



Eidgenössische Forschungsanstalt für Agrarökologie und Landbau  
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## **Bio-Safety Research at the Swiss Federal Research Station for Agroecology and Agriculture FAL Zürich-Reckenholz**

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In 2001, 52.6 million hectares of genetically modified (GM) crops were grown commercially worldwide. The assessment of environmental impacts of GM crops is a fundamental part of the regulatory process undertaken before GM crops can be grown under field conditions experimentally or commercially. As a consequence, it has been the subject of extensive international research over the last ten years. In Switzerland, research on potential impact of GM crops on the environment was initiated in 1993 by the Priority Programme in Biotechnology of the Swiss National Science Foundation. At FAL Reckenholz, we started a research programme on environmental effects of GM crops in 1995 with a focus on Bt-maize and non-target arthropods. The questions about potential impact of GM crops on the environment relate to: a) out-crossing of novel traits to wild relatives and to non-GM crops, b) gene transfer from plants to micro-organisms living in the soil, c) direct and indirect effects on wildlife and other non-target organisms and d) the fate of GM crop products in soil and water. FAL Reckenholz has focused its biosafety research of GM crops on non-target arthropods (insects and mites) and micro-organisms in the soil because both topics are closely linked to sustainability of agro-ecosystems.

Biological control of insect and mite pests have now been practised for over one hundred years. It is anticipated that the use of biological control agents (BCA) will become more important in the future when sustainable agricultural production systems will be developed worldwide and a number of commonly used pesticides be banned. Although biological control is, in general, considered cost effective and environmentally friendly, debates about impacts on biodiversity have initiated international research programmes on non-target effects of BCAs and more stringent regulation of import, export and use of such organisms as e.g. the FAO Code of Conduct on Import and Release of BCAs and the OECD Guidelines on Regulation of BCAs. Since FAL Reckenholz has a long tradition in developing biological control in arable crops and grassland, we have been confronted to evaluating potential impacts of one micro- and one macro-organism used in biological control of insect pests in Switzerland.

Biosafety research at FAL Reckenholz is targeting at ecological risk assessment of GM crops or products derived thereof and BCAs.

Our main questions are: 1. How are non-target organisms and ecosystems affected by the release of GM plants and BCAs? 2. How can environmental risks be reduced or prevented?

Our objectives are: 1. To develop methods for assessing potential effects on non-target organisms and ecosystem processes. 2. To measure effects and analyse ecological risks. 3. To provide information to authorities and to propose guidelines for ecological risk assessments.