Report
Climate Change – The Role of Crop Plants

1st workshop of the series
"Sustainable Growth: Unlocking the Potential of Plants"
Renaissance Hotel, Brussels, 01.12.2015

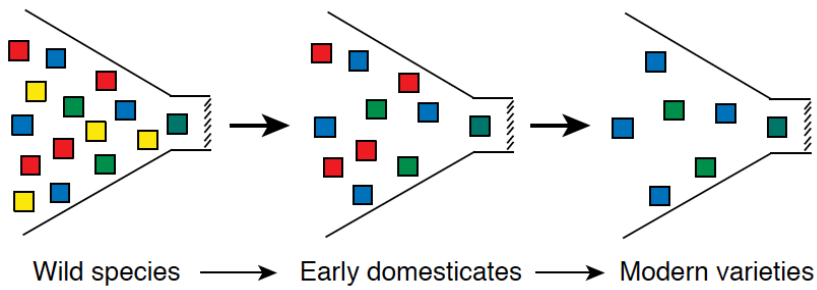
Climate change poses great challenges to our society. While many perspectives and solutions are being discussed at the 2015 United Nations Climate Change Conference (COP21) in Paris, it is clear that agriculture and crop plants have a major role to play. On 1 December 2015, the European Technology Platform 'Plants for the Future' (Plant ETP) in collaboration with Mr Jasenko Selimović and Mrs Anthea McIntyre, both Members of the European Parliament (EP), organised a workshop to discuss the contribution of plant research and plant breeding to address the challenges of climate change. This is the first event of the workshop series "*Sustainable growth: Unlocking the potential of plants*", which follows from a report by former MEP Marit Paulsen on *"Plant breeding: what options to increase quality and yields"* published last year. A total of 45 high-level representatives of the European Commission, the European Parliament, the Member States and experts from the stakeholder groups of the Plant ETP (industry, academia and farmers) came together and discussed examples and implementation to enable the necessary and vital contribution from the European plant sector to a society coping with climate change.

To respond to the challenges imposed by climate change, an inclusive approach is recommended that combines manifold practices and technologies for the best possible impact. Plant breeding can develop improved cultivars through many different techniques, ranging from simply selecting plants with desirable traits in farmers' fields to more complex classical or molecular techniques. The EP report from last year thus emphasized that "*EU should play a leading role in the development of sustainable plant breeding techniques and in promoting agricultural and plant breeding research and practice*". Europe therefore needs critical mass investments in the entire plant sector, including research, breeding and innovation.

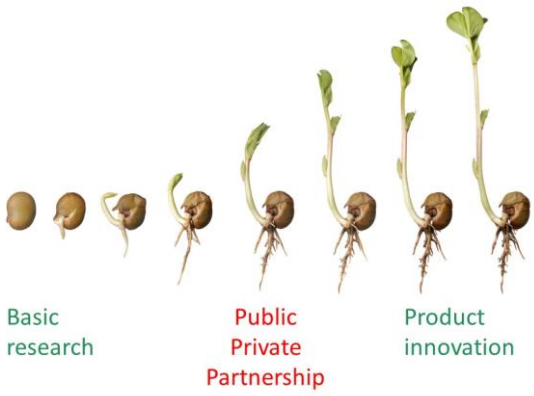
In her opening speech, **MEP Anthea McIntyre** underlined the challenge of climate change affecting Europe and the conditions for farming. She reminded that satisfying the world's demand for food is one of the biggest challenges ahead of us. Shrinking land availability, environmental loss and degradation, shortages of water, and the emergence of new pests and diseases, all as a consequence of climate change, are placing considerable pressure on our natural environment. "*Technological innovation is a vital part of the solution and I encourage Europe to become a world leader in agricultural technology, innovation and sustainability*", Mrs McIntyre emphasized, while adding that we need to develop a wide range of innovations and technologies that enable our farmers to meet our needs.

Jens Sundström from the Swedish University of Agricultural Sciences and representing the Chair of the ETP 'Plants for the Future', Ulrich Schurr, stressed the vital role that plant science and breeding can play in mitigating climate change and adapting crops to its effects. He explained that a research group in Sweden has recently demonstrated a modified rice with 90 percent less methane emission. "*Modified agricultural management practices may be the most obvious ways to reduce greenhouse gases emissions*", Dr. Sundström pointed out, "*but improved crops with higher resource use efficiency can also contribute*". He finished by drawing the attention to the Plant ETP Action Plans on Innovation, Research, and Education which have been published earlier this year and propose an integrated strategy to build industrial leadership, boost research and educate the next generation.

Wilhelm Gruissem from the Swiss Federal Institute of Technology alerted to the worrying trend of declining global crop yield increases and decreasing genetic diversity. He reminded that only ten staple crops provide 95 percent of the calories consumed worldwide. However, these crops are vulnerable to rapidly changing climatic conditions and their production contributes to greenhouse gas emissions. To mitigate these problems, radical changes in breeding programmes and agricultural practices are required. "*We need continuous investments in public research for breeding new and efficient crop varieties that have high and stable yield as well as improved nutritional qualities for the benefit of future generations*", Prof. Gruissem declared. To make agriculture sustainable, we must also understand and mobilize the genetic potential of seed banks around the world for breeding climate-smart crops. In the discussion that followed, Prof Gruissem argued strongly for better consumer education and broader acceptance of modern breeding methods. He urged Europe to support innovative research, efficient breeding and advanced technologies, including new breeding techniques and gene technology.



"*What if we stop breeding in 2016, 150 years after Gregor Mendel published his laws?*" asked **Thijs Simons**, Senior Advisor at Plantum in the Netherlands. Yields will be lower as climate change will impose stress on agricultural production through an increased prevalence of drought, flooding and soil salinity. Consequently, the available crop varieties will not respond anymore to the demands of the production chain, the consumers and the society as a whole. Mr. Simons agreed that the food distribution can be maximized, the cropping systems be improved and recycling be more efficient, but he reminded that in the end we need to improve the basics of plant production and breeding companies already invest about 10-25 percent of their annual turnover in R&D. He made it clear that breeding companies are also dependent on public investments in basic research. "*Basic research is the seed. Neglecting it is like trying to harvest without sowing*". In the discussion that followed, all stakeholders ranging from academia, industry and farmers agreed on a need to "*get our act together*". Otherwise, the EU will end up losing twice by exporting "the brains" and buying back the products.

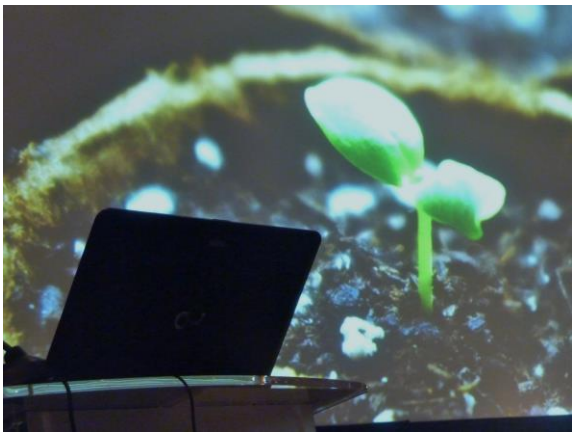


Luc Peeters, Chair of the Phytosanitary questions Working Party at Copa-Cogeca, commented that in the context of increasing variability of climatic and weather conditions, EU farmers face more and more pressure from new pests and diseases. This pressure jeopardizes the availability of agricultural crops to limit the influence of climate change. He said that both modelling and actual data provide several examples of plant diseases that may spread as well as become more severe with a future warmer climate, including fungal pathogens such as powdery mildew in cereals and grape, stem canker in oilseed rape, and the devastating Xylella in olive trees. International trade growing exponentially, pests and diseases are also travelling around the world. As a consequence, examples such as *Tuta Absoluta*, pest coming from Latin America to Europe, generates dramatic loss of export markets to US. To solve these problems, Mr. Peeters called for Europe-wide legislation on crop protection. EU farmers and agri-cooperatives need a proper legislative framework for plant health to prevent the appearance and spread of diseases in Europe as well as enough tools to treat their crops against diseases and pests. He underlined that new varieties are also needed in order to ensure that crops can grow under more extreme weather conditions. "*Remember always who is putting the food on your plate*", Mr Peeters reminded the participants as he encouraged to include the farming sector as advisors in the Standing Committee on Agricultural Research (SCAR).

Dr Sundström summed up the talks and discussions and concluded that we need more effort to bridge the "*Valley of Death*" between research and innovation – a challenge for which Plant ETP is well designed to tackle. He acknowledged Mr Peeter's final statement and judging from the many comments in the discussions we may see even further increasing bi- and multilateral collaborations between the Plant ETP stakeholder groups. Many of the discussions also made clear that the proposed inclusive approach is embraced, looking not only at "smart" crops but also "smart" farming and food systems.

In his concluding speech, **MEP Jasenko Selimović** emphasized the progress of plant breeding in the last 15 years – 15 percent production increase, 150 million less people suffering from undernutrition, and reducing the equivalent of Germany's traffic emissions of greenhouse gases in one year. To be able to combat climate change, we need a strong and competitive European research on plant breeding as well as long-term research financing. Mr. Selimović commented that it is very disappointing to see how business after business in the plant breeding sector moves their research about future plant breeding techniques to other parts of the world, especially the US. "*This makes it difficult for Europe to compete globally and to preserve the European genetic and cultural diversity*", he then pointed out. "*We thus need to stop playing games and instead create the conditions for the companies to stay and flourish*". He concluded that Europe also has a responsibility to make correct decisions as many other countries in the world may follow the European example.

We thank the co-hosts, the speakers and all the participants for their contributions which made this event a great success. We now look forward to next event in the workshop series "*Sustainable growth: Unlocking the potential of plants*", scheduled for the end of May 2016.



For more information about this event and the entire series, please contact the office of Plant ETP: secretariat@plantetp.org.

About ETP Plants for the Future - www.plantetp.org

The European Technology Platform 'Plants for the Future' (Plant ETP) is a stakeholder forum for the plant sector that brings together members from industry, academia and the farming community. The industrial sector is represented by the European Seed Association (ESA) which represents itself the totality of the European seed industry (more than 7000 companies, 90% of which are SMEs) active in research, breeding, production and seed marketing. A certain number of individual companies are also direct members of Plant ETP such as BayerCropScience, Keygene, Limagrain, KWS, Céréales-Vallée, SESVanderHave and two food processing companies Nestlé and Südzucker. The academic sector is represented by the European Plant Science Organisation (EPSO) with over 220 research institutes and universities from 31 countries as members; together they represent over 28.000 plant researchers working in plant science across disciplines. The farming sector is represented by Copa-Cogeca, the European organisation for farmers and their cooperatives. Copa represents over 13 million farmers whilst Cogeca represents the interests of 38,000 agricultural cooperatives.