

SYNOPSIS-WEB+, a farmer's decision support tool on sustainable mitigation of environmental risk from pesticide applications

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OptAKlim



OptAKlim

Advancement of and optimising agricultural cropping strategies and measures for climate change adaptation and mitigation of greenhouse gas (GHG) emissions

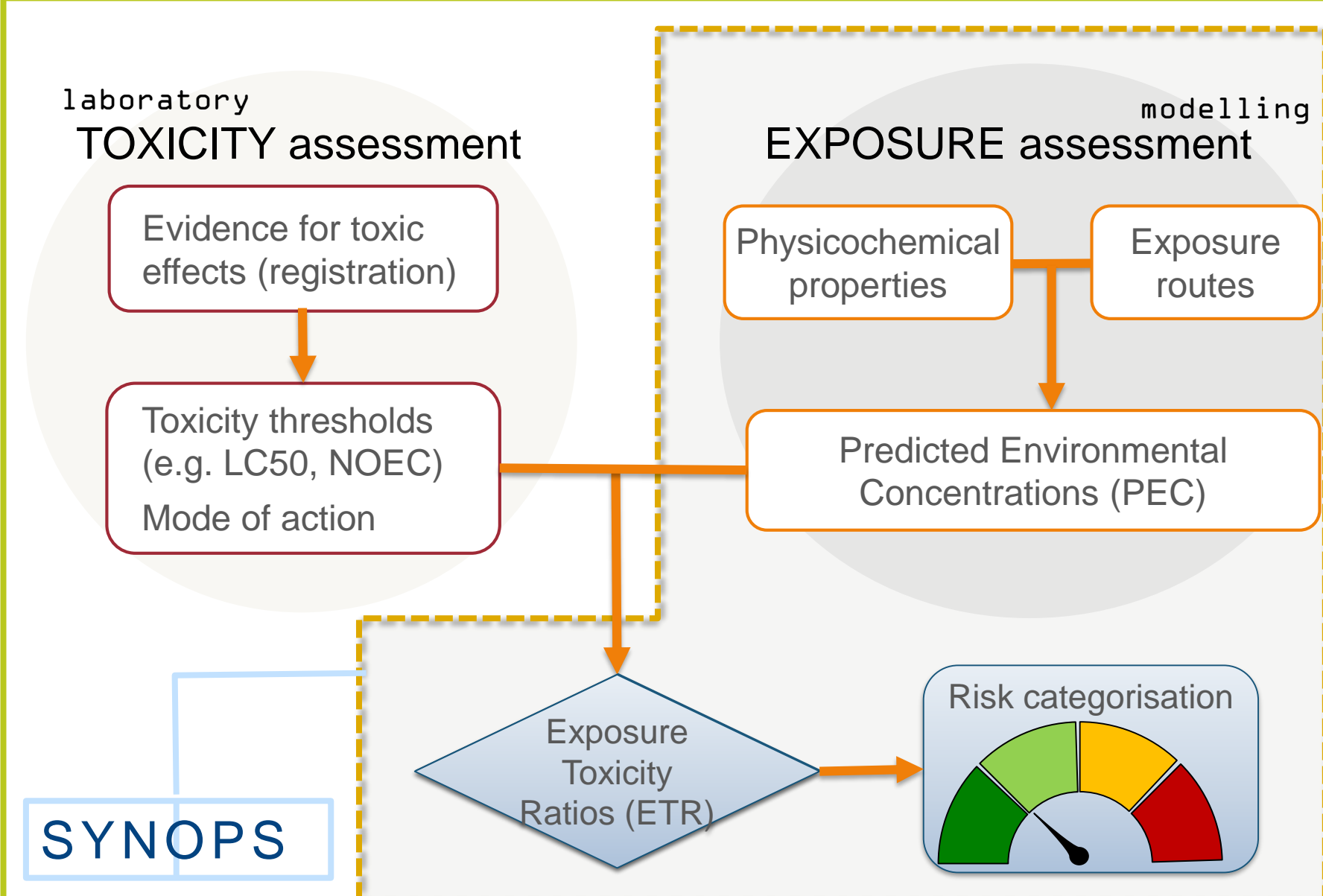
Project objectives:

- Study interactions between climate change and plant protection, agricultural productivity and changes within the cropping structure.
- Analyse the trade-off's between climate change adaptation/mitigation and environmental and economic targets.
- Through active participation of the stakeholders.

Tasks concerning SYNOPSIS-WEB+:

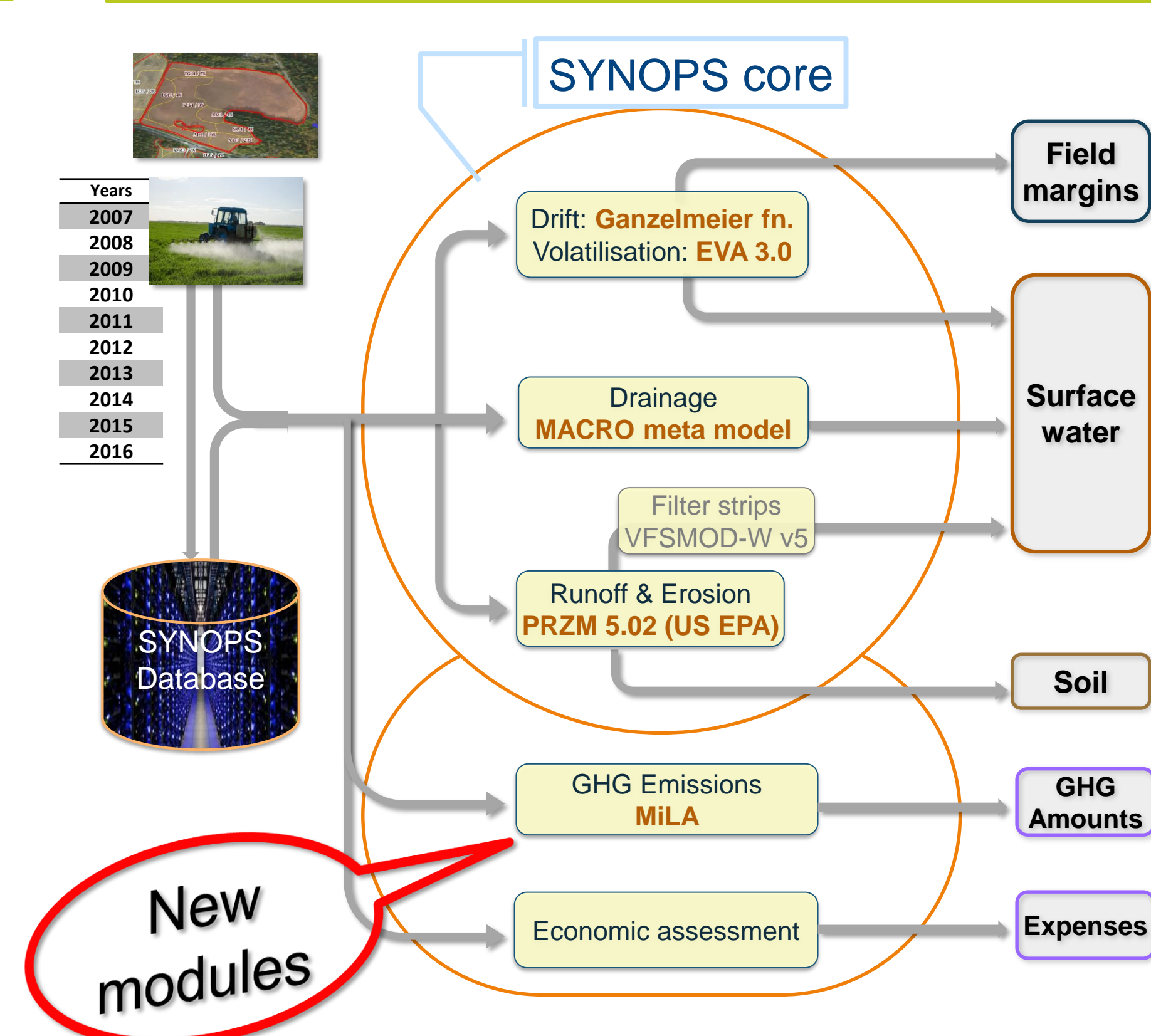
- Development of SYNOPSIS-WEB+, an environmental risk assessment tool with field-specific data, such as soil, water, weather, crop and chemicals applied.
- Assessment of environmental risk, GHG emissions and a cost-benefit analysis in the context of mitigating the effects of climate change.

SYNOPSIS in risk assessment



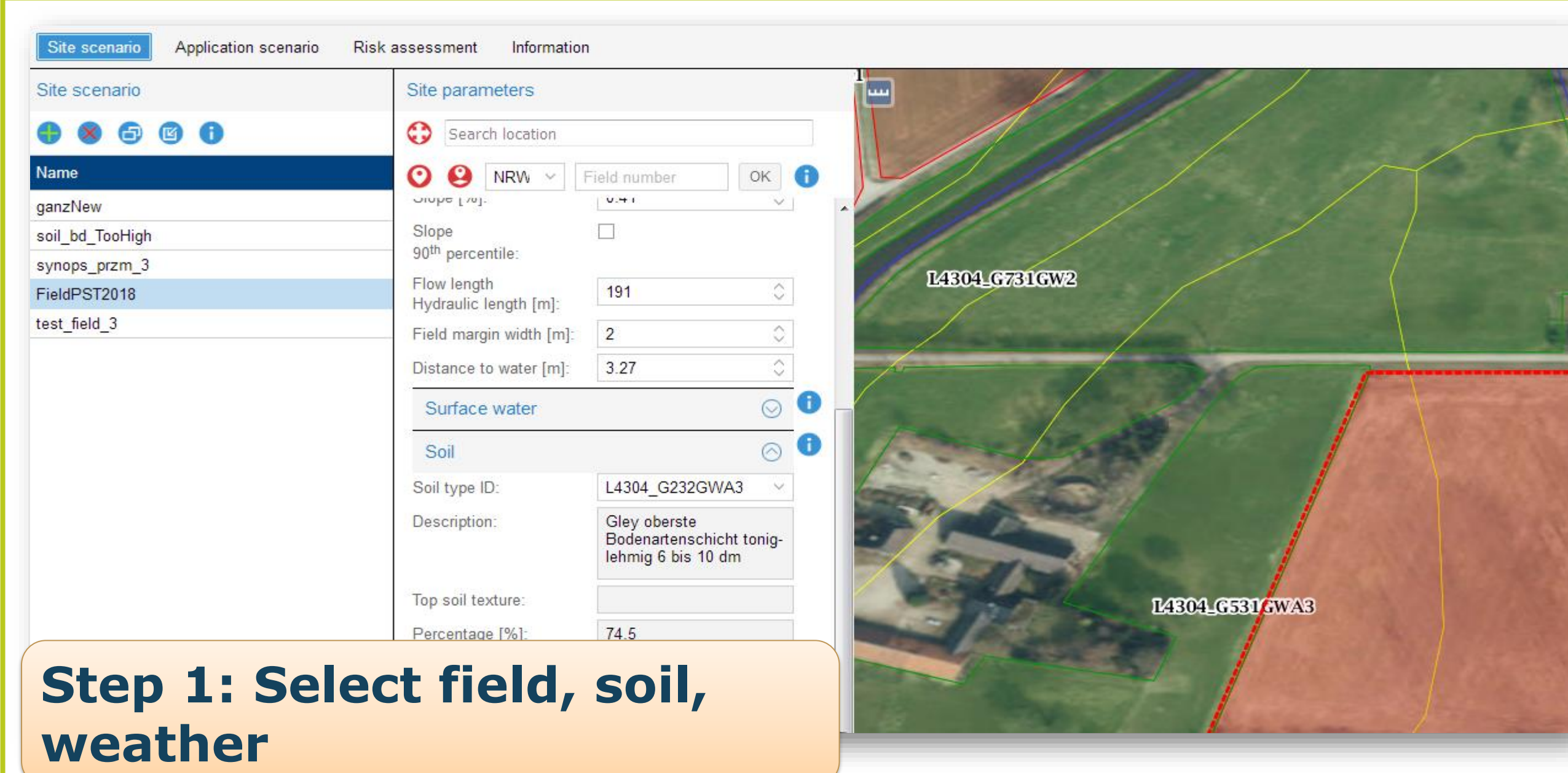
- The exposure pathways are modelled after those used in the EU Pesticide Regulation procedure.
- Environmental risk is presented as colour-coded categories for easy communication of results.

SYNOPSIS-WEB schema

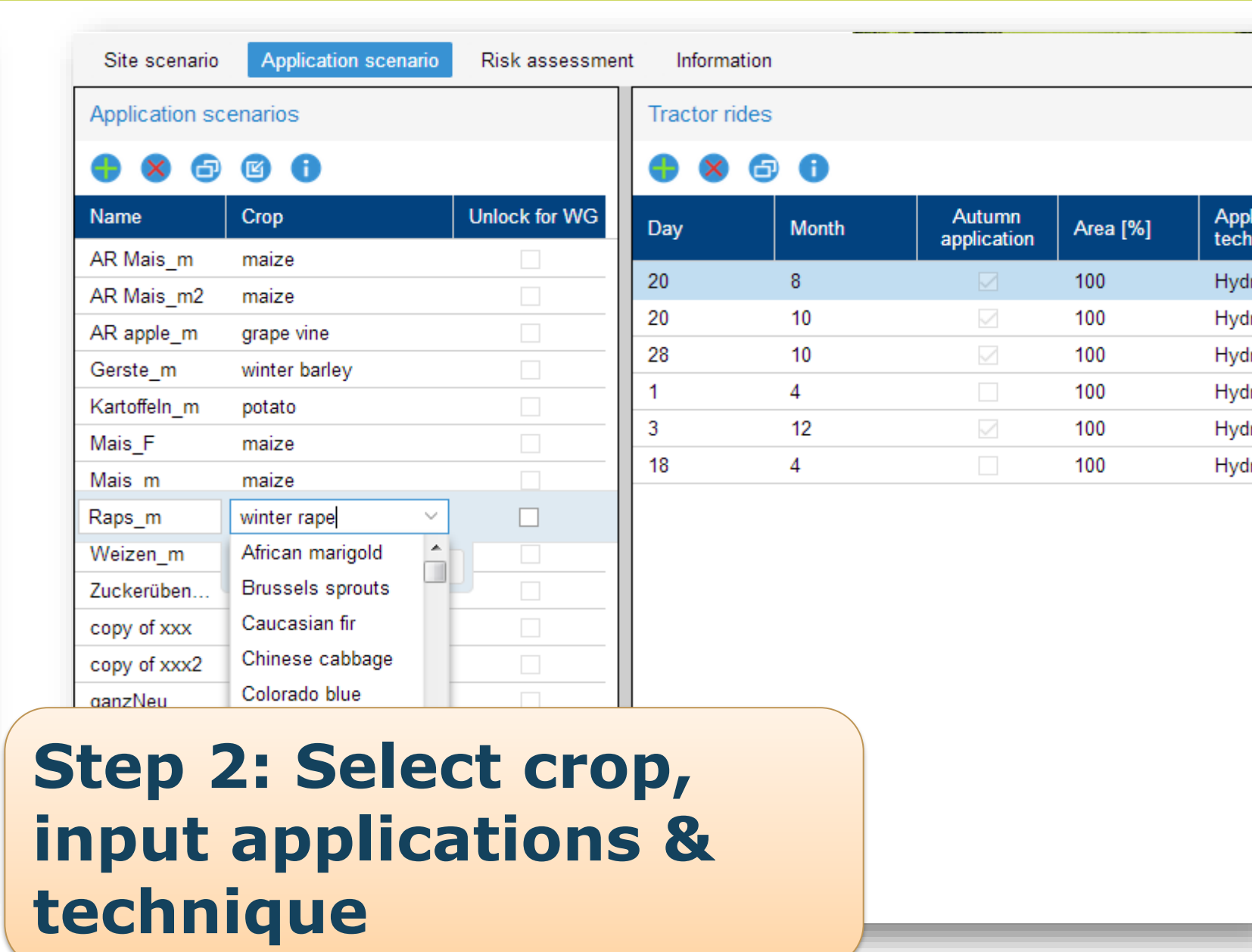


- Parameters for the user-defined site and application scenarios are extracted from the SYNOPSIS-database and passed onto SYNOPSIS core.
- Models in SYNOPSIS core calculate the risk to the different environmental compartments.
- New models for GHG Emissions and economic assessment implemented in the project OptAKlim.

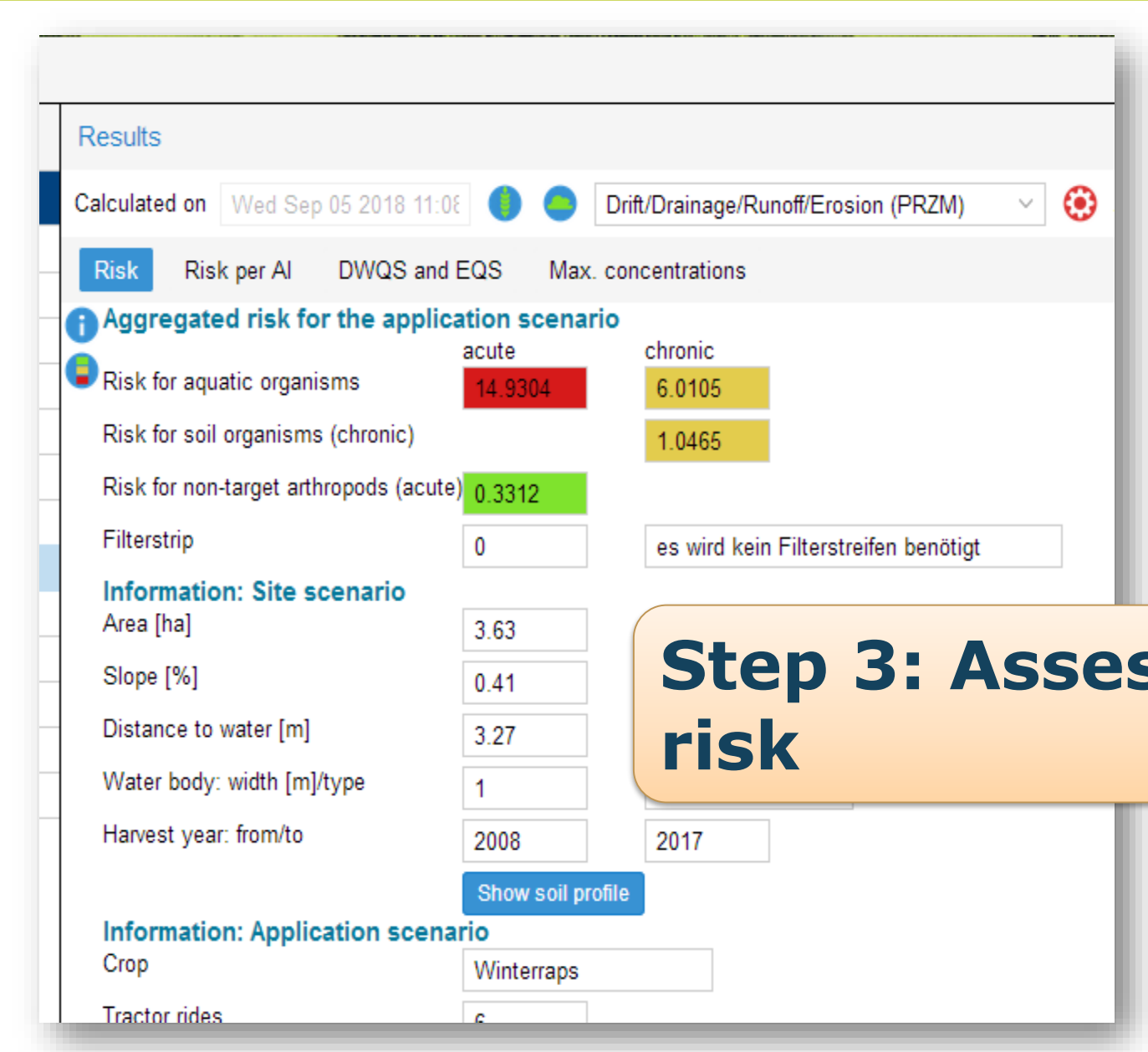
Risk assessment in three easy steps



Step 1: Select field, soil, weather

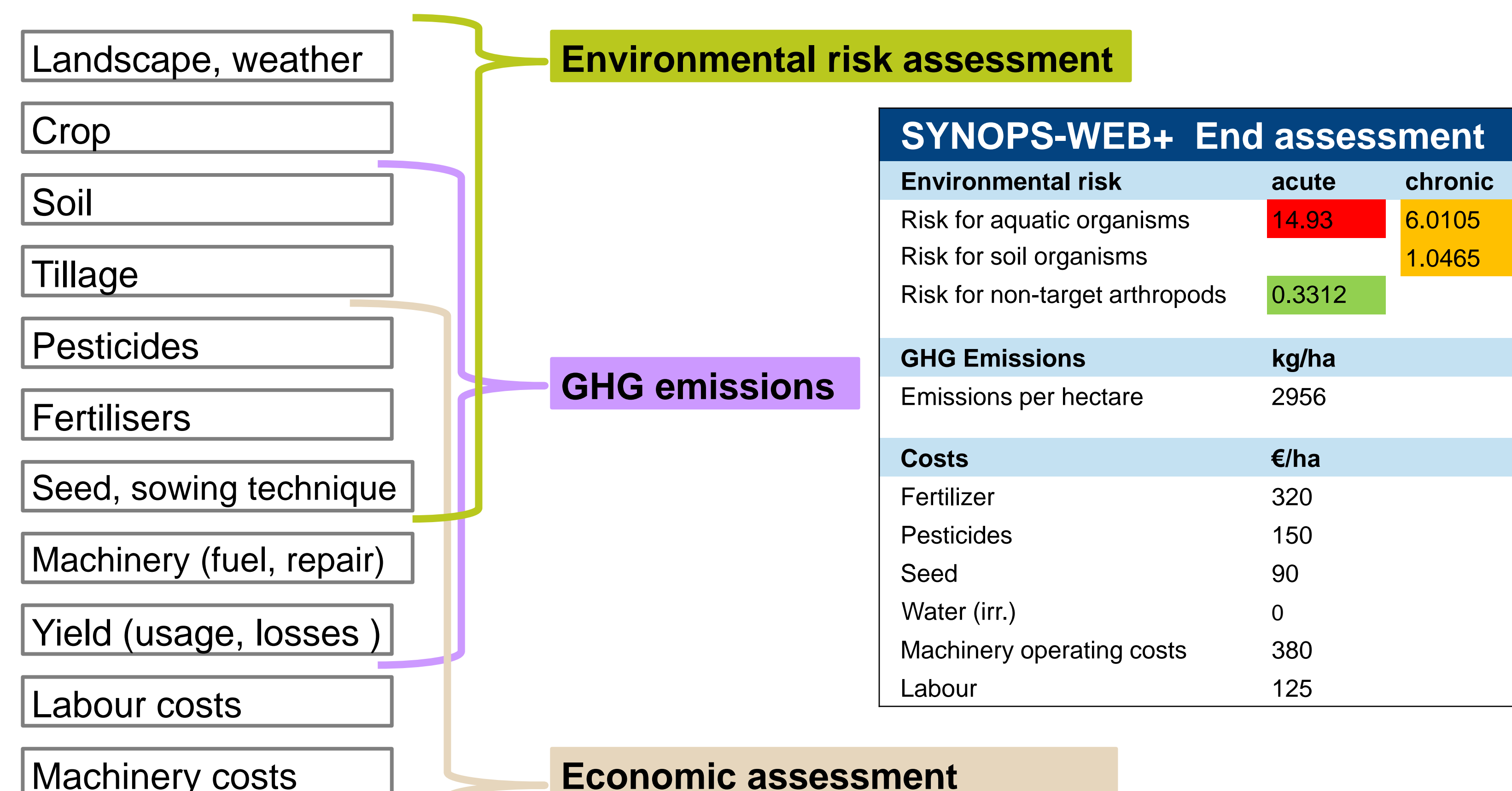


Step 2: Select crop, input applications & technique



Step 3: Assess risk

SYNOPSIS-WEB+ : Environmental risk, GHG emissions & economic assessment



- MiLA is a Model for integrated Life Cycle Assessment (LCA) in Agriculture developed at ZALF, Müncheberg, based on the Cool Farm Tool (CFT, <https://coolfarmtool.org/>)
- MiLA, estimates the GHG Emissions and Cumulative Energy Demand (CED) at farm level for each modelled crop.
- Calculations are carried out considering each phase and element involved in the farming practice such as:
 - Sowing
 - Fertilisation
 - Tilling
 - Distance between farms
 - Diesel/electricity usage
- MiLA is currently MS-Excel-based
- **Economic assessment** will be carried out following a model developed by JLU, Gießen. Costs incurred towards agricultural productions in the form of manpower, machinery and equipment, pesticides, fertilisers, irrigation etc. are provided to the user to identify suitable management strategies.

References

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