

Co-innovation: changing the perspective to bring about change

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Ecophyto Séminaire de lancement des appels "Approches Globales" et "Durabilité"

December 10, 2021

Online



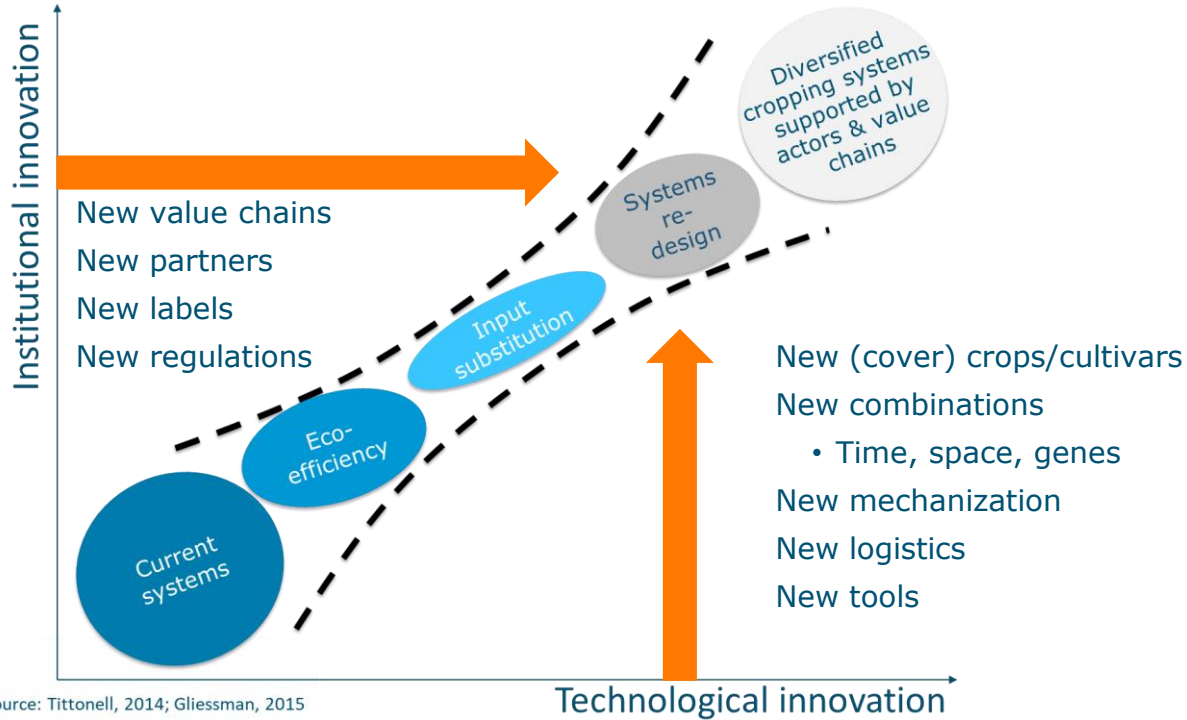
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727482 (DiverIMPACTS)

In a nutshell



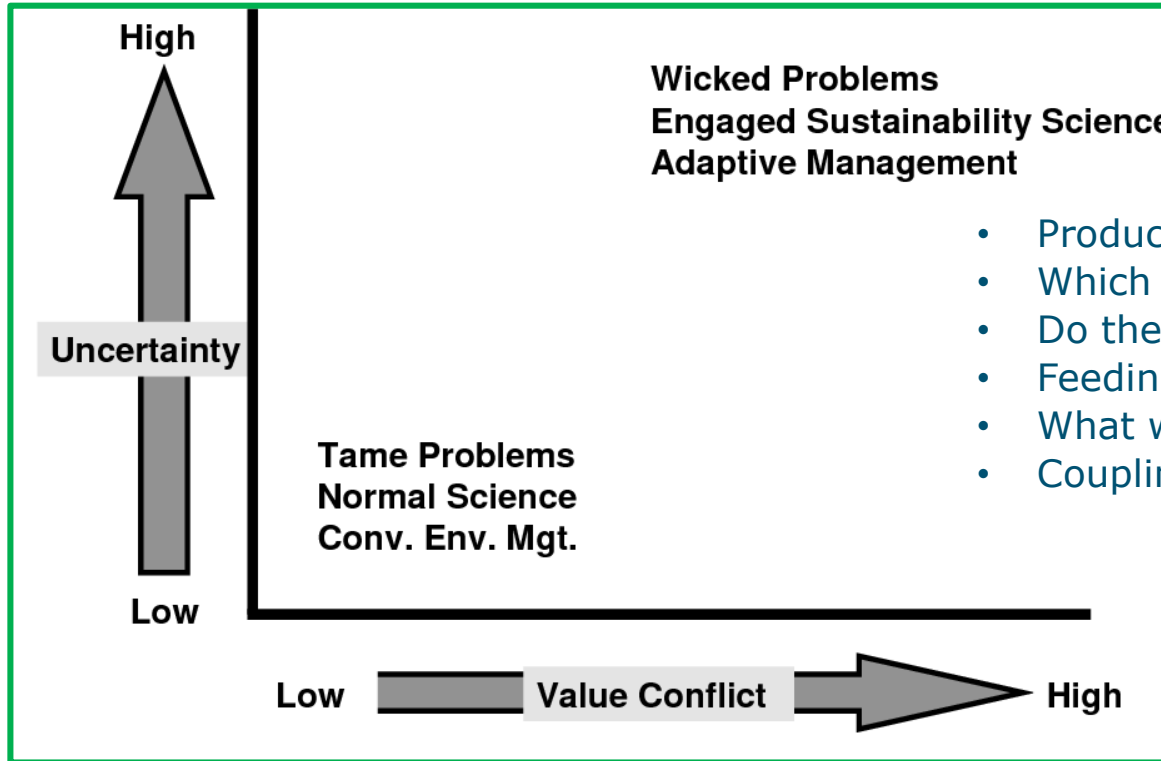
- Little use of scientific insights for solving sustainability problems
 - The 'how-to' question: actionable knowledge
- Key cause: lack of local embedding during knowledge development
- Requires rethinking the systems we work in
 - Complexity-sensitivity
- How to organize actionable knowledge development?
 - Two examples from DiverIMPACTS around co-innovation

How can *cron diversification* the Ecophyto goals come about?



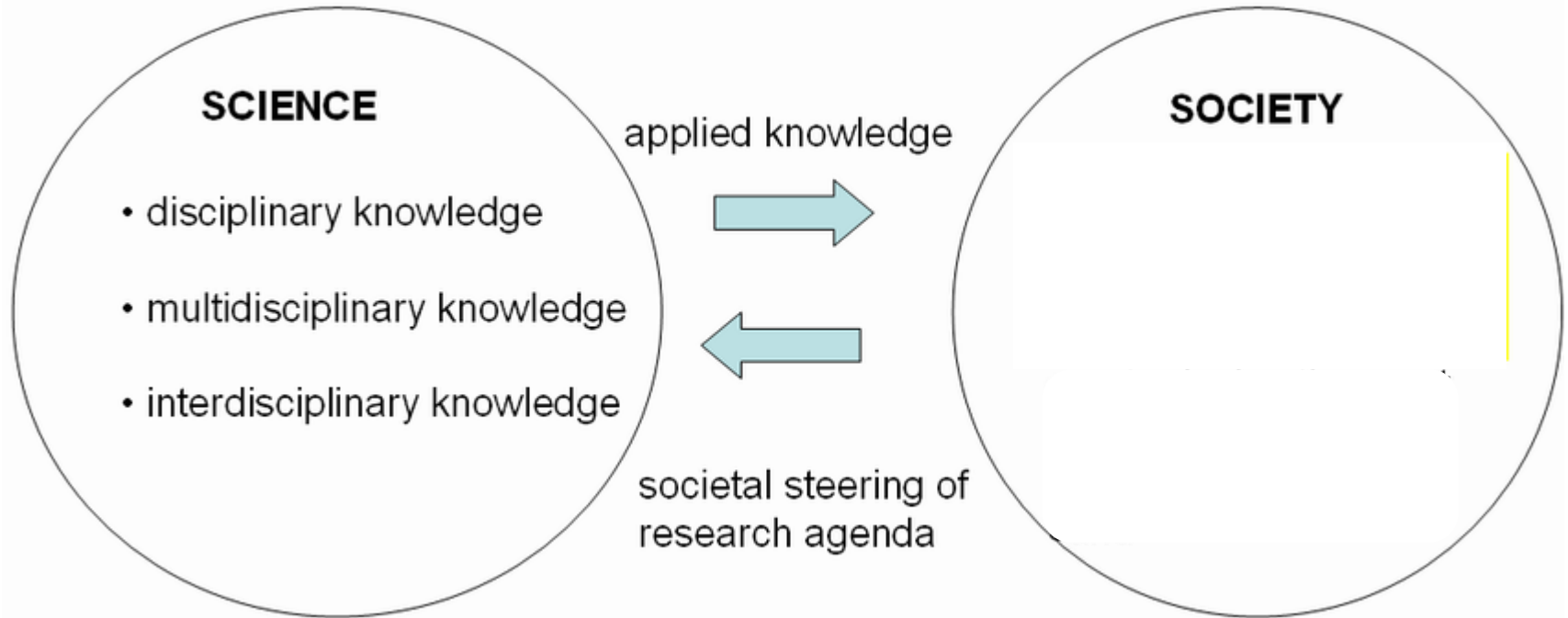
Source: Tittone, 2014; Gliessman, 2015

Wicked problems



- Products are safe
- Which alternatives?
- Do they really work?
- Feeding the world narrative
- What will my neighbours say?
- Coupling advice+sales

How to organize science for such transformation?



How-to as research question



Contents lists available at [ScienceDirect](#)

Energy Research & Social Science

journal homepage: www.elsevier.com/locate/erss

Review

Ten essentials for action-oriented and second order energy transitions, transformations and climate change research

Ioan Fazey^{a,*}, Niko Schöpke^b, Guido Caniglia^c, James Patterson^d, Johan Hultman^e, Barbara van Mierlo^f, Filippa Säwe^e, Arnim Wiek^g, Julia Wittmayer^h, Paulina Aldunceⁱ

“Yet despite the vast amount of knowledge already accumulated, there is still limited emphasis on understanding how to implement change. This ‘how to’ question is now arguably the most important question for climate research.”

Perspectives needed for crafting usable knowledge

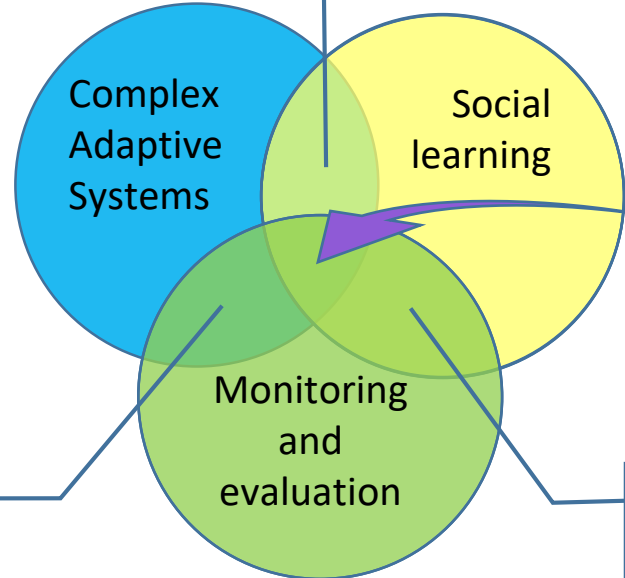
- Innovation system: co-development versus 'rolling out'
- Complex system: expect unexpected behaviour
- Adaptive system: managing for optimality based on control versus adaptation based on monitoring (safe-to-fail systems)
- Political system: determines what is salient, credible, legitimate. Trust may involve 'taking sides'.



Co-innovation as a framework for transdisciplinary knowledge crafting

- Systems at different levels
- Emergent behaviour
- Adaptive management

How we see the world: *framing*



- Perceptions of others
- Needs identification
- Networks of actors

Co-innovation

Interventions and responses:
anticipating the unexpected

- Accountability
- Learning

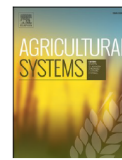
Are we doing the right things: *reflexivity*



Contents lists available at [ScienceDirect](#)

Agricultural Systems

journal homepage: www.elsevier.com/locate/agsy



Crafting actionable knowledge on ecological intensification: Lessons from co-innovation approaches in Uruguay and Europe

Walter A.H. Rossing^{a,*}, Maria Marta Albicette^b, Veronica Aguerre^b, Carolina Leoni^b, Andrea Ruggia^b, Santiago Dogliotti^c

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^b Instituto Nacional de Investigación Agropecuaria (INIA), Estación Experimental INIA Las Brujas, Canelones, Uruguay

^c Department of Plant Production, Faculty of Agronomy, University of the Republic, Montevideo, Uruguay

Journal of Rural Studies 78 (2020) 65–77



Contents lists available at [ScienceDirect](#)

Journal of Rural Studies

journal homepage: www.elsevier.com/locate/jrurstud



How do we enact co-innovation with stakeholders in agricultural research projects? Managing the complex interplay between contextual and facilitation processes

Julie Ingram^{*}, Pete Gaskell, Jane Mills, Janet Dwyer

Countryside and Community Research Institute, University of Gloucestershire, UK

World Development 140 (2021) 105382

Contents lists available at [ScienceDirect](#)

World Development

journal homepage: www.elsevier.com/locate/worlddev



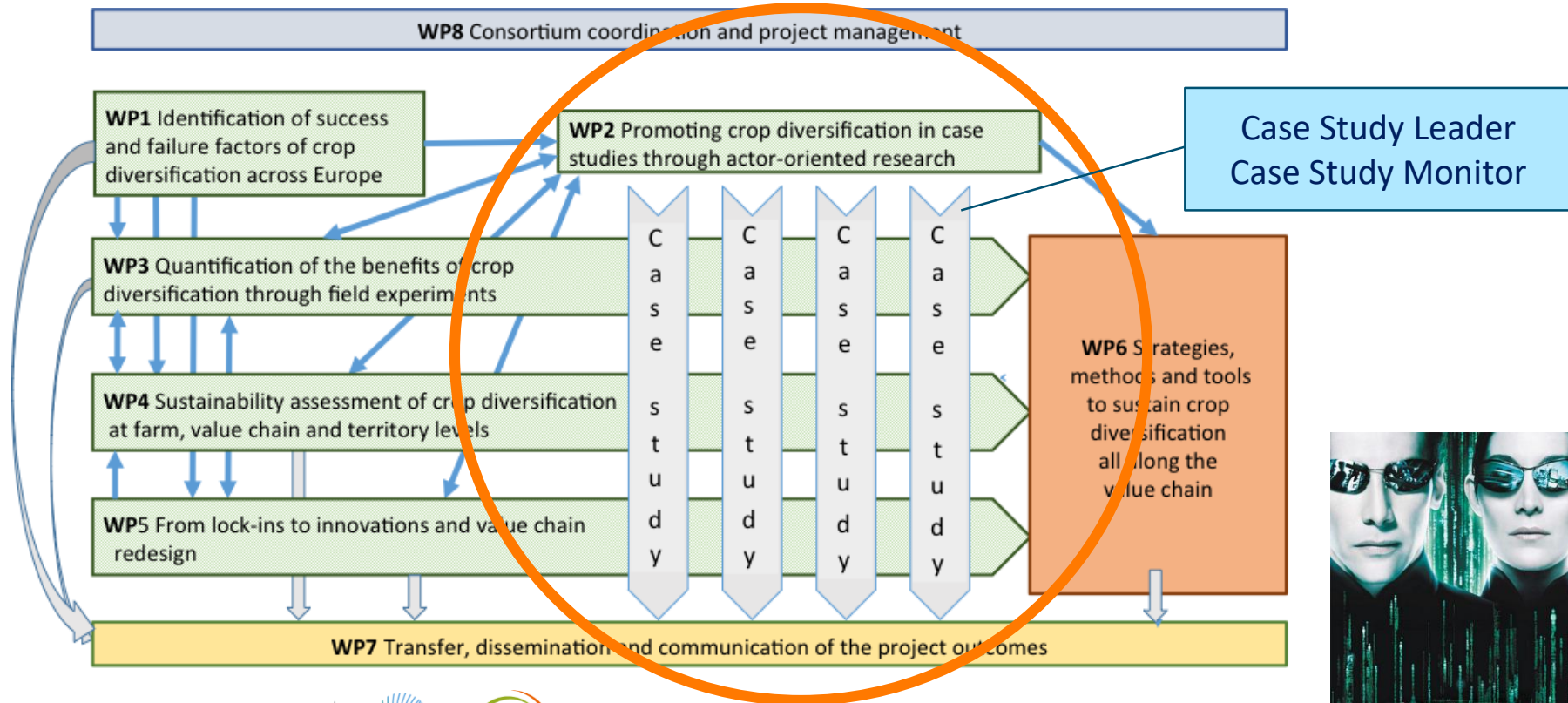
ELSEVIER

Understanding inclusive innovation processes in agricultural systems: A middle-range conceptual model

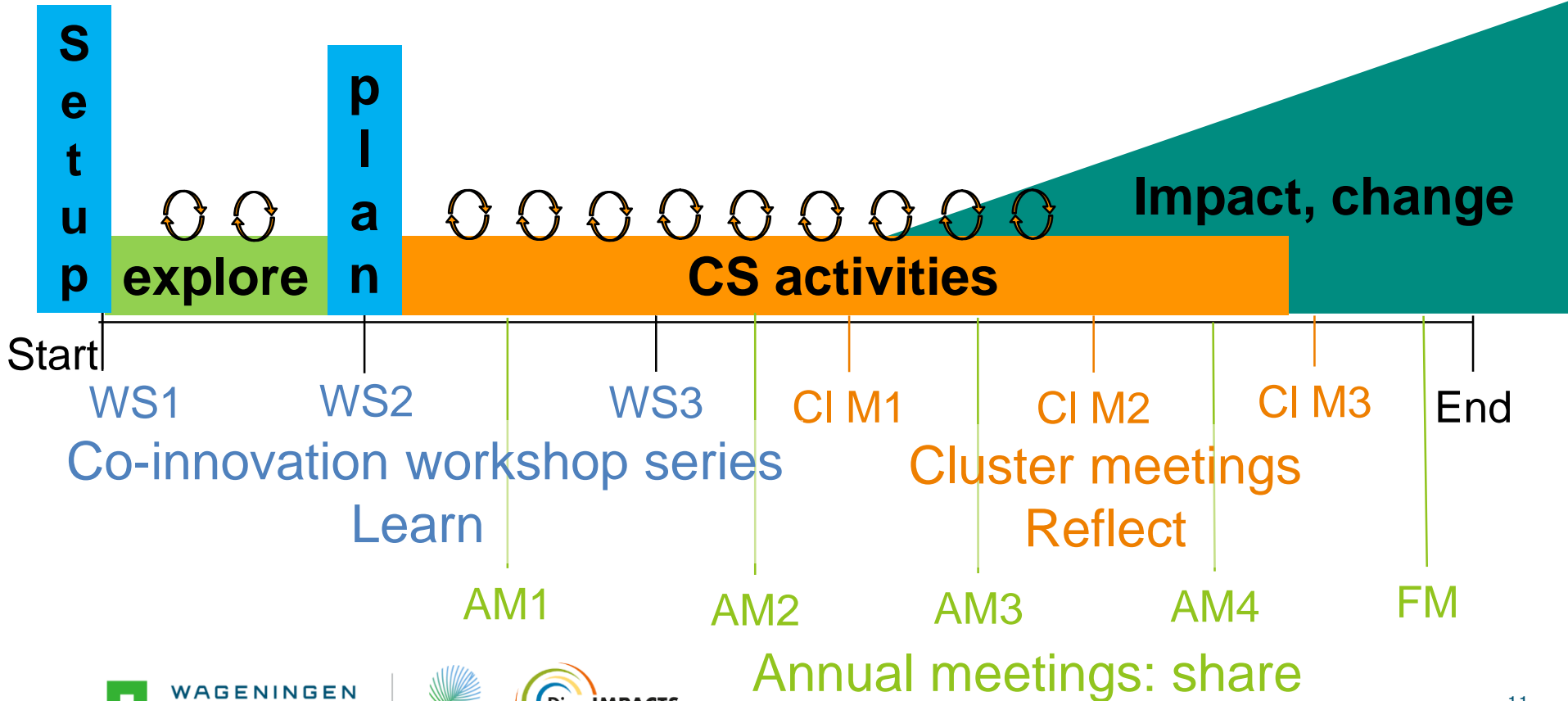
Elizabeth Hoffecker

MIT D-Lab, Massachusetts Institute of Technology, United States

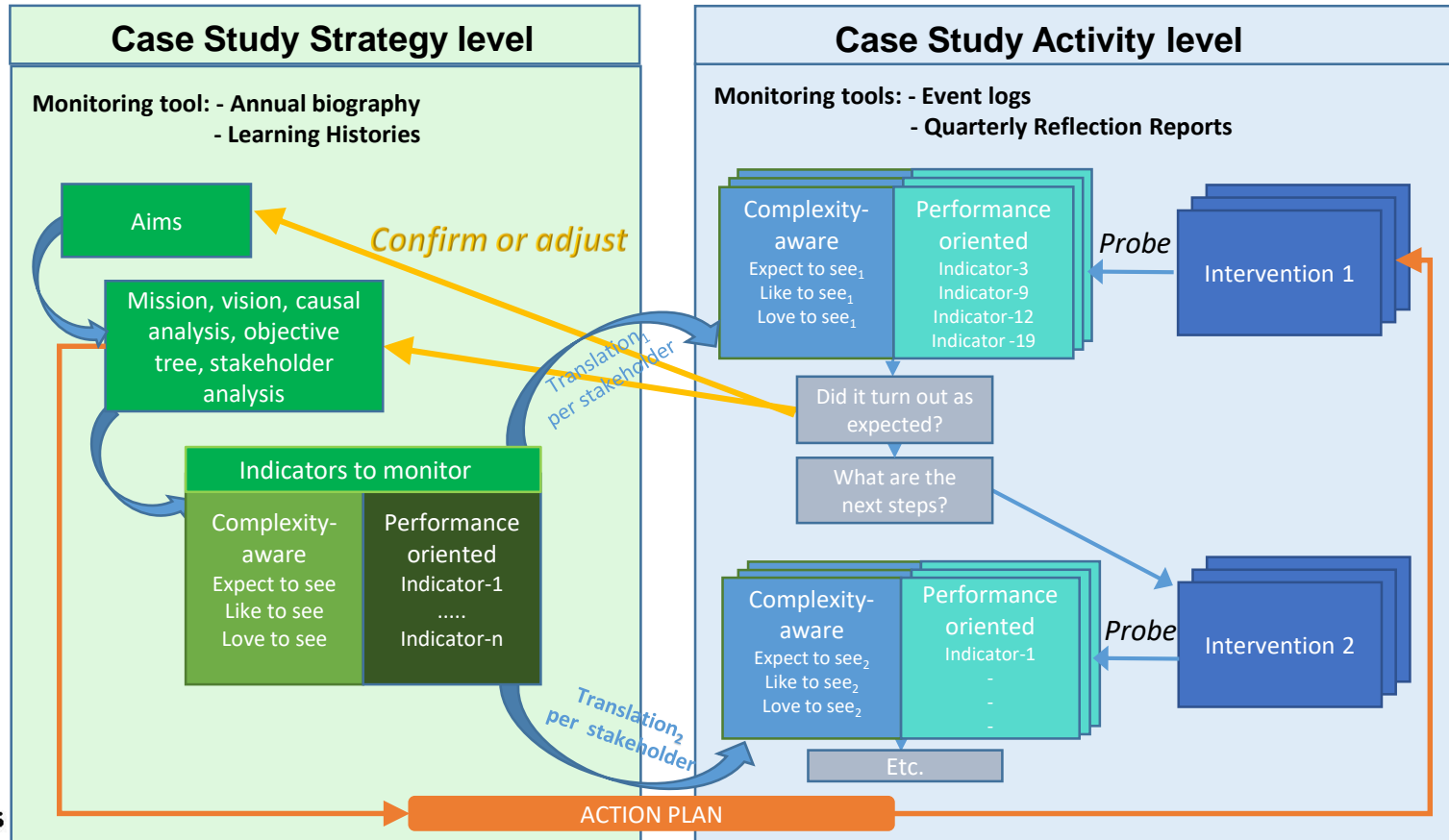
Co-innovation in DiverIMPACTS



Shaping co-innovation



Monitoring for learning: interventions as experiments



DiverIMPACTS Case Study #17



Case study 17 (Belgium): Grain legumes intercropping with cereals (not specifically organic)

-> Scaling-up “Winter pea for grains intercropping with winter wheat”



Olivier ROISEUX,
Walagri



Daniel JAMAR,
CRA-W

Winter pea for grains intercropping with winter wheat

Previous steps of the project:



2012-2018 : **Research program** at Gembloux Agro-Bio Tech (10 m²) -> **Agronomic requirements**



2015-2018 : **Pilot tests** with farmers at Walagri (10 ha)

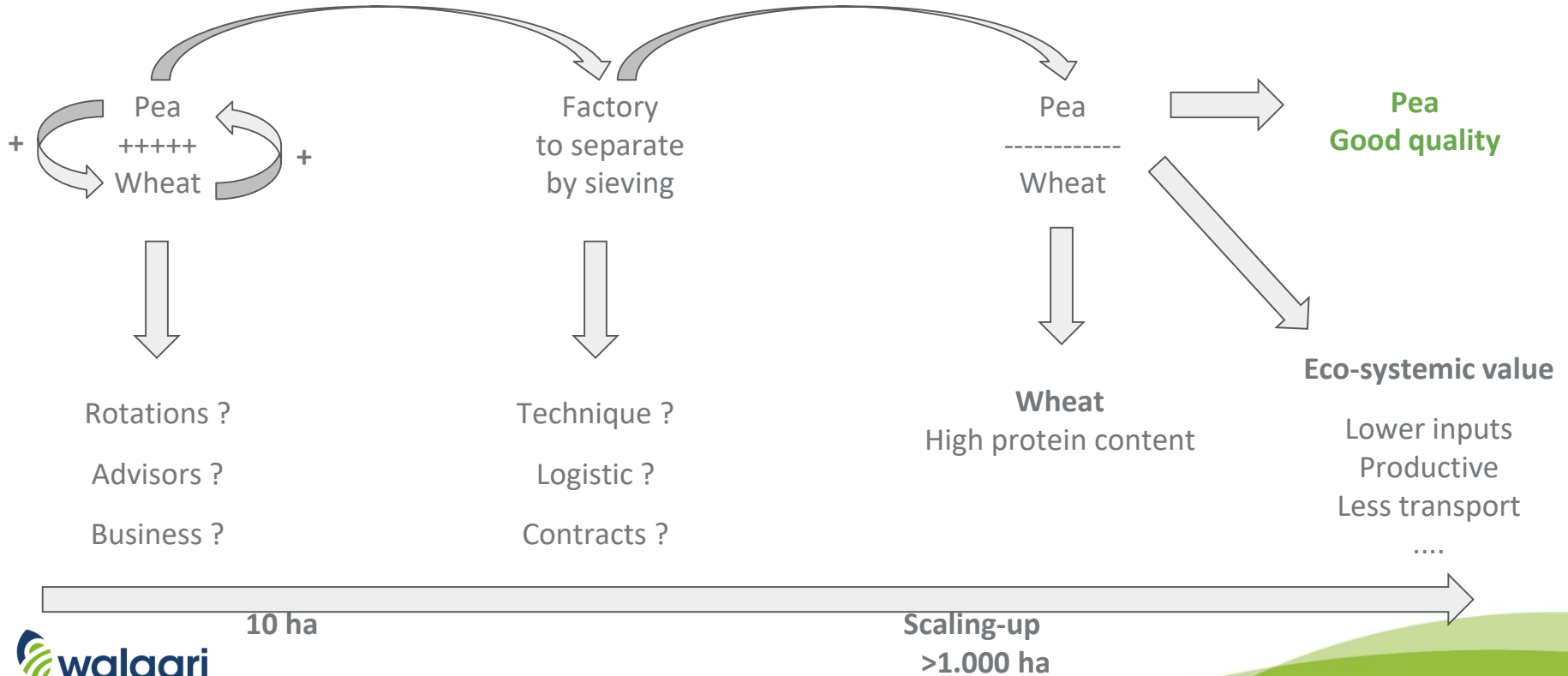
- Testing results of research project in “real life”
- Sieving process development
- Economic evaluation for farmer & Walagri
- **Create value-chain** for pea grains



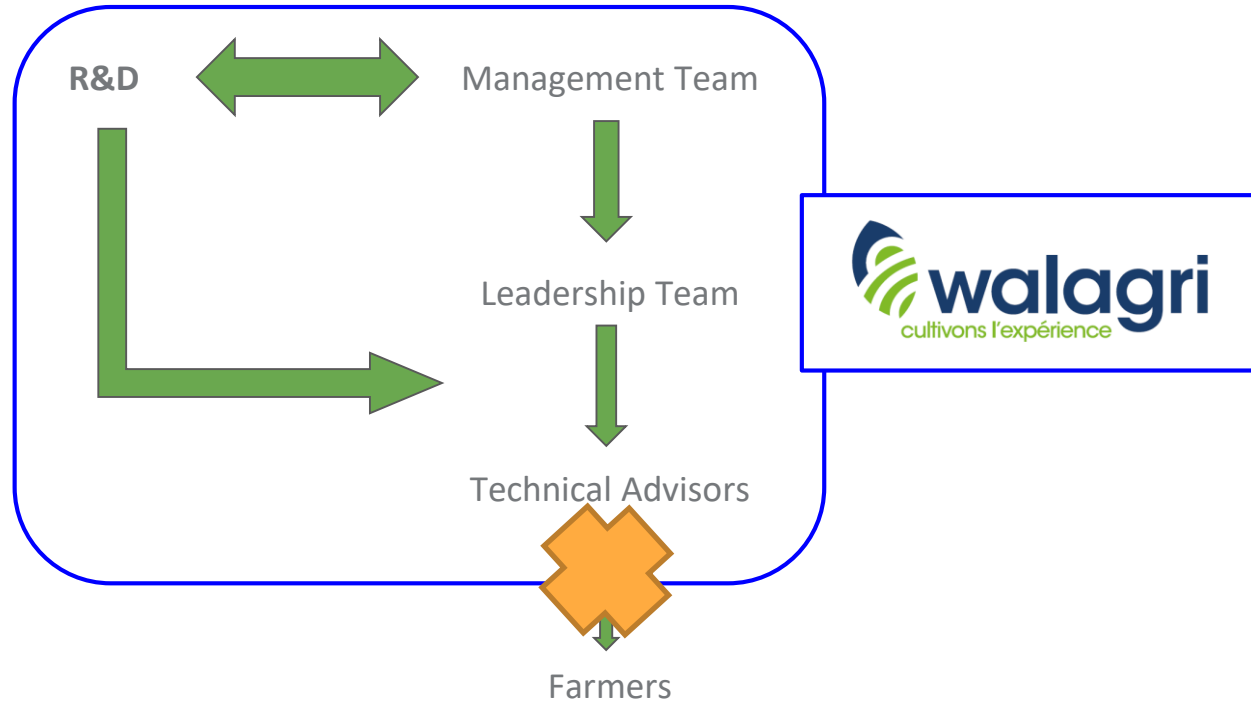
2017-... : -> **Scaling-up by DIVERIMPACTS** (10 ha -> 100 ha -> 1.000 ha)



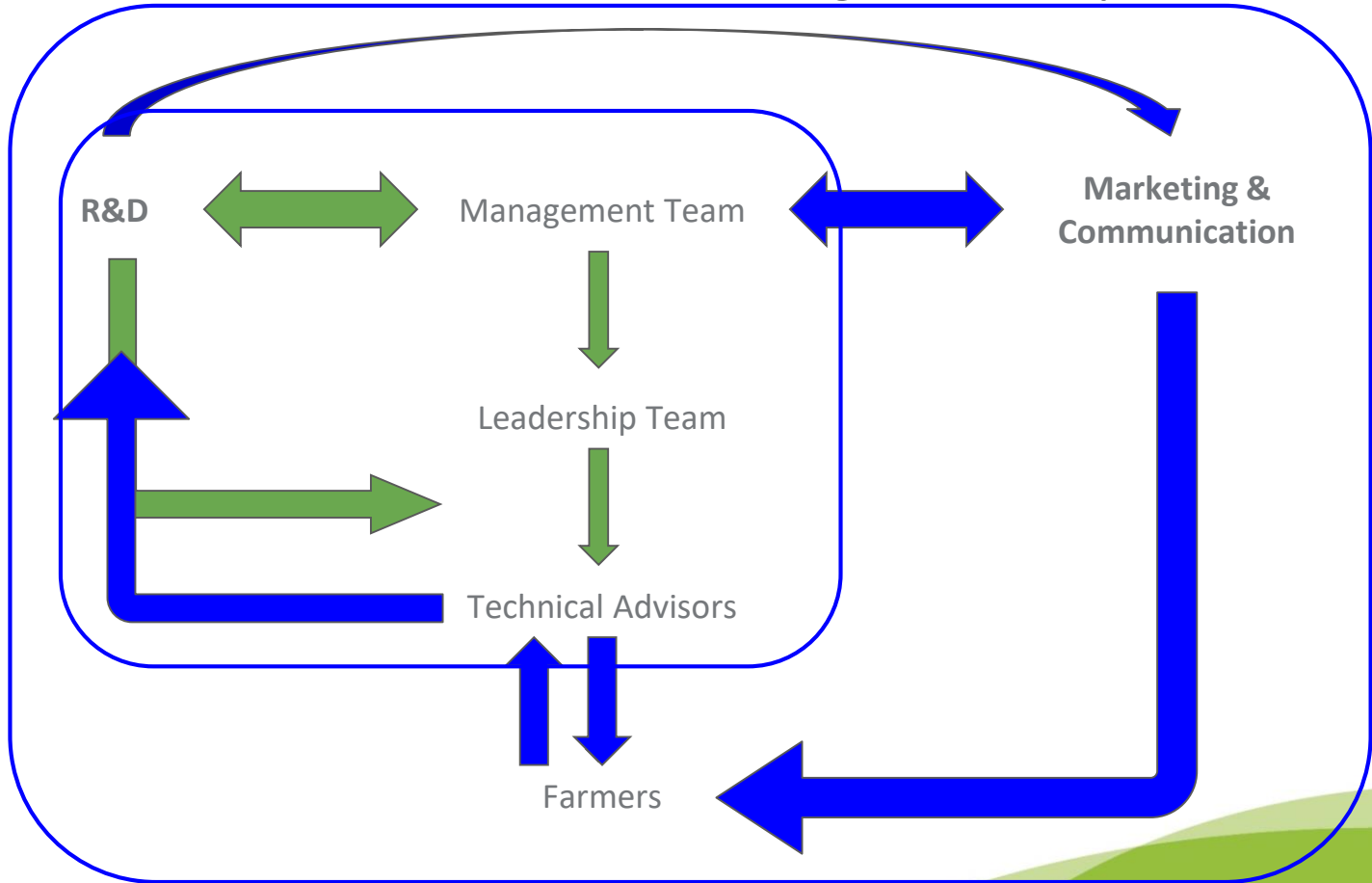
Creating added-value by Intercropping



Acceptance & Promotion: model at Co-innovation workshop #1



Acceptance & Promotion: reflections during Workshop #2



The Walagri example

- Technically and socio-economically, pea-wheat worked
- Important lock-in was at the level of Walagri itself
- Creative change of system boundaries to overcome lock-in
- Innovation process continues: new technical and socio-economic questions are emerging

DiverIMPACTS Case study #16: Strip cropping in the Netherlands

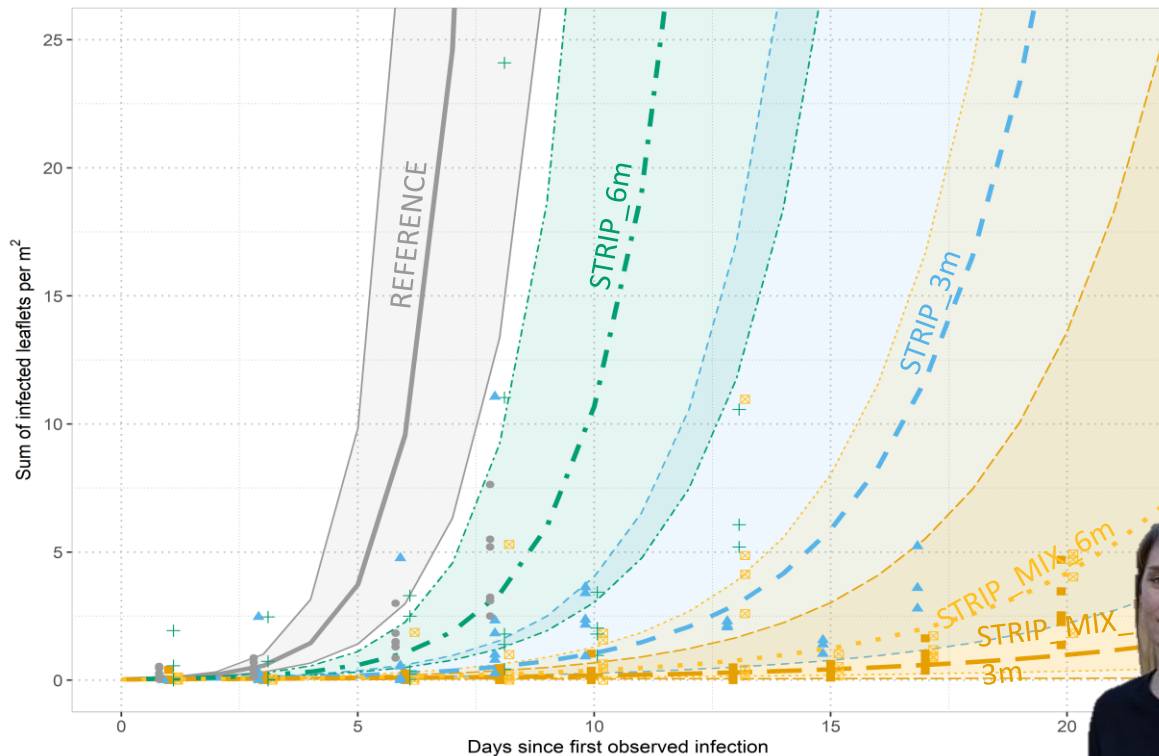
- Cumulative research activities since 2014
- From one engaged farmer in 2014 to sector-wide awareness
- Increasing engagement
- Elements of success?



farm locations

- ★ experimental station
- ▲ farm experiment
- stripcropping fields

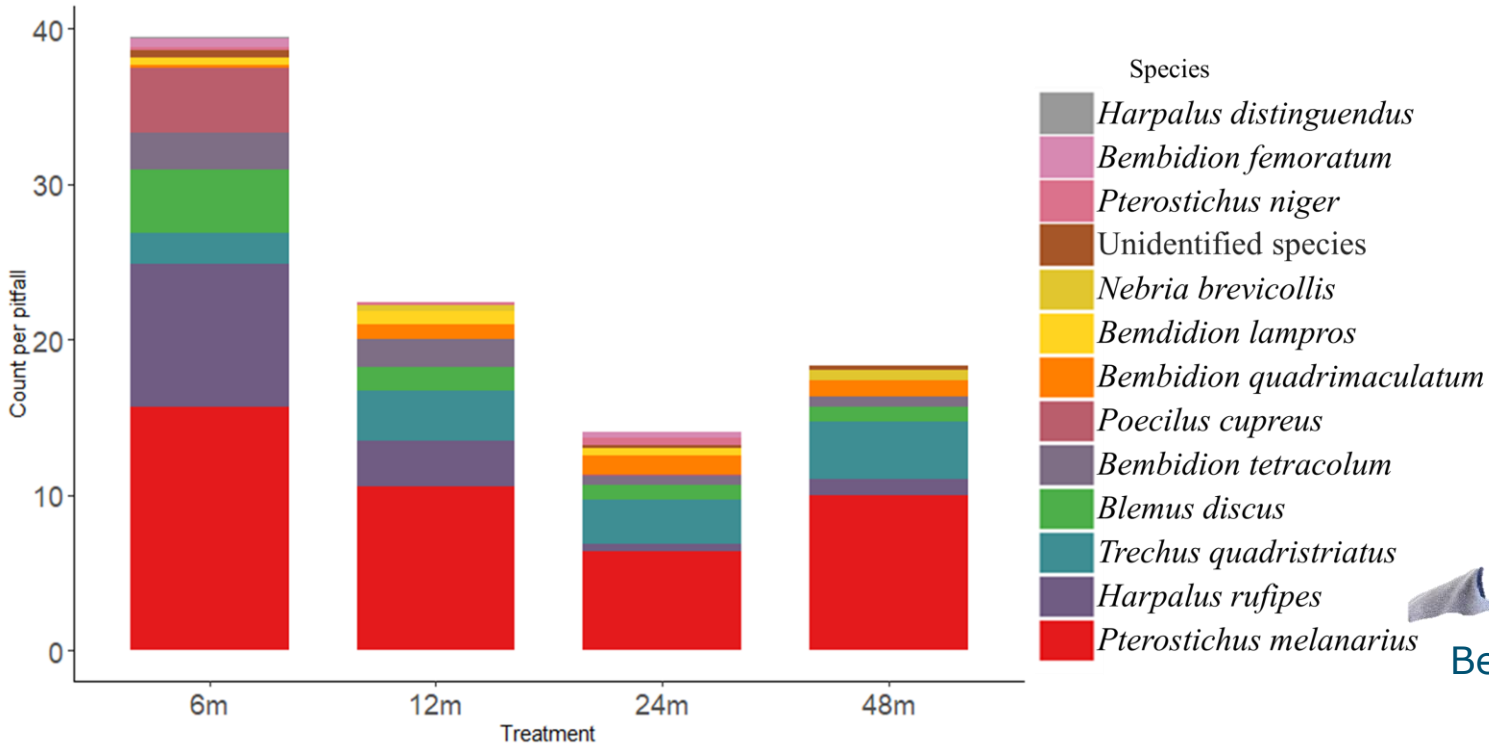
Social distancing of potato



Lenora Ditzler

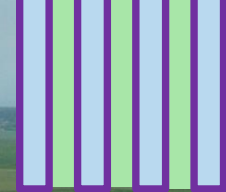


Abundance of ground beetles



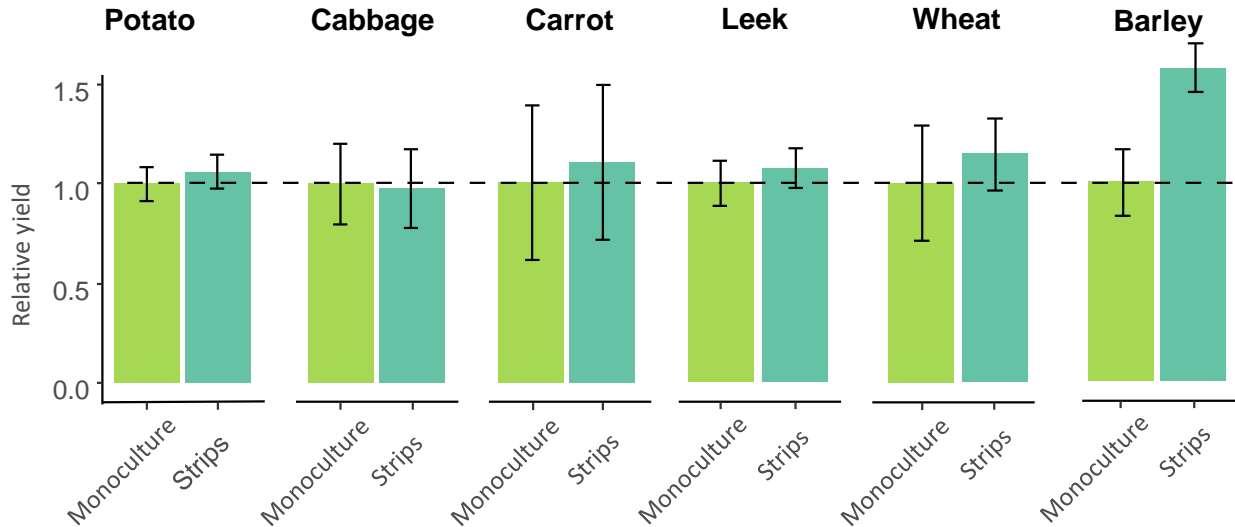
Bernard Osei

More habitat by "refuge" strips

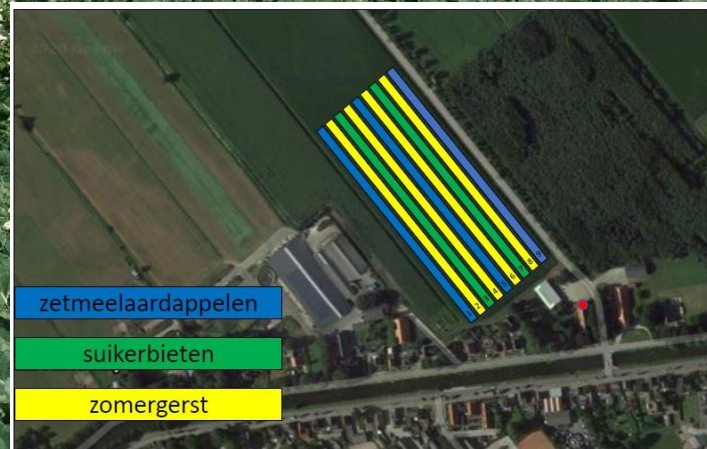


Chris Vreugdenhil

Yield effects at 3m strip width (in progress)



Redefining the field to fit GPS lines



9 stroken

12 meter breed

325 m lang

0,4 ha per strook

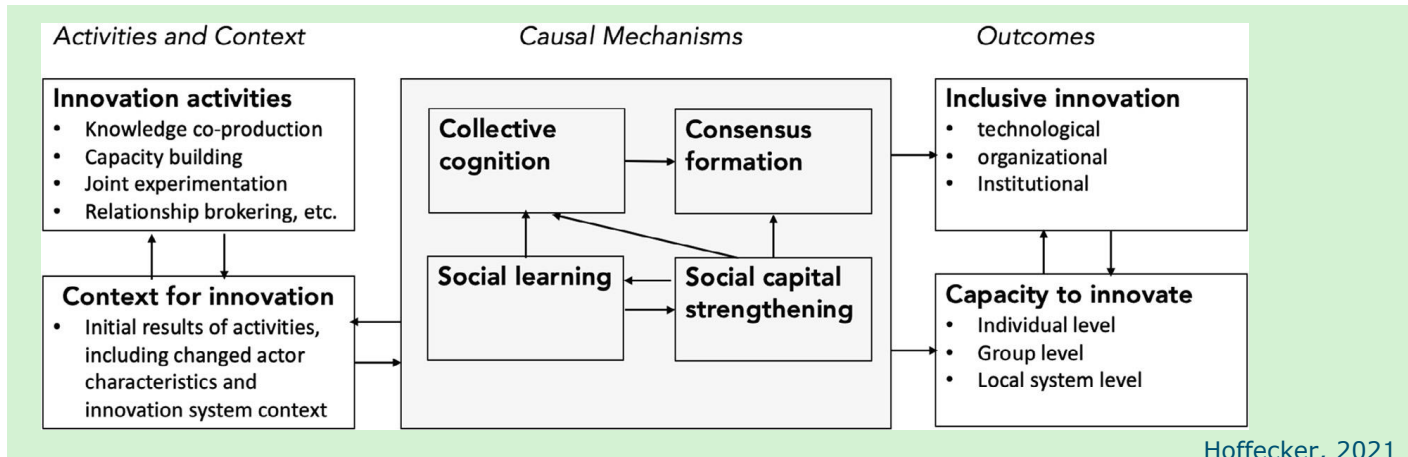
The Strip cropping example

- Continuous flow of new (scientific) information
- Researchers that understood farmer implementation problems
- Advocacy: more than 150 media appearances
- Charismatic farms, farmers, researchers
- First location highly visible
- Fast response to knowledge demands:
 - Tools, master classes, Q&A sessions
 - Feeding the Ministry with ideas



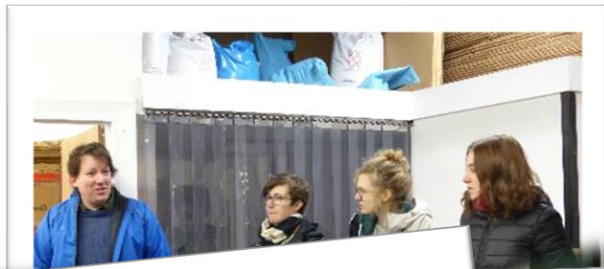
Rounding up & a question to you

- Transformation requires a social-ecological systems perspective
- Design-oriented systems research requires different activities and different management than analysis-oriented component research
- Change requires cumulative efforts



Hoffecker, 2021

Thank you for your interest



ENTREPRENEURSHIP

- NEW OPPORTUNITIES (PROFIT)
- UNUSUALITY OF BEST IDEAS
- INCREASED RISK IN DECISIONS
- IMPROVED COST-BENEFIT VALUE CHAINS
- MARKET LEADERSHIP DISTRIBUTION
- SOCIAL ECONOMIC DEVELOPMENT
- ENVIRONMENTAL/ECOLOGICAL BENEFITS FOR SOCIETY

Actions

- INTERNAL DECISIONS
- EXTERNAL DECISIONS
- INTERNAL DECISIONS
- EXTERNAL DECISIONS

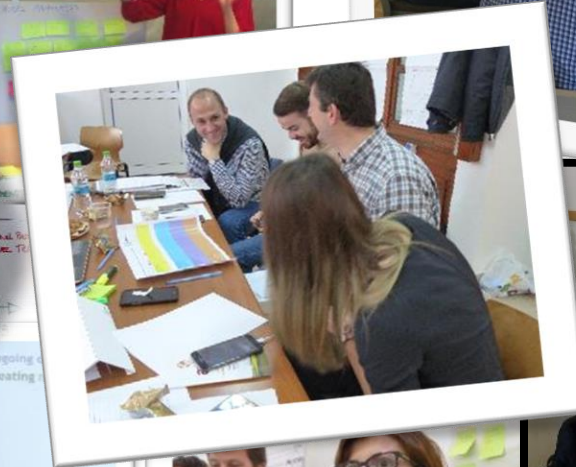
NSR

INNOVATORS - MEASUREMENTS

- CONSUMER ANALYSIS
- MARKET RESEARCH
- MARKET RESEARCH

Divert IMPACTS

- MARKET RESEARCH
- MARKET RESEARCH



Proof of concept at pilot scale

Application in “real life” of the results of research :

- Field's scale
- Machinery available in the farm : sowing, harvest machines
- Classic commercialisation + Risk premium (€/ha) based on wheat profitability
- Biomass for industrial tests (sieving, transformation)

Data production :

- Yield & production cost
- Industrial sieving test
- Grains quality at large scale -> Industrial transformation test
- Agronomic & technical difficulties

Proof of concept at pilot scale

Technical difficulties : Ex. Weed control

- Legal aspects -> "Pea+Wheat" as a new crop
- Mecanic control -> Tests

Economic evaluation -> Profitability for farmer & Walagri

- For farmer : higher profitability than wheat
- For Walagri : lower input & sieving costs -> need to valorize wheat with + 10 € / T -> Profitability =

10 €/T = 0,005 €/bread



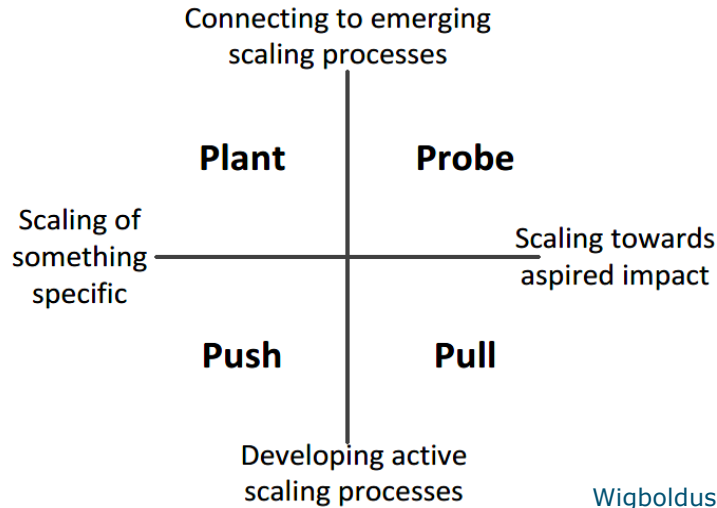
Creating added-value in the value chain

Give value to Ecosystemic Services :

- 1) Support by “authorities” : ex. Agro-Environmental & Climatic Measures -> Lobbying -> +240 €/ha
- 2) Direct agronomical advantage -> 80 NU less -> +60 €/ha
- 3) Consumers willingness to pay -> BtoB -> Promotion to Food Industries & Retailers -> Need to measure indicators with **WP4**

Higher value for higher quality :

- Pea : local (logistic) - physical quality - homogeneity
- Wheat : higher protein content



Wigboldus and Leeuwis, 2013

- Where would you position your project currently?
- What is needed for transforming to low-or-no pesticide systems / Ecophyto goals?