

Basic Principles for Protection Targets in Handling GM Plants

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Abstract

Regulations exist for the purpose of protecting human beings, animals and the environment against harmful effects or nuisances that might result from the impacts of genetically modified plants (GM plants). The legislator has partly concretized the terms "harmful" and "nuisance" on a qualitative level but has them left quantitatively undefined.

This project aims to establish basic principles for the specification of protection targets (protection level) when genetically modified plants are released into the environment. The basic principles are to be drawn up in three ways: (1) enhancement of the set of damage indicators that have been set up by the predecessor project Ammann et al. 2005 (in terms of their content, their differentiation, their meaning and their relation to law), (2) a Delphi survey in order to further enhance the valuation of the indicators by experts and to enhance the scientific and socio-political consensus and (3) integration of monetisation studies to receive quantifications of the used damage indicators that can be discussed in context with the valuation by the expert panel. Therewith the project compiles qualitative and quantitative criteria to provide a basis for tangible protection targets (protection level) as well as to provide a basis for further discussions of harmful effects and nuisances due to the impact of GM plants.

Keywords: Damage; Harmful effects; Nuisances; Indicators; Protection target; Protection level; Delphi method; Monetisation; Enforcement of law; Decision-making processes

Introduction

In Switzerland various regulations exist for the purpose of protecting human beings, animals and the environment against harmful effects or nuisances that might result from the impacts of genetically modified plants (GM plants). This raises questions as to the meaning of "harmful effects" and "nuisances".



20 GM oilseed rape volunteer plants in a ruderal site: a damage?



Outcrossing of transgenes into a wild relative on 100 square meters: a damage?



CHF 50,000.- of economic loss for an organic farmer due to pollen transfer: a damage?



1,000 people that feel insecure because of GM plants near their home: a nuisance?

Also the target parameters in NRP59 projects addressed by the modules (risk assessment, perception, political decisions, communication) require a point of reference. This point of reference should be a politically specified, scientifically sound and societally accepted protection level for the handling of GM plants.

The main aim of this project is to establish basic principles for the specification of protection targets (protection level) when genetically modified plants are released into the environment. In detail, the project aims to (a) define a set of adequate damage indicators, (b) establish sound quantifications of the indicators (band widths), and (c) increase the degree of consensus by national experts about benefits and risks of the deliberate release of GM plants.

Legalistic Approach

In selecting the objects of protection and establishing a set of indicators we will rely as close as possible on formulations found in biosafety legislation, i.e. the conversion of selected objects of protection into concrete protection targets will be achieved systematically and closely connected to the regulatory framework. The advantage of this legalistic approach is that the assessment of the harmful situations relates directly and consistently to the existing legal requirements rather than to extraneous objects of protection or indicators that are not recognised in the legislation.

Cooperation and Networking

National cooperation and networking

- AWEL Zurich, Section Biosafety SBS
- Amt für Umwelt, Canton Solothurn
- Federal Office for the Environment FOEN (BAFU), Legal Service 1, Legal Division
- Cooperation with NFP59 projects welcome

International cooperation and networking

- Decision Science Research Institute, Inc., Oregon, Prof. Paul Slovic,
- University of Tübingen, Centre for Ethics in the Sciences and Humanities (IZEW), Dr. T. Potthast
- TU Berlin, Institute for Ecology, Section Ecosystem Science / Plant Ecology, Prof. I. Kowarik

Methods

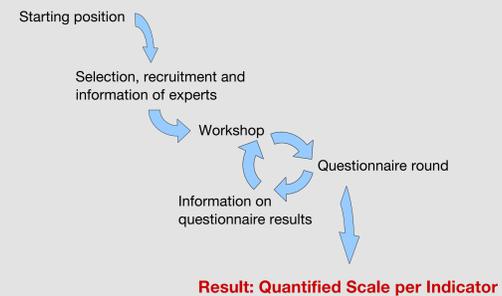
The basic principles are to be drawn up in several steps:

Protection Objects, Indicators, Explanatory Documents

Enhancement of the set of damage indicators that have been set up by the predecessor project Ammann et al. 2005 (in terms of their content, their differentiation, their meaning and their relation to law).

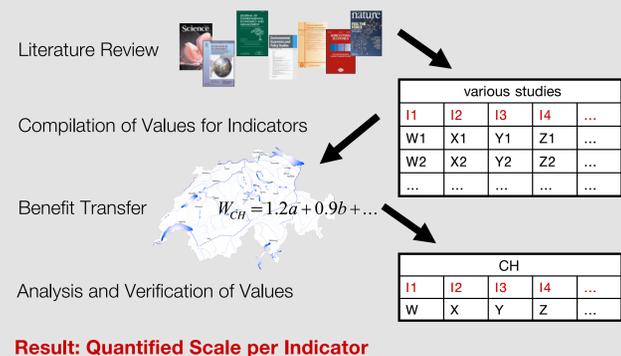
Wideband Delphi Survey

A Delphi survey in order to further enhance the valuation of the indicators by experts and to enhance the scientific and socio-political consensus.



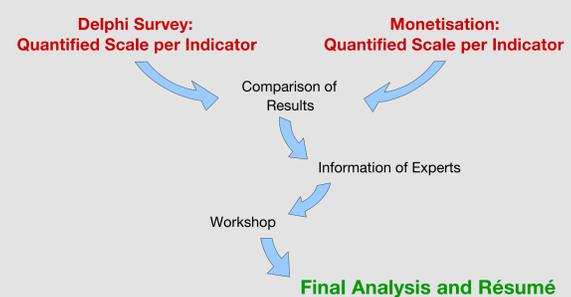
Monetisation and Benefit Transfer

Integration of monetisation studies by means of benefit transfer to receive quantifications of the used damage indicators that can be discussed in context with the valuation by the expert panel.



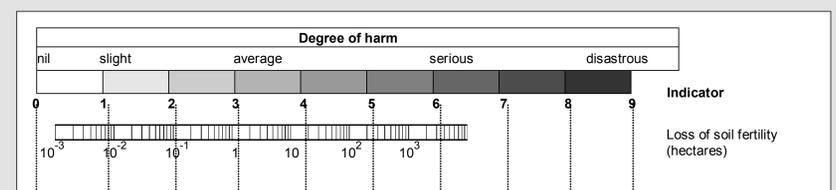
Comparison and Conclusions

Compilation of qualitative and quantitative criteria to provide a basis for tangible protection targets (protection level) as well as to provide a basis for further discussions of harmful effects and nuisances due to the impact of GM plants on the environment.



Expected Results and Significance

The project amplifies the establishment of basic principles to approximate protection target standards. Existing data will be improved and amended with respect to completeness, significance, consensus and acceptance. Thus, the project provides a tightened basis for the discussion of harmful effects and nuisances due to the impact of GM plants on the environment.



For the first time, the protection targets will be expressed in concrete form on the basis of a dual rating scale (expert-based and based on economic valuations). This will then provide a point of reference for discussions of the target parameters also within the NRP 59, making it possible for the results to be assessed in a manner that permits more objective discussions, more realistic valuations and plausible decisions.

The results will help to achieve an improved legal certainty and equality before the law and will boost a more factual discussion among stakeholders. Additionally, the results have a high benefit for the execution of law by the cantonal authorities.

Particular benefit is obtained through the implementation of GM plant monitoring. If a protection-based GM organisms (GMO) monitoring concept is ready for implementation, it will be necessary to coordinate protection targets, indicators and recording methods with the legal foundations. The current project provides substantiated basic principles for the needed protection targets for GM plant monitoring.