CASE STUDY

TERMINAPHOS

BY TOXLEARN4EU

FUNDED BY ERASMUS+

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Environmental Risk Assessment

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Terminaphos PBL

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Co-funded by the Erasmus+ Programme of the European Union

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General aim of the case study

- To understand the Environmental Risk Assessment approach based on the ERA of a new pesticide

- **Based on the « Guidance on tiered risk assessment for plant protection products for aquatic organisms in edge-of-field surface waters" by EFSA**

EFSA Journal 2013;11(7):3290

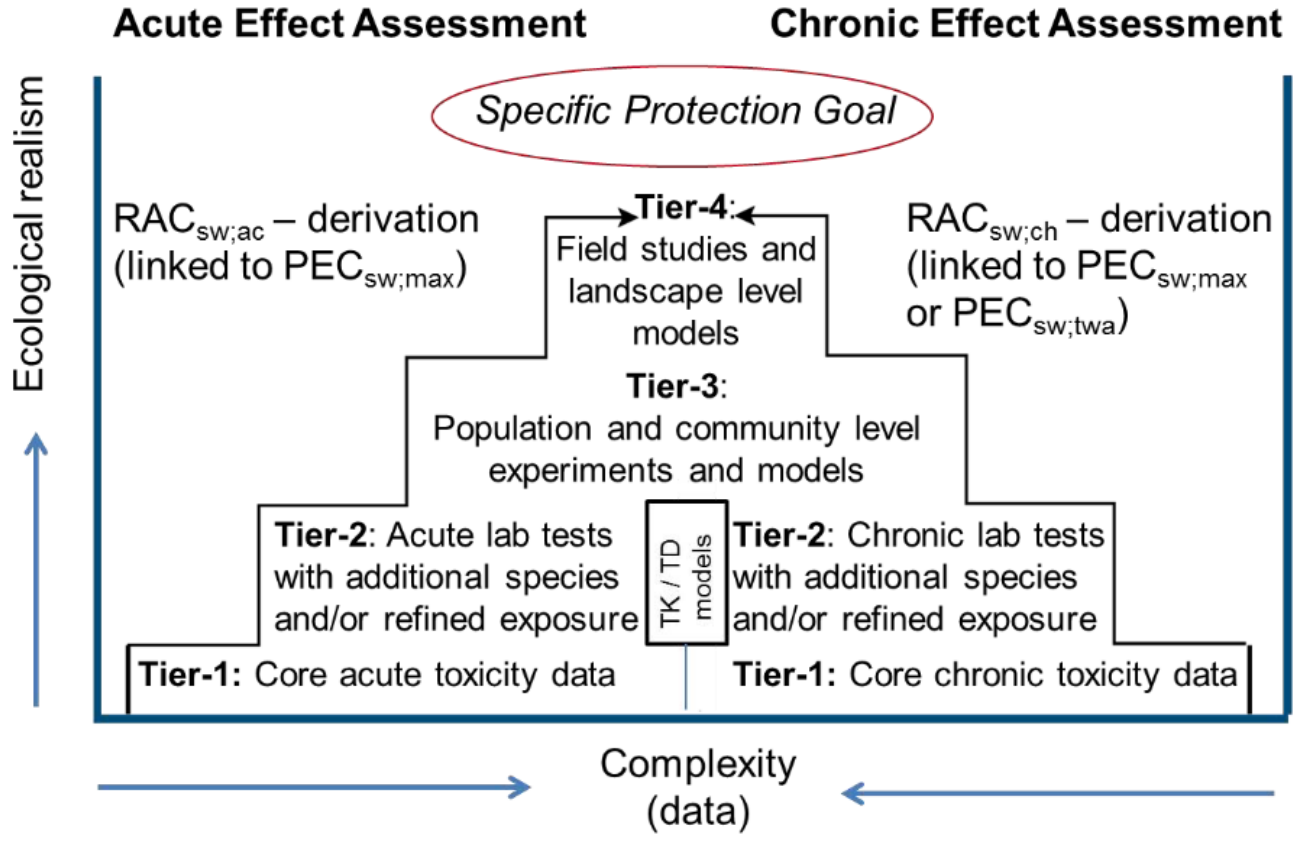
SCIENTIFIC OPINION

Guidance on tiered risk assessment for plant protection products for aquatic organisms in edge-of-field surface waters[1]

EFSA Panel on Plant Protection Products and their Residues (PPR)[2,3]

General aim of the case study

- To assess the RA based on a Tier-approach (« Guidance on tiered risk assessment for plant protection products for aquatic organisms in edge-of-field surface waters" by EFSA)



Terminaphos case study

- Collorado potato beetles (*Leptinotarsa decemlineata*) resistant to the most commonly used pest control products were detected in Southern Belgium

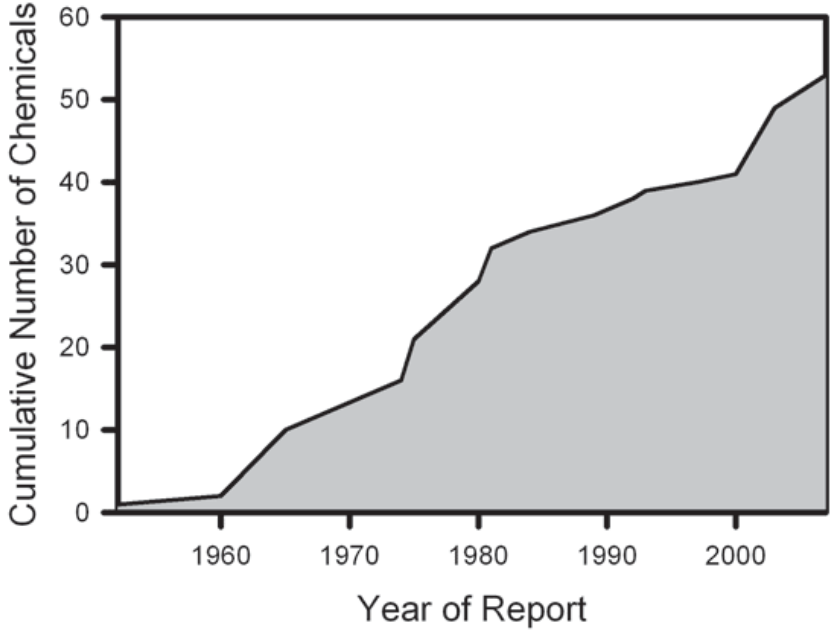


Fig. 1. Cumulative number of different active ingredients to which resistance has been reported in the Colorado potato beetle (Whalon et al. 2008).

Terminaphos case study

- Collorado potato beetles (*Leptinotarsa decemlineata*) resistant to the most commonly used pest control products were detected in Southern Belgium

- **Soylent** company wants to put on the market a new pest control product called Terminaphos® against Collorado potato beetle

- Physico-chemical parameters and toxicological data were produced to assess RA in Tier 1, Tier 2 and Tier 3

Terminaphos case study: role playing

- 4 groups of stakeholders with different perspectives (more can be added; cf Evolution)

Body	Soylent Corporation	Agriculture Ministry	Environment Protection Ministry	Greenpeace
Economic consideration	++	+	0	--
Risk consideration	--	-	+	++
Precautionary principle consideration	--	0	+	++
Will to put the product on the market	++	+	0	--

Terminaphos case study: role playing

- 4 groups of stakeholders with different perspectives (more can be added; cf Evolution)

Body	Soylent Corporation	Agriculture Ministry	Environment Protection Ministry	Greenpeace
Economic consideration	++	+	0	--
Risk consideration	--	-	+	++
Precautionary principle consideration	--	0	+	++
Will to put the product on the market	++	+	0	--

- Pitch presentations and debates

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Terminaphos case study: specific goals

- 4 groups of stakeholders with different perspectives (more can be added; cf Evolution)

Body	Soylent Corporation	Agriculture Ministry	Environment Protection Ministry	Greenpeace
Economic consideration	++	+	0	--
Risk consideration	--	-	+	++
Precautionary principle consideration	--	0	+	++
Will to put the product on the market	++	+	0	--

- Decisions based on 100% Ecotoxicology

- Decisions based on Ecotoxicology + Economy and social data + Geopolitics

Learning outcomes

- Understand the main physico-characteristics of a pesticide and their potential consequences on ecosystems;
- Get the basis on toxicology and ecotoxicology;
- Interpret the results from exposure experiments, with standard and non-standard test species;
- Interpret data from microcosm and mesocosm experiments;
- Perform Environmental Risk Assessments of chemicals and take decision about chemical release on the market;
- (Integrate socio-economical data to take decision about chemical release on the market)
- Practice collaborative group work: work, oral presentation, debate.

PBL Documents

- Tier 1 data (physico-chemical, core toxicological and exposure data)

- Tier 2 data (SSD approach)

- Tier 3 data (field experiments in mesocosms)

PBL Organisation

- Choice to perform Tier 1 (2 days), Tier 2 (1.5 days) and Tier 3 (1.5 days)
- Global organization 40h of student work + extra student work + exam: 2 ECTS

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning	Case study: presentation - Tier 1 Lecture	Tier 1	Tier 2 Lecture - Tier 2	Tier 2 presentations and debate - Group debriefing	Tier 3
Lunch					
Afternoon	Tier 1	Tier 1 presentations and debate - Group debriefing	Tier 2	Tier 3 Lecture - Tier 3	Tier 3 presentations and debate - General discussion

- Provide all the documents and perform a global analysis (2-3 days: 1 ECTS)

PBL Potential evolution

- Different country/pest/molecule/data

- Add stakeholders: other Ministry (e.g. Health, Economy/Industry…), consumer NGO, farmer association…

- Extra data: toxicology and or pesticide residues for Human Risk Assessment (Ministry of Health)

- Same context but different type of ERA (e.g. Birds and mammals, sediment…)

HAVE FUN !!!!!

For any questions regarding the case study: bertrand.pourrut@ensat.fr