

Workshop on Food and Nutritional Security European Parliament – Plant ETP

Brussels, 9.6.2016

The purpose of the meeting was to help engage policy makers from the European Parliament, representatives



from the European Commission and the Member States in a discussion of the potential contributions from plant science, breeding and farming towards food security and nutrition and to highlight the advances and opportunities associated with the field. It took place in the European Parliament on 2nd June 2016 and was attended by a range of stakeholders, including public researchers, breeding industry representatives, farmers, policy makers and journalists.

The meeting was introduced by Aleksandra Malyska, Executive Manager of Plant ETP and the opening talk was by Jasenko Selimović, a Swedish MEP, who was the co-host of the event. He introduced the topic of food security, which includes the supply sufficient calories but equally importantly, nutritional security to address the question of “hidden hunger”. This is urgently needed as the global incidence of chronic illness has increased in recent years, partially due to factors such as obesity arising from poor dietary choices. He emphasised the need for high quality plant products in the marketplace and the need to take a holistic approach to quality coupled with transparency regarding their origin, farming methods and their path through the food chain to the consumer. He also emphasised that farmers, breeders and scientists increasingly need to collaborate (for instance in so called public private partnership) to achieve innovations for a changing marketplace but pointed out that some EU regulations were stifling innovation and resulting in companies and scientists leaving the EU.

The three workshop speakers focused on the contributions from plant science, breeding and farming towards food and nutritional security:

Joachim Schneider, Vegetable Seeds at Bayer CropScience: He presented a breeding company’s vision and priorities and argued that agriculture as a whole is facing a technology jump and that this development is both driven by new technologies (push) and consumer demands (pull). The concept of “healthfulness” will be a driving factor for future plant breeding. Breeding programmes are broadening from yield – calories - to combining this with quality traits – nutrition - using technology to do more, more cheaply and better. Bayer aims to produce food that is healthier and with less unhealthy compounds, toxins etc. Imminent examples of innovations are fortified crops such as Vitamin-A enriched, high oleic canola oils and traits that make it more

convenient for consumers to make healthy diet choices e.g. eat more fruit and vegetables, for example baby vegetables and cup sized seedless water melon. Technology advancements that encompass present and future development within the IT-sector will transform agriculture. The use of digital farming, Big Data and LED-technologies will increase productivity and sustainability. Deployment of New Breeding Technologies will also be important.

Another driver will be personalised nutrition and metabolic monitoring linked to computer programmes making recommendations on food choices, again through smartphone technologies.

Eugenio Butelli, John Innes Centre Norwich, UK: He discussed how healthy diets can be used in disease prevention as the goal of 5 servings of fruit and vegetables a day is good but not easily met.

He presented evidence to suggest that specific compounds such as flavonoids can help alleviate cardiovascular disease and obesity. His talk focused on the example of increasing flavonoid content in tomatoes which could help increasing the daily intake since tomatoes is regularly consumed by a large fraction of the population. GM plants with high levels of phenolics reduce vascular diseases in model animals. Another example he presented is the blood orange, which has a major impact when compared with the orange fruit on reducing fat accumulation in a mouse model of obesity. Together, these approaches show how plant science can potentially have a positive role in developing fruits and vegetable with preventative properties for chronic diseases.

Juan Sagarna García, Agri-food Cooperatives Spain: He presented a grower perspective on quality production. Farmers operate under pressures that include regulation, markets, technologies, and organised production. Technology developments are significant and include drones, satellites, sensors, robotics, new breeding technologies, smartphones, social media, and big data. Implementing these changes poses a big challenge and will transform agriculture in future.

A discussion followed and brought out the following points

- Growers and grower co-operatives are adaptable, they will produce whatever the consumer and the market demands.
- Growers can contribute to innovation in partnership with researchers in companies, and there are examples of where they have done so.
- Enhanced nutritional quality needs to be delivered without a yield penalty.
- As consumer behaviour changes and they need something different, scientists and the industry need to show innovation and politicians need to help produce a supportive environment by highlighting the potential of Agriculture, supporting positive campaigns and demonstrating flexibility.
- Jan Huitema, MEP responded and concluded, citing a lack of communication with the public and the need for rational argument and emotional engagement to support the acceptance of innovation in agriculture and food production.

Following the workshop, science, companies and farmer representatives will continue collaboration with members of the European Parliament and representatives of the European Commission and the Member States to include the potential contributions from the plant sector to address food and nutritional security in respective European and national policies, strategies and programmes.

Eugenio Butelli (JIC/ UK), Rosemary Collier (Warwick / UK), Helmut Dietrich, (Geissenheim / DE), Gabriele Digaspero (Udine / IT), Dennis Eriksson (EPSO & SLU / SE), Antonio Granell Richart (CSIC / ES), Calum MacKichan (EPSO / Europe), Karin Metzlauff (EPSO / Europe), Benard Ngewe (Grossbeeren / DE), Jens Sundstrom (SLU /

SE), Brian Thomas (Warwick / UK) and Herve Vanderschuren (ETH & Liege / CH&BE) participated as experts from EPSO, the European Plant Science Organisation, in the workshop.

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EPSO on food and nutritional security

Plant science can contribute towards the “vision of an agri-food system which will take up CO₂, produce water, increase biodiversity and provide choices for an exciting nutritious healthy diverse diet for everybody”, articulated at the EC RTD workshop on future food systems, by developing solutions ensuring to take up CO₂, producing high yields with less water and nutrients, reducing the overall environmental footprint, increasing biodiversity (in natural and cultivated systems), and providing consumer choices for a nutritious, healthy and diverse diet. The challenges of food and nutritional security (FNS) are closely interlinked with those of climate change, energy security and sustainability including declining resources, which are impacting food security, as well as biodiversity, which is impacting nutritional security. This is most relevant for instance to “Agricultural research and innovation 2020 and beyond” and to “Food 2030”.

To tackle more quantitative aspect of **food security**, and addressing **climate change**, **energy security** and **sustainability**, including declining resources, plant research and innovation can make three major contributions:

- Improving resource use efficiency and resource stewardship – such as land, soil, nutrients – implementing the cyclic economy concept
- Improving yield and yield stability combining abiotic stresses with a focus on temperature stress, sustainably increasing marketable yield (as there already was a focus in the WPs 2016/17 on water stress)
- Improving plant health by tackling ongoing diseases with major impact in Europe and strengthening the efforts anticipating emerging diseases (as this has just started in WPs 2016/17)

In addition, it becomes increasingly important to achieve **nutritional security** in Europe and globally over the next 15 years – the qualitative aspect of FNS: improved nutritional quality has very positive effects on **human health** by improving wellbeing, reducing the incidence of obesity and the frequency of chronic diseases (steroid-hormone related cancers, cardiovascular diseases, metabolic diseases such as type 2 diabetes) that result from poor ‘Western Style’ diets in both developed and developing countries. This will reduce health and welfare costs, as well as losses in productivity and improve quality of life globally. Plant research and innovation can help to make the healthy choice the easy choice by:

- Developing plants with improved composition for
 - human nutrition and health – Increase understanding of which phytonutrients promote health and protect against chronic diseases; use biofortification to increase micronutrients and / or increase compounds enhancing their bioavailability;
 - animal nutrition & lowering environmental footprint (for animal husbandry and farmed fish)
- Improving and promoting diverse crops for diverse diets: Improving the economic performance and value of underutilised fruit and vegetable crops in Europe and globally (WHO has a strong preference to develop fruit and vegetable diets) – these are often nutritious, but need research and breeding efforts for higher yield, transport and storage characteristics
- Outreach activities promoting the health benefits of fruit and vegetables in our diet, generating and providing information on the nutritional benefits of individual components / entire fruits and vegetables - for instance with a mobile phone app

As **horizontal** measures underpinning the themes mentioned above, Europe urgently needs to

- Incentivise outreach activities of scientists across Europe and above: stakeholders should be encouraged to initiate and coordinate snowball-principle bottom up activities at European or even global scale, incentivised by competitive European funding to support the central coordination and core resources provided then through open and free access for anybody across Europe and beyond to utilise and hold an event.
- Drive agricultural research and innovation with / for Developing countries (reinforcing and strengthening the support started in WP 2016)
- Facilitate advancement of and access to state of the art research infrastructure in the plant sector highly relevant to FNS: Perform a gap analysis on research infrastructure in the plant sector (build on

the example of phenotyping via the EMPASIS project) and advance the issues of data management and standardisation (as recently initiated by ERA-CAPS).

Useful links

Workshop Press Release by Plant ETP: www.plantetp.org

EPSO publications: www.epsoweb.org/archive-epsoweb-publications-and-statements?981448774=1

EPSO member institutes and universities: www.epsoweb.org/membership/members

EPSO representatives: www.epsoweb.org/membership/representatives

About EPSO

EPSO, the European Plant Science Organisation, is an independent academic organisation that represents more than 220 research institutes, departments and universities from 28 European countries, Australia, Japan and New Zealand, and 3.200 individuals Personal Members, representing over 28 000 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, 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. www.epsoweb.org