Workshop Draft Programme

European Plant Science Organisation
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EPSO Workshop

Addressing the Nutritional Security challenge is a strategic issue for Europe under COVID-19 pandemic

Brussels, 2.4.2021

The EPSO Nutritional Security Working Group has the pleasure to announce its second workshop entitled: "Addressing the Nutritional Security challenge is a strategic issue for Europe under COVID-19 pandemic" to be held online 15-16 June 2021 always 9 am – 1pm.

Background

Plant based foods are receiving a remarkable attention during the last decades in the research field of nutrition, due to the biological activities recognized for many classes of phytochemicals and the relevance that food nutritional security topics are obtaining in European countries. The availability and accessibility to nutritionally rich food sources are hallmarks for human health and wellbeing, that is why many efforts are being directed towards old and new generations of plant crops.

The issues related to nutrition and health are recently deserving more attention during COVID-19 since a number of risk factors for a severe COVID-19 outcome have been proposed. Among these are poor nutritional status, Non-Communicable Diseases (NCDs; which include diabetes, cardiovascular diseases, chronic lung disease), obesity and other immune-related diseases. All these pathologic conditions share a common inflammation base. The Western diet is a well-known risk factor for NCDs but also for COVID-19 since it induces a chronic activation of the innate immune system, inducing a lipotoxic state and a general chronic inflammation. Therefore, key dietary patterns, such as the Mediterranean diet (rich in fruits, vegetables, plant-derived foods, fibers, antioxidants, minerals and vitamins, and low saturated fatty acids and refined sugars), could represent a healthy nutritional intervention useful to lower the inflammation status of people at risk, including elderly people.

The access to healthy and nutritious food at reasonable prices for all the European citizens is mandatory especially under this pandemic situation, if we want to improve human wellbeing, reduce over-loading medical / hospital capacities and promote the transition to new more sustainable food systems. This is captured in the concept of 'Diverse crops for diverse diets for human health and resilient production'.

This issue is very well linked to the UN Sustainable Development Goals (SDGs) 2 (zero hunger) and 3 (good health and well-being) proposed in the World Food Programme, and in the Farm to Fork and the Biodiversity strategies under the European Green Deal, to which the Horizon Europe Programme for Research and Innovation pays high attention.

Addressing these challenges is getting even more urgent, since new scenarios [global warming, overpopulation of metropolis, globalized trade systems, invasion/destruction of wildlife habitats, new emerging zoonotic diseases] will likely impact on our common behaviors and choices related to food and nutrition.

In this context, the EPSO 'Nutritional Security' Working Group aims to discuss and contribute to define new paths and solutions for resilient and sustainable production systems using innovative solutions in the area of food and nutrition.

Goals of the workshop
The meeting of the working group will discuss about the latest (bio)technologies which can contribute to define a new roadmap focused on `How to achieve the Nutritional Security issue in Europe´. The meeting intends to increase collaborations between the working group members both bi-and multi-lateral. In addition, it will provide a report including recommendations on R&I as science advice to policy to the European Commission as well as national authorities.

Administrative information
The online workshop will be held via Zoom, hosted by IGZ.
EPSO members: We kindly ask you to **offer an inspirational note** (5 min) (name, affiliation, talk title & to which session) **by end April** for the chairs to be considered and included in the programme, and to **register for your participation** to the workshop **before 15 May**, both by e-mail to Marina Korn (korn@igzev.de).

The organizers
Monika Schreiner (IGZ, *chair*), Chiara Tonelli (UniMI, *chair*), Angelo Santino (CNR, *chair*) and Karin Metzlaff (Executive Director EPSO).

The Draft Agenda:

15 June 2021

9:30 **Welcome** (Karin Metzlaff)

9:45 **The EPSO WG Nutritional Security** & COVID-19 pandemic
- Tour de table (1 slide from each participant)
- Goals of the workshop
- How Plant Science and the NS WG can contribute to achieve the SDGs 2 (zero hunger) and 3 (good health and well-being) (Angelo), the EU Farm to Fork strategy and Biodiversity strategy (Monika / Chiara or Karin).

10:30 European Commission and Member States initiatives (20 min each: 10' scope + 10' discussion)
- EC Farm to Fork Strategy, Food 2030 initiative and food systems partnership: Peter Wehrheim (DG RTD) t.b.c.
- Biodiversity partnership: Hilde Eggermont (Belgian Biodiversity Platform) t.b.c.

11:10 15 min break

11:25 **Round table session I**: ***Re-discovering underused species and landraces of fruits, vegetables and staple crops*** (chair: **Monika Schreiner,** rapporteur t.b.a.)
The promotion of biodiversity generates awareness on the nutritional value of plant food sources traditionally cultivated in local areas and lost

in the last years due to the modern cropping systems and the requirements of modern global markets. Re-discover those characterized by a high nutritional value can greatly help to diversify our diet, '***diverse crops for diverse diets'***.

- Characterize the biosynthetic pathways for healthy compounds in underutilised highly nutritious species/varieties
  - Ia) micronutrient (phytochemicals -polyphenols, terpenes carotenoids, isothiocyanates; (pro)-Vitamins; Minerals)
  - Ib) lipids, proteins (jointly with 'Plants and Animal Research' WG) and dietary fibres.
- Identify and characterize nutritionally important biocompounds, with a special attention for those lost during the breeding processes
- Characterize the biosynthetic pathways for antinutritional compounds (protease/amylase inhibitors, oligosaccharides, toxic secondary metabolites, i.e. alkaloids)
- Diversification of crop production is strategic for European agriculture
- Crop biodiversity & HE.

13:00 End day 1

16 June 2021

9:00 **Round table session II**: ***Use of new metabolic engineering / new breeding technologies to re-design high quality crops*** (chair: **Angelo Santino,** rapporteur t.b.a.)

New genetic technologies can help to improve the metabolic pathways towards the accumulation of specific classes of healthy bio compounds in fruits and vegetables thus accelerating the development of a new generation of crops characterized by a higher nutritional value. New advances are now rapidly developing based on the gene targeting and new breeding technologies (NBTs), allowing the achievement of new frontiers in the food research area.

- Innovative solutions to increase secondary metabolites content in vegetables;
- Innovative solutions to increase dietary lipids in crop species;
- Innovative solutions to increase healthy proteins/peptides in pulses and grasses;
- Legislative issue and role of the European industries;
- Translation to market of improved crops;
- NBTs & HE (in connection with AgTech WG).

10:15 15 min break

10:30 **Round table session III**: ***Linking the concept of diverse diet, bioactive compounds & the prevention of human diseases*** (chair: **Chiara Tonelli,** rapporteur t.b.a.).

Several studies have shown the importance of phytochemicals assumption on the immune system and the prevention of inflammation-based diseases such as cardiovascular, neurodegenerative and bowel diseases as well as obesity-associated low-grade inflammation.

Many classes of biocompounds (or their sub-products deriving by microbiota biotransformation) can provide a substantial contribution to the

human gut microbiota *shaping*, in terms of microbial communities and probiotics abundances. On the other hand, a healthier microbiota profile is an important factor influencing our immunity response and general wellbeing.

- Linking phytochemicals, quantities to exert a nutritional effect, role of the original food matrix and the protective effects on specific human pathologies
- Linking phytochemicals, quantities, role of the original food matrix and microbiota re-shaping
- Towards tailored crops for consumers at risk of specific diseases
- Dietary shift & HE.

11:45 **Conclusions** (Karin Metzlaff and chairs)

- Report with recommendations (addressing the nutritional security goal is strategic for Europe, as well under pandemic)
- Interactions with other EPSO WGs (Plants & Microbiomes; Horticulture; AgTech)
- Outlook on future activities.

12:00 Buffer in case of many inspirational speakers
13:00 End of workshop

Contacts

Registration: Marina Korn (korn@igzev.de);
Content: Angelo Santino, CNR, Institute of Sciences of Food Production, IT, angelo.santino@ispa.cnr.it;
Monika Schreiner, Leibniz Institute of Vegetable and Ornamental Crops, IGZ, DE, schreiner@igzev.de;
Chiara Tonelli, University of Milan, IT, chiara.tonelli@unimi.it;
Karin Metzlaff, EPSO, Karin.Metzlaff@epsomail.org.

Useful links

EPSO: Statement on the Draft Strategic Research and Innovation Strategy by the Biodiversity Partnership Consortium, 29.1.2021 (https://bit.ly/2NNGAB9)
EPSO: Statement on the Farm to Fork Strategy by the European Commission, 2.6.2020
EPSO: Contributions from plant science towards Nutritional Security and human health, Draft Statement, 11.5.2020
EPSO Submission to the EC consultation on EU research and innovation missions (FP9), 30/03/2018, incl. 1001 Crops – diverse crops for diverse diets and human health and sustainable production.
EPSO news: https://epsoweb.org/news/
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About EPSO

EPSO, the European Plant Science Organisation, is an independent academic organisation that represents more than 200 research institutes, departments and universities from 32 countries, mainly from Europe, and 2.700 individuals Personal Members, representing over 26 000 people working in plant science. EPSO's mission is to improve the impact and visibility of plant science in Europe, to provide authoritative source of independent information on plant science including science advice to policy, and to promote training of plant scientists to meet the 21st century challenges in breeding, agriculture, horticulture, forestry, plant ecology and sectors related to plant science. https://epsoweb.org | EU Transparency Register Number 38511867304-09