

# Agro-ecology

Knowledge exchange WUR, Aarhus University & ILVO  
29 september 2022

**ILVO**



# Program

10h00 Short introduction everyone

10h10 ILVO presentations

- *Introductie ILVO Animal Unit*
- *Technology and Food Unit*
- *Plant*
- *Social science unit*

11h00 WUR presentation

11h30 Aarhus University presentation

12h00 Departure [Cruydt](#)

13h45 Presentation PHAE & LLAEBIO

14h30 Walk at PHAE

16h00 End





- **Flanders Research Institute for agriculture, fisheries and food**
- **Research Institute linked to the Flemish government**
- **Created 90 years ago**
- **720 employees**
- **Located in Merelbeke, Melle, Ostend**





## INFRASTRUCTURE

- 9 locations in Merelbeke, Melle, Ostend
- 220 ha experimental fields
- Greenhouses, animal housing (dairy cows, pigs, poultry)
- Pilot plant for the food processing industry
- More than 40 labs (accredited)
- Agro-ecological platform 50 ha in Hansbeke





## Four divisions

- **Plant sciences**
- **Animal sciences**
- **Technology and food science**
- **Social Sciences**



## SYSTEMS APPROACH – INTEGRATED RESEARCH



soil → plate



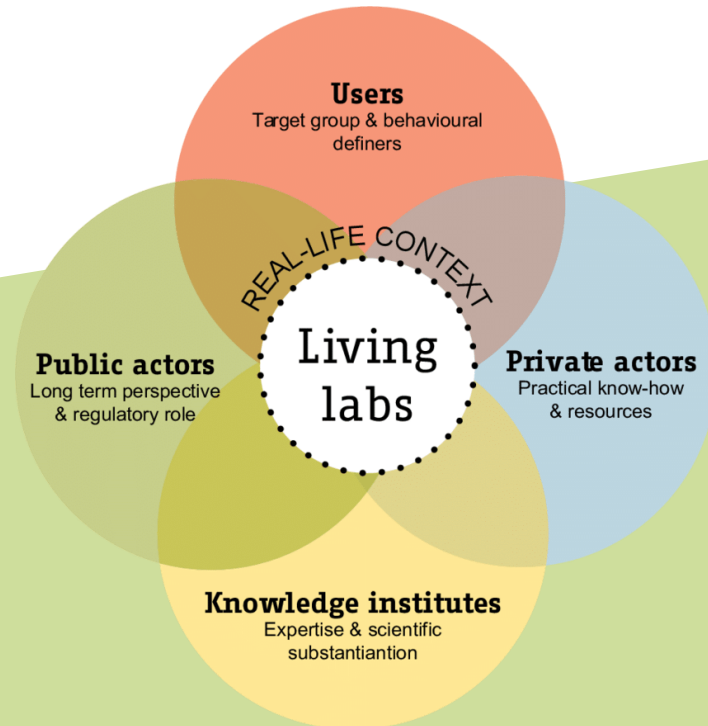
plate → soil





## LIVING LABS – CO-CREATION / MULTI ACTOR APPROACH

- ILVO Living Lab Food Pilot
- ILVO Living Lab Animal husbandry
- ILVO Living Lab Precision agriculture
- ILVO Living Lab plant
- ILVO Living Lab agro-ecology and organic farming





## A crusade for a healthy soil

**Good for soil fertility**

**Good for plant resilience**

**Good for biodiversity/nature**

**Good for the climate**

**Good for the prevention of erosion**

**Good for maintaining agricultural capital**

**Good for maintaining the production capacity of European agriculture**





## **Agro-ecology @ILVO**

**Animal Science Unit**

**Charlotte Vanden Hole**

**Nico Peiren**

**29/09/2022**

## **POULTRY/PIG/CATTLE:**

- **Feed: OPTIPLUIM, LEGMEME, MELKMETHGRAS**
- **Worm infections: ALTBIOLEG, PREBEBIOLEG**
- **Range use: PPILOW**





# ANIMAL – POULTRY

## OPTIPLUIM

Optimal cultivation of protein crops for poultry feeding

### Goal

Maximize the use of regional protein sources in poultry



### Why?

- ✓ Protein independency
- ✓ Sustainable, circular and animal friendly poultry production systems
- ✓ Less fertilization, pesticides and soil erosion

### Contact

[Marta.Lourenco@ilvo.vlaanderen.be](mailto:Marta.Lourenco@ilvo.vlaanderen.be)

### Research Questions

- ✓ Which alternative protein sources can be used in mixed cropping systems for poultry feeding
- ✓ Which cultivation techniques for mixed crops
- ✓ Which optimal processing technique for mixed crops
- ✓ What is the nutritional value of the processed mixed crops and its impact on egg and meat quality
- ✓ What is the economic viability and environmental impact (LCA)



# ANIMAL – POULTRY

## LEGMEME

Insect meal and whey powder: new potential protein sources for 100% organic feed

### Goal

Evaluate if these new potential protein sources match the requirements in organic production



### Contact

[Annatachja.DeGrande@ilvo.vlaanderen.be](mailto:Annatachja.DeGrande@ilvo.vlaanderen.be)

### Why?

- ✓ From **1/1/'22 30%** of the feed ingredients has to be **regional**
- ✓ **5% protein rich feeds** in young birds no longer allowed from **2026** on
- ✓ Challenge to formulate feeds that meet the animal requirements, particularly for **methionine & vit B2**

### Plan of Approach

- ✓ Evaluation of **insect meal** and **whey powder** as potential protein source
- ✓ Why? High **nutritional value** and fit in the concept of **circular economy**
- ✓ **Local production** and possible **alternative to soy**
- ✓ Implementation in research and commercial farms



# ANIMAL – POULTRY

## ALTBIOLEG

Alternative methods for deworming in organic laying hen production systems

### Goal

Provide guidelines to organic laying hen farmers for a better management of helminthic infections



### Contact

[Annatachja.DeGrande@ilvo.vlaanderen.be](mailto:Annatachja.DeGrande@ilvo.vlaanderen.be)

### Why?

- ✓ Systematic use of flubendazole for laying hen deworming
- ✓ No general deworming thresholds
- ✓ Risk of resistance against the only allowed pharmaceutical
- ✓ Little insights in the dynamics of worm infection and effects on production and animal health

### Research Questions

- ✓ What is a **correct indicator** for the infection pressure (**egg counts, autopsy, blood**)?
- ✓ What is the effect of **flubendazole** on the infection pressure?
- ✓ What is the effect of **not deworming** on the infection pressure?
- ✓ What is the effect of **alternative methods** (fytogenic products) on the infection pressure?



# ANIMAL – POULTRY

## PREBEBIOLEG

Alternative Methods to Prevent and Control Worm Infections in Organic Laying Hen Production Systems

### Goal

Increase the choice in alternative and preventive methods to control worm infections for poultry farmers



Without impact on animal performance

### Contact

[Annatachja.DeGrande@ilvo.vlaanderen.be](mailto:Annatachja.DeGrande@ilvo.vlaanderen.be)

### Why?

#### 1. Change in EU-regulation regarding the use of chemical products in organic production

↳ Waiting period of 48h

↳ Eggs can not be sold under the label of organic eggs during treatment + waiting period of 48h

↳ Economic losses

#### 2. Minimal use of pharmaceuticals = belongs to basic principles of organic production

### Research Questions

- ✓ Desk-study: inventarisation of the current practices
- ✓ Making SOP's with the available knowledge on
  - ✓ Monitoring and diagnose
  - ✓ Prevention and alternative methods
  - ✓ Treatment strategies
- ✓ Apply and optimize SOP's in practice
- ✓ SOP's available for free via LivingLab Animal Production - Poultry



# ANIMAL – POULTRY / PIGS

## PPILOW

Poultry and Pig Low-input and Organic production systems

### Goal

Innovative strategies for the welfare improvement of pigs and poultry in organic and low-input systems



### Why?

- ✓ Increasing consumer demand for free range/organic products, but still many welfare challenges
- ✓ Increasing attention for the 'One Welfare' concept

### Contact

[Evelien.Graat@ilvo.vlaanderen.be](mailto:Evelien.Graat@ilvo.vlaanderen.be)

### Research questions

- ✓ Does the use of welfare self-assessment tools lead to an improvement in welfare?
- ✓ Incubation and rearing strategies (without mutilations) to improve welfare?
- ✓ **Optimised design of the outdoor area for laying hens, that maximises the use of the outdoor area and minimises feather pecking, feather damage and mortality**



ILVO



# ANIMAL – CATTLE

## MELKMETHGRAS

Nutritional mitigation and grassland climate adaptation in relation to enteric methane emissions from dairy cattle

### Goal

Develop nutritional grass-based mitigation and adaptation strategies in relation enteric methane emissions for dairy cattle



### Why?

- 1. Climate Mitigation through lower enteric methane emissions in grass fed diets**
- 2. Climate Adaptation through grass and grassland that is more drought tolerant and resilient to more extreme weather conditions**

### Contact

[Joni.VanMullem@ilvo.vlaanderen.be](mailto:Joni.VanMullem@ilvo.vlaanderen.be)

### Research Questions

- ✓ What is the mitigation potential of different grassland herbs (Ribwort plantain, Chicory, Sainfoin, White clover, Red clover, Alfalfa) and can this be determined via *in vitro* CH<sub>4</sub> emissions screening?
- ✓ What is the optimal harvest moment of these herbs?
- ✓ What is the effect of these herbs on dairy cows? (dry matter intake, milk production and composition, CH<sub>4</sub> production, digestibility and microbiome)





# ANIMAL – CATTLE

## BROCHURE

Practical guide to Organic Beef Farming



<https://www.vlaanderen.be/publicaties/praktijkgids-voor-de-biologische-vleesveehouderij>

Contact

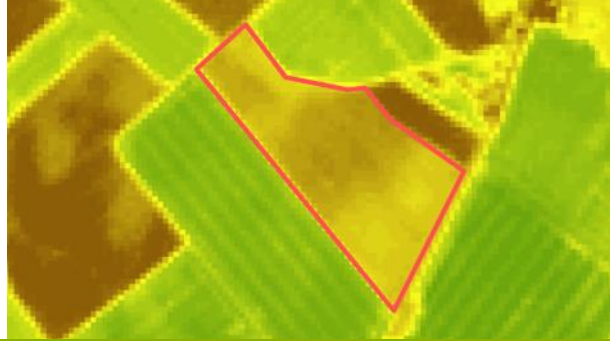
[Karen.Goossens@ilvo.vlaanderen.be](mailto:Karen.Goossens@ilvo.vlaanderen.be)



## Thank you for your attention

Flanders Research Institute for Agriculture,  
Fisheries and Food  
Animal Science Unit  
Scheldeweg 68  
9090 Melle – Belgium  
T + 32 (0)9 272 26 00

[dier@ilvo.vlaanderen.be](mailto:dier@ilvo.vlaanderen.be)  
[www.ilvo.vlaanderen.be](http://www.ilvo.vlaanderen.be)



# Remote sensing cases @ILVO

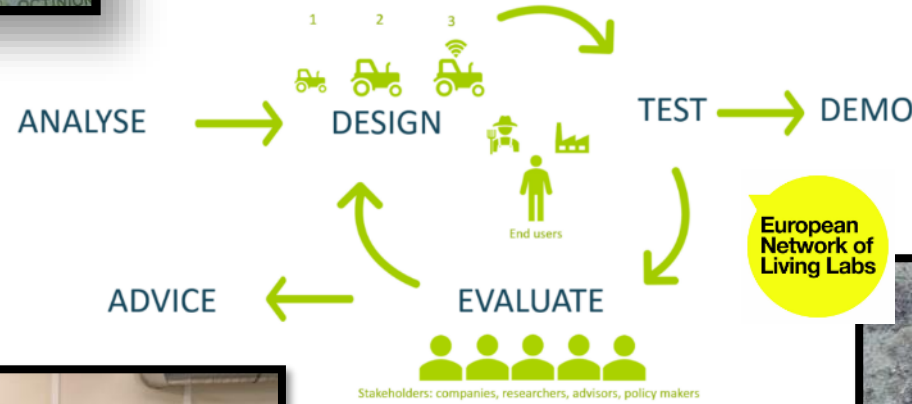
29/09/2022

Jonathan Van Beek

[Jonathan.vanbeek@ilvo.vlaanderen.be](mailto:Jonathan.vanbeek@ilvo.vlaanderen.be)



## Living Lab Agrifood Technology



 [www.agrifoodtechnology.be](http://www.agrifoodtechnology.be)  
 [info@agrifoodtechnology.be](mailto:info@agrifoodtechnology.be)  
 @LLAgrifoodTech

# Living Lab Agrifood Technology

## → Platforms

- Satellites
- Drones
  - Altigator Hydra-12
  - DJI Phantom 4 PRO
  - DJI matrice 600
- Robots
  - Treebot
  - Biobot
  - Cimat

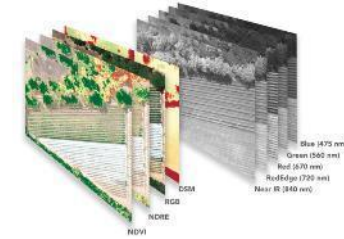


## → Cases

- Fertilizer application in leek
- Weeds in maize
- Weeds in potato
- Growth monitoring for flax

## → Sensors

- RGB
- Multi/hyperspectral
- Thermal
- ...

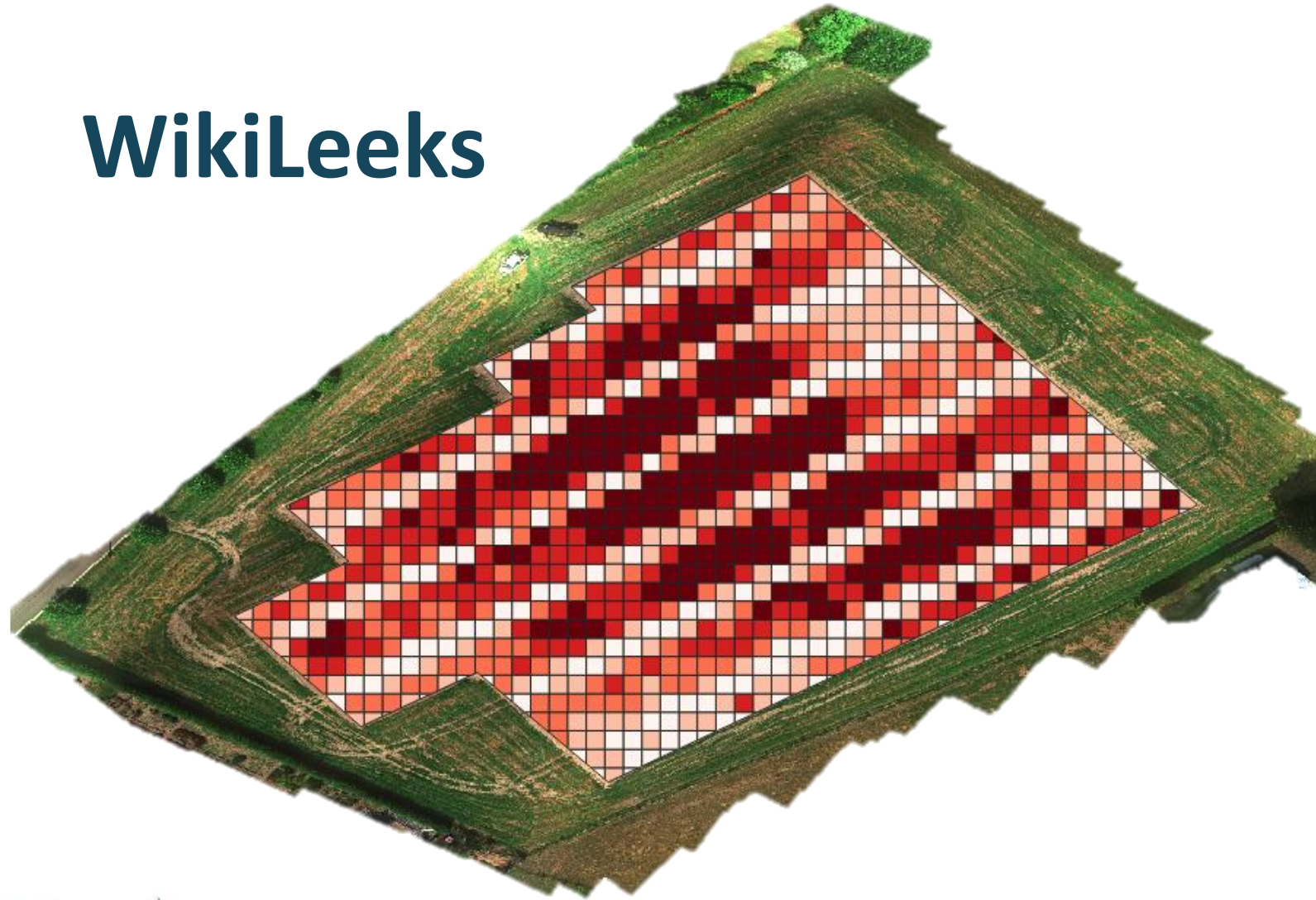
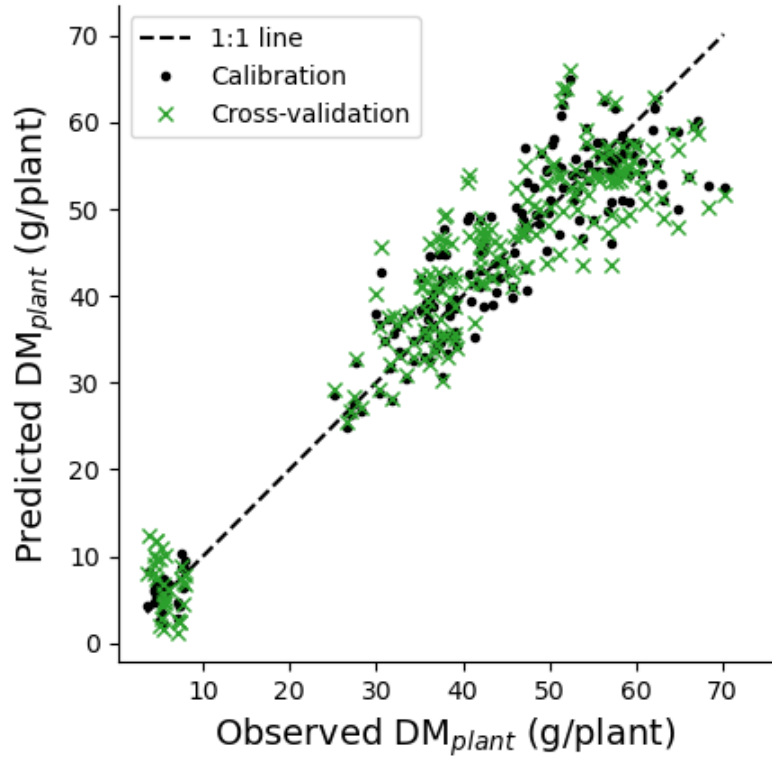


IMEC Snapshot VNIR Airborne

- Spatial: 2048 x 1088 pixels
- VIS 470nm-620 nm 16 bands
- NIR 600 nm- 860nm 15 bands



# WikiLeeks



AGENTSCHAP  
INNOVEREN &  
ONDERNEMEN

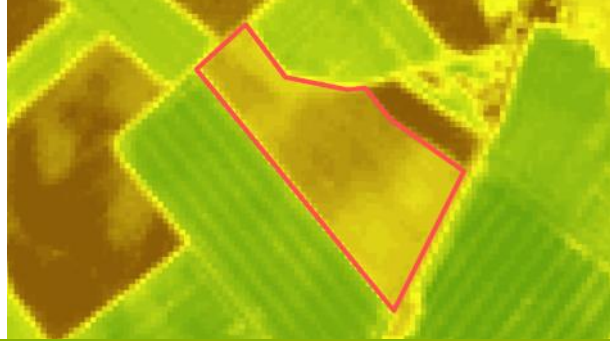


Vlaanderen  
is ondernemen



KU LEUVEN





# Thank you

Contact [Jonathan.vanbeek@ilvo.vlaanderen.be](mailto:Jonathan.vanbeek@ilvo.vlaanderen.be)

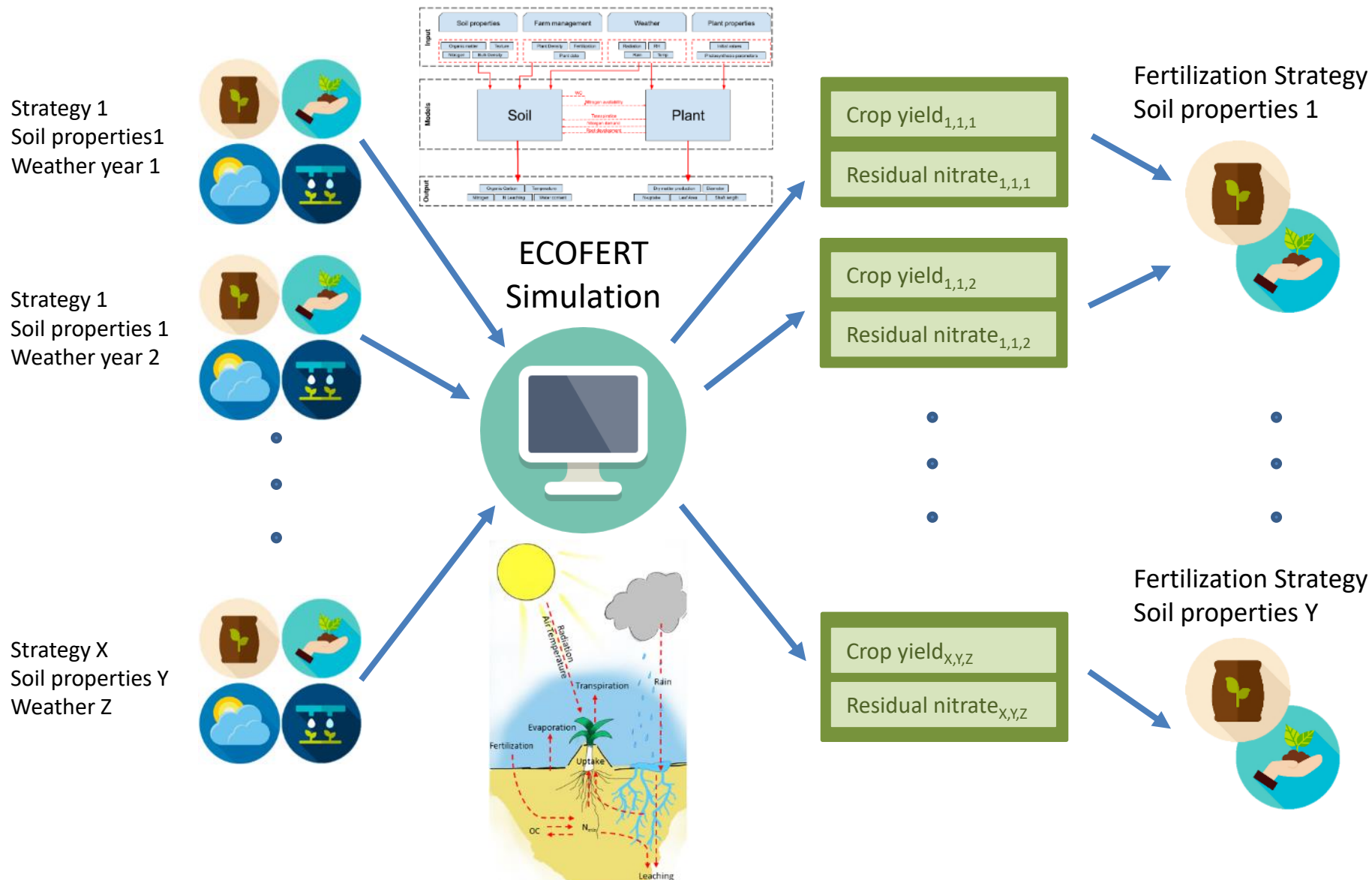


 [info@agrifoodtechnology.be](mailto:info@agrifoodtechnology.be)

 [@LLAgrifoodTech](https://twitter.com/LLAgrifoodTech)

 [ILVO Living Lab Agrifood Technology](https://www.linkedin.com/company/ilvo-living-lab-agrifood-technology/)

# ECOFERT DSS





## Step 1: Data acquisition

- Soil texture (Flemish texture map)
- OC% (Veris soilscan)
- N<sub>min</sub> (soil analysis)

## Step 2: Simulations

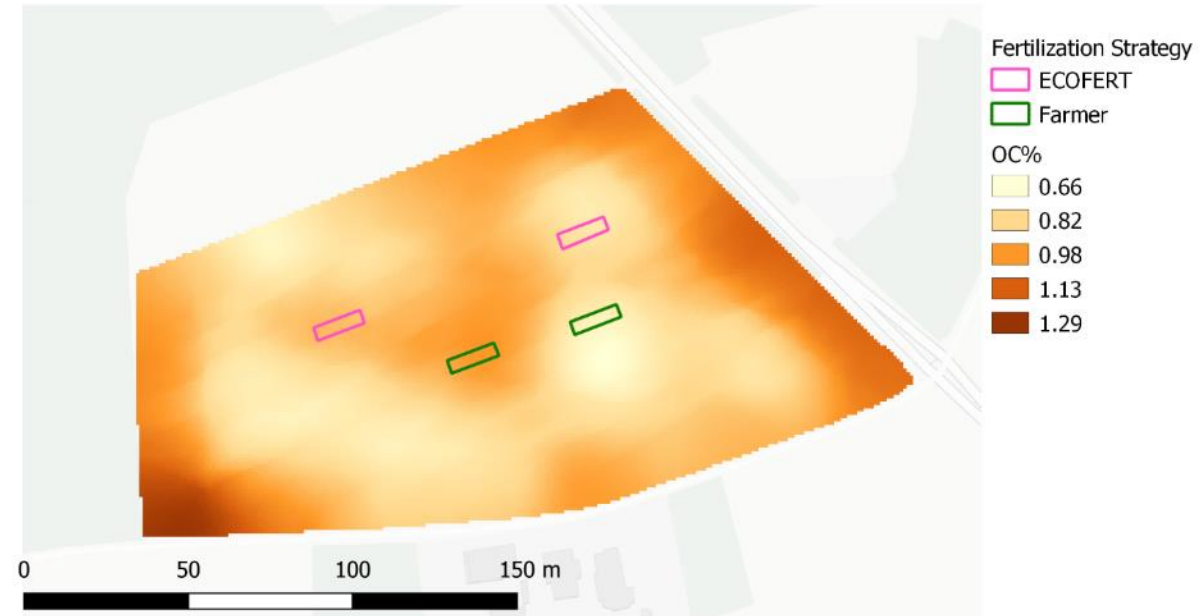
- 100 fertilization strategies
- Weather (JRC weather database 1979 – 2020)

## Step 3: Optimization

- Interpolation models
- Maximal yield
- 10% exceeding MAP6 NO<sub>3</sub>-residue limit
- Restrictions on total N-use

## Step 4: Results

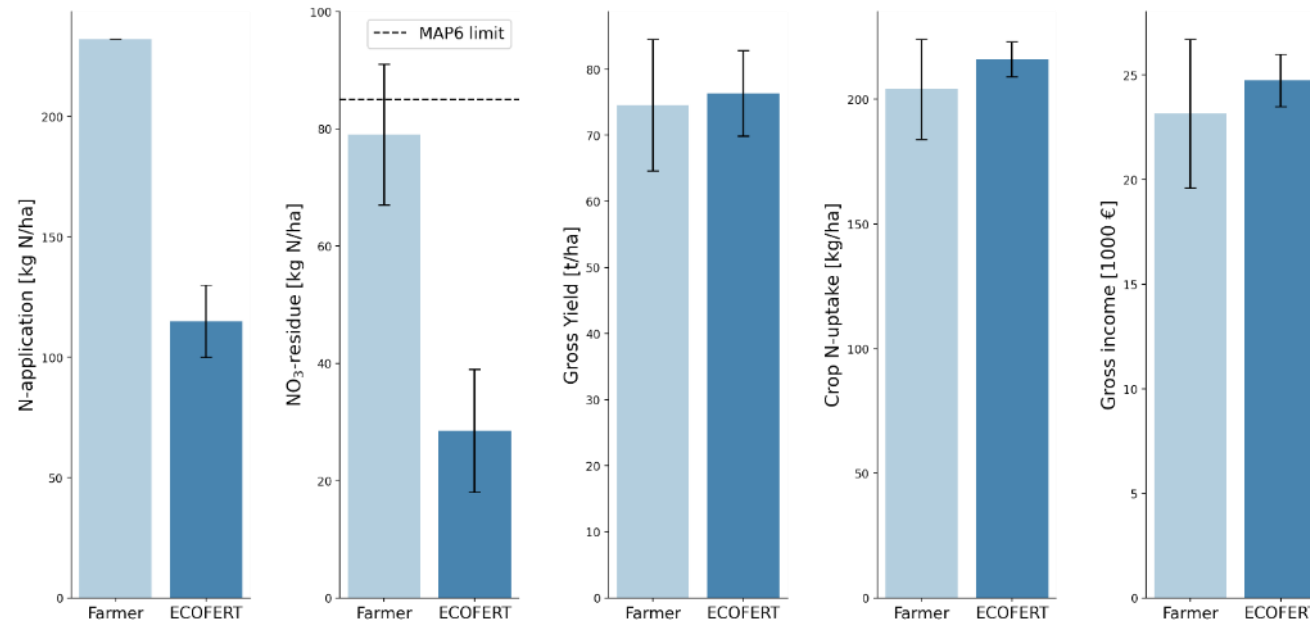
- Top 10 candidate strategies discussed with advisor



Fert Strategy	OC %	NO <sub>3</sub> -ini [kg N/ha]	Texture
Farmer	0.67 – 0.77	221 – 312	Sand
ECOFERT	0.69 -0.73	197 – 207	Sand

- 115 kg N/ha less fertilizers (-50%)
- NO<sub>3</sub>-residu 50 kg N/ha lower (-64%)
- Crop N-uptake 12 kg N/ha higher (+5.8%)
- Gross Yield 1.8 t/ha higher (+2.4%)
- Gross Income\* €1600 higher (+6.9%)

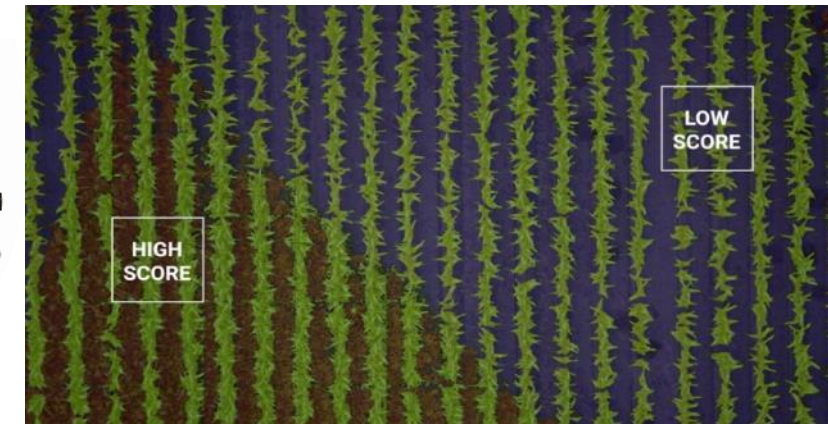
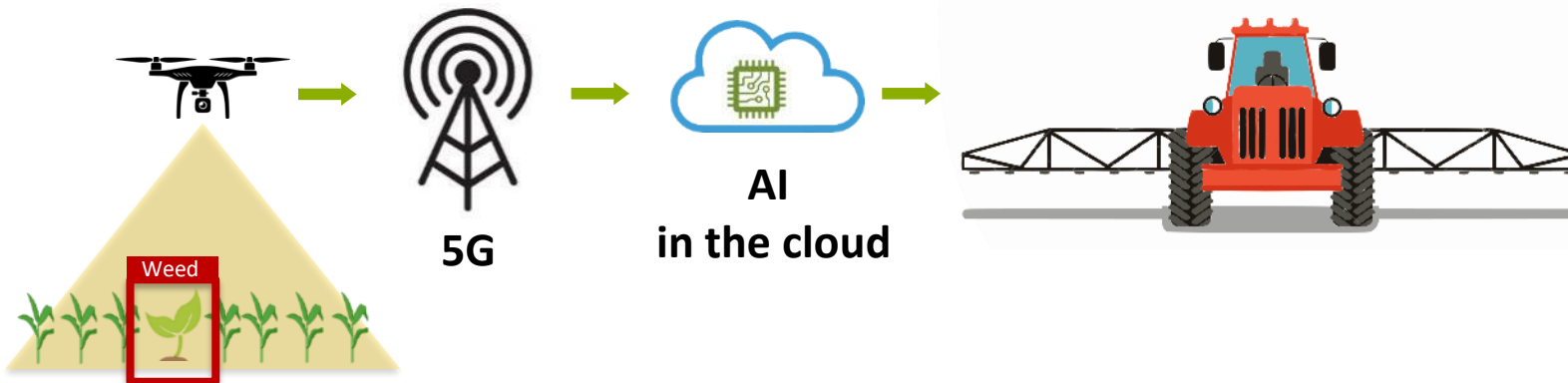
\*Based on 5-year average prices per diameter class



# Real-time weed detection with 5G



- Real-time site-specific weed detection in maize crop
  - Autonomous drone
  - 5G & Artificial intelligence
  - Site-specific spray boom
- Live demonstration 24/06/2021





0 50 m



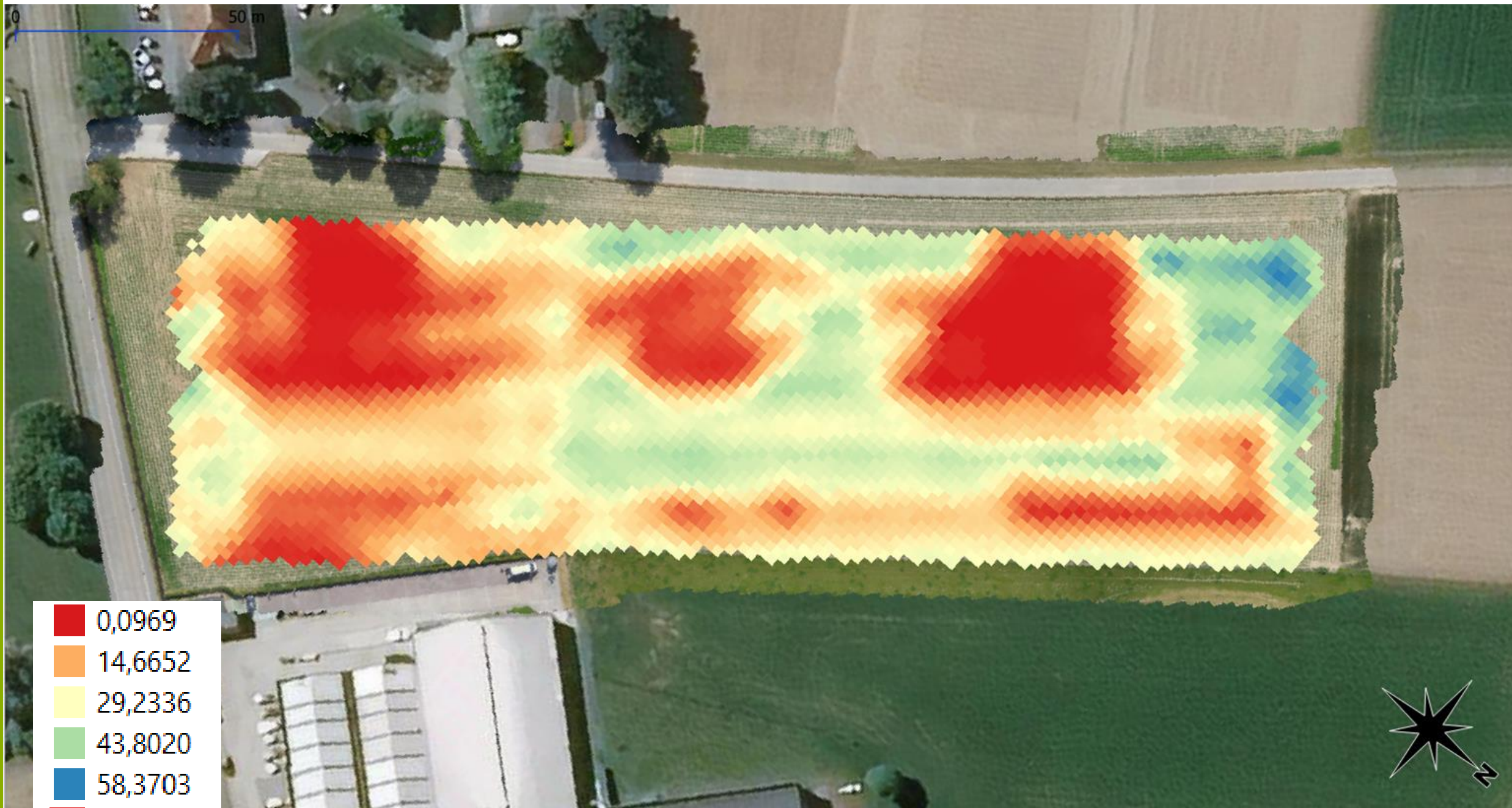


0 50 m













Threshold = 19

# Weed detection and control

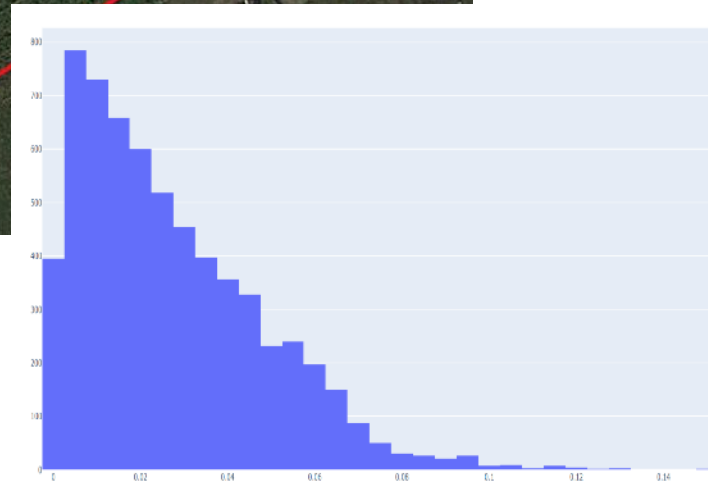
- Real-time site-specific thermal weed detection and control in potato crop
  - Drone en autonomous CIMAT robot
  - 5G & Artificial intelligence
  - Site-specific control on robot
- Live demonstration 21/05/2022



# Autonomous CIMAT robot



Mean value: 2,72 cm  
Median value: 2,24 cm  
Standard deviation 2,21 cm



# Flaxsense 2.0

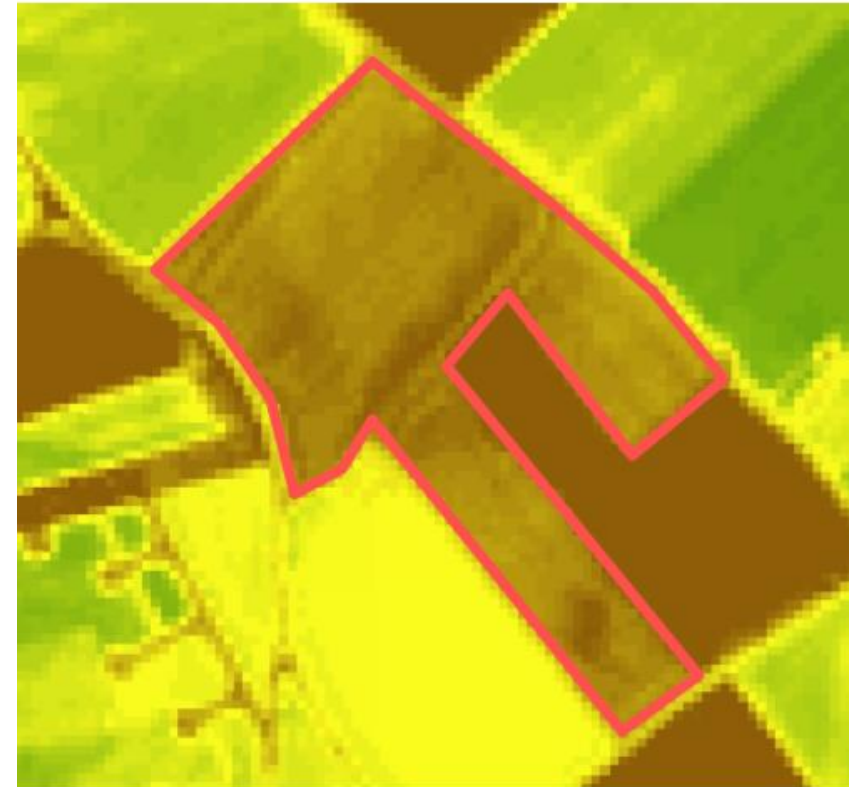
- Efficient and objective monitoring of flax fields
- Improve management through data-analysis
- Modify crop models to use satellite imagery as input



# Monitoring fields



# Monitoring fields



20-04-2022

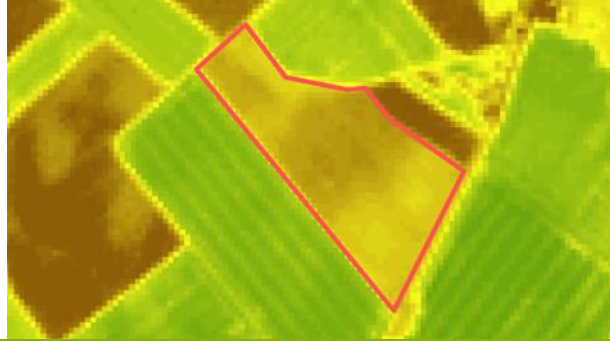
# Experimental fields

- $\pm$  Weekly observations at flying height 40 m
- MicaSense RedEdge Dual Camera System



0 10 20 m





# Thank you

Contact [Jonathan.vanbeek@ilvo.vlaanderen.be](mailto:Jonathan.vanbeek@ilvo.vlaanderen.be)



 [info@agrifoodtechnology.be](mailto:info@agrifoodtechnology.be)

 [@LLAgrifoodTech](https://twitter.com/LLAgrifoodTech)

 [ILVO Living Lab Agrifood Technology](https://www.linkedin.com/company/ilvo-living-lab-agrifood-technology)



# Multiyear soil management field experiments @ILVO

## Agroforestry @ILVO

Koen Willekens, Greet Ruyschaert, Tommy D'Hose  
Bert Reubens, Jolien Bracke  
29 September 2022

**ILVO**

# SOIL MANAGEMENT FACTORS

- ✓ Fertilization
  - On farm prepared compost
  - Animal manure types
  - Cut-and-carry fertilizers
  
- ✓ Soil tillage
  - Mouldboard ploughing
  - Reduced tillage: non-inversion tillage or no-till
  
- ✓ Cover crop management
  - Termination of a non frost-sensitive cover crop mixture
    - Early (February-March)
    - Late (May)
    - Very late (just before sowing/planting main crop, roller-crimper technique)
  - Either removal (fodder production) or incorporation of the cover crop

## Effects

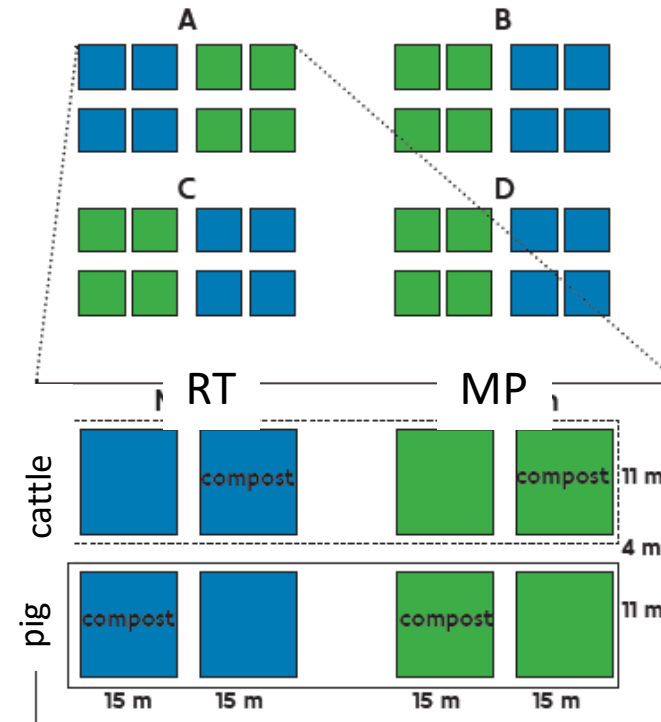
- ✓ Soil quality (chemical, physical and biological)
- ✓ Nutrients dynamics (N & P, ...)
- ✓ Crop performance

BOPACT trial: 2010 - ...  
Conventional arable production

Factors:

- ✓ Slurry application: cattle versus pig slurry
- ✓ Mouldboard ploughing (MP) versus Reduced tillage (RT; non-inversion)
- ✓ Farm compost application: zero versus 2 t C/ha ( $\approx$  20 t compost/ha)

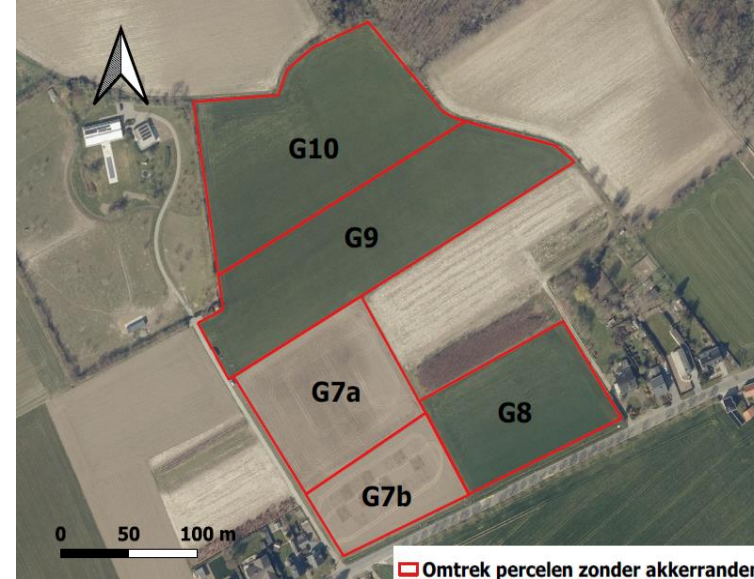
Crop rotation: maize – potatoes – spring barley – leek/fodder beet  
incl. of cover crops (GAP)



# Crop rotation, crops and projects

## Experimental fields G7-G10

(5,7 ha certified organic)



	G7a	project	G7b	project	G8	project	G9-G10	project
2010	grass clover		grass clover					
2011	grass clover		grass clover					
2012	leek	Symbios	grass clover					
2013	celeriac	Symbios	grass clover					
2014	spring wheat		grass clover					
2015	potatoes	Project cut-and-carry fert	grass clover					
2016	headed cabbage	Project cut-and-carry / Soilveg	grass clover					
2017	headed cabbage	Soilveg	cover crop mixture					
2018	soy	La vie est belle	soy	La vie est belle	spring barley - grass clover		grass clover	Klavertroef
2019	spelt		spelt		grass clover	Klavertroef	grass clover	Klavertroef
2020	potatoes		potatoes	VLM-project	grass clover	Klavertroef	grass clover	Klavertroef
2021	grass clover	Klavertroef	leek	VLM-project	leek	Wikileeks	grass clover	Klavertroef
2022	grass clover	Klavertroef	spring barley	Soildiveragro	maize-bean	Farmers Benefits	grass clover	Klavertroef
2023	grass clover		headed cabbage	Soildiveragro	maize-bean	Farmers Benefits	winter wheat	



# First multiyear soil management field experiment@ILVO

2 organically managed fields – 2 starting years

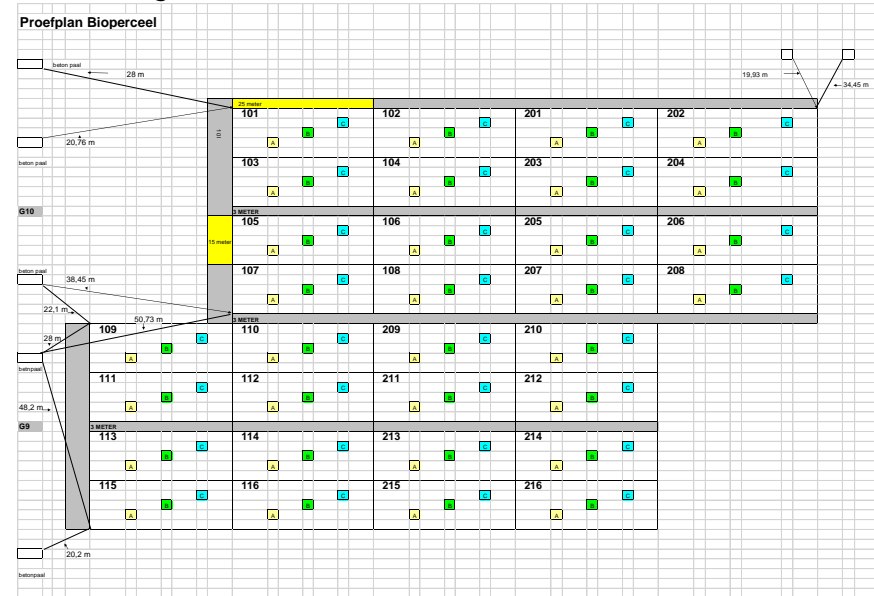
Crop rotation: maize - potatoes – summer barley – red clover

Field G10: 2005-2008

Field G9: 2006-2009

Factors:

- Farm compost application combined with reduced tillage (non-inversion)
- ✓ Farm yard manure combined with mouldboard ploughing





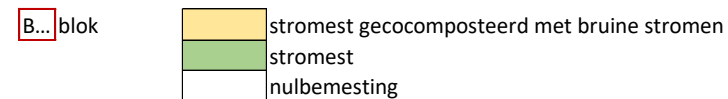
# VLM-BIO project Soildiveragro

## Organically managed field G7b

2019-2023: spelt – potatoes – leek – spring barley – headed cabbage

### Factors

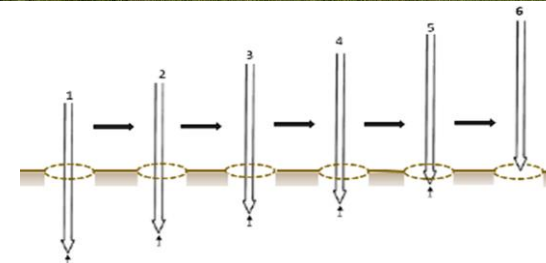
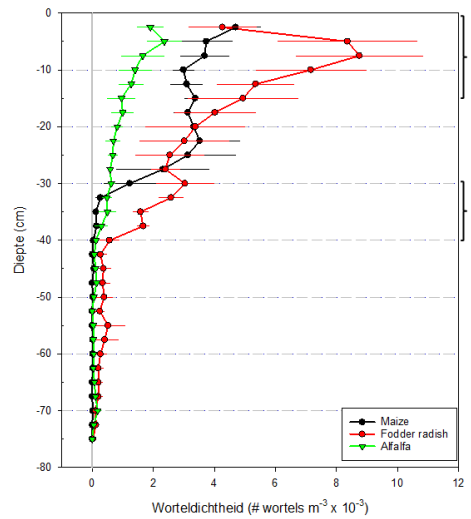
- Fertilization: Farm yard manure versus Farm yard manure co-composted with brown material
- Either removal (fodder production) or incorporation of the cover crop



# Soil compaction research

- ✓ Prevention measures
- ✓ Remediation (mechanical and biological)
- ✓ Tools to detect soil compaction based on proximal and remote sensing

## Field experiment Melle

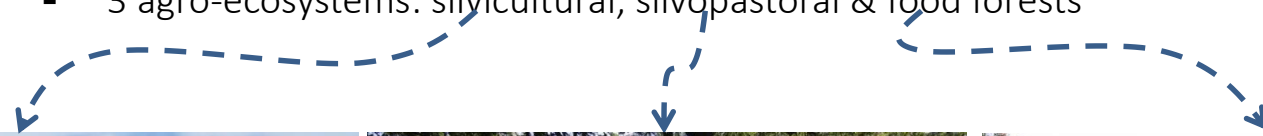


\*: P < 0.05



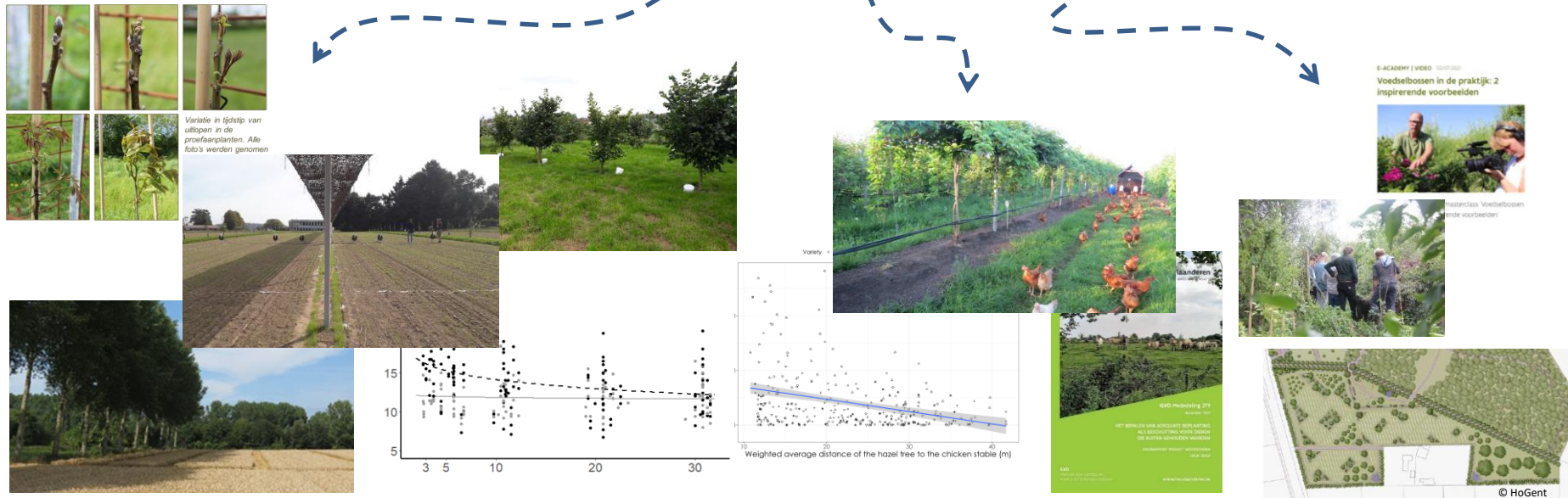
# Agroforestry @ILVO

- 10 years: 2012 – 2022
- Consortium Agroforestry Flanders ([www.agroforestryvlaanderen.be](http://www.agroforestryvlaanderen.be))
- 4 dimensions: research – socio-economic - policy – communication
- Agroforestry systems research: understanding & optimizing
  - Impact on crop, soil, biodiversity,...
  - 3 agro-ecosystems: silycultural, silvopastoral & food forests

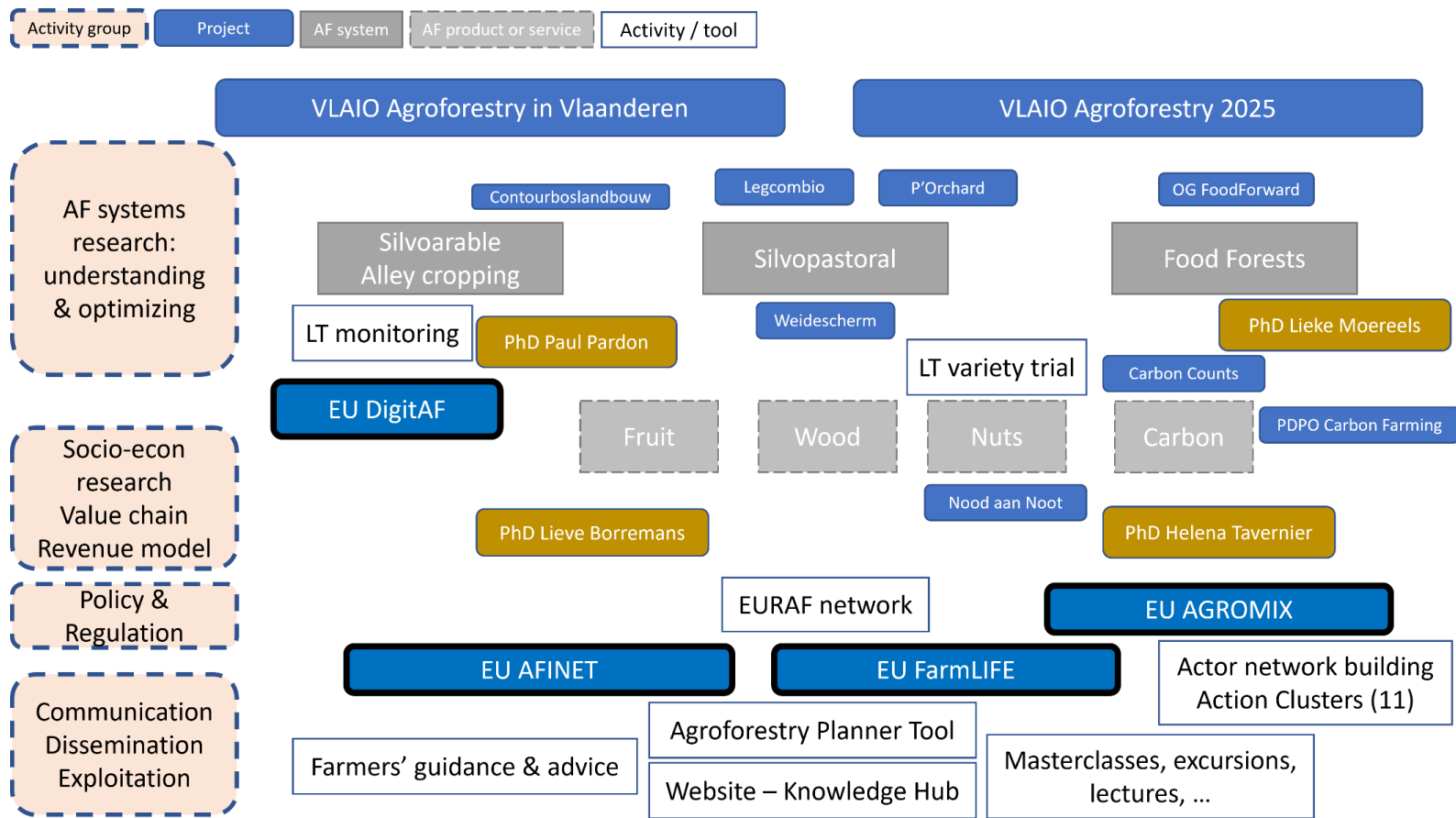


# Agroforestry @ILVO

- 10 years: 2012 – 2022
- Consortium Agroforestry Flanders ([www.agroforestryvlaanderen.be](http://www.agroforestryvlaanderen.be))
- 4 dimensions: research – socio-economic - policy – communication
- Agroforestry systems research: understanding & optimizing
  - Impact on crop, soil, biodiversity,...
  - 3 agro-ecosystems: silvicultural, silvopastoral & food forests



# Agroforestry @ILVO



# Thank you for your attention

**Instituut voor Landbouw-,  
Visserij- en Voedingsonderzoek**  
Burg. Van Gansberghelaan 109  
9820 Merelbeke – België  
T + 32 (0)9 272 26 73

[koen.willekens@ilvo.vlaanderen.be](mailto:koen.willekens@ilvo.vlaanderen.be)  
[www.ilvo.vlaanderen.be](http://www.ilvo.vlaanderen.be)

# Carbon Farming

## Monitoring, tools and business models



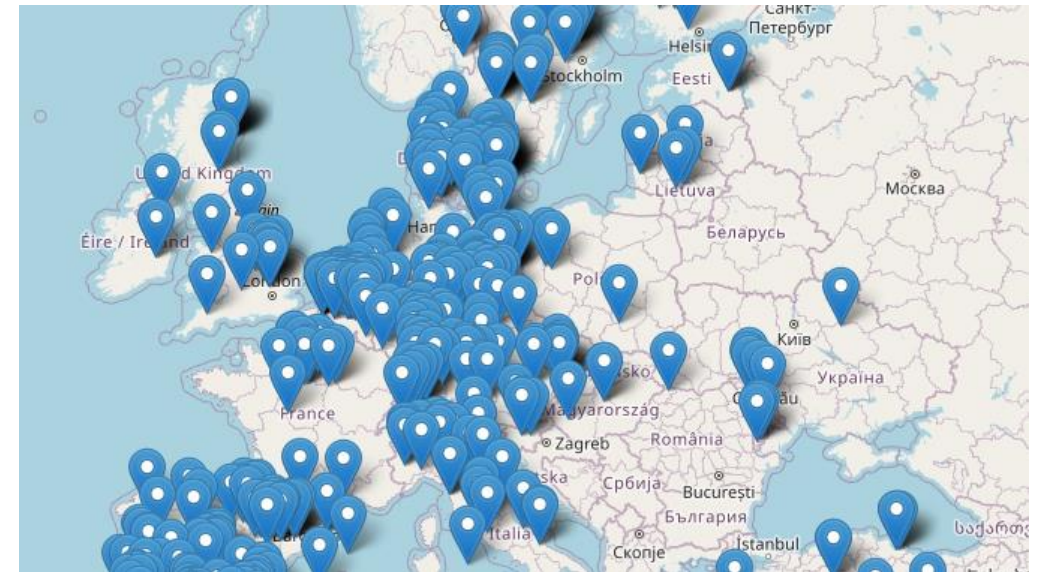
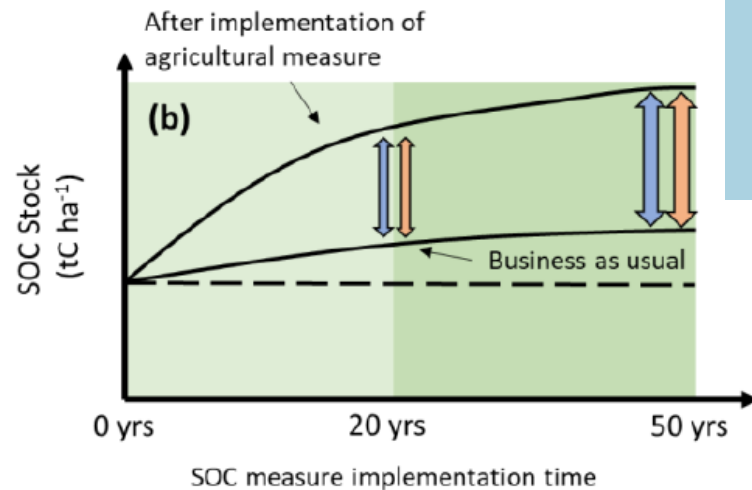
**Plant Sciences:** Greet Ruyschaert, Peter Maenhout, Kaat Mertens, Ioanna Panagea, Tommy D'Hose

**Social Sciences:** Sofie Annys, Ennio Facq, Els Lemeire

**Technology and food sciences:** Panos Ilias

Visit WR and AU - 29/09/2022

# Impact of carbon farming practices



**EJP SOIL**  
European Joint Programme

**CARBON SEQ**



Ioanna Panagea



Guillaume Blanchy

# SOC and trade-offs









Soil management strategy	SOC change		N <sub>2</sub> O emission mitigation		CH <sub>4</sub> emission mitigation	N leaching	
Tillage management			?		?	?	
Cropping systems	ROT; LEG; ORG; CONS		CONS; CC; CC incorporated into the soil; CG; CF	CONS; ORG; PER	ORG; AGF; CG; CF	CC; LEG; ORG	
Water Management					?		
Fertilization and OM input – <i>Crop residues</i>					N/A		
Fertilization and OM input – <i>Cover crops</i>					N/A		
Fertilization and OM input – <i>Livestock manure, slurry and compost</i>			?		N/A	N/A	
Fertilization and OM input – <i>Biochar</i>							
Fertilization and OM input – <i>Liming</i>					N/A		

Table legend (also see Chapter 2):

N/A: Not Assessed;  no-tillage (zero-till);  non-inversion tillage (minimum/ reduced tillage);  legume  non-legume

Impact: Positive (green color), negative (red color), no difference (grey color)

positive	negative	neutral
----------	----------	---------

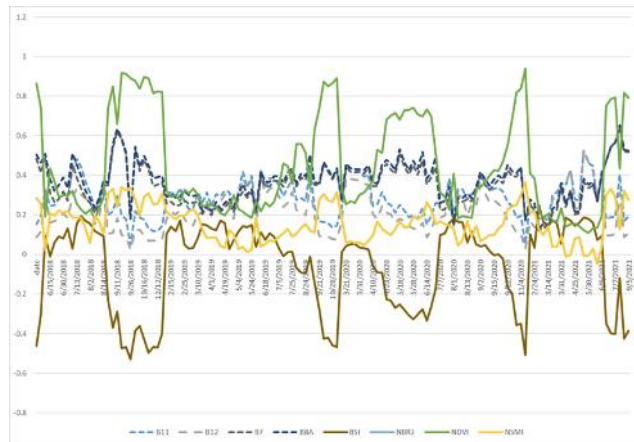
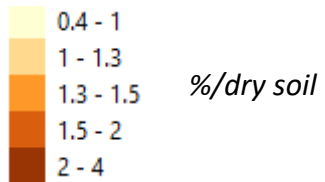
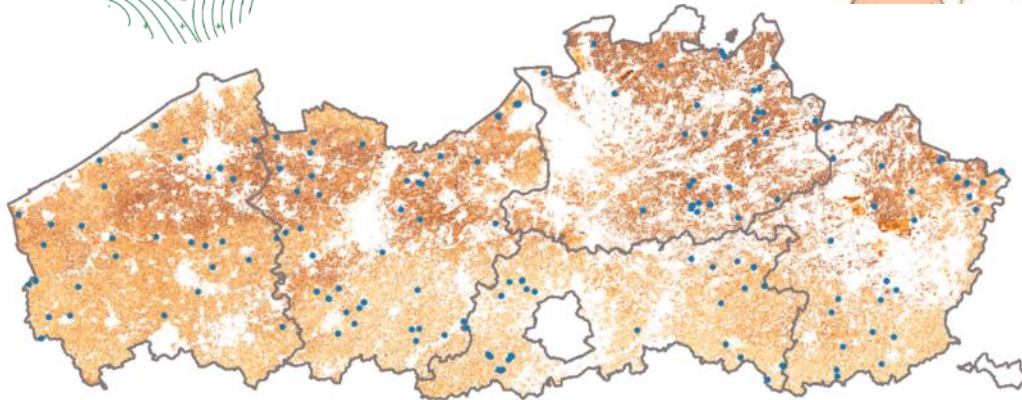
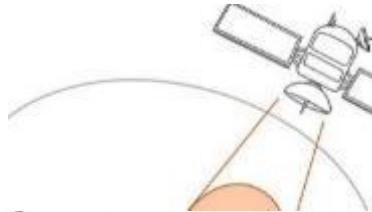


Peter Maenhout

# Carbon monitoring



enVision



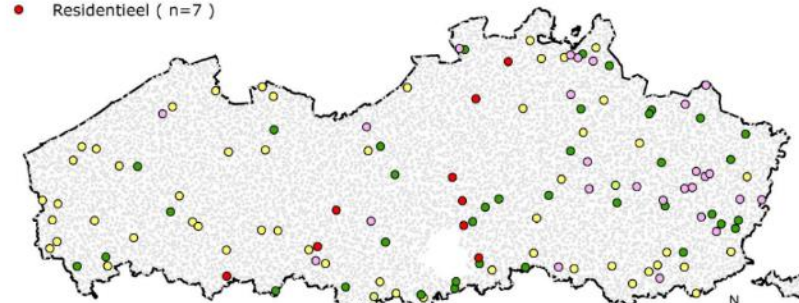
Panos Ilias

## Carbon Monitoring network Flanders

### Legende

- Akker ( n=53 )
- Bos ( n=37 )
- Grasland ( n=2 )
- Natuur ( n=26 )
- Residentieel ( n=7 )

Grijze dots zijn 10000 GRTS locaties voor potentiële staalname (laagste rank binnen elk landgebruik)



First year sampling locations



DEPARTEMENT  
OMGEVING

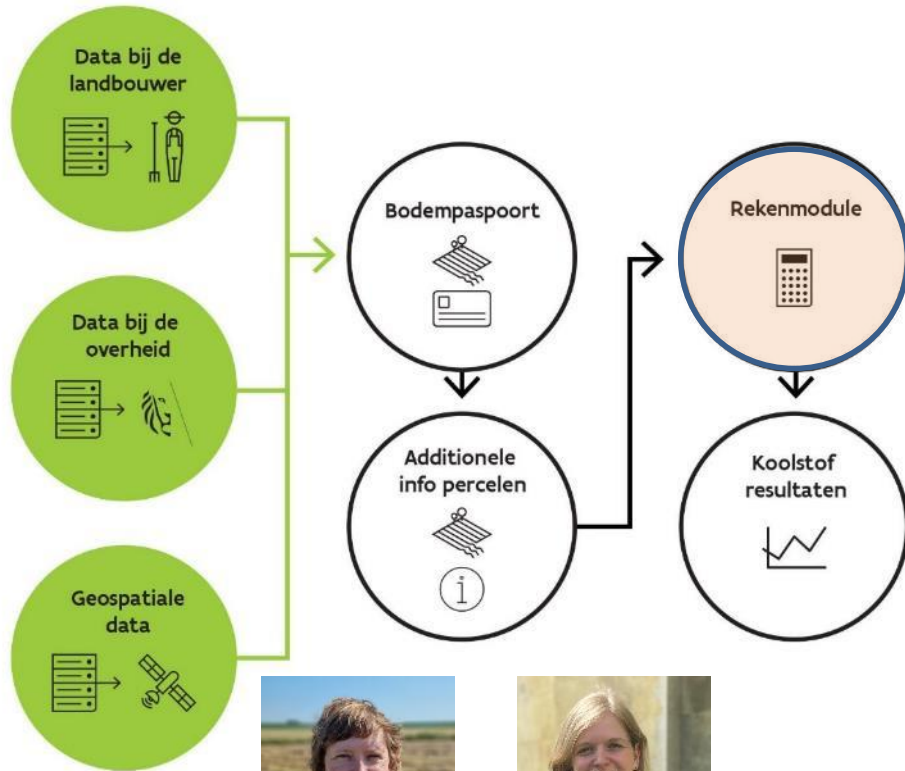
INSTITUUT  
Natuur- EN  
BOSONDERZOEK



Fien Amery Tommy D'Hose



# Tools for farmers

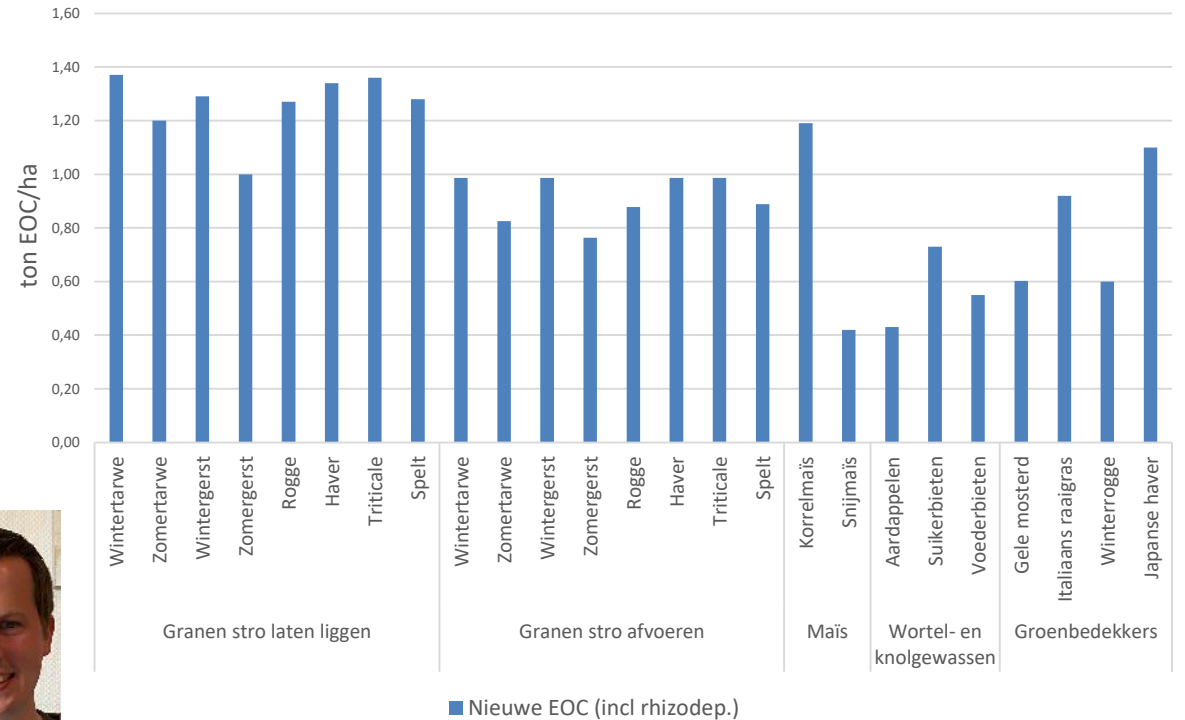


Greet Ruyschaert Kaat Mertens



Peter Maenhout

## EOC



Vlaanderen  
is landbouw & visserij



DEPARTEMENT  
OMGEVING



VLAAMSE  
LAND  
MAATSCHAPPIJ



UNIVERSITEIT  
GENT



Bodemkundige  
Dienst van België vzw

# LIFE CarbonCounts



1. System analysis and roadmap for carbon farming in Flanders, using a multi-actor approach

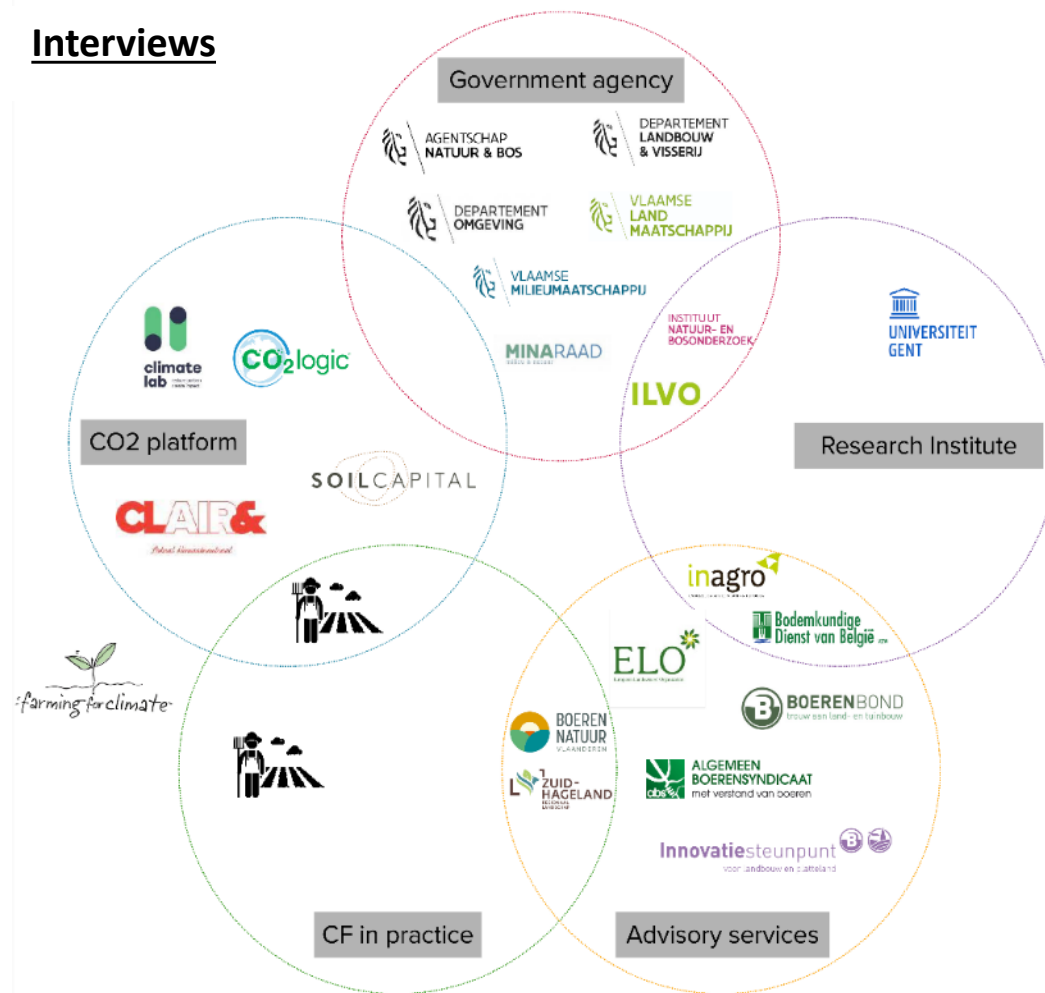
## Policy workshops

- Minimal role of Flemish government
- Guiding principles

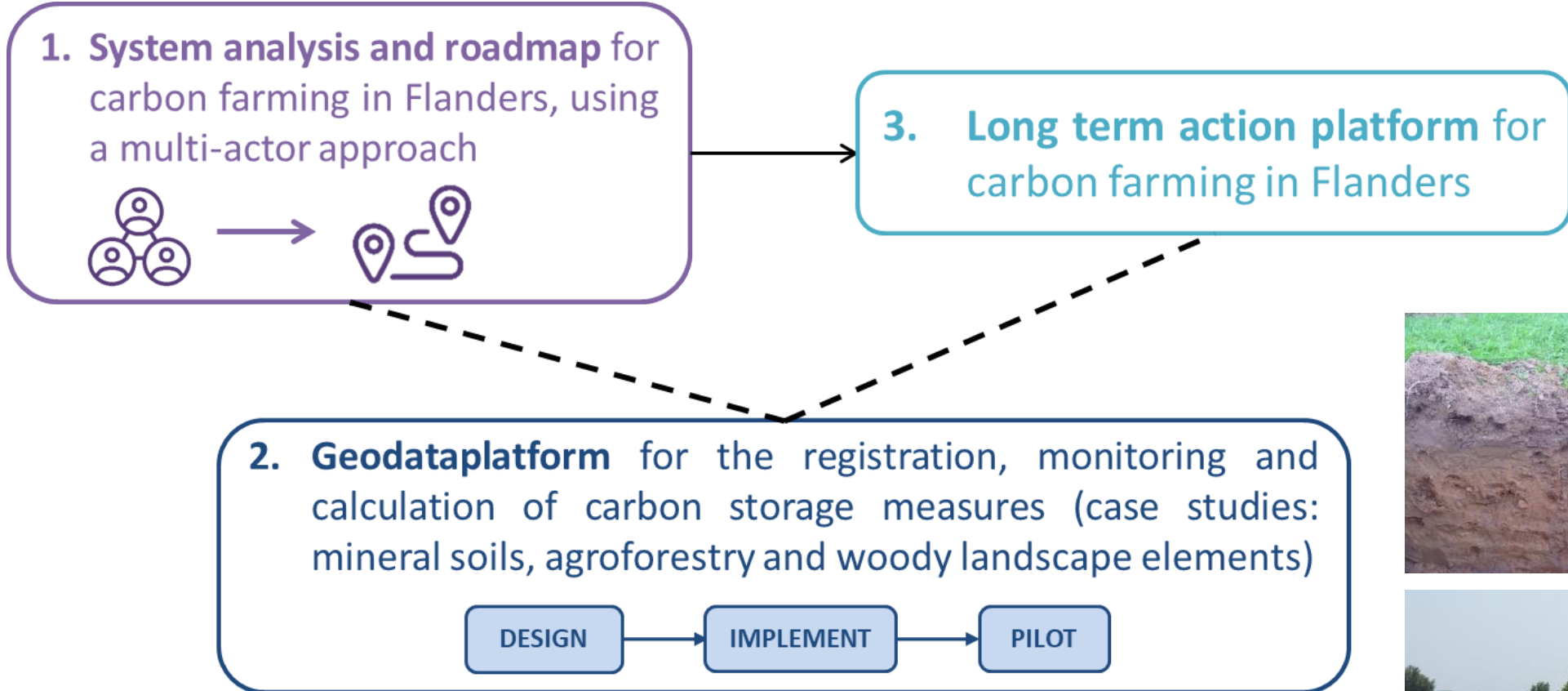
## Literature review



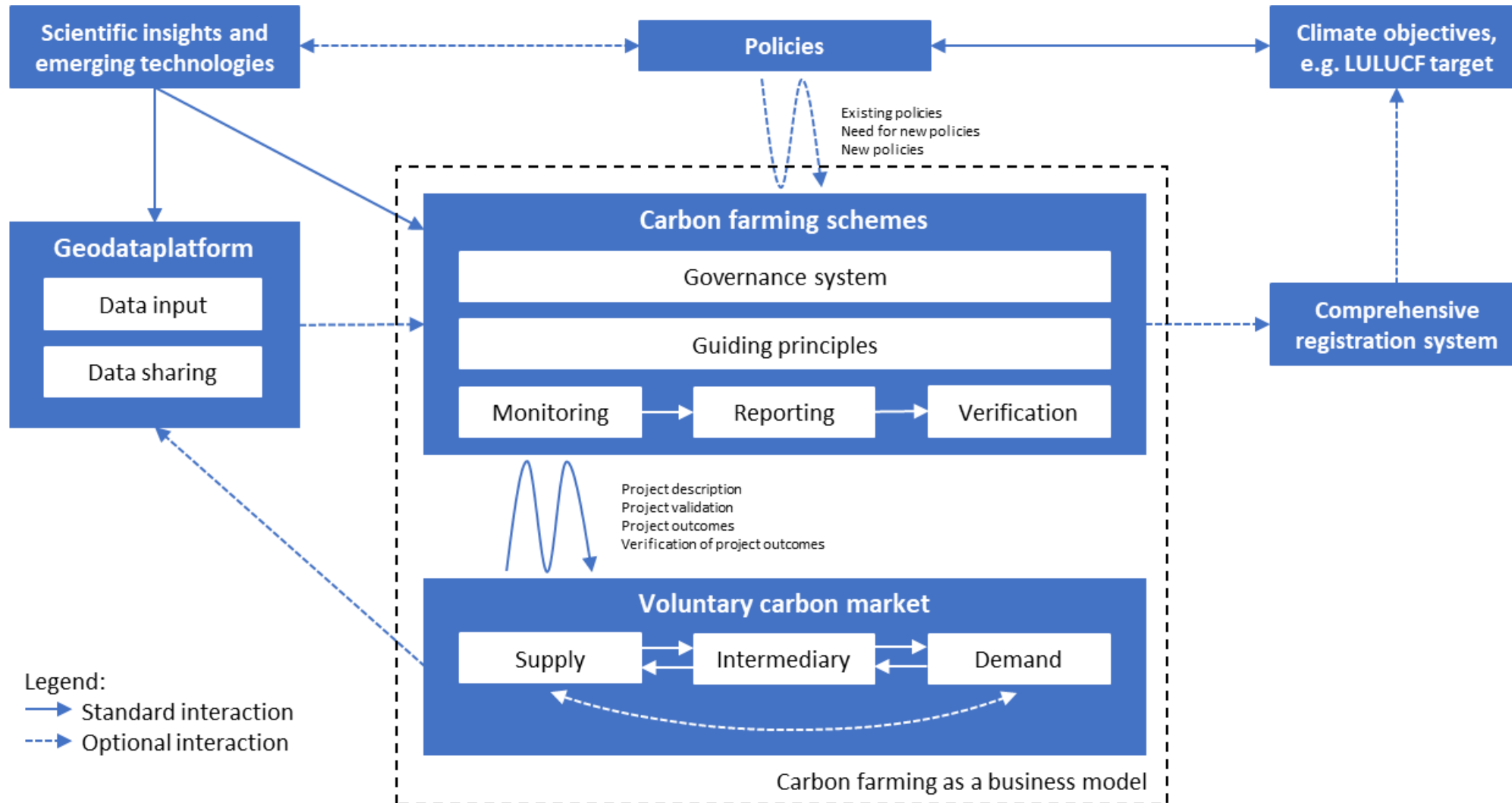
## Interviews



# LIFE CarbonCounts



# LIFE CarbonCounts



# Overview carbon farming projects

---



**EJP SOIL**  
Road4Schemes



**EJP SOIL**  
European Joint Programme

**C-Farms**

*Enhanced weathering*

Submitted / in preparation

**SoilValues**

*Business models for soil health*

*Soil Mission project*

**Thank you!**  
**Questions?**

**Instituut voor Landbouw-,  
Visserij- en Voedingsonderzoek**  
Burg. Van Gansberghelaan 109  
9820 Merelbeke – België  
T + 32 (0)9 272 27 00

[Greet.Ruysschaert@ilvo.vlaanderen.be](mailto:Greet.Ruysschaert@ilvo.vlaanderen.be)  
[Sofie.annys@ilvo.vlaanderen.be](mailto:Sofie.annys@ilvo.vlaanderen.be)

[www.ilvo.vlaanderen.be](http://www.ilvo.vlaanderen.be)

# LIFE CarbonCounts

---

- **Duration:** Sep 2021 – Feb 2023
- **Goal:** Enabling carbon farming in Flanders by establishing a geospatial information system
- **Role:** carbon simulation tool connected to soil passport, system analysis of carbon farming schemes, roadmap, and long-term action platform for carbon farming in Flanders
- **Website:** [Onderzoeksproject LIFE CarbonCounts | Departement Landbouw & Visserij \(vlaanderen.be\)](#) (in Dutch)
- **Contact person:**
  - Coordination and C-tool: [greet.ruysschaert@ilvo.vlaanderen.be](mailto:greet.ruysschaert@ilvo.vlaanderen.be)
  - Business model: [sofie.annys@ilvo.vlaanderen.be](mailto:sofie.annys@ilvo.vlaanderen.be), [ennio.facq@ilvo.vlaanderen.be](mailto:ennio.facq@ilvo.vlaanderen.be)
  - Agroforestry: [bert.reubens@ilvo.vlaanderen.be](mailto:bert.reubens@ilvo.vlaanderen.be)

# EJP SOIL Road4Schemes

---

- **Duration:** Nov 2021 – Oct 2024
- **Goal:** assess strenghts and weaknesses of carbon farming schemes, stakeholder's perceptions/preferences w.r.t. scheme design, roadmap for result-based carbon farming schemes
- **Role:** inventory of schemes, stakeholder's perceptions, scenarios for implementing result-based schemes
- **Website:** [Road4Schemes \(ejpsoil.eu\)](http://Road4Schemes(ejpsoil.eu))
- **Contact person:** [greet.ruysschaert@ilvo.vlaanderen.be](mailto:greet.ruysschaert@ilvo.vlaanderen.be), [sofie.annys@ilvo.vlaanderen.be](mailto:sofie.annys@ilvo.vlaanderen.be), [ennio.facq@ilvo.vlaanderen.be](mailto:ennio.facq@ilvo.vlaanderen.be)



# SoilValues (Soil Mission)

---

- **Duration:** Jan 2023 – Dec 2026
- **Goal:** enhance the conditions for developing successful soil health business models
- **Role:** coordination of testing grounds (in 6 countries) for co-designing business models for soil health, scaling up of communities of practice, indicators for soil ecosystem services and data infrastructure
- **Website:** /
- **Contact person:** [els.lemeire@ilvo.vlaanderen.be](mailto:els.lemeire@ilvo.vlaanderen.be),  
[greet.ruysschaert@ilvo.vlaanderen.be](mailto:greet.ruysschaert@ilvo.vlaanderen.be)

# C-Farms (SBO)

---

- **Duration:** Oct 2022 – Sep 2026
- **Goal:** study the potential to embed Negative Emission Technologies (NETs) in the circular economy, valorising waste streams, while also enhancing ESS – with focus on products for enhanced weathering
- **Role:** assessing opportunities and threats for agro-NETs, system analysis, stakeholder feedback loops, roadmap for implementation, test enhanced weathering products for agronomic value
- **Website:** /
- **Contact person:** [els.lemeire@ilvo.vlaanderen.be](mailto:els.lemeire@ilvo.vlaanderen.be),  
[bart.vandecasteele@ilvo.vlaanderen.be](mailto:bart.vandecasteele@ilvo.vlaanderen.be), [greet.ruysschaert@ilvo.vlaanderen.be](mailto:greet.ruysschaert@ilvo.vlaanderen.be)



# Social Sciences unit

Visit Aarhus and WUR  
29.09.2022

**ILVO**



## WHO ARE WE?

60 researchers, in a multidisciplinary team (geography, economics, anthropology, sociology, ecology, ...)

Social  
Sciences  
Unit

57



[Fleur.marchand@ilvo.vlaanderen.be](mailto:Fleur.marchand@ilvo.vlaanderen.be)

[Elke.rogge@ilvo.vlaanderen.be](mailto:Elke.rogge@ilvo.vlaanderen.be)

ILVO



## WHAT DO WE DO?

Social Sciences unit addresses socio-economic aspects related to agrifood systems and the relation with the countryside and society as a whole



- 1) Design of innovation** (new business models, governance models, education models, innovation models, etc)
- Limited open space and space for food (connect users of open space)
  - Environmental challenges (carbon farming, IPM, agroecology, agroforestry) (**Soil Values, Carbon Counts, Road4Schemes, LIFE CarbonCounts, SoilValues**)
  - Resilience of farm and food systems (new business models, success factors for short chain) (**Agroforestry 2025, Farmwell**)



## 2) Co-creation and multistakeholder processes

- Understanding innovation and learning processes (adoption of innovation, develop recommendations and best practices for peer to peer learning, social learning, co-creation etc) **(Soildiveragro, IPM works, Climate farm demo, Climate farm advisors, Turquoise)**
- Facilitation of learning and co-creation processes (organise multi-actor processes, training for LL, advisors, etc) **(ALL-Ready, FabFarmers, Agroforestry 2025)**



### 3) Socio-economic impact assessment

- How to assess resilience, sustainability? (Soildiveragro)
- Economic assessment (Agroforestry 2025)
- Assessment of willingness to adopt (Soildiveragro, Turquoise)
- Assessment of well being of farmers (Farmwell)



# Thank you

Research Institute for  
Agriculture, Fisheries and Food  
Burg. Van Gansberghelaan 115 box 2  
9820 Merelbeke – Belgium  
T + 32 (0)9 272 23 40

[I&m@ilvo.vlaanderen.be](mailto:I&m@ilvo.vlaanderen.be)  
[www.ilvo.vlaanderen.be](http://www.ilvo.vlaanderen.be)

# Climate Farm Demo

- **Duration:** okt 2022- sept 2029 (Horizon Europe)
- **Goal:** A European-wide network of pilot farmers implementing and demonstrating climate smart solutions for a carbon neutral Europe
- **Role:**
  - setting up and managing demonstration farm network and facilitating knowledge exchange and capacity building within this network
  - Supporting demonstration activities
  - Support in co-design of new solutions in LL
- **Contact person:** [lies.debruyne@ilvo.vlaanderen.be](mailto:lies.debruyne@ilvo.vlaanderen.be)

# Climate Farm Advisors

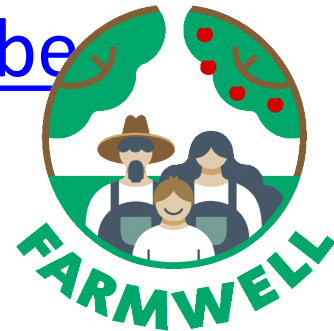
- **Duration:** 2023-2029
- **Goal:** connecting and mobilizing the EU agricultural advisory community to support the transition to climate smart farming
- **Role:** coordination
- **Contact person:** [Lies.debruyne@ilvo.vlaanderen.be](mailto:Lies.debruyne@ilvo.vlaanderen.be)

# Turquoise

- Duration: sept 2021 – sept 2025
- Goal: Adapt to droughts by storing water in the natural systems via green blue measures (GBM) including weirs, rewetting of valleys and infiltration ponds.
- Role: research on the barriers and opportunities for the implementation of GBM
- Website: <https://ilvo.vlaanderen.be/en/research-projects/blauw-groene-strategie%C3%ABn-voor-klimaatadaptatie>
- Contact person: [sylvie.fosselle@ilvo.vlaanderen.be](mailto:sylvie.fosselle@ilvo.vlaanderen.be)

# Farmwell

- Duration: Jan 2020 – Dec 2023
- Goal: The project aims to improve **farmers' mental, physical and social wellbeing** through social innovations.
- Role: lead WP2: mapping national landscape of social challenges
- Website: <https://farmwell-h2020.eu/>
- Contact person: [lies.messely@ilvo.vlaanderen.be](mailto:lies.messely@ilvo.vlaanderen.be)



# Fabulous Farmers

- Duration: Jan 2018 – Dec 2023
- Goal:
  - support farmers in the transition to more agro-ecological practices on their farms
  - reduce the reliance on external inputs, like chemical fertilisers and pesticides, by encouraging the use of methods and interventions that increase the farm's Functional AgroBiodiversity (FAB)
- Role:
  - Task lead: approach regional learning networks
  - Lead WP3: embed FAB in society
    - Landscape integration
    - Farmer-citizen communities
- Website:
  - For research & policy: <https://www.nweurope.eu/projects/project-search/fabulous-farmers>
  - For farmers: <https://www.fabulousfarmers.eu/en>
- Contact person: [lies.messely@ilvo.vlaanderen.be](mailto:lies.messely@ilvo.vlaanderen.be)

# Agroforestry2025

- Duration: 2020-2024
- Goal: increase the applicability of AF in Flanders by optimising the cultivation system, as well as by developing viable business models.
- Role: setting up agroforestry living labs, cost-benefit analysis of 12 case studies, preferences consumers and farmers for AF
- Website: [www.agroforestryvlaanderen.be](http://www.agroforestryvlaanderen.be).
- Contact person:
  - Bert Reubens  
([bert.reubens@ilvo.vlaanderen.be](mailto:bert.reubens@ilvo.vlaanderen.be))
  - Marlinde Koopmans  
([Marlinde.koopmans@ilvo.vlaanderen.be](mailto:Marlinde.koopmans@ilvo.vlaanderen.be))

AGROFORESTRY  
VLAANDEREN

# IPM Works

- **Duration:** 2021-2024; (Horizon 2020, coordinated by INRAE)
- **Goal:** to promote the adoption of IPM strategies, based on a EU-wide network of farmers, who will both progress further in the adoption of IPM – through peer-to-peer learning and joint efforts – and demonstrate to other farmers that holistic IPM “works”
- **Role:**
  - support the development of IPM Farm demo networks and learning within the networks
  - Assess relation between learning and behavioural change within the networks
  - Develop policy recommendations for scaling IPM adoption through IPM demo networks
- **Website:** [IPMworks](https://www.ipmworks.eu)
- **Contact person:** [Laure.triste@ilvo.vlaanderen.be](mailto:Laure.triste@ilvo.vlaanderen.be)





# Soildiveragro



- **Duration:** June 2019 – May 2024
- **Goals:** (1) Adoption of new management practices that enhance soil genetic and functional biodiversity,
  - reduce input use, while increasing crop production and quality,
  - increase delivery of ecosystem services
  - increase agricultural stability and resilience.(2) Study the beneficial effects of soil biodiversity (micro and macro organisms) on crop production
- **Role: Plant:** lead WP3 baseline soil biodiversity assessment, responsible nematode research, CS6 farmyard manure vs FYM co-composted with 'brown' material in organic potatoes  
**Social Sciences Unit:** in Socio-economic WP: co-lead task 'Socio-psychological evaluation of farmers' willingness to adopt innovative practices', lead task 'Integrated sustainability assessment at farm level'
- <http://soildiveragro.eu>
- Contact persons: [Lieven.Waeyenberge@ilvo.vlaanderen.be](mailto:Lieven.Waeyenberge@ilvo.vlaanderen.be), [hilde.wustenberghs@ilvo.vlaanderen.be](mailto:hilde.wustenberghs@ilvo.vlaanderen.be)

# ALL-READY



- **Duration:** Nov 2020-Okt 2023; Horizon2020
- **Goal:** prepare a framework for a future European network of LLs and RIs that will enable the transition towards agroecology throughout Europe ([Partnership on agroecology \(europa.eu\)](https://ec.europa.eu/agriculture/partnership-on-agroecology/))
- **Role:** lead stakeholder engagement, organize capacity building activities; LLAEBIO as member of the pilot network
- **Website:** [ALL-Ready - All-Ready \(all-ready-project.eu\)](https://all-ready-project.eu/)
- **Contact person:** [jo.bijttebier@ilvo.vlaanderen.be](mailto:jo.bijttebier@ilvo.vlaanderen.be); [sylvie.fosselle@ilvo.vlaanderen.be](mailto:sylvie.fosselle@ilvo.vlaanderen.be)

# LIVING LAB AGROECOLOGY AND ORGANIC AGRICULTURE



We support agroecological innovation as a lever in the **transition from organic and conventional agriculture to sustainable food and farming ecosystems.**

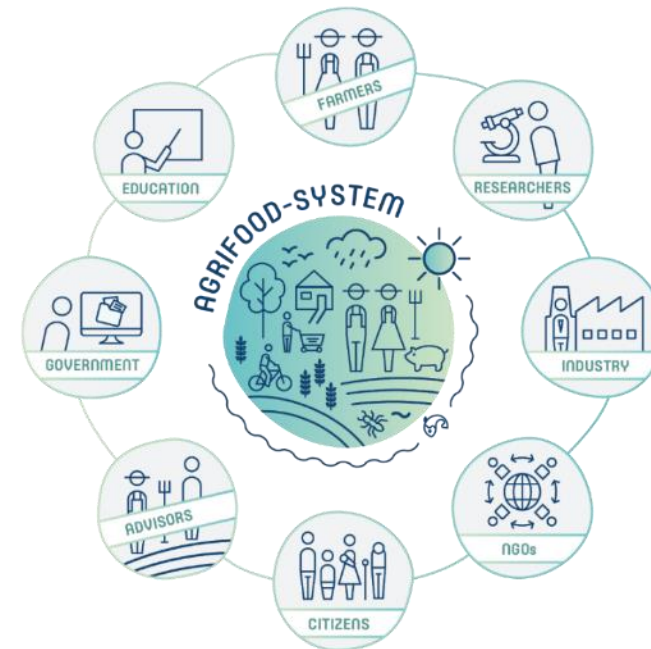
We do this by connecting people, organisations, science and practice.

## Knowledge-sharing activities:

- Making knowledge visible: connecting
- Knowledge exchange: webinars, farm visits, website, learning networks

## Research activities:

- Making knowledge gaps visible
- Facilitating project proposals



**Do you want to contribute to the expansion of agroecological practices?**

**Contact us!**



[llaebio@ilvo.vlaanderen.be](mailto:llaebio@ilvo.vlaanderen.be)  
[www.llaebio.be](http://www.llaebio.be)

# Thank you

Research Institute for  
Agriculture, Fisheries and Food  
Burg. Van Gansberghelaan 92  
9820 Merelbeke – Belgium  
T + 32 (0)9 272 25 00

[ilvo@ilvo.vlaanderen.be](mailto:ilvo@ilvo.vlaanderen.be)  
[www.ilvo.vlaanderen.be](http://www.ilvo.vlaanderen.be)