

European Technology Platform “Plants for the Future”

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European Technology Platform “Plants for the Future”

Vision and SRA identify four challenges for society to which this Platform can contribute:

- 1: Healthy, safe and sufficient food supply
- 2: Sustainable agriculture, forestry and landscape
- 3: Green products
- 4: Competitiveness, consumer choice and good governance



Stakeholder Proposal for a Strategic Research Agenda

Challenge 1: Healthy, safe and sufficient food supply

Goals:

- Production of safe, high quality, sufficient and sustainable **food** (storage compounds; nutritional, sensory & processing char; less deleterious to quality)
- **Foods for specific consumer groups and needs** (Carotenoids, Polyunsaturated fatty acids, Allergenicity, Cancer prevention)
- Production of safe, high quality, sufficient and sustainable **feed** (less mycotoxins & heavy metals; optimise macro- & micronutrient conc, **protein source, digestibility, appetite**)



Stakeholder Proposal for a Strategic Research Agenda

Challenge 2: Sustainable agriculture, forestry and landscape

Goals:

- Securing sustainability of agriculture by improving **plants productivity and quality potential** (Yield stability, tolerance to non-biotic factors)
- Reduce and optimize the **environmental impact** of agriculture (better use of **water** / crop protect. agents – less needed)
- Enhance **biodiversity** (use natural diversity for crops, **Domesticate new species**)
- Viable and pleasant **landscape** (ornamentals, landscape management)



Stakeholder Proposal for a Strategic Research Agenda

Challenge 3: Green Products

Goals:

- Develop advanced plant-based **raw materials and pharmaceuticals** (new & improved functionalities; recombinant and natural pharmaceuticals; enabling technologies)
- Plants as **energy** production systems (bio-fuels; economically competitive energy production; enabling technologies for biomass production)

Convert plants into **production factories** (production & extraction)



Stakeholder Proposal for a Strategic Research Agenda

Challenge 4: Competitiveness, consumer choice and good governance

Goals:

- Vibrant **Basic Research** (genome sequences & biodiversity inventory; **PSB**; genomics tools; genetic systems for crop improvement)
- Human Resources, infrastructure and networking** (**Virtual Institute Plant Science**)
- Public / consumer involvement** (**knowledge, trust, fun**)
- Ethics, Safety, legal and financial environment** (choice; co-existence; supportive environment)



Survey on future plant research activities in Europe
European Technology Platform "Plants for the Future"
<ul style="list-style-type: none"> • Aim: Input to FP7 Workprograms first years Information to national bodies including ERA-PG for national and transnational programs • Result: http://bioinformatics.psb.ugent.be/FPRA/ ~ 280 responses from 21 countries Involving 42 countries Estimated budget 1.4 b€

Survey on future plant research activities in Europe
European Technology Platform "Plants for the Future"
<ul style="list-style-type: none"> • Conclusions: Strength of community to address the SRA → include in research programs Mainly challenges 2 and 4 of the SRA i.e.: Ch 1: Food health and safety (Plant res and biomedicine) Nutritional quality (wild genotypes, impact of environment on nutritional quality, specialty crops) i.e. Ch 2: Improving plant productivity and quality (Biotic, abiotic stress) Optimizing agriculture to further reduce its environmental impact Enhance and protect diversity Enhance aesthetic value and sustainability of landscape

Survey on future plant research activities in Europe
European Technology Platform "Plants for the Future"
<ul style="list-style-type: none"> • Conclusions: Gaps between the preparedness of community and SRA → workshops pointing to such opportunities Mainly challenges 1 and 3 of the SRA i.e. Ch 1: Food for specialized consumers (age / disease) Feed quality (protein content, animal appetite) i.e. Ch 2: Improving plant productivity and quality (Yield improvements - photosynthesis, allocation and assimilation, heterosis, etc) General conclusion: more use of crop plants needed

State of our ETP
European Technology Platform "Plants for the Future"
<ul style="list-style-type: none"> • Vision June 2004 • Proposed Strategic Research Agenda July 2005 Launched with speeches by Mr Potocnik, European Research Commissioner Mr Chichester, European Parliament Chair Research Committee • Discussed at Member State Consultations 2005/6 <ul style="list-style-type: none"> - In 20 countries across Europe - Including national ministry representatives - With members of the European Parliament - With members of the European Commission

State and Future of our ETP
European Technology Platform "Plants for the Future"
<ul style="list-style-type: none"> • Survey on future plant research activities in Europe June 2006 • Finalize the Strategic Research Agenda May 2007 • Future of our ETP – under discussion Where do we stand now? <ul style="list-style-type: none"> • Vision and SRA well appreciated • First implementation witnessed (FP7, DE, UK, FR) • Which strategic goals would we like to achieve? <ul style="list-style-type: none"> • Vibrant plant sector in Europe • Competitive globally

Future steps – role of industry in research:
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<ul style="list-style-type: none"> • What is our concept to achieve these goals? • Focus setting for SRA implementation Win-win scenarios: <ul style="list-style-type: none"> - 2nd dimension across challenges: productivity, water - Align with related SRAs: use synergies - Evaluate output (competitiveness and progress of funded efforts) to improve future strategy • Interface between stakeholders of the KBBE ETPs, ERA-Net PG • Contact point for stakeholders associated with agricultural and plant-based specialty sectors • Manage, oversee, streamline local operational efforts Possibly national platforms • Core secretariat and 2-level membership Core members (current) + interested entities (non-EU, other sectors)

Future steps:

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- → **Implement** activities proposed in the SRA
**European and national level
public and public / private sector**
i.e. Use Research survey report for input to
 - Workprogram 2 of FP7
 - National Programs
 - Trans-national Programs
- **Monitor progress and amend** the Research Agenda

Link between national activities and ETP is crucial

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Recognized early:

MS consultations on the SRA Proposal in 2005/6

• Aim:

Start ownership of the SRA at national level
Start political will to implement SRA at national level
Receive input to finalise the SRA

• Participation:

Over 1 300 people

Countries: AU, BE, **BU, CZ**, DK, **EE**, FI, FR, DE, **HU**, IR, IT, NL, NO, PT, **SK, SV**, SE, CH, UK

National ministries / administration participating:

Average of 11% of participants

Link between national activities and ETP is crucial

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Future tools:

- **Develop MS mirror groups (started 2006)**
Ministries of industry / enterprise, research, agriculture
represented in a team of 3 per country
- **Development of national platforms (considered)**

Aims:

- **Ensure information flow**
Bring interested actors in closer contact to ETP
Disseminate information from the ETP to national actors via web links and Newsletter
- **Foster interaction between related TPs**
- **Stock Taking of ongoing and foreseen activities**
- **Foster implementation of the SRA**

Contact us

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Thank you for your attention



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Survey on future plant research activities in Europe

European Technology Platform "Plants for the Future"

Conclusions –generalized research topics in the Challenge "Food and feed":

- 1: **Food health** (Plant research and biomedicine) **and safety**
- 2: **Nutritional quality** (Genetic diversity of wild genotypes, environmental impacts on quality and nutrition, specialty crops)
- 3: **Nutraceuticals and food products for specialized consumers** (aim at specific age / disease groups in the population)
- 4: **Feed safety and nutritional quality** (protein content, animal appetite)
- 5: **Storability and processing**

Survey on future plant research activities in Europe
European Technology Platform “Plants for the Future”
Conclusions – generalized research topics in the Challenge “Sustainable agriculture, forestry and landscape”:
<p>1: Improving plant productivity and quality</p> <ul style="list-style-type: none"> - Biotic stress (Viruses, Fungi, Nematodes, Bacteria, Insects, general plant defense) - Abiotic stress (salt, drought, metals, stress interactions) - Yield improvements (photosynthesis, allocation and assimilation, heterosis, etc) <p>2: Optimizing agriculture to further reduce its environmental impact (Nutrient use, water use, agrochemical use, etc)</p> <p>3: Enhance and protect diversity (biodiversity resources to improve crops, farming practices)</p>

Survey on future plant research activities in Europe
European Technology Platform “Plants for the Future”
Conclusions – generalized research topics in the Challenge “Sustainable agriculture, forestry and landscape” cont.:
<p>4: Enhance aesthetic value and sustainability of landscape (landscape organization / influence of agriculture, ornamentals, phytoremediation)</p> <p>5: General conclusion: more use of crop plants needed</p>

Survey on future plant research activities in Europe
European Technology Platform “Plants for the Future”
Conclusions – generalized research topics in the Challenge “Green Products”:
<p>1: Enabling research</p> <p>2: Biochemicals</p> <ul style="list-style-type: none"> - Pharmaceuticals (recombinant, secondary metabolites) - Specialty chemicals and enzymes (technical enzymes, specialty enzymes) - Industrial feedstocks - Polymers (oils, rubber, starches, novel polymers) - Fibers (natural cellulose fibers, novel fibers) <p>3: BioEnergy (Biomass production, biomass utilization, - Biofuels)</p>

Survey on future plant research activities in Europe
European Technology Platform “Plants for the Future”
Conclusions – generalized research topics in the Challenge “Basic research”:
<p>1: Creation of advanced genomic resources</p> <p>2: Advanced approaches to plant breeding (maintain polyploids heterosis)</p> <p>3: Novel uses of genomic diversity (genetic variation underlying biodiversity)</p> <p>4: Improved GM technologies (new promoters)</p> <p>5: Multi-level high-precision phenotyping</p>

Survey on future plant research activities in Europe
European Technology Platform “Plants for the Future”
Conclusions – generalized research topics in the Challenge “Basic research” – cont.:
<p>6: Integrative or systems biology</p> <p>7: Computational biology and modelling biological processes (maintain stock / resource centres, access high quality databases)</p> <p>8: Basic Plant Processes (Chromatin/epigenetics; Transcription/RNA world; Protein world; Metabolic transformations; Plant cell wall; capture / use of solar energy/CO2/water/nutrients; Cell dynamics; Signalling; Integrate growth with metabolism/ environment /development; plasticity of plant morphogenesis and development; Senescence / cell death)</p>