Case studies for stakeholder-driven innovation

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• Context: translating research and co-innovation
• The stakeholder-driven methodology
• Case study insights
• Conclusions
 Vallarie Background and Aims

• Outreach and **translation of results into field practices** from EU and nationally funded research projects (agriculture and forestry) is limited

• The overall aim of VALERIE is to **boost the outreach of research** by facilitating the integration into innovative field practices
How do case studies contribute to these VALERIE objectives?

- **Review, extract and summarise knowledge** - from national, international and EU research projects in agriculture and forestry

- **Translate** “promising” research results into formats for end-users (farmers, advisers, supply chain, actors)

- Develop a ‘smart’ search engine (*ask-Valerie.eu*) for research outputs, for use by farm/forestry community and link to EIP-AGRI platform’
Re-thinking translation of research

- **Translation** - turning knowledge into action
- **Science continues to be essential** for innovation but there are challenges in translating research into practice
- Achieving **translation** of research to enable effective deployment of innovative research is seen as an **essential part of the research and innovation process**
- Large amounts of available research material **untapped**
- Emerging interest in **translational research** – more emphasis on involving end-users in innovative networks

"Knowledge translation is the meeting ground between two fundamentally different processes: research and action. It knits them with communicative relationships"  
Bennett and Jessani (2011)
• The **co-innovation approach** offers a mechanism to make research-based knowledge more accessible

• Co-innovation—a process that allows **multi stakeholder learning**, operates according to principles of **dialogue, reflection and iterativity**, built around **feedback loops** between researchers and users, applied using participatory methodologies
Co-innovation to enhance translation of research

Linear science driven
Translation as transfer

Interactive co-innovation

User
Researcher

Multiple actors

Multiple actors
Stakeholder-driven methodology

**Extract knowledge for innovation**
- Extract, screen, summarise
- Create knowledge base for ask-Valerie.eu
- Identify gaps

**Case studies on innovation**
- Provide ontologies
- Articulate knowledge needs
- Evaluate solutions

**Create data infrastructure**
- Themes structure the extraction
- Structured vocabulary

**Create smart search tool ask-Valerie.eu**
Integrate into EIP NF
• **solutions** derived from research need to be utilised and re-built on the farm with the involvement of relevant actors

• **iterative stakeholder-driven** methodology in 10 case studies

• **mobilises stakeholders** (farmers, advisers, foresters, supply chain actors) to:
  
  • -assess their **innovation demands**, screen and trial solutions, understand how stakeholders ask questions
  
  • -capture their knowledge for integration into **ask-Valerie.eu**, ensures ask-Valerie.eu is relevant to users
Stakeholder-driven methodology

Building a smart search engine that is relevant to users’ needs

- Developing ask-Valerie.eu
  - Contribute to ontologies and document base
  - Raise issues of interest
  - Evaluate solutions
  - Test and co-develop AV
  - Understand how stakeholders ask questions
  - Initiate AV community

- Co-innovation - learning in the project
  - Help identify research needs
  - Fact sheets to answer specific questions
  - Test out innovations in trials
  - Use AV – to answer questions
  - Connect with and learning from others

- Mobilises farmers to assess their innovation demands and capture their knowledge for integration into ask-Valerie.eu, ensures ask-Valerie.eu is relevant to users

- Identify, apply, test and refine screened research outputs

Valerie
Issues, terms, concepts /relations ROC+ Translate concepts
CSP suggest and scan 100 papers
Suggest repositories (different languages)
CSP evaluate AV interface, community

Stakeholders identify: list of issues
Factsheets from research outputs
CS evaluate factsheets, test and refine
CS create trial leaflets

The created tool and its pillars
Valerie ontology
Document base
Digital advisor algorithms
User community

Test and feedback:
Query editor
Snippets
Ranking
Language Translation
Stakeholder-driven methodology

Series of participatory meetings with stakeholders in case studies facilitated by Case Study Project Partners using Dynamic Research Agenda

• Stakeholders identify innovation issues (research needs)

• Scientists (Thematic Experts) search and retrieve ‘best matching’ information - innovation solution

• Scientists translate science into ‘end user format’ (Research Fact sheets summaries)

• Stakeholders review Fact sheets and feedback to scientists

• Stakeholders screen information- assess viability with trials – adapt innovation and feedback
Stakeholder-driven methodology

Stakeholders identify and review innovation issues

Thematic Experts search, extract, summarise research for solutions

Stakeholders review and evaluate solutions

Stakeholders feed back to Thematic Experts

Select test selected innovation solutions

Testing, refining, adapting solutions

Identifying, articulating and refining issues

Extracting, reviewing

Re-articulating, re-formulating

Case Study Project Partners facilitate
Case study: Sustainable potato supply chain

The potato production in Poland for the French fry industry in the Netherlands. Supply chain SHs - growers, processing and exporting industry, suppliers of seeds, fertilisers and pesticides, extension service and research.

Key quality issue - potato quality cause problems in processing of french fries.
Innovation issues
• Internal brown spots in potato tubers, variety specific.
• Grey discolouration of french fries after processing
• Early dying of potato crop, variety Innovator
• Sprouting of Innovator in store
• Pathogen Rhizoctonia solani
• Hollow hearts in tubers
• Skin set after haulm killing in seed potatoes
• Bacterial wilt in seed potatoes
• Misshaped tubers, tuber length, frying index

Refined issues
Brown spot caused by Tobacco Rattle Virus (TRV) transmitted by nematodes
Brown spot caused by Ca deficiency
Control with variety choice
Control with crop rotation

Refined issues
More about TRV
Calcium deficiency
Ozone damage

Trial topics
TRV transmission by nematodes, and different varieties
Calcium deficiency & hollow heart

Research Factsheets
Integrated management of TRV
• General information
• Control methods
• Which cultivar to chose?

Research Factsheets
Ca fertilisation and quality
Role of ozone in crop quality
Meeting 1-3 issues

Revised trial actions
1. Susceptibility of current and potentially new varieties to specific strains of TRV, transmitted by nematodes (Trichodorus spp.)
2. Testing 2 Ca fertilisers for the effect on hollow heart and reduction of Ca deficiency symptoms in Russet Burbank.

FIELD TRIAL
1. Two plots infected with Trichodorus spp., with 5 potato varieties
2. Trial is on working scale, 3 replicates with 2 Ca products at different times.

Innovation solution
1. Varieties to replace susceptible Innovator and Russet Burbank
2. Adapted solution - the best application time and techniques identified

Research papers
• Ca fertilisation and quality
• Relation between P. penetrans (nematode) and early dying
• Weeds, host for TRV
• TRV and potato varieties
• Effects of green manure crops on diseases

Trial topics
TRV transmission by nematodes, and different varieties
Calcium deficiency & hollow heart

Trial leaflets
Innovative Arable Cropping

The Berry arable farmers group, central France, active since 2005, with the help of an agronomist developed different cropping techniques (e.g. tillage and legumes)

They are addressing issues of decreasing or stagnating yields linked to short rotations and simplified tillage which creates soil problems.
Meeting 1 issues

Farmers questions

- Rapeseed drilling associated with which leguminous crops?
- What are the proper drilling techniques for our region?
- How to succeed seeding/drilling in a covered soil?
- Using strip-till for better soil structure?
- Which crop should be added to the rotation to improve its sustainability?
- How to manage intercropping?
- Cash crop or intercrop?
- Would it be beneficial to maintain permanent soil cover?
- Can good drilling limit the impact of pests?
- Has the intercrop impact on pest management?

Refined questions

- What are the effects of agricultural practices such as direct sowing, cover crops and soil tillage on the nitrogen and organic matter cycles and availability? “
- “What does influence (trigger) the end of dormancy i.e. the germination of the weeds?”
- “How can we evaluate in the field the properties of the soil (structure, texture, “health”)? What are the possible evaluation methods?”
- “How can we best drill (sow) a crop through a soil cover (soil covered by a crop or crop residue)?”
- “What are the practical impacts of the use of existing alternative plant controls and protections?”

Trial topics

Rapeseed, wheat and protein crop plots, according to farming practices:
- direct sowing
- cover crops
- ≠ land tillage
- association of crops
- etc.

Research Factsheets

Agronomic techniques
Meeting 1 issues:

Revised trial proposals and actions

1- Soil structure: end of spring (June 2015, May 2016)
2- Crop residues: fallow period
3- Crop growing structure, density (mid-Sept to mid-Oct 2015, 2016)
4- Evaluation of quality of roots (length; biomass) in winter (mid-Nov. to February 2015, 2016)

Observations & recordings

- 7 to 10 farmers meet
- 4 key periods

1- Parcel characteristics & recent history (weed, pest risks etc.)
2- Field assessment (soil structure, residues)
3- Decision-making (use of innovative practice?)
4- Assessment of the success

Innovation solution

Decision support system (in 2017)
Based on 4 steps

1- Parcel characteristics & recent history (weed, pest risks etc.)
2- Field assessment (soil structure, residues)
3- Decision-making (use of innovative practice?)
4- Assessment of the success

Innovative Arable Cropping

Innovative Arable Cropping

Research Factsheets
Visual soil Assessment

FIELD TRIAL (May 2016)
Soil structure evaluation guide
Quick, visual & descriptive assessment (simplified spade test)

Innovative Arable Cropping

Trial topics
Rapeseed, wheat and protein crop plots, according practices:
- direct sowing
- cover crops
- # land tillage
- association of crops
- etc.

Quick, visual & descriptive assessment (simplified spade test)
Innovative Arable Cropping

Progressively constructed a set of new specific questions focusing in on soil assessment

A Decision Support Tool - a step by step guide to establishing oilseed rape that can be easily conducted by farmers themselves

With an in-field method to assess soil quality
Mobilises farmers to assess and address their innovation demands and capture their knowledge for integration into ask-Valerie.eu

ask-Valerie.eu is developed with user input – suited to users’ needs

Co-innovation -combines stakeholder experiences with utilising existing research outputs

Assumption that stakeholders articulate concrete research questions and science provides immediate solutions is simplistic– requires continued dialogue, repeated interaction and problem analysis

Translation processes- identification, prioritisation, articulation, evaluation, searching, extraction – refining, testing -stakeholders progressively construct a set of specific questions and test solutions

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Conclusions: Stakeholder-driven methodology
A transferable model for translating research

Co-innovation multi actor research projects, operational groups

Modified from Birner et al. 2006
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