Innovations in Food Loss and Waste Management

BOOK OF ABSTRACTS

Ancona, 23-25 January 2024

UNIVERSITÀ POLITECNICA DELLE MARCHE

Department of Agricultural Food and Environmental Sciences

Dear Participants

Thanks for joining and taking your valuable contribution the #PostharvestAncona2024 congress, in which we will have the final meeting of PRIMA project "Innovative Sustainable technologies TO extend the shelf-life of Perishable MEDiterranean fresh fruit, vegetables and aromatic plants and to reduce WASTE (StopMedWaste, https://stopmedwaste.net/)" and Meeting of COST CA22134 Action "Sustainable Network for agrofood loss and waste prevention, management, quantification and valorisation (FoodWaStop, https://www.cost.eu/actions/CA22134/?fbclid=IwAR0cYjMCgVSWRByj4UenputYwc8Qa5NgDwqpomkpXAOiKaNA3GItoB7ZTbM#tabs+Name:Description)".

We are delighted to host you in Ancona for this important opportunity for networking and knowledge sharing. Speakers from over 30 Countries will present the latest innovations in terms of technologies, strategies, and approaches for reducing food loss and waste, which is a worldwide priority. We are confident that this conference will be a valuable experience for all participants. We wish you a pleasant stay in Ancona and a fruitful time.

The Convener
Gianfranco Romanazzi

The Organising Committee
Marwa Moumni
Lucia Landi
Annamaria Lucrezia D'Ortenzio
Simone Piancatelli
Sarah M. Makau
Mehdiye Tunc

The event was realized in cooperation with:

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INNOVATIONS IN FOOD LOSS AND WASTE MANAGEMENT

CONFERENCE PROGRAMME

Ancona, 23-25 January 2024

Aula Magna
Department of Agricultural Food and Environmental Sciences, Università Politecnica delle Marche

Via Brecce Bianche, 10 – 60131 Ancona

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Password: ANKON2024

PROGRAM

23 January 2024

08:30-09:15	**REGISTRATION AND SETTING UP OF STOPMEDWASTE POSTERS**
09:15-09:30	***WELCOME ADDRESS***
09.30-09:45	**Gianfranco Romanazzi**, **Marwa Moumni** - *Marche Polytechnic University, Ancona, Italy*. Presentation of the PRIMA StopMedWaste project
09:45-10:10	**Gianfranco Romanazzi, Marwa Moumni, Lucia Landi, Lucrezia D'Ortenzio, Sarah Makau, Samuel Alvarez Garcia, Deborah Pacetti** - *Marche Polytechnic University, Ancona, Italy*. Chitosan, essential oils and ozone as tools for the management of postharvest decay of fresh fruits
10:10-10:35	**Annamaria Mincuzzi, Antonio Ippolito** - *University of Bari, Bari, Italy.* Integrated alternative control means against postharvest diseases of pomegranates and citrus fruit
10:35-10:55	**Mohamed Bechir Allagui, Mouna Ben Amara** - *National Institute for Agronomic Research of Tunisia (INRAT), Tunisia*. Essential oils and GRAS salts for preventing postharvest fruit rot and reducing the need for chemical fungicides
10:55-11:20	***Coffee break and poster session***
11:20-11:45	**Davide Spadaro, Giulia Remolif** - *University of Torino, Torino, Italy*. Effectiveness of antagonistic yeasts and essential oils in the control of postharvest diseases of fruit
11:45-12:10	**Pervin Kinay** - *UE, Turkey* and **Mahmut Kilic** - *ICACHEM, Turkey*. Effect of postharvest UV-C applications on postharvest decays on strawberry fruits
12:10-12:35	**María Bernardita Pérez-Gago, Verónica Taberner, Lluís Palou** - *IVIA, Spain* and **Clara Montesinos** - *DECCO, Spain*. Antifungal edible coatings to reduce decay and maintain postharvest quality of citrus, plums, and pomegranates
12:35-13:00	***General discussion***
13:00-13:15	***Feedback from International Advisory Board members***
13:15-14:30	***Light lunch and poster session***
14:30-15:30	**THE EXPERIENCE OF OTHER PRIMA AGROFOOD PROJECTS** **Fernando Perez Rodriguez** - BioFreshCloud **Laura Gasco** - ADVAGROMED **Priscilla Farina, Barbara Conti** - FedKito **Federico La Spada, Santa Olga Cacciola** - BiOrangePack
15:30-16:00	***Coffee break and poster session***
16:00-18:00	**VISIT OF THE CITY OF ANCONA**
19:30	**SOCIAL DINNER** (*Ristorante L'Ascensore*, Piazza IV Novembre)

24 January 2024

08:30-09:00 **REGISTRATION AND SETTING UP OF FOODWASTOP POSTERS**

09:00-09:15 ***WELCOME ADDRESS***

09.15-10:45 **Presentations of WG1 -** Prevention of food loss and food waste (Moderators: ***George Karaoglanidis*** and ***Fernando Perez-Rodriguez***)

Barbara Blanco-Ulate, *University of California, Davis, California, USA*. Improving shelf-life while ensuring fruit quality using gene editing

David Gramaje, *Instituto de Ciencias de la Vid y del Vino (ICVV), Spain*. Fungal trunk diseases: a global threat to grapevine health

Florence Fontaine, *University of Reims Champagne-Ardenne, RIBP USC INRAE, France*. Strategies studied for an ecofriendly management of grapevine trunk diseases

Erzsebet Karaffa, *Hungarian Chamber of Professionals and Doctors of Plant Protection, Hungary.* Endophytic *Trichoderma* strains increase preharvest quantity and quality of grapes

Piotr Kulawik, *Department of Animal Products Processing, University of Agriculture in Krakow ul. Balicka, Poland*. The use of multilayer chitosan/furcellaran mini/nanoemulsions with oregano essential oil for preservation of perishable food products

Annamaria Mincuzzi, *Department of Soil, Plant, and Food Sciences, University of Bari Aldo Moro, Bari, Italy*. Antifungal activity of Apulian macroalgal extracts

10:45-11:15 ***Coffee break and poster session***

11:15-13:00 **Presentations of WG1 -** Prevention of food loss and food waste (Moderators: ***George Karaoglanidis*** and ***Fernando Perez-Rodriguez***)

Paolo Guarnaccia, Fabio Gresta, *Department of Agriculture, Food and Environment, University of Catania, Italy*. How can agroecology contribute to the reduction of food waste and loss?

Stela Todorova, *University of Agriculture, Bulgaria*. Short food supply chains as drivers of sustainability in rural areas

Presentations of WG2 - Agrofood loss and waste management (Moderators: ***Slaven Zjalic*** and ***Lluís Palou***)

Lluís Palou, *Centre de Tecnologia Postcollita (CTP), Institut Valencià d'Investigacions Agràries (IVIA), València , Spain*. Antifungal edible coatings for postharvest disease control and quality maintenance of fresh fruits

Alessandra Di Francesco, *Department of Agriculture, Food, Environmental and Animal Sciences, Udine University, Italy*. Efficacy of wild *Aureobasidium pullulans* VOCs and application methods vs strawberry fungal pathogens

Giulia Remolif, *Dipartimento di Scienze Agrarie, Forestali e Alimentari (DISAFA), Università di Torino, Largo Paolo Braccini 2, Grugliasco, Italy*. Efficacy of antagonistic yeasts to control brown rot of nectarines and effect on the fruit microbiome

Selda Daler, *Department of Horticulture, Faculty of Agriculture, Yozgat Bozok University, Turkey*. The potential of smoke solutions from vineyard pruning wastes to mitigate heavy metal toxicity in grapevine saplings

Kata Ludman-Mihaly, *FruitVeB Hungarian Interprofessional Organization for Fruit and Vegetable, Hungary*. Cold storage may elongate the fresh consumption period of sour cherry (*Prunus cerasus* L.)

13:00-14:15 ***Light lunch and poster session***

14.15-15:45 **Presentations of WG3 - QUANTIFICATION OF FOOD LOSS AND FOOD WASTE** (Moderators: ***Natalia Falágan*** and ***Lise Korsten***)

Rosa Rolle, *FAO*. FAOs work to address food loss and waste

Natalia Falagán, *Plant Science Laboratory, Cranfield University, Cranfield, United Kingdom*. Drivers of food loss and waste and the importance of quantification

Lise Korsten, *University of Pretoria*. Produce waste and losses in the informal sector in South Africa

Andrea Segré, *University of Bologna*. Waste watcher international observatory

Viktoriya Voytsekhovska, *Lviv Polytechnic National University, Ukraine*. Modelling the scenarios of development for Ukraine in the context of EU circular economy using fuzzy set theory

Miguel Elias, *MED-Mediterranean Institute for Agriculture, Environment and Development, Portugal*. Food waste quantification in Portuguese meat plants

15:45-16:15 ***Coffee break and poster session***

16:15-17:45 **Presentations of WG4 - VALORISATION OF AGROFOOD WASTE AND A CIRCULAR BIO-ECONOMY** (Moderators: ***Jessica Girardi*** and ***Marwa Moumni***)

Sarah Milliken, *University of Greenwich, United Kingdom*. The valorisation of agri-food waste for a circular bioeconomy: highlighting policy incoherence through nexus thinking

Ivo Safarik, *Department of Nanobiotechnology, Biology Centre, ISBB, CAS, Na Sadkach, Ceske Budejovice, Czech Republic*. Magnetically responsive waste biomaterials for environmental technology applications

Arben Mehmeti, *University of Prishtina, Faculty of Agriculture and Veterinary, Bill Clinton, Republic of Kosovo*. Application of insect frass for the development of sustainable agriculture production in Kosovo

Magdalena Joka Yildiz, *Bialystok University of Technology, Poland*. Biowaste-based pellets as a promising feedstock for biochar production

Ioannis Trougakos, *Department of Cell Biology and Biophysics, Faculty of Biology, National and Kapodistrian University of Athens, Greece*. Natural products in the fight against ageing and age-related diseases

Semanur Yildiz, *Sustainable Food Processing Laboratory (SuProLab), Sakarya University, Sakarya, Turkey*. Optimization of ultrasound-assisted extraction of cold-pressed pistachio meal proteins

19:30 **SOCIAL DINNER** (*Ristorante Il Giardino*)

25 January 2024

09:00-10:15 **<u>Presentations of WG4</u> - VALORISATION OF AGROFOOD WASTE AND A CIRCULAR BIO-ECONOMY** (Moderators: ***Jessica Girardi*** and ***Marwa Moumni***)

Luis C. Duarte, *Institution LNEG-UBB, Portugal*. The pros and cons of upgrading fruits & vegetables wastes in the biorefinery framework

Eduardo Espinosa, *University of Cardoba, Spain*. Sustainable packaging solutions based on the circular valorization of agro-industrial by-products

Tulay Inan, *Sabanci University Nanotechnology Research and application Center (SUNUM), Turkey*. Preparations of multifunctional composites for electromagnetic interference (EMI) shielding applications using tomatoes wastes

Rajeev Bhat, *ERA-Chair in VALORTECH, Estonian University of Life Sciences, Tartu, Estonia*. Realisation of sustainable food systems by valorisation of agri-food wastes and by-products in support of circular bioeconomy concepts

Laszlo Abranko, *MATE - Hungarian University of Agriculture and Life Sciences, Hungary*. Assessment of beneficial impacts of plant bioactives on macronutrient digestion by digestion simulation

10:15-10:45 *Coffee break and poster session*

10:45-13:00 **<u>Presentations of WG5</u> - CROSS-CUTTING STRATEGIES AND SMART SYSTEMS FOR FOOD MANAGEMENT** (Moderators: ***Sandro Frati*** and ***Zeynep Zerrin Turgay***)

Zeynep Zerrin Turgay, *MIGROS*. Prevention of food waste in retail industry

Dov Prusky, *Department of Postharvest Science, Agricultural Research Organization, The Volcani Institute, Rishon LeZion, Israel*. Induced resistance in fruit and vegetables: the physiological effect

Gonzalo Mejia, *Universidad de La Sabana, Colombia*. Food loss and waste in central markets in Colombia perspectives from a comparative study

Elena Battini Sonmez, *Istanbul Bilgi University, Turkey*. Smart solutions for waste prevention with case study on fruit and vegetable

<u>Presentation of WG6</u> - NETWORKING AND DISSEMINATION, COMMUNICATION AND TRANSFER OF KNOWLEDGE (Moderators: ***Kata Ludman-Mihály*** and ***Luca Falasconi***)

Magdalena Bielenia-Grajewska, *Institute of English, University of Gdansk, Poland*. Communicative side of food loss and waste management

Achraf Ammar, *Johannes-Gutenberg-University of Mainz, Germany*. MEDIET4ALL Approach to support food waste prevention

Bekir Ayyildiz, *Yozgat Bozok University, Turkey*. Scientific studies on food waste in Turkey

13:00-14:30 ***Light lunch and poster session***

14.30-15:15 ***WG meetings in separate rooms***

15:15-16:30 ***General plenary discussion***

16:30-17:00 ***Coffee break and poster removal***

17:00-18:00 ***COST Management Committee Meeting (hybrid)***

POSTERS COST FOODWASTOP

WG1. PREVENTION OF FOOD LOSS AND FOOD WASTE

P22. KARAOGLANIDIS G., TESTEMPASIS S. *Aristotle University of Thessaloniki, Faculty of Agriculture, Forestry and Natural Environment, Laboratory of Plant Pathology, Greece.* **Fungicide resistance in postharvest pathogens and its management as a tool to prevent food losses**

P23. SAR T., FERREIRA J.A., TAHERZADEH M. J. *Swedish Centre for Resource Recovery, University of Borås, 50190 Borås, Sweden.* **A study on the use of olive oil mill wastewater to produce protein rich fungal biomass**

P24. MINCUZZI A.[1], PICCIOTTI U.[1,2], SANZANI S. M.[1], GARGANESE F.[1], PALOU L.[3], ADDANTE R.[1], RAGNI M.[1], IPPOLITO A.[1] *[1]Department of Soil, Plant, and Food Sciences, University of Bari Aldo Moro, Bari, Italy; [2]Department of Marine Science and Applied Biology, University of Alicante, San Vicente del Raspeig, Alicante, Spain; [3]Postharvest Technology Center (CTP), Valencian Institute of Agrarian Research (IVIA), Montcada, Valencia, Spain.* **Spiderweb effect on pomegranate postharvest diseases**

P25. EJUPI F.[1,2], GECAJ R.[1] *[1]University of Pristina, Faculty of Agriculture and Veterinary, Pristina, Kosovo; [2]UBT Higher Education Institution, Pristina, Kosovo.* **Identification of food waste in supermarkets in several regions of Kosovo**

P26. KLEIN M., APPRICH S. *University of Applied Sciences Vienna. Austria.* **Influence of food waste through packaging design**

P27. ROTONDO P. R.[1], ACETO D.[2], DISTANTE S.[1], LAERA S.[1], AMBRICO M.[2], DILECCE G.[2], DONGIOVANNI C.[3], DI CAROLO M.[3], AMBRICO P. F.[2], FARETRA F.[1], DE MICCOLIS ANGELINI R. M.[1] *[1]Department of Soil, Plant and Food Sciences, University of Bari Aldo Moro, Bari, Italy; [2]Institute for Plasma Science and Technology, National Research Council, Bari, Italy; [3]Centre of Research, Experimentation and Training in Agriculture (CRSFA) Basile Caramia, Italy.* **Decontaminant effects of plasma activated fog (PAF) against postharvest fungal pathogens and pesticide residues on table grape**

P28. ĆUJIĆ NIKOLIĆ N., JANKOVIC T., ŠAVIKIN K., MILUTINOVIC M. *Institute for Medicinal Plants Research Dr Josif Pancic, Serbia.* **Sustainable road from chokeberry fruit waste to microencapsulated powders for nutraceutical, pharamaceutical or food application**

P29. DESOPO M.[1], TERLIZZI N.[1], INCERTI O.[1], SCHLOSSEROVA N.[1,2], MOSTACCI A.[1], CONVERTINI L.[1], FERRANTE P.[1], PICCA R.A.[3], SPORTELLI M.C.[3], DIFONZO G.[1], GENTILE L.[3], PALAZZO G.[3], CAPONIO F.[1], IPPOLITO A.[1], CIOFFI N.[3], SANZANI S.M[1] *[1]Department of Soil, Plant and Food Sciences, University of Bari Aldo Moro, 70126 Bari, Italy; [2]Department of Chemistry and Biochemistry, Mendel University in Brno, 613 00 Brno, Czech Republic; [3]Department of Chemistry, University of Bari Aldo Moro, 70126 Bari, Italy*. **Active packaging to reduce losses and wastes of fresh fruits and vegetables**

WG2. AGROFOOD LOSS AND WASTE MANAGEMENT

P30. ZJALIC S., LONCAR J., KOS T. *Department of ecology, agronomy and aquaculture, University o Zadar, Crotia*. **Occurrence of conidia of mycotoxigenic fungi in an experimental corn field in the Slavonia region**

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Sustainable road from chokeberry fruit waste to microencapsulated powders for nutraceutical, pharamaceutical or food application

ĆUJIĆ NIKOLIĆ N., JANKOVIC T., ŠAVIKIN K., MILUTINOVIC M.

Institute for Medicinal Plants Research Dr Josif Pancic, Serbia. E-mail: ncujic@mocbilja.rs

Chokeberry, one of the richest polyphenolic fruit sources, especially anthocyanins, represent a natural nutraceutical, having important role in human nutrition due to the outstanding antioxidant potential. Processing of chokeberry juice generates waste by-product, cake residue containing high polyphenolics content, which can be extracted. Microencapsulation by spray-drying technology was performed in order to improve functionality, stability, and bioavailability of extracted polyphenols. Microencapsulation of chokeberry extract vs. chokeberry waste extract using different carriers was employed. Morphological and physicochemical characteristics of the obtained powders were analyzed. In vitro simulated digestion model was used as indicator of polyphenolics bioavailability and stability in gastrointestinal environment. Spray-dried powders demonstrated perspective to enhance functional, bioavailable properties and stability of chokeberry polyphenols, with the chokeberry waste fruit extract being superior. The chokeberry waste microparticles could be an auspicious additive for incorporation into food products, as well as pharmaceutical application since chokeberry waste extract demonstrated in vitro tyrosinase and acetylcholinesterase inhibition, antimicrobial, antioxidant activity, antihypertensive effect and relaxation of contractions in the isolated rat ileum. The recovery of valuable bioactive sources after the processing of fruit is not only important from an ecological and economic point of view. Therefore, it has been shown that waste products containing nutraceutical fractions can be a valuable source of bioactive substances through the use of widely used microencapsulation technology and low-cost and easily accessible carriers.

Keywords: Chokeberry, digestion, microencapsulation, polyphenols, waste