Submission to EC consultation

European Plant Science Organisation
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Towards a long-term strategy for European agriculture research and innovation by 2020 and beyond

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During the EPSO General Meeting on June 21-23, 2015, the EPSO representatives discussed the background paper 'Towards a long term strategy for European agriculture research and innovation by 2020' with great interest. **The representatives of over 220 European research institutes and universities active in plant science expressed their support for the five prioritized core areas as a starting point described in the background paper and highlighted four main areas for improvement.**

In the attached questionnaire we have included detailed responses to relevant questions pertaining to the five core priority areas.

EPSO would like to bring forward four general remarks which EPSO representatives consider as very important to agricultural research and innovation by 2020 and beyond:

1. **There is the urgent need to strengthen collaborative basic research across Europe**. This is a major gap in the Horizon 2020 Work Programmes 2014-17 and even in several Member States. Europe's competitiveness in research and innovation resulted from the balanced support of individual (ERC) as well collaborative (Collaboration Programme) basic as well applied research over the past decades. From this system the component of the collaborative basic research has been removed which should be a major and intrinsic part of the Societal Challenges programmes to complete the innovation cycle between basic and applied collaborative research, demonstration and innovation actions.

2. **The support of new / high tech research supporting all technologies equally has to be strengthened** compared to low tech/ input research and tacit knowledge to achieve a balanced approach for all solutions that can help addressing the societal challenges we face today and in future. Europe supported the high tech research until Framework Programme 6 more, changing towards tacit knowledge preference in the course of FP7, peaking now in the first years of the Horizon 2020 programme. This was a development from one extreme to the other, which urgently needs to be resolved by a truly balanced support of all technologies and practices. The ultimate best benefit for the environment, human health etc. will emerge from an open minded combination of the advantages of all available solutions.

3. **The goals and thereby priority areas of 'Improving yield and yield stability', as well as 'Improving plant compounds beneficial for human and animal nutrition and health' need to be added**. The first is of utmost importance to achieve agricultural productivity and sustainability (as in the title of the EIP-AGRI and elaborated in its Strategic Implementation Plan). The second will be crucial for our future societies in the developed as well as developing countries to better understand the links between plant composition, processing, bioavailability during nutrition and effects on health, and to utilize this knowledge for innovation improving human and animal health (as elaborated in the EIP-AGRI Strategic Implementation Plan).

4. **Introduce the concept of 'Deep science' and 'Farmers' science' and truly facilitate cross-sectorial approaches and involve the broader farming as well as scientific and industrial communities**

Agricultural production is highly complex and meeting the future needs and requirements with respect to sustainability and security requires a vast knowledge base supported by cross disciplinary approaches. The combination of research results within the disciplines of molecular biology, sensor- and robot technologies, and 'big data' processing, as well as the incorporation of new business models, will create new opportunities to understand and utilize complex interactions to back the implementation of sustainable production systems that will support increases in agricultural production. Reaching the full potential of the cross disciplinary research will allow a paradigm shift, specifically with regards to existing crop cultivation schemes. As an example it is expected that ***Deep Science*** interaction studies of microorganisms, plants, animals and humans will change our current understanding of plant growth, nutrient uptake, immune system, composition and quality. EPSO therefore finds that research and innovation by 2020 must encompass the possibility for collaborations between complementary cross disciplinary research groups allowing for deep science with an innovation vision.

Another area of potential is the development of ***farmer's science*** in natural resource monitoring. This would help improve our understanding of environmental and biodiversity changes, as well as the use of natural resources and ecosystem services. Farmers will benefit in such approaches when empowered and when benefitting from monitoring activities. EPSO suggests that the development of the science that would enable the integration of ***farmer's science*** in a scientifically robust way should be supported, in order to obtain a proper understanding of the interaction between plant and animal genotypes, the environment and management at different scales. Such analyses may fundamentally affect how sustainable farming systems can be development beyond 2020. This would require multidisciplinary collaboration between scientists and farmers to integrate and use new knowledge from agricultural, biological, economic, political, and technological sciences. The initiative will benefit from an advanced version of the already established interactive innovation model implemented via the EIP-AGRI by better involving the broader scientific community, not only those scientists who already traditionally work closely with farmers.

EPSO will be happy to further engage in the discussion towards towards a long-term strategy for European agriculture research and innovation by 2020 and beyond.

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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 3.100 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