



Biosafety research on GM plants

A major task in biosafety research on GM plants is to give scientific answers to questions regarding the safety aspects of interactions between plants and target or non-target organisms as well as the environment.

Biosafety research improves the knowledge of safety relevant interrelations and contributes to sciences-based insight necessary for safety assessment and management. It helps to up-date the knowledge base according to the scientific status quo and aims to identify and reduce potential risks for the environment. To attain these aims the Institute performs scientific experiments in the laboratory and in the greenhouse, and also in the field whenever required.

Safety and sustainability of new plant breeding technologies

In the last few years various molecular techniques have been developed and advanced which allow more precise and faster breeding of new plant varieties. Our research is intended to optimise the assessment of such plants with regard to their environmental friendliness, their stability, and their potential risks.



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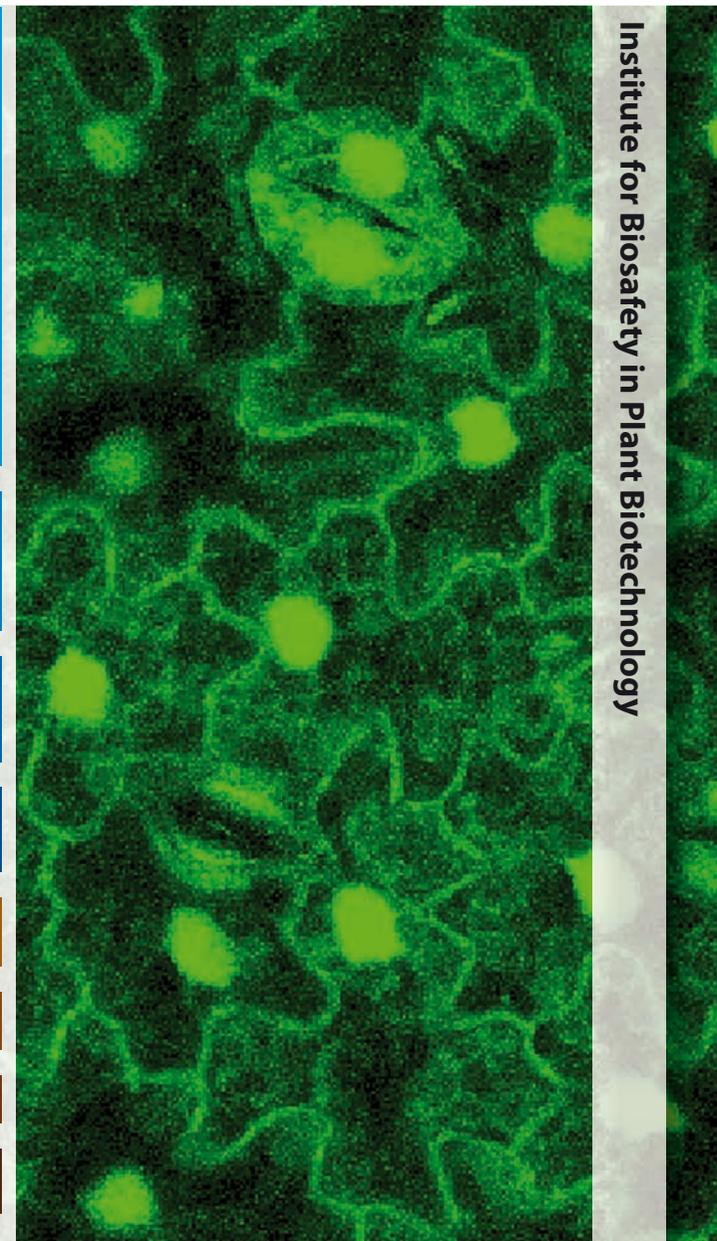
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Institute for Biosafety in Plant Biotechnology

The activities of the Institute focus on the assessment of, and research on new biotechnological methods applied to plants, including gene technology. These activities are derived from the German Gene Technology Act, the Plant Protection Act, other legal regulations, and from the research schedule issued by the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV). They especially concentrate on risk assessment and monitoring of genetically modified organisms (GMO) and on coexistence of cultivation systems with and without GM plants.

Activities and research areas

Scientific opinions on applications for field release and placing on the market of GMO

According to the German Gene Technology Act the release of GMO and the placing on the market of products containing, or consisting of GMO are subject to approval.

Within these approval procedures, the Institute prepares the scientific opinions of the JKI. These are integrated into the decisions taken by the competent federal authority (Federal Office of Consumer Protection and Food Safety, BVL) in agreement with additional federal agencies. Prior to approving a field release the federal state agency in charge gives its opinion, and the public must be involved.

In the same way the JKI is involved in the scientific assessment procedure for the placing on the market of food and feed for which the European Food Safety Authority (EFSA) is in charge.

Assessing the risks of new traits of GM plants

Gene technological methods allow for the transfer of genes, as isolated nucleic acid (DNA) segments, *in vitro* among various organisms in an asexual manner. This means that animals, plants, microorganisms and viruses can be equipped with characteristics that did not evolve under these biological and ecological conditions. The expert assessment of these characteristics is based on scientific principles and criteria laid down in an assessment scheme. The scientific expertise of the Institute, resulting from its own research activities as well as from national and international research results, gives assistance in preparing the opinions on field releases and placing on the market of GM plants.

Monitoring the environmental effects of GM plants in the agro-ecosystem during cultivation

The EU Directive 2001/18/EC demands that during the cultivation of GM plants their possible effects on the environment and on human beings are monitored. This requirement was converted into German law by the Gene Technology Act.

The monitoring system is intended as an early warning system to detect unexpected effects resulting from the cultivation of GM plants. It shall clarify uncertainties in the risk assessment which may not have been definitely appraised by experiments limited in time and space. Possible negative effects which may occur



either directly or indirectly, e. g. by interactions of the GM plants with beneficial insects and pests on the cultivated area or on neighbouring fields and biotopes, have to be recorded.

These general objectives have to be integrated into a monitoring concept specific for a certain crop plant with one or several transgenes. In addition to the development of new investigation methods, established control systems can be included in a GMO monitoring scheme. The aim is to establish efficient and practicable structures for a routine monitoring as elements of the risk management of GM plants.

Coexistence of agricultural production systems

The term 'coexistence' defines the side-by-side use of conventional or organic agricultural methods and agriculture applying genetically modified plants.

Strategies are designed and evaluated, allowing a compatible side-by-side application of agricultural production systems with and without gene technological methods. Thanks to the expertise gathered in many research projects and documented in various publications, members of the JKI take an active part in national, international and European committees engaged in the problems linked to coexistence on the scientific and regulatory level.

