End-user involvement for innovation: Experience from PoH-MED and other projects

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ARIMNet 2 Young Researchers Seminar
May – June 2016, Montpellier, France
Outlook

Back to basics: some text analysis

- End-user involvement...
- ... for innovation
- Some key questions

The PoH-MED case

- PoH-MED at a glance
- Research strategy
- Building the right consortium
- Some achievements
- What would we do differently now?

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Back to basics: some text analysis

End user involvement

- **Who’s an end user?**
  
  In our case (agricultural research), could be:
  - Growers
  - Advisors
  - Solution developers: SME, Breeders, Industry
  - Authorities (ministries etc…) > regulations
  - ....

- **What are their needs?**
  - Technologies
  - Advice
  - Knowledge
  - Performance
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End user involvement…

- Who’s an end user?
- What are their needs?
- Where is their place in innovation?
  - Upstream:
    - regulators/legislators as innovation drivers
  - Downstream:
    - Industry
    - Advisers
    - Technology users
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... for innovation

- What is innovation?
  Innovation = an invention that met a market

- A long way from research to innovation...
  - TRL scale

- ...and an even longer one to impact
  - ASIRPA project
Back to basics: some text analysis

From invention to innovation: the TRL scale...

Source: uk-cpi.com
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From invention to innovation: the TRL scale... and its consequences

Source: wp.ifi.uzh.ch
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From invention to innovation: impact pathways

**Contexte**
- Absence de méthodes curatives
- Mutations continues des pathogènes
- Méthodes de diagnostic existantes ne sont ni évolutives ni fiables ni sensibles
- Avancées scientifiques sur les méthodes sérologiques (réactifs) et les acides nucléiques (tests moléculaires)
- Normes FR > Normes UE
- Liste de quarantaine: lutte obligatoire (diagnostic+détection)

**Filiee: FN3PT** (UMT, personnel, financement), GNIS, ONIFHLOR (serres), CNIP

**ANSES**

**INRA**
- Rennes: virologie
- Angers-Rennes: bactériologie

**Centre Régional de Transfusion Sanguine**

**Conseil Régional Bretagne France AgriMer**: financement

**Milleux sélectifs de bactéries pectinolytiques**

**Réactifs sérologiques polyclonaux purs monoclonaux**

**Réactifs bactériologiques** (sérum) poly et monoclonaux

**AGDIA-Biofords vend la pectine à des laboratoires**

**Service Officiel de Contrôle (GNIS):**
- délègue la certification autorisant la commercialisation à la FN3PT
- propose des modifications réglementaires

**Réseau mondial PVYwide (INRA):** ajustement des réactifs aux variants détectés

**Fédération FN3PT**:
- Labs agréés (EPR) certifient le plant français (administrent tests)
- gèrent des litiges commerciaux
- EPR produisent les plants
- Formation de contrôleurs étrangers

**Sanitaire**:
- Crise sanitaire évitée (cf. Allemagne ou Pays-Bas)

**Politique**:
- Appui à la mise en œuvre de politiques sanitaires vis-à-vis des parasites de quarantaine et de qualité

**Economique**:
- Maintien de l’avantage comparatif de la filière française lié à la qualité sanitaire supérieure de ses plants: agréments d’exportation en Israël et en Égypte
- Augmentation de l’export de plants. Installation de « majors » étrangères pour la multiplication de leurs propres variétés
- Pertes évitées: 25 M€ de pertes liées à la mise en quarantaine en 1995 aux Pays-Bas

**Politique**:
- Utilisation à l’étranger: amélioration de la qualité sanitaire des plants internationaux
- Utilisation des tests et procédures de certification français à l’étranger (Égypte)

**Politique**:
- Contribution aux discussions internationales sur l’évolution de la réglementation
- Reconnaissance et transfert de l’expertise française

**Inputs** | **Outputs** | **Intermédiaires** | **Impacts 1** | **Impacts 2**
---|---|---|---|---

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Key questions!

- Who do you need to involve?
- Into which schemes…?
- …and with which performance assessment metrics?
The PoH- MED case

PoH-MED at a glance

- **PoH-MED =** Potato Health – Managed for Efficiency and Durability

- **Expected results and innovation potential**
  - Academic knowledge and information about pathogen distribution, genetic structures, and relationships around the Mediterranean basin;
  - Insights into new control methods, and their biological basis, applicable for more sustainable potato protection strategies in the future;
  - Opportunities for dissemination and adoption of available control means (e.g. resistant cultivars) by growers;
  - Training and capacity building through shared student tuition.
The PoH- MED case

Project strategy

- Research…. from fields to labs and back
  - starting from the fields
    - pathogen sampling; field enquiries
  - going into labs
    - molecular typing of isolates,
    - mechanistic assessment of defence mechanisms… or to controlled controlled conditions
    - temperature adaptation,
    - pathogenicity tests
  - and then back to fields
    - trials
    - demonstration.
The PoH- MED case

Project strategy

- Research…. from fields to labs and back

- Training and capacity building
  - an integral part of the project strategy
  - primarily involved scientific stays by PhD students in partner’s labs
  - planned in initial project but could not be achieved
    - Cross- institution teaching courses
    - Joint learning modules

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Project strategy

- Research.... from fields to labs and back
- Training and capacity building
- Dissemination
  - Demonstration platforms to increase awareness and adoption of innovations by end-users.
  - Publications in academic and technical journals

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The PoH-MED case

Setting up the right consortium

[Map showing collaboration between various institutions]

INRA
GNIS
FN3PT
INPV
ENS
Ensa
CNCC
ITCMI
University Paris VII
University
Hassan II
University
Bejaia
CASC
The PoH- MED case

Some achievements

- **New knowledge**
  - Population composition in France and Maghreb
    - Same AGs of *Rhizoctonia solani*
    - Partly different clonal lineages of *P. infestans*
    - Rather different *Pectobacterium/Dickeya* species

- **Adaptive patterns**
  - to temperature
    - *R. solani*
    - *P. infestans*
  - to host cultivars and host resistance
    - *P. infestans/ Sarpo Mira*
The PoH- MED case

Some achievements

- New knowledge
- …and inventions
  - Natural plant extracts for biocontrol
  - Olive, but not carob extracts
  - Protection linked to defense induction in potato tubers
    (Ouanas et al, 2016 – Plant Pathology – in press)
The PoH- MED case

Some achievements

- **Training and capacity building**
  - Long stays abroad
    - 2 PhD students from Morocco and Algeria > France
    - Co-signed research papers
    - PhD theses defended or to be defended soon
  - Technical training
    - Disease /resistance scoring

- **Demonstration**
  - Cultivar resistance trials in Algeria, 2015-2016
The PoH- MED case

Learning from experience: what would we do differently now?

- Set up a more ‘compact’ consortium
- Explicit the position of each action along an innovation pathway
  - TRL rating
  - Partner connection and involvement
- Exploit indicators of success
  - Actual transfer to higher TRL
  - Quantitative assessments?
- Invest even more in dissemination and capacity building
  - Innovation from research
  - Innovation in research
Thanks for your attention!