Wheat Consortium

Universität Zürich ETH Zürich

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Forschungsanstalt Agroscope Changins-Wädenswil ACW

Forschungsanstalt Agroscope Reckenholz-Tänikon ART

Benefits and Risks of Genetically Modified Wheat with Improved Powdery Mildew Resistance

Structure and partners of the Wheat Consortium:

Head: **Beat Keller** (University of Zurich)

Scientific Coordination
Franz Bigler, Andrea Foetzki (Agroscope ART)

Communication
Wilhelm Gruissem (ETH Zurich), **Petra Bättig**

Field Logistics
Coordination Reckenholz:
Michael Winzeler, Carolin Luginbühl (Agroscope ART)
Coordination Pully:
Fabio Mascher (Agroscope ACW)

Single projects of the Wheat Consortium

Impact of environments on performance of GM wheat

Beat Keller (University of Zurich)
Analysis of *Pm3* resistance gene function in transgenic wheat

Christof Sautter, Fabio Mascher, Wilhelm Gruissem
(ETH Zurich, Agroscope ACW)
Powdery mildew resistance, field performance and molecular analysis of GM wheat expressing barley chitinase and glucanase

Impact of GM wheat on the environment (Biosafety research)

Thomas Boller (University of Basel)
Interplay of arbuscular mycorrhizal fungi with transgenic and non-transgenic wheat

François Felber, Roberto Guadagnuolo (University of Neuchâtel)
Genetic and ecological consequences of introgression of transgenic wheat in a wild relative, *Aegilops cylindrica*: an open field experiment

Monika Maurhofer, Christoph Keel (ETH Zurich, University of Lausanne)
Impact of genetically modified wheat on soil fertility sustained by plant-beneficial bacteria

Wolfgang Nentwig (University of Bern)
Effects of GM wheat cultivation on the decomposition of GM biomass by soil arthropods and annelids

Jörg Romeis, Christine Müller (Agroscope ART, University of Zurich)
Transgenic wheat and non-target impacts on insect herbivores and food webs

Berhard Schmid (University of Zurich)
Influence of abiotic and biotic environment on the ecological performance of GM and non-GM wheat

Objectives

1) Implementation of scientifically well-designed field trials for environmental benefit and risk analysis of GM spring wheat lines
2) Study of the regulatory processes and legal aspects of field trials with GM plants by other projects in NRP59
3) Contribution to an intensive, science-based discussion with the interested public

Field Experiments 2008-2010

Agroscope ART, Zurich-Reckenholz

- **Macro-plot experiments**: Investigation of ecological performance and of genetic, morphological and agronomic traits including yield and impact on non-target organisms
- **Micro-plot experiments**: Determination of the effect of the transgenes on the resistance reaction against powdery mildew and of the ecological consequences of the introgression of transgenes into the wild grass *Aegilops cylindrica*
- **Demonstration plots**: Demonstration of macro- and micro-plots to stakeholders and the public

Agroscope ACW, Pully

- **Yield-plot experiments**: Comparison of the agronomic performances, the morphology, phenology and physiology of GM wheat lines with the original and control varieties
- **Disease resistance experiment**: Testing of the resistance potential of the wheat genotypes against the most important fungal diseases in Switzerland