

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

Fields marked with * are mandatory.

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This questionnaire provides the possibility to comment on the background paper for the workshop "Towards a long-term strategy for European agricultural research and innovation by 2020 and beyond" organised by European Commission in EXPO Milan on 19 June 2015. It will remain open two weeks after the end of the workshop, until 3 July 2015.

About the structure of a future long-term strategy

*Is the proposed organisation based on five main building blocks relevant and useful to structure our approach for a long-term strategy?

- Yes
- Yes, partly
- No
- No opinion

Would you suggest changes in this approach? A different approach? Please elaborate.

1500 character(s) maximum

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).

About the five core priority areas

Resource-efficient production systems in a changing climate

What should research activities concentrate on? Provide your comments based on the questions at page 6 of the background paper.

1500 character(s) maximum

KEY ASPECTS: Highlight improving crops themselves as intrinsic part of the approach: Genetic resources and improving crops reg. resource use and climate resilience; Low environmental footprint AND high-productivity farming systems. Facilitate all technologies and combine them (NBTs; familiarity principle for GMOs, IPM..). Resource-efficient systems research: interaction between genotype, environment, novel management and technologies.

FOR long-term ag/rural challenges : A-Collaborative BASIC res: Plant development and physiology, impact on yield and being influenced by environmental changes in model plants, main and orphan crops. From annual to perennial plants. Reveal adaptive strategies in wild species. How to use existing variation or increase (induced, epigenetic, genome editing) variation for breeding? Landscape genomics: understand at molecular, plant and landscape scales how agri-genotypes interact with (changing) agri-environments over time. Understand the Plant-soil-microbiome. Limited natural resources - ex phosphor

B-Collaborative APPLIED res: Develop cropping systems with genotypes improved for specific local agro-environments for higher productivity and lower environmental footprints. Understand existing resources and ecosystem services and how to use them more effectively (incl. sustainable intensification, underutilized resources, comparative life-cycle evidence base.

SCALES local to global: e.g. GPC Digital Seed Bank and Resilience initiatives

Ecological approaches at farm and landscape levels

What should research activities concentrate on? Provide your comments based on the questions at page 6 of the background paper.

1500 character(s) maximum

KEY ASPECTS: Add to title: 'for high productivity farms and landscapes'
Highlight: Use evidence based investment in all agri-research and innovation that can lower environmental footprint of agriculture while maintaining / improving productivity and generating jobs/income (not prefer agro-ecology, organic farming). Combine tacit knowledge with new research and technologies towards agricultural productivity and sustainability (EIP AGRI title), incl. e.g. synthetic agroecology and biology, plant biochemistry, plant-soil and plant-microbial systems, agri-epigenetic interactions with environment, genetics, chemical ecology, environmental engineering. Mitigate GHG across scales. Rewild domesticated crop species, domesticate new crop species. Emission based regulation of fertilizer and pesticide use.

FOR long-term ag/rural challenges : A-Collaborative BASIC res: Use robust science and evidence to identify the molecular and mechanistic basis for designing crop ideotypes, cropping systems and landscapes for sustainable intensification. Minimize the inputs and nutrient losses and understand tradeoffs. Ecological weed control. Plant microbe interactions, e.g. effect of altered plant metabolism on taste.

B-Collaborative APPLIED res: Balance measurements and modelling: European network of instrumented field sites of agronomic and conservation relevant species to understand genotype x phenotype x environment interactions for agriculture and conservation options

Healthy plant and animals

What should research activities concentrate on? Provide your comments based on the questions at page 6 of the background paper.

1500 character(s) maximum

KEY ASPECTS: Add to title 'for human health and well-being'
Highlight: Mutually beneficial plant microbe interaction. How can plant breeding more rapidly respond to emerging pathogens and stresses? Health and nutritional co-benefits of different crop and livestock species/ varieties for sustainable and healthier human diets. Develop crops and livestock to lower disease agents, toxin levels in the food chain. Improve plants to be resistant / tolerant to: pests (research on current / emerging pathogens); biotic AND abiotic stress; combine this with management. Facilitate appreciation of molecular plant breeding techniques in crops.

FOR long-term ag/rural challenges : A-Collaborative BASIC res:
Understand pest and pathogen biology, evolution and ecology (natural and farmed habitats) to develop strategies for limiting effects of pests/pathogens on agri-productivity. Screen a wide range of cultivated and wild varieties for resistance genes. Deep science in molecular and physiological signaling between organisms. Crop plant/organismic interactions including plant/plant, plant/microbes and plant/insect interaction.

B-Collaborative APPLIED res: Synthetic design of resistance. Use big data from remote sensing to develop future cropping.

SCALES local to global: Emerging diseases; Resistance breeding including synthetic biology

New openings for rural growth

What should research activities concentrate on? Provide your comments based on the questions at page 6 of the background paper.

1500 character(s) maximum

KEY ASPECTS: Add to title ... and bioeconomies

Highlight: High value bio-products for food and non-food -Bringing the rural and urban economies closer together: Underused resources from (fruit) trees, orphan crops (e.g. Pseudocereals suitable for gluten intolerance), horticulture (vegetable diversity, plants for secondary metabolites, Plant-made pharmaceuticals); bioenergy. Consider population dynamics of rural areas in Europe due to inward migration pressures due to food insecurity, fragile food systems, fragile environments and fragile states in developing countries. How to develop EU-developing country agrifood innovation linkages that provide jobs, income and stability in both EU and developing countries.

FOR long-term ag/rural challenges : A-Collaborative BASIC res: Secondary metabolites and pathways, bioactive metabolites, primary metabolism (e.g. cellulose conversion for biogas generation). C4 metabolism/secondary metabolism; efficient conversion of biomass to biofuel (cellulose conversion).

B-Collaborative APPLIED res: Robust life cycle assessment, environmental footprint and value chain analyses to determine optimal supply chain systems for profitable and job-creating plant-biomass biorefineries.

SCALES local to global: Linking land-sea: e.g. Omega 3 Fas. Coordinated horticultural trials in European regions. Crops for fuel is a global topic. Multi-location instrumented demonstration trials, SME participation

Developing the human and social capital in rural areas

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1500 character(s) maximum

KEY ASPECTS: Highlight: Interactive innovation model: include scientists and innovators! Add new sources of financing and investment in sustainable agri-innovations. Add outreach actions of scientists, farmers .. themselves (e.g. snowball high impact activities across Europe / globally like the Fascination of Plants Day). Balance content of innovation and knowledge system and add functioning network of both applied and fundamental research scientists. The previous scheme of communication between farmers and knowledge centers (agricultural cooperatives) is discredited but the description of means of replacement are too vague. It would be better to enable, connect and improve existing structures (involve the science and farming and industry communities at large) than trying to set up a new system of collaborative research

SCALES local to global: Global FNS with and for Sub-Saharan Africa: consider conclusions from 2012 FAO-EPSO workshop and follow-up actions (Under-utilised fruit and vegetable crops, Cassava value chain)

About cross-cutting issues

Would you like to comment on the cross-cutting issues section of the background paper? Are there issues which should receive more attention? Less attention?

1500 character(s) maximum

Balance APPLIED / BASIC research: ERC funds excellent individual basic and applied research. Societal Challenges are supposed to fund collaborative basic and applied research and innovation. The major gap in SC2 being the collaborative basic research. Add: Strengthen collaborative basic research in SC2; Support respective Member States' initiatives. Basic plant science is underpinning all agricultural and food research and should be included in all priority areas. An optimal balance between collaborative applied and basic research is important for all priority areas.

FNS, GLOBAL: Nutritional security is only mentioned, add support for it across the document. Add references to: European Parliament's report on plant breeding (24.2.2014) calling for all available approaches, international cooperation etc.; ETPs long term views calling for all technologies, basic and applied collaborative research; GPC and FAO-EPPO initiatives.

PRIVATE sector: Add measures to increase feasibility of research solutions (e.g. familiarity principle, support NBTs). Interdisciplinary: Plant compounds for human nutrition and health, animal nutrition and improving environmental footprint.

ERA & MEMBER STATES: Better involvement of scientists, ETPs, Programme Committee. Support as well broader ERA-Nets such as ERA-CAPS (collaborative basic and applied research)

AOB: Research areas 1-4 are knowledge intensive. Highlight horticulture as one major contribution to each research area

Other comments

Any other comments can be provided here:

1500 character(s) maximum

EU policy requests 0.7% of all EU STI expenditure to be spent on international cooperation with developing countries. As the agricultural sector is essential to food and livelihood security in developing countries (incl. nutritional, health and income levels; political stability; reduce poverty; sustainable food and bio-product systems), EU / developing country plant and agri-research partnerships and value chain research alliances are crucial. Similarly relevant is support for neighboring countries like Ukraine.

There is a need for greater balance in the document, based on evidence, to not over-emphasise certain approaches (e.g. "in particular social sciences and humanities"; ".. the organic sector").

As plants underpin all areas of the European economy and society, plant science should be highlighted as a cross-cutting activity and specifically mentioned in all priority areas and on pages 15-16.

Digital farming and IT in agriculture: An accelerating aspect of plant management and breeding is the increased inclusion of digital information into breeding and plant management practices. The plant sector needs to adapt strategies to implement novel instruments, big data analysis and knowledge-oriented modelling linking agronomic practice and plant-environment in breeding and plant production systems. Better coordinate/access to trial fields (incl. genome edited plants), common gardens (basic and horticultural research) in different environments across Europe.

You can use the link below to upload additional input documents if you wish.

- [67685e04-2c31-42af-9ff5-40377bb19a11/15_07_03_EPSO_Reply_EC_consultation_Long term European agri R&I.doc](#)

Your details

*ORGANISATION

EPSO, European Plant Science Organisation

*Function/Responsibility

Executive Director

Registration number in EU register of private interests (optional)

38511867304-09

*You work at:

- Local/regional level
- National level
- European level
- International level

*You work for:

- A research institute or a university
- Innovation support services or advisory services
- Business or business representatives
- Civil society organisations
- Authorities or government bodies
- International organisations
- Other

Other, please specify:

*Would you like to be informed about future steps of this process?

- Yes
- No

Useful links

Workshop webpage (http://ec.europa.eu/agriculture/expo-milano-2015/cap-events/long-term-vision_en.htm)

Background Documents

ws19062015_long-term_strategy_backgroundpaper.pdf
(/eusurvey/files/978c21fc-25ec-4de5-b80c-210490cb0644)

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