


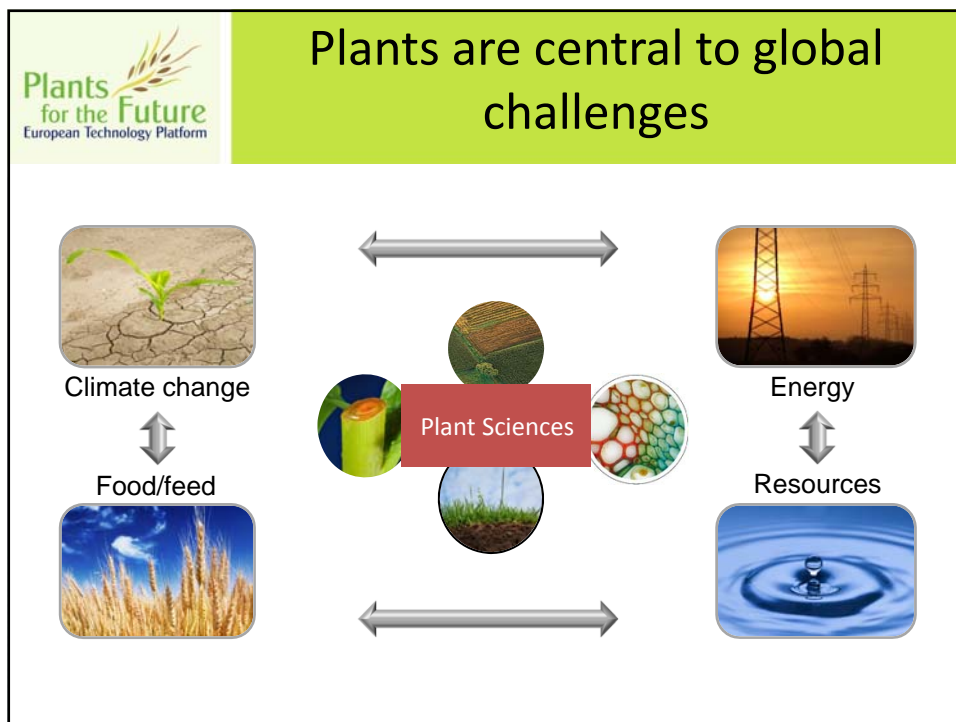
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European Technology Platform

*Plant Biology Europe 2016
Prague*



**The European Plant Sector –
Importance and
Targets in Research, Innovation
and Education**

Prof. Uli Schurr
Chairman of ETP 'Plants for the Future'



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Plants are in the center of our daily life and welfare

Food & Feed



Clothes & Textiles



Heating & Biofuels



Ecosystem services, Pleasure & Recreation



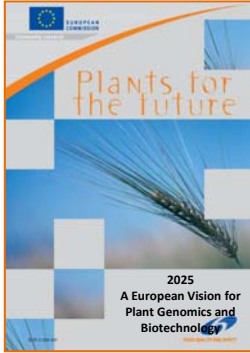

 Research gains relevance, when integrated into products, services and regulation

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Plant sector is a cornerstone of the European economy

Plant sector: combined agricultural & food sectors, plant science

- 30 million jobs (13,4% total employment)
- 3,5% total Gross Value Added in EU-28
- 40 % of EU lands are farmed
- 10-20 % of annual turnover in R&D
- 50,000 scientists in public sector
- 13,000 R&D employees in private sector



"The future competitiveness of Europe's agricultural and Agro processing industries will depend on plant genomics, biotechnology and their smart application" (Plant ETP Vision, June 2004)



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Breeder - Industry – Academia – Farmers



ESA
EUROPEAN SEED ASSOCIATION

>7000 Companies (90% SMEs)



Bayer CropScience



epso
European Plant Science
Organisation

>220 Research Institutes & Uni
> 22.000 researchers





KWS



Limagrain



Céréales
Vallée



copa*cogeca
european farmers european agri-cooperatives

76 Farmers' Organizations & 40.000 Coop




Nestlé



SÜDZUCKER



SES VANDERHAVE
sugar beet seed



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The economic, social and environmental value of plant breeding in Europe

HFFA Research GmbH

The economic, social and environmental value of plant breeding in the European Union

An ex post evaluation and ex ante assessment

Corresponding author: Steffen Noltepp




HFFA Research Paper 03/2016

- Ex-post study on the economic value of plant breeding
- Initiated by Plant ETP
- undertaken by an independent researcher

Aims

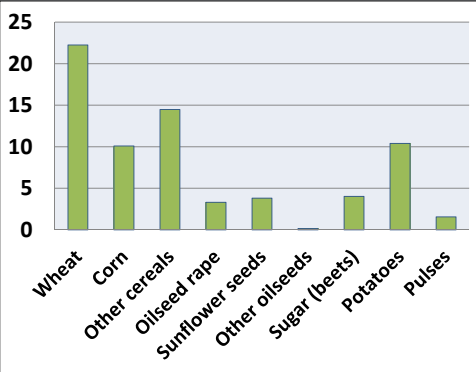
- Science-based and methodological sound data on plant breeding benefits
- importance of plant breeding for productivity growth in EU agriculture
- Specific benefits plant breeding has offered since the turn of the millennium

<http://www.plantetp.org>



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The economic, social and environmental value of plant breeding in Europe



| Crop | Additional supply (10 ⁶ tons) |
|-----------------|--|
| Wheat | 22 |
| Corn | 10 |
| Other cereals | 14 |
| Oilseed rape | 3.3 |
| Sunflower seeds | 4 |
| Other oilseeds | 0.5 |
| Sugar (beets) | 4 |
| Potatoes | 10 |
| Pulses | 1 |


Source: HFFA Research GmbH (2016).

Additional annual crop supply of plant breeding in EU since 2000 (in 10⁶ tons)

Yield and Productivity

Thanks to plant breeding, every year farmers in EU grow additional:

- ✓ 22 million tons of wheat;
- ✓ 10 million tons of corn and potato;
- ✓ 3.3 million tons of oilseed rape.



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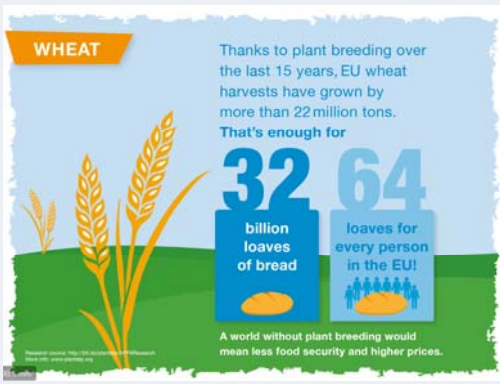
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EU plant breeding has largely **improved global food supply** - enough to additionally **feed 160 million** people with kcal.

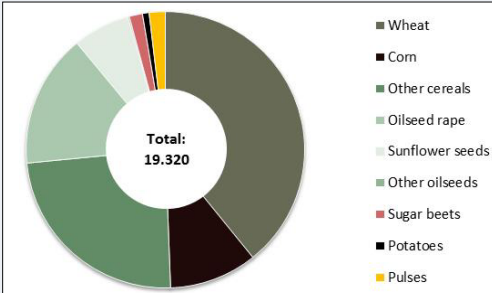
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The economic, social and environmental value of plant breeding in Europe

Land and resource use




Total: 19.320

Source: HFFA Research GmbH (2016).

✓ Without plant breeding Europe would need an extra 19 million hectares of farm land to produce the same amount of food.

Avoided net virtual land trade with plant breeding for major arable crops in EU since 2000 (in million ha)



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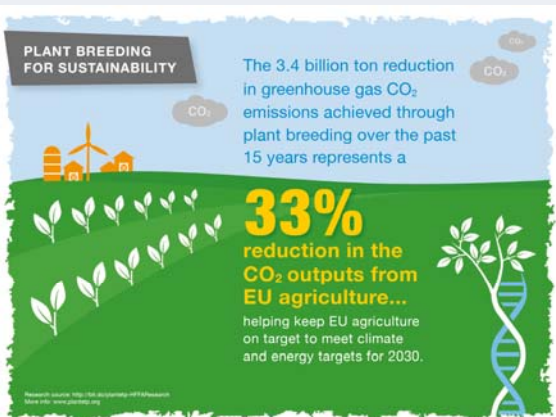
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hffa
RESEARCH



Research source: HFFA 15th Anniversary HFFA Research Report 2016 (www.hffa.org)

<http://www.plantetp.org>



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PLANT BREEDING FOR SUSTAINABILITY

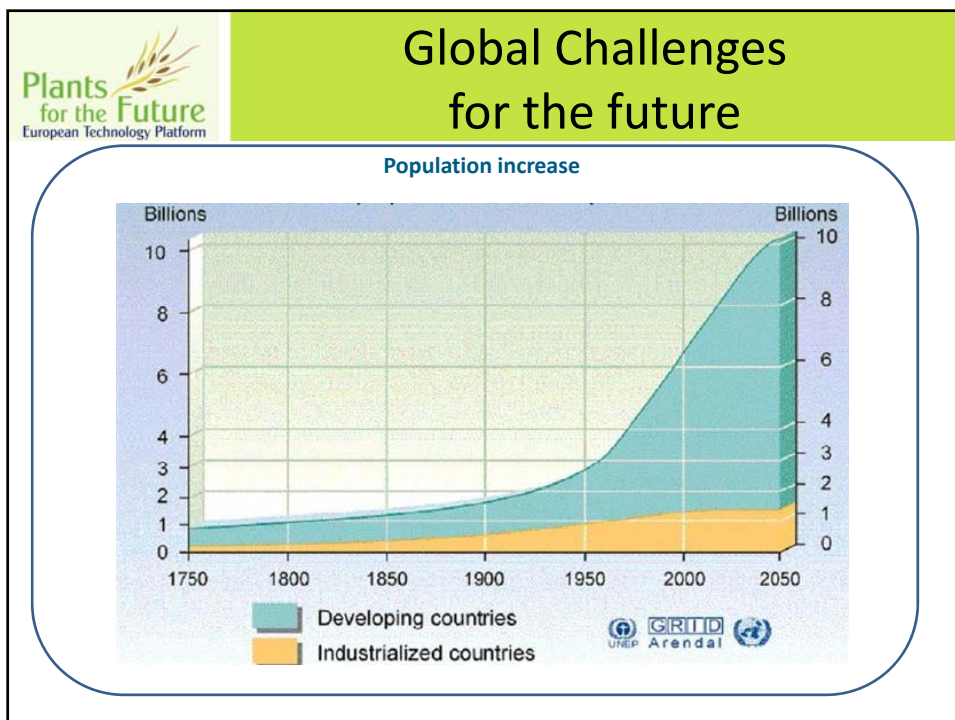
Plant breeding has enabled EU farmers to save nearly 55bn m³ of water since 2000.


That is the same as 22 million Olympic swimming pools.



Plant breeding is helping EU agriculture to meet the objectives of the EU Adaptation Strategy for climate change and helping us manage droughts as our climate changes.

<http://www.plantetp.org>

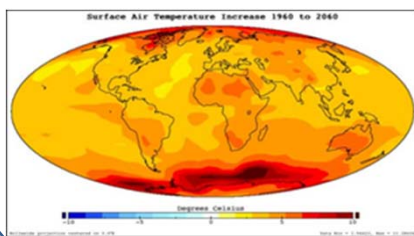





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Global Challenges for the future

Climate change



Agro-Biodiversity at risk

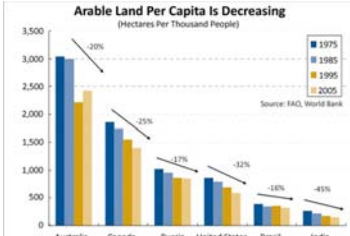


Feeding the future

We must mine the biodiversity in seed banks to help to overcome food shortages, urge Susan McCouch and colleagues.

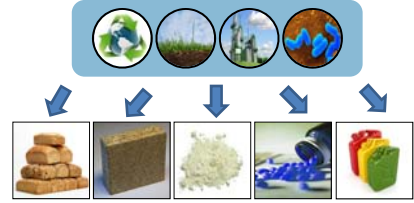
Limits of yield and land

Arable Land Per Capita Is Decreasing
(Hectares Per Thousand People)



Source: FAO, World Bank

Novel demands in quality and scale





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Urgent need for strategic action - Integrated strategy

- **Mapping**
needs & bottlenecks
- **Identification**
key actions & solutions
- **Implementation**
 - National, multinational
 - EU (e.g. H2020)
 - Global level (e.g. FAO)
- **Launch in January 2015**



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Innovation Action Plan to 2020

Innovation Action Plan:

- Link of market needs and idea generation
- Ease flow from idea to marketable product
- Develop innovation culture in Europe




How can innovation be boosted and research-to-market be shortened?

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Key Actions to build sustainable innovation leadership in European agriculture

Ensure innovation success

- Promote **critical scale in basic and applied research**
- Reduce risk of engaging in applied research
- **Enable use of all processes and technologies considered safe**
- Reduce cost and time-to-market

Increase innovation predictability

- Develop a transparent approach to IP management and access to plant genetic resources
- Develop public-private interfaces for enterprises



Improve innovation coordination

- Improve sustainability and global leadership through regulation, standards and procurement
- **Integrate costumers and farmers in innovation process**
- Communicate skill needs in entire sector
- Integrate and make data & knowledge accessible across value chain

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Research Action Plan to 2020

Research Action Plan:

- Improve competitiveness and critical scale of European plant research
- Balance knowledge- and application-driven plant research
- Work on priority research areas



How can future research contribute to innovative solutions for societal and market challenges ?



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Key actions to boost research for a sustainable bioeconomy

Sustainable plant production and yield


- Improve resource use efficiency and resource stewardship
- Enhance yield and yield stability for increase resilience in dynamic environments
- Improve plant health for resilient production

Quality of food, feed and non-food products

- Develop plants with improved composition for human and animal nutrition and health
- Improve composition and performance of plants for non-food products

Vibrant research environment

- Develop and implement horizontal actions
- Strengthen basic and applied research and research infrastructure to secure innovation





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Education Action Plan to 2020

Education Action Plan:

Provide short-, mid- and long-term

- Skill needs in plant R&D
- Career opportunities in plant sector

- How to secure people and workforce for the plant sector and bioeconomy?
- How to embed plant and agricultural sector in society?

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Key actions to educate and train the next generation

Three key actions to help ensuring an appropriately qualified and skilled future workforce:

Build a sustainable workforce for the plant sector


Clustering of plant sciences & agricultural disciplines and integrating with other disciplines to ensure the mobilisation of all relevant knowledge

Foster future of the plant sector through research, education and training

Public funding, public-private cooperation & greater engagement with agricultural production chain

Increase public appreciation of the plant sector

Outreach activities are key to raise essential public awareness of importance of plant sector and to increase its appreciation



From Action Plans to Action



Let's work together !

- Challenges are global & urgent
- Joint effort of all stakeholders needed