



Forum for Plant Innovation:

Petersberg Declaration **on the Future of Plant** **Research**



Petersberg Declaration

on the Future of Plant Research

PREAMBLE:

Plants are the basis of all life and the key to many global challenges. Sufficient food supplies for a growing world population must be ensured in times of increasing food demand and changing nutritional habits. A sustainable industrial production needs renewable energy and renewable raw materials as basic commodities for. These objectives must continue to be pursued despite the looming consequences of climate change. Most certainly, agricultural production needs to be sustainable and ecologically viable to safeguard the basis of life for future generations.

In recent years, life sciences have contributed considerably to a more efficient utilization of the potential of plants and in the course of development have progressed from a mainly descriptive to a predicting discipline. This is also of utmost importance to our society as it means that plants have become the pillar of support for the Knowledge-Based Bio-Economy (KBBE). The resulting technological jump will trigger off innovation in all industries and sciences.

The high-tech strategy of the German Federal government needs to be advanced vigorously through strategic planning of research programmes.

DECLARATIONS:

1. Germany plays a leading role in international plant sciences. In order to maintain and improve this position, development in **plant science** needs to be further **intensified at all levels**, also including the interdisciplinary co-operations with related fields of research.
2. Genomic research provides the essential scientific basis for our knowledge of the genetic and biological diversity of all species. It is vital to advance research in this field to allow optimal utilization of the **genetic diversity** of our crops for targeted improvements through plant breeding (de-novo and resequencing; comprehensive molecular profile analyses).
3. New concepts and technologies are needed to enable a systematic and precise analysis of **plant structures and functions** and their interrelation with a dynamically changing **environment** (phenotyping). Such analysis needs to be carried out at all relevant levels, i. e. from the molecular state to field populations, with a focus on well-defined biological questions. This will require developing and integrating interdisciplinary scientific expertise.

4. Genomic research and phenotyping generate enormous amounts of data. In order to ensure sustained accessibility and usability of these data, applied and user-friendly **bio and breeding informatics** as a new engineering discipline need to be built up. Moreover, there is a need for new and broad based **bio-statistic methods and procedures** if these data are to be efficiently put to use for fundamental and applied research.
5. **Systems biology** (including modelling) will draw on the results of genomic research, of phenotyping and of integrative bio and breeding informatics in order to analyse them in the light of defined biological questions. This will enhance our understanding of plants as biological system and it will be the basis for targeted, knowledge-based and **predictive plant breeding**.
6. Development of these new technology fields necessitates excellent **training** of junior scientists. Experts also need to receive **interdisciplinary** training.
7. The scientific community commits itself to generating new findings and to contributing them to **co-operations** with the industry to assist in their **transfer and practical application**.
8. The industry commits itself to strengthening the principles of “public-private partnership” and to providing financial resources and contributions in kind to co-operations with the scientific community. The industry will develop new and **innovative products** and thereby generate **added value** for society as a whole.
9. **Seamless knowledge transfer chains** extending to practical application need to be established and the necessary structures optimized especially with respect to interdisciplinary requirements. This in turn will open up new added value chains
10. A **reliable framework – including legislation** – needs to be established for both science and industry to ensure that plant research potentials can be fully leveraged. Adequate and sufficiently long-term **public spending** on plant research is crucial.
11. The development of **KBBE** will require interaction between plant research and all industrial sectors using plants for processing or as raw material. Knowledge-based bio-economy will make agricultural industries more competitive on global markets, ensure a sustainable supply of raw-materials for the industry and safeguard the **innovative power** of Germany.
12. The German plant research and plant breeding will further enhance **international network** building. It will also take on its **global responsibility** to ensure that this cutting-edge technology will also find its practical application both in developing countries and in newly industrialised countries.

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