ARIMNet2 Young Researchers Seminar

“How to better involve end-users throughout the research process to foster innovation-driven research for a sustainable Mediterranean agriculture at the farm and local scales.”

30 May - 3 June 2016, Institut Agronomique Méditerranéen de Montpellier (IAMM), France

Resilience of farms to plant protection practices change: tools design for managing pesticide risks

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CONTEXT & CHALLENGES

Setting up of a collective reflection for pesticide management at the scale of the étang de l’Or catchment area

Research project “TRam” (Managing toxicity in the Ramsar areas) France, Morocco

Plan Ecophyto I, APR Pesticides MEDDE (2009)

➤ Reduce using pesticide up to 50% until 2018

➤ Human health, environmental (ecological system and biodiversity) and socio-economic issues related to pesticides used in agriculture

Reducing risk of toxicity related to plant protection practices
Resilience of farms under constraint risk reduction of toxicity (human health and environment) related to plant protection practices (PPPs)

Design of decision-support tools for managing pesticide risks: indicators, modeling (technical-economic model), GIS

Acting on the choice of plant protection products

New levers (tools, treatments, practices)

Satisfactory economic situation for farmers

How to reduce risk toxicity of PPPs?

What are the relevant decision-support tools for managing risks of PPPs?
Research projects TRam-GESPAIRE

**Plan Ecophyto II**

Farmers and cooperatives

**Data collection**

Surveys

**farms**

fields (Orchard, vineyard, field crops, market gardening)

**Database**

- Plant protection product, active substance, approved dose
- target treated, dose applied, ...

**TFI, IRSA, IRSA Ch, IRSA A, IRTE, IRTE T, IRTE B, IRTE A**

**Technical-economic optimisation model**

**OptiPhy**

**Phyto cost, production cost, yield, sales price,...**

**Economic indicators**

**Product efficiency**

Proposal of alternative products by target and by crop (less toxic, economical, efficient)

**Constraints**

**Scenarios**

**Linear programming**

**Optimisation of PPP**

**Assessing of PPP**

**METHODOLOGY**

**Plan Ecophyto I**

**Etang de l’Or**

**MTAP**

**Health & environment Indicators**

**EToPhy**
EXPECTED RESULTS / IMPACT (INNOVATION)

• The development of an assessment method of plant protection practices (EToPhy):
  - Development of a multi-scale diagnostic method (field, farm, catchment area) using risk indicators (health & environment) and sub-indicators

• The design of a technical-economic model for optimising production systems and managing plant protection practices (OptiPhy):
  - Reduce toxicity risks on the environment and applicator health depending on the natural context of plots (near to rivers, slop, soil, near to urban areas, …)
  - Improve the operational phase of the model according to the demands and the objectives of stakeholders.

• Assessing the contribution of agricultural systems to the phytosanitary diffuse pollution at the watershed level (GIS)
  - Mapping risks of plant protection practices at the catchment area scale
Stakeholders
Application professions

Farmers

Cooperatives / Producer groups

Agricultural organisations / Agricultural Advice

Medical professionals

Territorial collectivity /
Local and regional authority /
Public institutions
PROPOSED PARTNERSHIP

- Partner 1: Some region in France, Morocco and Tunisia
- Partner 2: Design and expertise offices for agricultural management and development
- Partner 3: Ministry of Agriculture in France, Morocco and Tunisia
- Partner 4: Research units (UMR GRED, ...), research institutes (IAV Hassan II Rabat-Morocco, INA Tunis-Tunisia, ...)
- Partner 5: Agricultural cooperatives, Farmers, ...
Continue our research to develop risk management tools accessible to all stakeholders

To be continued…

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THANK YOU FOR YOUR ATTENTION
Assessing plant protection practices using pressure indicator and toxicity risk indicators: analysis of the relationship between these indicators for improved risk management, application in viticulture


OptiPhy, a technical-economic optimisation model for improving the management of plant protection practices in agriculture: a decision-support tool for controlling the toxicity risks related to pesticides

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