



ISBR

*International Society
for Biosafety Research*

9th ISBGMO

Session III

**Identifying and Defining Hazards
and Potential Consequences, Part II**

Jeremy Sweet

3 Papers

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- **Predictive modeling of the Consequences of hybridisation based on Fitness Estimates: the cases for lettuce and oilseed rape : Danny Hoofman**
 - **On Weediness and Invasiveness of Transgenic Plants: Evaluating Screening Models and their predictions: Peter Caley.**
 - **Assessing the potential Invasiveness of pest resistant transgenic plants: Rosie Hails**

Relevance to Risk Assessment

Understanding which life cycle parameters will most increase fitness

Fitness >>> invasiveness ?

Using these parameters as primary inputs into models to estimate changes in fitness in recipient

Develop plant (generic) and ecosystem models (eg Matrix) for predicting changes

Informs probability of an effect and consequence

Assumptions

- General knowledge of life cycle of conventional plants and factors affecting their behaviour and fitness are used extensively= Familiarity
- That GM plant only differs due to the insertion of the GM trait (s)
- Assume stochasticity in studied environments (demographic and environmental)

Useful for predicting likelihoods for:

- Impacts on populations
- Transgene frequency
- Impacts on specific ecosystems
- Cumulative effects,
- Long term effects,
- Large scale/landscape effects

ISBR Next Steps in Research

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More data :

- **More fundamental ecology**
- **Identify critical points (elasticity analysis)**
- **Testing and Verification of models**
- **Studying environmental sensitivity**
- **Improve “accuracy” of models**

- **Achieving End Point :**
 - “ **is GM plant significantly more fit or invasive ?”**
 - “ **will GM plant have an adverse environmental impact (in one or more ecosystems) ?“**

Improve probability that prediction of safety/harm is correct