile Canev, Daniela Todevska.....	23
HETEROOTHIC EFFECT OF SOME QUANTITATIVE TRAITS IN F1 DIALLEL HYBRIDS OF VARIOUS TOBACCO TYPES Jane Aleksoski.....	24
CORN PRODUCTION IN R. MACEDONIA AND POSSIBILITIES FOR ITS CULTIVATION WITHOUT INTERVENTIONAL IRRIGATION Mite Ilievski, Dragica Spasova, Biljana Atanasova, Dusan Spasov	25
MACRONUTRIENT AVAILABILITY OF DIFFERENT ORIENTAL TOBACCO VARIETIES GROWN UNDER THE SAME CONDITIONS Biljana Jordanoska Shishkoska, Valentina Pelivanoska, Marija Srbinoska	26
PLANT PROTECTION	28
<i>Acidovorax citrulli</i> - CAUSING BACTERIAL FRUIT BLOTCH OF WATERMELON FRUITS IN STRUMICA REGION Sasa Mitrev, Emilija Arsov.....	29
RAMULARIA LEAF SPOT - A POTENTIAL THREAT TO BARLEY PRODUCTION IN NORTH MACEDONIA Vesna Župunski, Radivoje Jevtić.....	30
EFFECT OF BORON (B) NUTRITION ON DEVELOPMENT OF GRAY MOLD IN PEPPER (<i>Capsicum annuum</i> L.) Dusan Spasov, Biljana Atanasova, Biljana Kovacevik, Dragica Spasova, Mite Ilievski	31
MONITORING OF THE SPECIES FROM NOCTUIDAE FAMILY IN TOBACCO FIELDS USING LIGHT TRAP Vesna Krsteska, Stanislava Lazarevska, Biljana Jordanoska Shishkoska	32
IMPACT OF DISEASE SEVERITY ON INFECTED BUNCHES UPON A YIELD OF GRAPE VARIETY VRANEC, CAUSED BY <i>Plasmopara viticola</i> (Berk. & M.A. Curtis) Berl. & De Toni Gligor Bojkov, Emilija Arsov, Sasa Mitrev	33

BIOLOGICAL CONTROL OF GREEN MOULD DISEASE AND MUSHROOM FLY USING BIOFUNGICIDE <i>Bacillus subtilis</i> Ch-13 AND BOTANICAL INSECTICIDE AZADIRACHTIN (TECHNICAL SOLUTION) Ivana Potočnik, Tanja Drobnjaković, Svetlana Milijašević-Marčić, Jelena Luković, Miloš Štepanović, Dejan Marčić, Emil Rekanović.....	34
BIOLOGICAL CONTROL OF SCAB DISEASE (<i>Venturia inaequalis</i>) USING BACILLUS ISOLATES IN <i>IN VITRO</i> AND <i>IN VIVO</i> CONDITIONS Dzansel Bukovec, Marija Todorovska Ivkovic, Ana Nikolovska, Sofia Kostandinovska, Natalija Atanasova-Pancevska, Dzoko Kungulovski.....	35
QUALITY CONTROL AND FOOD SAFETY	36
MULTIPLIED BENEFITS FROM A COMPLEX SELF-SUSTAINABLE TECHNICAL SYSTEM FOR PRODUCING MEAT AND MEAT PRODUCTS Darko Veljanovski, Vangelica Jovanovska.....	37
THE INFLUENCE OF THE PERSONAL HYGIENE AND HEALTH OF MILKMEN IMPROVEMENT ON THE MILK SAFETY AND COMPOSITION ON SMALL DAIRY FARMS Branislav Stanković, Slavča Hristov, Jelena Miočinović, Dimitar Nakov.....	38
MASTITIS MAKE CHANGES IN THE ANTIOXIDANT ENZYMES CAPACITY OF RAW MILK FROM DAIRY COWS IN EARLY LACTATION Dimitar Nakov, Aco Kuzelov, Slavča Hristov, Katerina Belichovska, Branislav Stanković, Jelena Miočinović	39
OPTIMIZATION OF RAPID AND SIMPLE HPLC-DAD METHOD FOR ANALYSIS OF GLYCOALKALOIDS SOLANINE AND CHACONINE IN POTATOES Irena Petrova, Violeta Ivanova-Petropulos, Liljana Koleva-Gudeva, Sasa Mitrev	40
IMPLEMENTATION AND FUNCTIONING OF HACCP PRINCIPLES IN THE MACEDONIAN WINERIES: A MULTIPLE CASE STUDY Daniela Nikolovska Nedelkoska, Biljna Risteska, Tatjana Kalevska, Vesna Antoska Knights, Vezirka Jankuloska, Sashko Martinovski	41
MICROBIOLOGICAL QUALITY OF MACEDONIAN WHITE BRINED CHEESE Borche Makarijoski	42
SENSORY CHARACTERISTICS OF COLD PRESSED SUNFLOWER OIL WITH THE ADDITION OF AROMATIC HERBS Katerina Temelkovska, Gorica Pavlovska, Valentina Pavlova, Viktorija Stamatovska	43
OLEOGELS – INNOVATIVE TECHNOLOGY FOR REPLACING ANIMAL FATS IN MEAT PRODUCTS Tanja Stojanovska, Tatjana Kalevska, Daniela Nikolovska Nedelkoska, Eleonora Delinikolova	44
PHENOTYPIC AND EXTERIOR COMPARISON OF SALERS BEEF CATTLE WITH OTHER BEEF CATTLE BREEDS Daniel Simakoski	45
CHEMICAL COMPOSITION AND ANTIOXIDANT ACTIVITY OF XAD-7 EXTRACTS FROM LINGONBERRY (<i>Vaccinium vitis-idaea</i> L.) Sanja Kostadinovic Velickovska, Fidanka Ilieva, Daniela Todevska	46
SOIL SCIENCE AND HYDROLOGY.....	47
REDUCING GREENHOUSE GAS EMISSIONS IN AGRICULTURE: CHALLENGES AND POSSIBILITIES Biljana Balabanova, Verica Ilieva, Sasa Mitrev.....	48
ISOLATION, SCREENING AND CHARACTERIZATION OF CELLULOLYTIC BACTERIA FROM DIFFERENT SOIL SAMPLES FROM PELAGONIA REGION Dzoko Kungulovski, Natalija Atanasova-Pancevska, Elena Damcevska- Josifovska	49
THE PRESENCE OF <i>Escherichia coli</i> AND <i>Enterococcus</i> IN THE WATER OF THE FIFTH CANAL AND BLACK RIVER NEAR BITOLA Tatjana Blazhevaska, Valentina Pavlova, Viktorija Stamatovska, Vesna Knights, Mihajlo Sviderski, Eleonora Delinikolova	50
THE INFLUENCE OF DIFFERENT CLIMATIC TYPES ON THE NUMBER OF <i>Bacillus</i> spp. ISOLATED FROM SOIL IN NORTH MACEDONIA Natalija Atanasova-Pancevska, Dzoko Kungulovski, Elena Usta Petrova, Nikola Radmanovik, Ognen Boskovski, Edi Frcovski, Hristijan Premcevski, Sofija Kostandinovska.....	51
VITICULTURE, ENOLOGY AND FRUIT PRODUCTION	52
PHENOLIC PROFILE OF MACEDONIAN RED WINES Violeta Ivanova-Petropulos, Borimir Vojnoski, Isidro Hermosín-Gutiérrez.....	53
QUALITY OF RED WINES FROM VRANEC, MERLOT AND FRANKOVKA GRAPE VARIETIES F Todevska ERMENTED BY TWO DIFFERENT YEAST STRAINS Fidanka Ilieva, Antonio Petrov, Sanja Kostadinovic Velickovska, Violeta Dimovska ¹ , Daniela Todevska.....	54
ISOTOPIC (⁸⁷ Sr/ ⁸⁶ Sr) DETERMINATION OF WINE FROM THE TIKVES AREA Ivan Boev	55

PRESENTATIONS OF COMPANIES.....	56
ROBOTICS FOR AGRI FOOD PRODUCTION: OPPORTUNITIES AND CHALLENGES Vasko Sazdovski	57
BALANCED, COMPLEX LIQUID FERTILIZERS FOR FOLIAR APPLICATION Mladen Lilov.....	58
PRESENTATIONS OF COMPANIES WITHOUT ABSTRACT	59
DRYING VEGETABLES AND FRUITS WITH SOLAR ENERGY AND HEAT PUMP - AGRO SOLAR LTD	59
HOW AGFUTURA TECHNOLOGIES CONTRIBUTES TO THE DIGITALIZATION OF THE AGRICULTURAL SECTOR IN MACEDONIA - AGFUTURA TECHNOLOGIES.....	59
EUROPEAN FUNDING OPPORTUNITIES - POSSIBILITIES AND CHALLENGES.....	60
CARBON INITIATIVE FOR CLIMATE-RESILIENT AGRICULTURE – CARBONICA, HORIZON EUROPE, 101087233 Biljana Balabanova, Verica Ilieva, Sasa Mitrev.....	60
BUILDING A NETWORK FOR COOPERATION AND MULTIDISCIPLINARY SCIENTIFIC APPROACH IN THE FIELD OF ANIMAL WELFARE, COST ACTION CA21124 LIFT: LIFTING FARM ANIMAL LIVES – LAYING THE FOUNDATIONS FOR POSITIVE ANIMAL WELFARE (LIFT) Dimitar Nakov	60
PLASTICS MONITORING DETECTION REMEDIATION RECOVERY, COST ACTION, CA20101, PRIORITY Vineta Srebrenkovska, Biljana Balabanova	60
CEEPUS programme - opportunities and challenges Violeta Ivanova Petropulos.....	60
UTILIZATION OF DIGITAL AND IT TOOLS IN AGRICULTURE SECTOR, SOCIO-ECONOMIC IMPACT OF THE COVID-19 CRISIS IN AGRICULTURE, UNDP Local Office Skopje, North Macedonia Fidanka Trajkova, Sasho Risteski, Lazo Dimitrov.....	60

ISOTOPIC ($^{87}\text{Sr}/^{86}\text{Sr}$) DETERMINATION OF WINE FROM THE TIKVES AREA Ivan Boev^{1*}

¹Faculty of Natural and Technical Sciences, Goce Delcev University, Stip, Republic of North Macedonia
*Corresponding author: ivan.boev@ugd.edu.mk

Abstract

This paper presents research that was done in the direction of introducing a method of determining the origin of wine by applying the methods of strontium isotope geochemistry. Namely, strontium isotopes are widely used in the world today to determine the origin of wine. For this purpose, a certain number of samples were collected from the area of Tikvesh and the obtained results are shown in fig. 1.

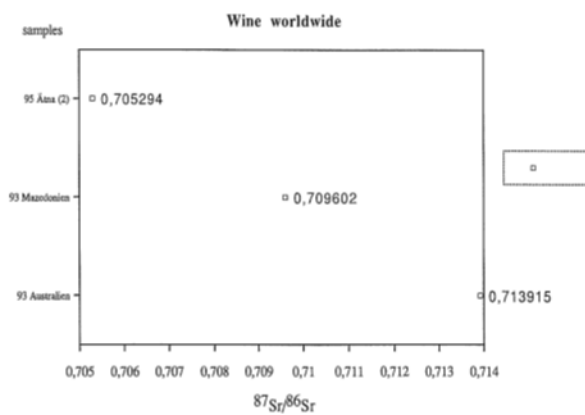


Fig. 1. Determining the origin of Tives wine using strontium isotopes $^{87}\text{Sr}/^{86}\text{Sr}$ (Max-Planck Institut Mainz, Germany)