"Stronger together: Researchers from Wallonia and Flanders join hands for organic farming"

Tuesday 25 March 2025
Gembloux

Content

Content (continue)

25 March 2025 - Chaussée de Namur 47 5030 GEMBLOUX

Program of the day

"Stronger together: Researchers from Wallonia and Flanders join hands for organic farming".

Welcome coffee 9h30-10h00

Introduction of the day 10h00-10h30

- Introduction of the representative of the organisators of the day.
- Introduction by the director of CRA-W.
- Introduction by the representative of the Walloon government.
- Introduction by the representative of the Flemish government.

Pitches 10h35-12h20

- Biodiversikas: fostering biodiversity in organic unheated greenhouses : *Sander Fleerakkers (Proefstation voor de Groenteteelt)*.
- Biodiversity at the service of farmers for more resilient and autonomous agriculture : *Fanny Boeraeve (Gembloux Agro-Bio Tech)*.
- Monitoring Biodiversity in Agrarian Regions - A joint researcher-farmer effort : *Mieke Lateir (INBO)*.
- Evaluating varieties and developing innovative technical itineraries to meet the challenges of organic field crops : *Anne-Michelle Faux (CRA-W)*.
- From Farm to Future: Elevating Local Quinoa Through Collaboration : *Gerda Cnops (ILVO)*.
- Technological quality of food cereals in organic farming (TechnoCerBio) : *Bruno Godin (CRA-W)*.
- Crop diversification as a way to resilience : *Hilde Muyle (ILVO)*.
- Alfalfa, a pillar for organic agroecology : *Eddy Montignies (Brioaa asbl)*.
- Non-inversion tillage versus "eco-plow : *Joran Barbry (Inagro vzw)*.
- Participative multi-actor research in organic cropping systems : reduced tillage (ABC) - protein intercrops (Assobio) : *Aline Fockedey, Morgane Campion, Pénélope Lamarque (CRA-W)*.
- Ammonia emissions in organic livestock farms : *Laura Peeters (ILVO)*.
- How to measure soil health, and how soil health respond to management practices in organic farming ? : *Brieuc Hardy (CRA-W)*.
- Carbon and nitrogen dynamics and nutrient balance approach in organic farming systems : *Koen Willekens (ILVO)*.
- SPoT: Co-design and experimentation of sustainable mixed crop-livestock systems in Belgian Ardenne : *Michael Mathot, Séverine Lagneaux (CRA-W)*.
- Towards sustainable diets and farming systems through land use optimization : *Tom Desmarez (Gembloux Agro-Bio Tech)*.
- Promoting biocontrol of thrips and cabbage pests with banker plants and insect frass : *Femke Temmerman (Inagro vzw)*.
- Comparison of organic market gardening cultivation systems : *Laurent Jamar, Clément Nieus (CRA-W)*.
- Research related to agroecological principles at Viaverda : *An Van de Walle (Viaverda)*.

Lunch + poster presentation :12h20-13h30

Workshops first round 13h30-14h35

- Workshop 1 : Soil.
- Workshop 2 : Arable cropping.
- Workshop 3 : Animal welfare.
- Workshop 4 : Plant protection (alternatives to copper and spinosad).

Break :14h35-14h50

Workshops second round 14h50-16h00

- Workshop 1: Value chains.
- Workshop 2 : Farm profitability.
- Workshop 3 : Farm redesign.
- Workshop 4 : Mixed production systems.

Plenary session 16h00-16h15

Conclusion and wrap-up of the two workshop rounds, 2 actions per workshop to be undertaken in a short time.

Closing the day followed by a drink 16h15-17h00

Introduction of the day by An Jamart, Bioforum

Ladies and gentlemen, dear colleagues,

On behave of the organisers of this day CCBT, Bioforum and the ILVO Living Lab Agroecology and Organic farming better known as the Flemish organic knowledge network (FORK) and the CRA-W, we welcome you to this special exchange day between Flemish and Walloon researchers. My name is An Jamart and I work for BioForum and also coordinate the Organic farmers'networks In Flanders and am an active member of the Fork network. As such, I am delighted to greet you all today. Our focus today is on celebrating the richness and potential of organic agriculture, but, more importantly, on the power of collaboration. Today is designed not only to bridge the gap between our regions, but also to deepen our understanding of each other's research and expertise, so that we may work more closely together. The strength of our field lies in the diversity and complexity of the systems in which we work. That is why we are emphasizing system research—a holistic approach that goes beyond analysing individual components to understanding the interconnections within the whole.

In Flanders, the Flemish Organic Research and Knowledge Network has laid a solid foundation, as detailed in our strategic plan for 2023-2027. The ambition is to strengthen demand-driven research, optimize knowledge exchange, and bridge the gap between practical experience and scientific inquiry. It is this spirit of co-creation, trust, and reciprocity that we wish to extend to our colleagues from Wallonia today. A key element in our collaborative approach is the invaluable knowledge of the farmers. We believe that true innovation starts at the grassroots, by building on the insights and experiences of those who work the land. Therefore, we are committed to engaging closely with farmers and the practical field. By integrating their handson expertise with academic research, we can develop solutions that are not only innovative but also directly applicable to real-world challenges. This joint effort will enable us to create a more robust, resilient, and sustainable organic agriculture system.

Innovation blossoms when different perspectives come together. By sharing knowledge and working collectively on integrated system research, we can deepen our understanding of the fundamentals of organic agriculture. This in turn offers us the opportunity to develop new, sustainable strategies. It is essential that we create knowledge bridges, connecting researchers, policymakers, advisors, and, of course, farmers. By pooling our strengths, we can achieve concrete and impactful results. Today, I invite you to look beyond your own familiar boundaries and to embrace the potential of regional collaboration. Let's work together to push the limits of our research and uncover insights that will help us build a robust and resilient system for organic agriculture—a system that is sustainable and capable of withstanding tomorrow's challenges.

Our program today is rich with inspiring sessions and interactive moments, providing ample opportunities to engage with colleagues from both Flanders and Wallonia. Please take the time to network, exchange experiences, and collaboratively explore practical solutions that benefit the agricultural sector as a whole. Every conversation, every presentation, and every interaction contributes to a larger goal: a shared path toward systematic, holistic research that directly supports the growth and resilience of organic agriculture.
I encourage you to not only listen today but also to actively share your ideas and insights. This is the day to build bridges, to combine knowledge and experience—from the research field to the practical wisdom of the farmers—and to explore together how, as researchers across regional borders, we can address our common challenges. Finally, my sincere thanks to everyone who helped organize this event. Your commitment and enthusiasm provide the foundation for what I hope will be a productive day filled with new collaborations and innovative ideas. Let's embrace the challenge together—to make organic agriculture a robust, sustainable system that benefits us all.

Welcome by
the General Director of CRA-W
Georges Sinnaeve

Introduction by the director of CRA-W.

- Georges Sinnaeve

Wallonie recherche CRA-W

Walloon Agricultural Research Centre

CRA-W : Overall presentation

SINNAEVE Georges, General Director

25 March 2025 - Chaussée de Namur 47 5030 GEMBLOUX

Program of the day

"Stronger together: Researchers from Wallonia and Flanders join hands for organic farming".

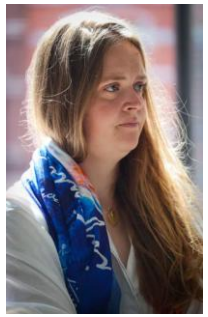
Field of activities of the CRA-W
According to the competencies of the current Walloon Government

Dolimont A.

Neven C.

Coppieters Y.

Dalcq A-C



Jeholet P-Y

Scientific Research

Climate

Environment

Rural affairs

Agriculture
Supervisory minister

Economy

Animal welfare

Energy

Nature

Forest

Wallonie recherche
CRA-W

Walloon Agricultural Research Centre

A few facts and figures ...

440
Employees

120
Scientists

60
Services

23
Laboratories

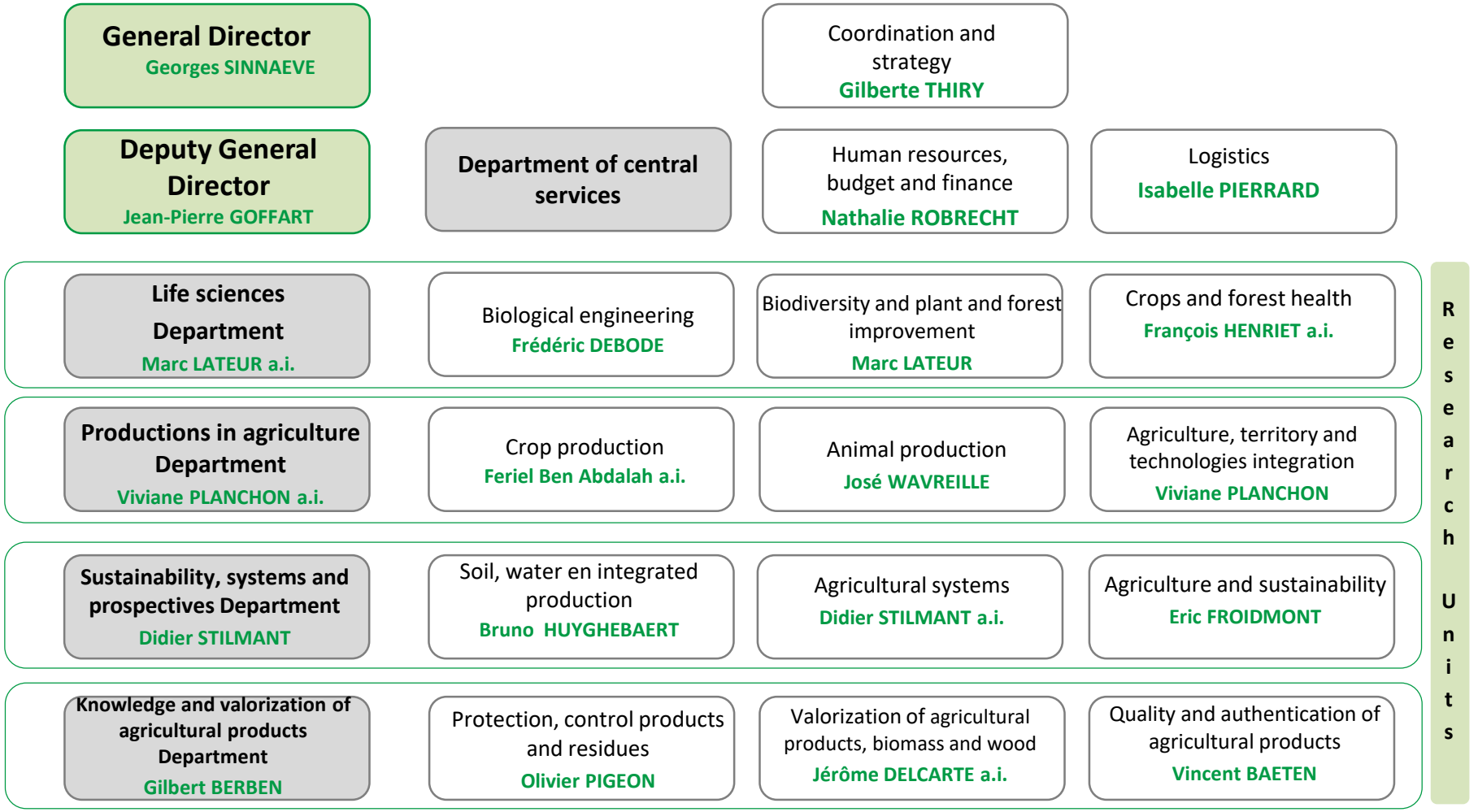
15
Collections

3
Site (Gembloux, Libramont et Mussy-la-Ville)

230
Hectares of cropland

73
Hectares used for organic agriculture

Walloon Agricultural Research Centre



01/01/2022

Walloon Agricultural Research Centre

The CRA-W provides together **scientific research**, **service** and **support** functions to Walloon farmers, stockbreeders, horticulturists, forestry producers and operators in the agri-food sector.

Walloon Agricultural Research Centre

Scientific research is focused in four main areas

Precision farming

to produce more sustainably

Precision livestock farming:

for more sustainable production

Risk management

to stabilise production outcomes while protecting the environment and consumers

Understanding products

to ensure the quality of the production processes and the products derived from them

Walloon Agricultural Research Centre

Some **130** scientific research projects :

1. Curbing the use of synthetic inputs and mitigating the climate change impact of agriculture

2. Producing quality products in a more sustainable way by maintaining farmers' standards of living and promoting animal welfare and the protection of the environment and biodiversity

3. Boosting production profitability, thus ensuring a decent income for Walloon farmers

4. Helping to enhance the value of agricultural production in conventional or local sectors (organic or otherwise)

Partnerships and Beneficiaries

- Society
- Farmers, horticulturalists and other stakeholders in these sectors
- Individuals
- Government departments and authorities
- Business
- Universities and other research institutions (international, European, federal, regional levels)

Recovery plan for Wallonia

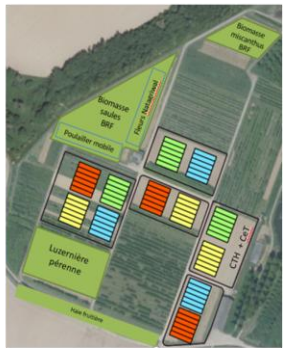
- Resilient forests
- Soil preservation
- Carbon sequestration
- Smart farming
- Specific research activities
- Improving research facilities

Introduction by the representative of the Walloon government.

- Georges Sinnaeve, CRA-W



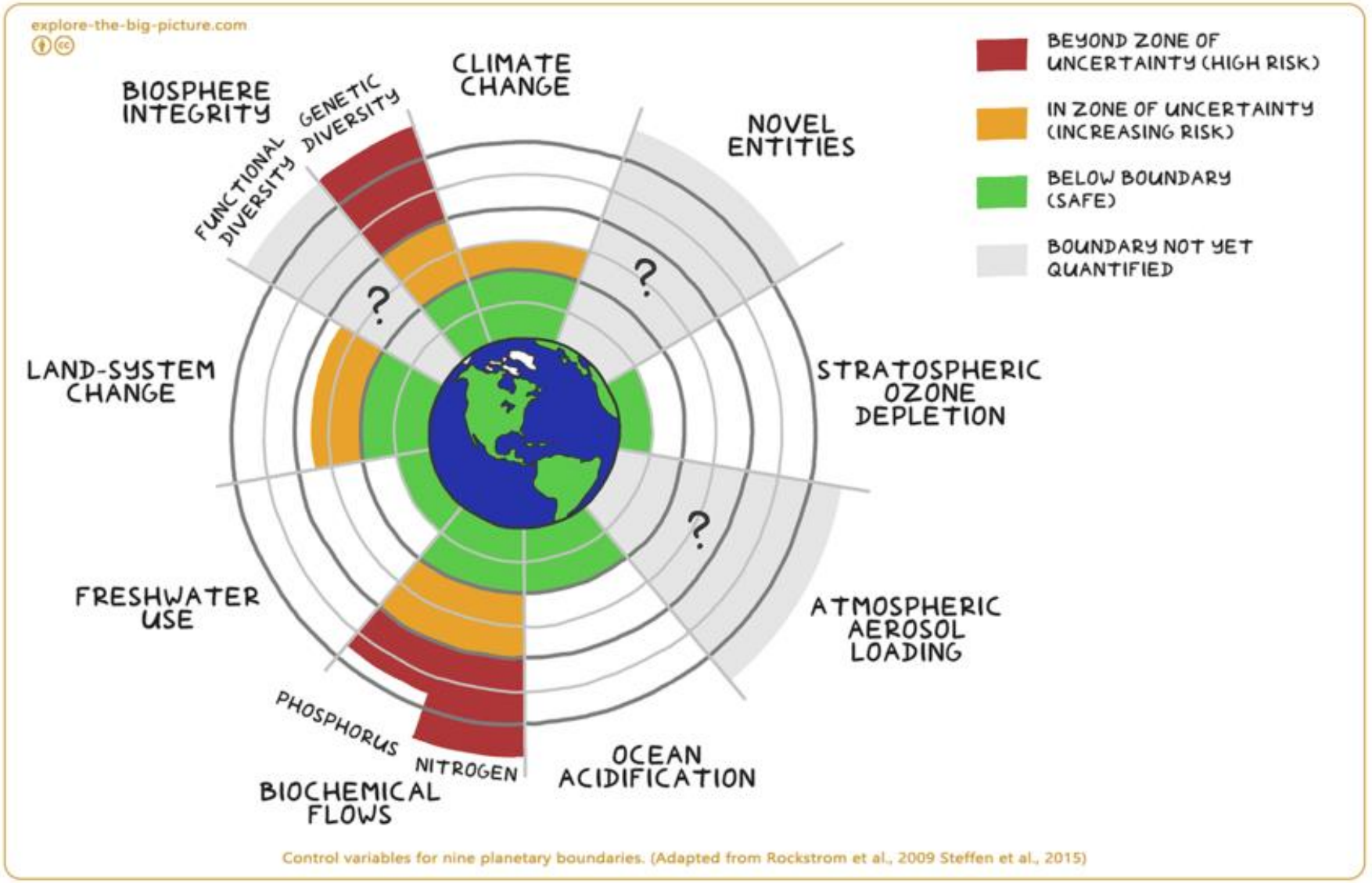


CRA-W's research actions in response to the needs of organic farmers and horticulturists

Global context - Control levels for 9 planetary boundaries

As a result of human activity, our planet is no longer able to maintain its homeostasis, imbalances appear on many levels!

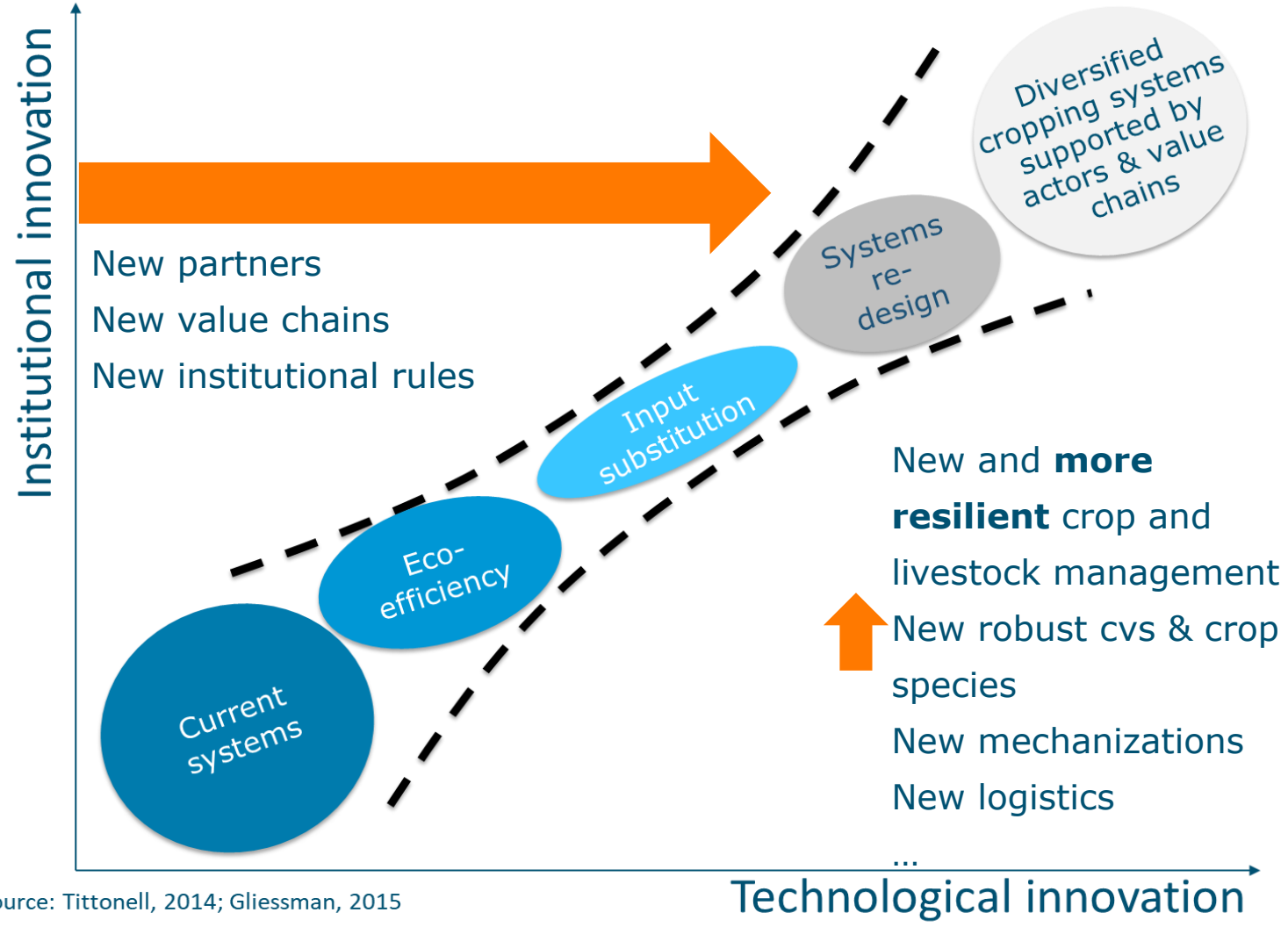


Control variables for nine planetary boundaries. (Adapted from Rockstrom et al., 2009 Steffen et al., 2015)

Global context – Changement of paradigm

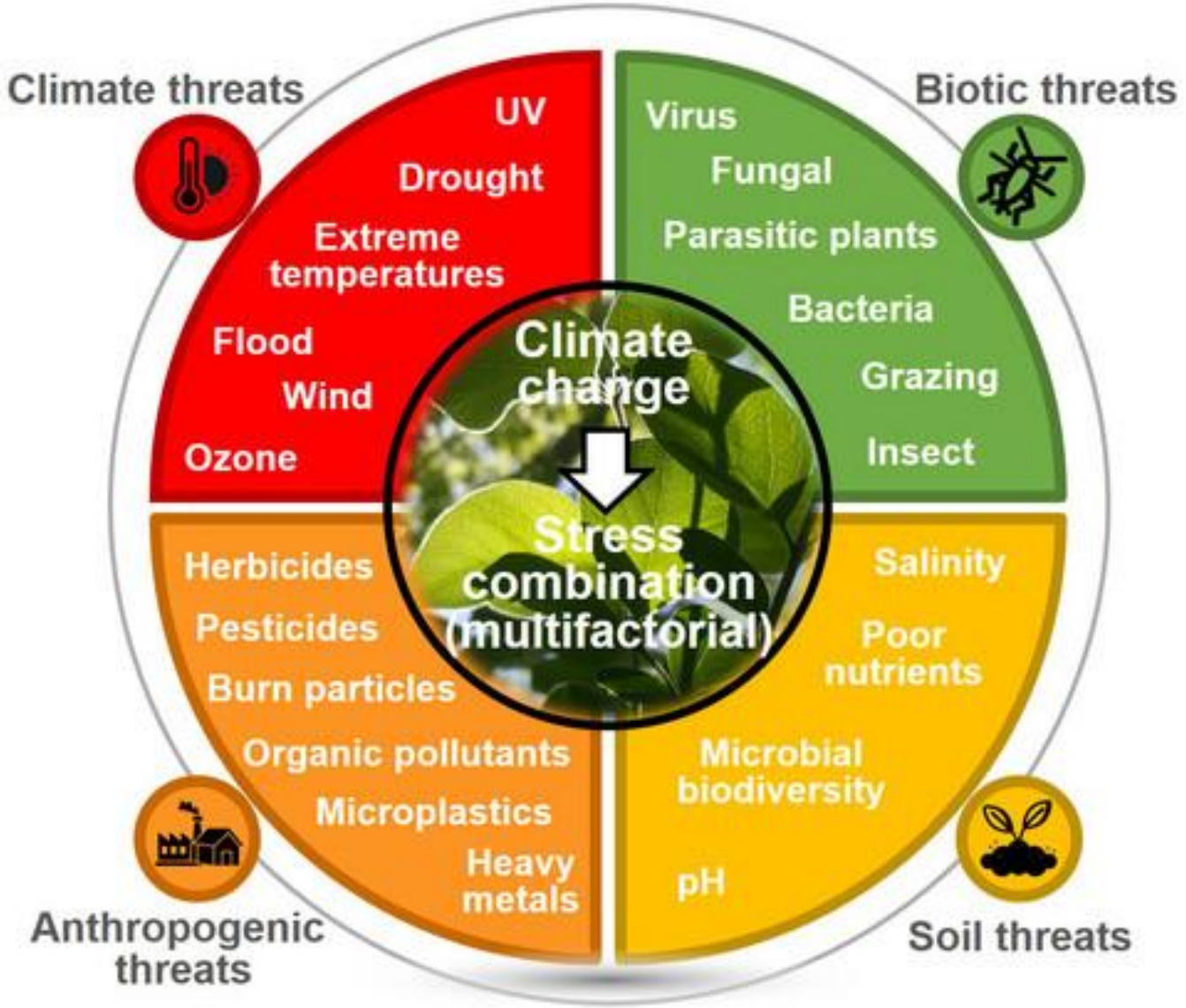
In order to get back out of the red zones it is necessary to change our ways of producing and consuming our resources == > innovations in rupture that require technical but also institutional changes

Organic farming has been and is pioneering in giving the ability to explore, implement innovative systems that make profit of ecosystem services delivered by nature



Source: Tittonell, 2014; Gliessman, 2015

Global context – Specific risks induced by climatic changes

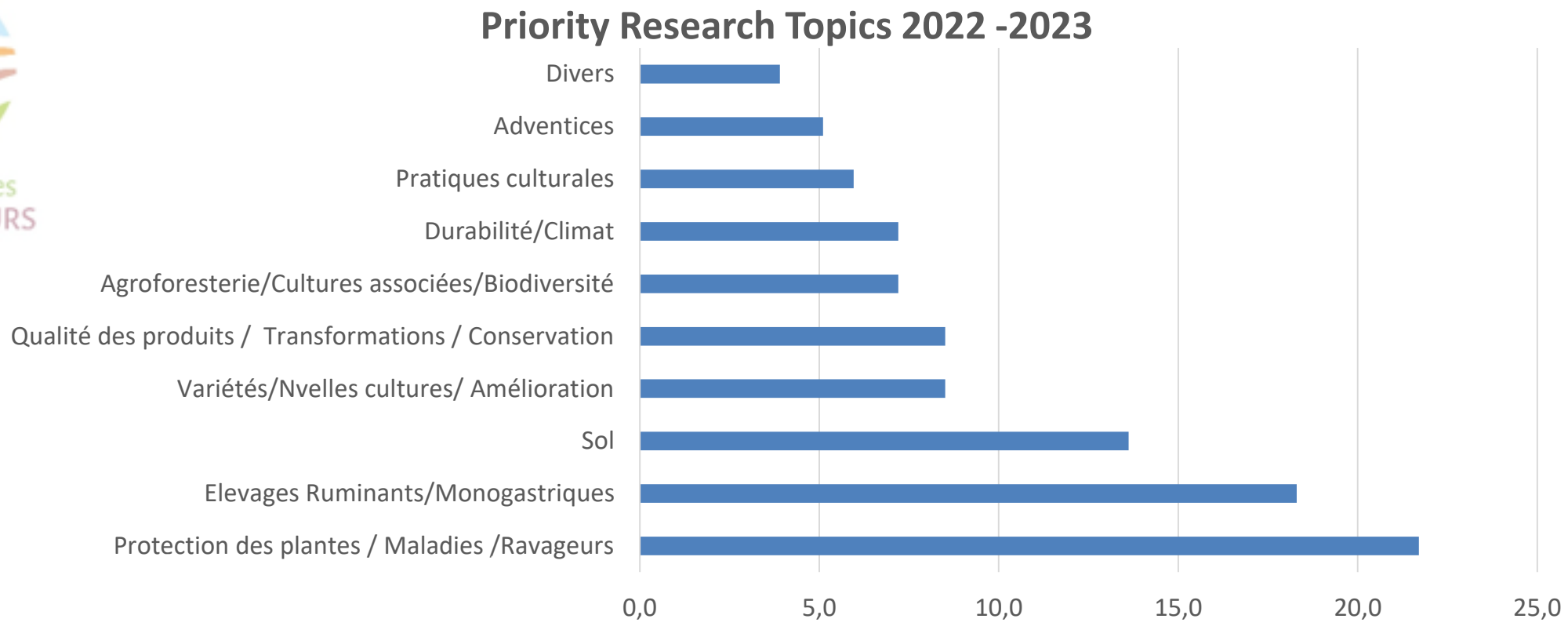


Coordinated research actions in line with the pluri-annual ***Walloon Organic Production Development Plan 2030***

« Develop more sustainable and more resilient agro-food systems to meet future global and local challenges (scarcity of resources, preservation of the biosphere (water, air, soil, biodiversity)...) and society's expectations (healthy food, quality, quantity, a good income for the actors involved) »

Annual survey update of the Organic professionnal demands

COLLÈGE des PRODUCTEURS



Research Priority Topics 2024	Variety Organic Testing, new varieties, Mix of species and/or varieties	Organic alternatives to Pest & Diseases	

Organizational Research actions

Long term Organic Production Research at CRA-W :

1. Long term organic systems comparison trials on

1.1. **Arable crops** – SYCBIO (5 ha) - 3 contrasted systems
1.2. **Vegetables** – SYCMA (5 ha) - 5 contrasted systems
1.3. **Mixed farming and livestock systems –** SPOT (25 ha)

2. Organic Soil fertility studies :

2.1. **Temporal monitoring** of the physical, chemical and biological fertility of soils
2.2. 'MICROSOILSYSTEM' project : impact studies on soil **microbiomes consortia & mycorhizes**

3. Organic Plant Breeding for more robust & disease tolerant cvs.

3.1. **Participative organic fruit breeding** using old local cvs as more robust parents (NOVAFRUITS & GAWI)
3.2. **Participative organic wheat breeding:** CCP's
3.3. **Breeding spelt, wheat, durum wheat, potato** for organic production

Organitional Research actions

Long term Organic Production Research at CRA-W :

4. Multilocal organic variety testing trials :

4.1. Network trials comparing **cereal** cvs. **: wheat, spelt, triticale, durum wheat**
4.2. Trial comparing 30 **more robust potato cvs**.
4.3. Trans-border trial of 125 **apple & 30 pear cvs.**
4.4. Testing **more robust apple & pear rootstocks**
4.5. Testing **more robust fruit cvs in diversified non sprayed systems :** agroforestry, orchard meadows, poultry/orchards,…

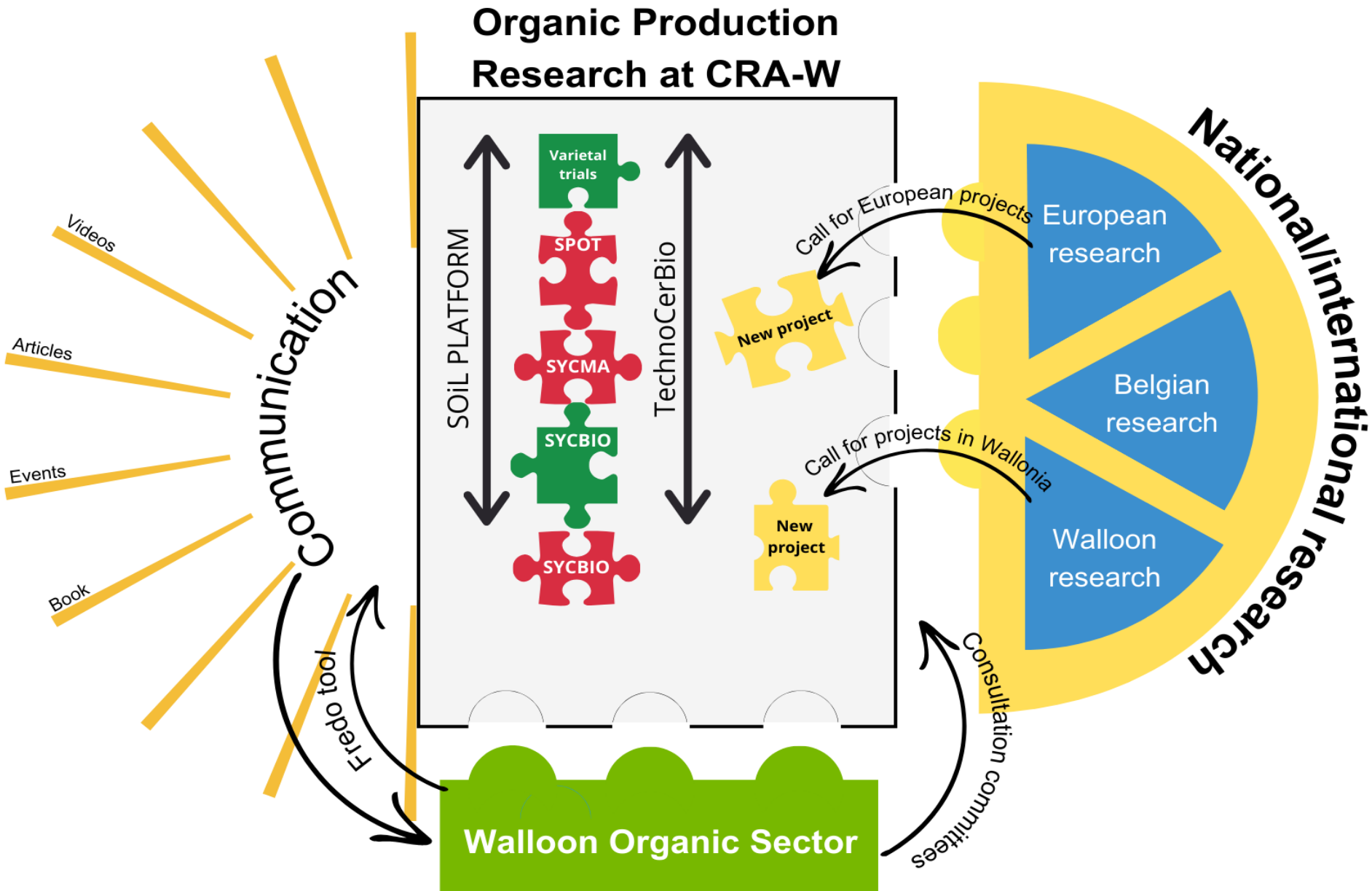
5. Research on socio-economical & durability factors

5.1. User-friendly software for economical & environmental factor monitoring – **https://tresoferme.be**
5.2. **Life Cycle Analysis** of different **meat** chains
5.3. User-friendly **software** for farm **'Greenhouse Gaz' – GHG - monitoring: "DECIDE".**

6. Alternative organic plant health control research projects

Organizational Research actions

Long term Organic Production Research at CRA-W



Walloon Region Call for organic research projects 2024

- **5 New starting research projects (CRA-W)**

ABC Soil2weed: Systemic evaluation of the effects of organic agriculture (OA) and conservation organic agriculture (”ABC“) on weed flora and its impact on crop development.

Progrès: Identification and understanding of late blight resistance gene processes for more sustainable organic potato production

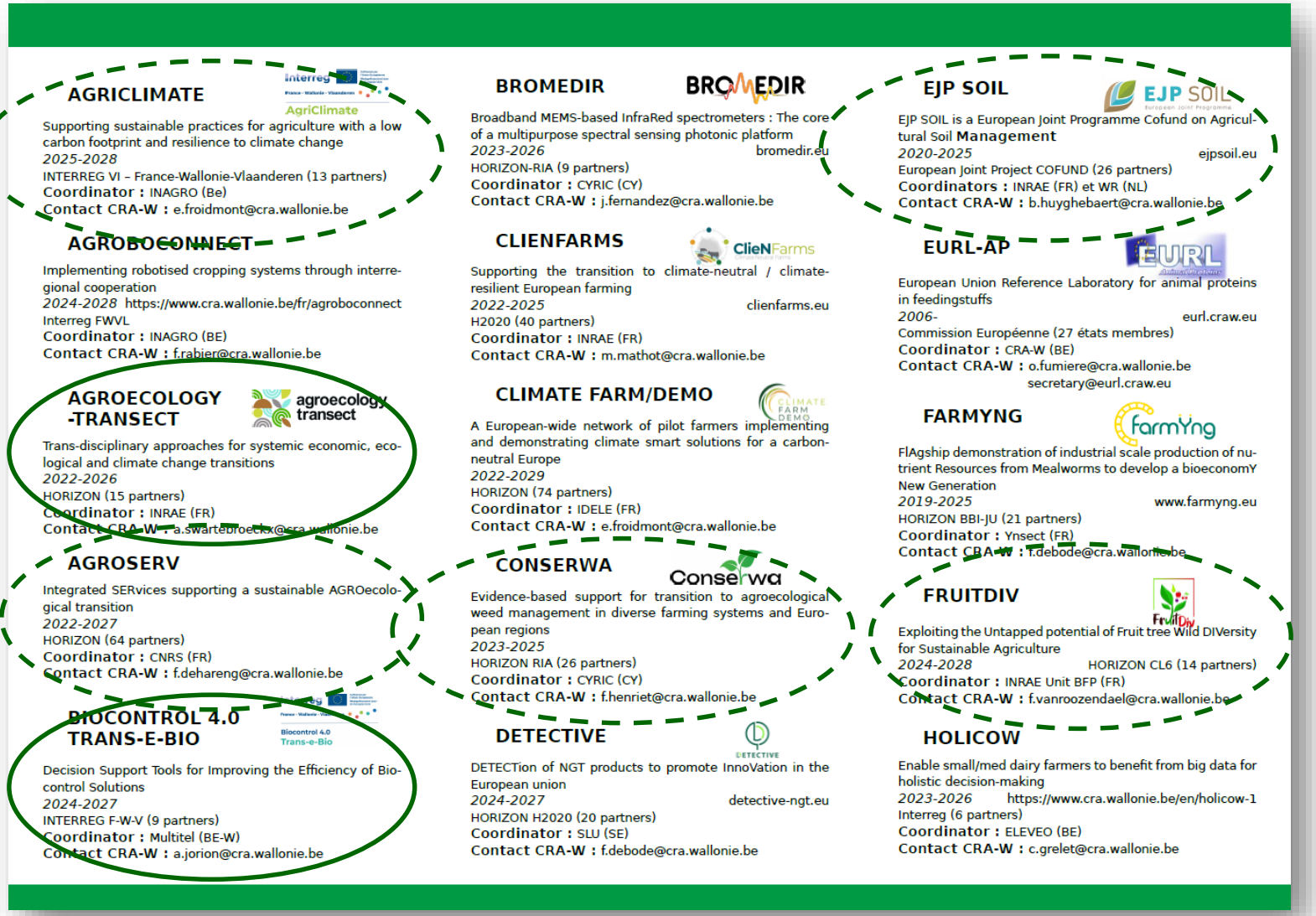
SolAB: Soil management in the Walloon Region: What practices optimize soil services?

CropFightsWeeds: Multi-performance evaluation of weed management systems in organic field crops.

Lipomme-bio 2.0: Multi-levers research of alternatives to copper use to control apple diseases including scab in Organic Production

CRA-W's European Research projects linked with Organic Production

CRA-W's European Research projects linked with Organic Production



AGRICLIMATE

Supporting sustainable practices for agriculture with a low carbon footprint and resilience to climate change
2025-2028
INTERREG VI – France-Wallonie-Vlaanderen (13 partners)
Coordinator : INAGRO (Be)
Contact CRA-W : e.froidmont@cra.wallonie.be

AGROBOCONNECT

Implementing robotised cropping systems through interregional cooperation
2024-2028 https://www.cra.wallonie.be/fr/agroboconnect
Interreg FWVL
Coordinator : INAGRO (BE)
Contact CRA-W : f.rabier@cra.wallonie.be

AGROECOLOGY -TRANSECT

Trans-disciplinary approaches for systemic economic, ecological and climate change transitions
2022-2026
HORIZON (15 partners)
Coordinator : INRAE (FR)
Contact CRA-W : a.swartebroeckx@cra.wallonie.be

AGROSERV

Integrated SERvices supporting a sustainable AGROecological transition
2022-2027
HORIZON (64 partners)
Coordinator : CNRS (FR)
Contact CRA-W : f.dehareng@cra.wallonie.be

BIOCONTROL 4.0 TRANS-E-BIO

Decision Support Tools for Improving the Efficiency of Biocontrol Solutions
2024-2027
INTERREG F-W-V (9 partners)
Coordinator : Multitel (BE-W)
Contact CRA-W : a.jorion@cra.wallonie.be

BROMEDIR

Broadband MEMS-based InfraRed spectrometers : The core of a multipurpose spectral sensing photonic platform
2023-2026 bromedir.eu
HORIZON-RIA (9 partners)
Coordinator : CYRIC (CY)
Contact CRA-W : j.fernandez@cra.wallonie.be

CLIENFARMS

Supporting the transition to climate-neutral / climate-resilient European farming
2022-2025 clienfarms.eu
H2020 (40 partners)
Coordinator : INRAE (FR)
Contact CRA-W : m.mathot@cra.wallonie.be

CLIMATE FARM/DEMO

A European-wide network of pilot farmers implementing and demonstrating climate smart solutions for a carbon-neutral Europe
2022-2029
HORIZON (74 partners)
Coordinator : IDELE (FR)
Contact CRA-W : e.froidmont@cra.wallonie.be

CONSERWA

Evidence-based support for transition to agroecological weed management in diverse farming systems and European regions
2023-2025
HORIZON RIA (26 partners)
Coordinator : CYRIC (CY)
Contact CRA-W : f.henriet@cra.wallonie.be

DETECTIVE

DETECTion of NGT products to promote InnoVation in the European union
2024-2027 detective-ngt.eu
HORIZON H2020 (20 partners)
Coordinator : SLU (SE)
Contact CRA-W : f.debode@cra.wallonie.be

EJP SOIL

EJP SOIL is a European Joint Programme Cofund on Agricultural Soil **Management**
2020-2025 ejpsoil.eu
European Joint Project COFUND (26 partners)
Coordinators : INRAE (FR) et WR (NL)
Contact CRA-W : b.huyghebaert@cra.wallonie.be

EURL-AP

European Union Reference Laboratory for animal proteins in feedingstuffs
2006- eurl.craw.eu
Commission Européenne (27 états membres)
Coordinator : CRA-W (BE)
Contact CRA-W : o.fumiere@cra.wallonie.be
secretary@eurl.craw.eu

FARMYNG

FlAgship demonstration of industrial scale production of nutrient Resources from Mealworms to develop a bioeconomY New Generation
2019-2025 www.farmyng.eu
HORIZON BBI-JU (21 partners)
Coordinator : Ynsect (FR)
Contact CRA-W : f.debode@cra.wallonie.be

FRUITDIV

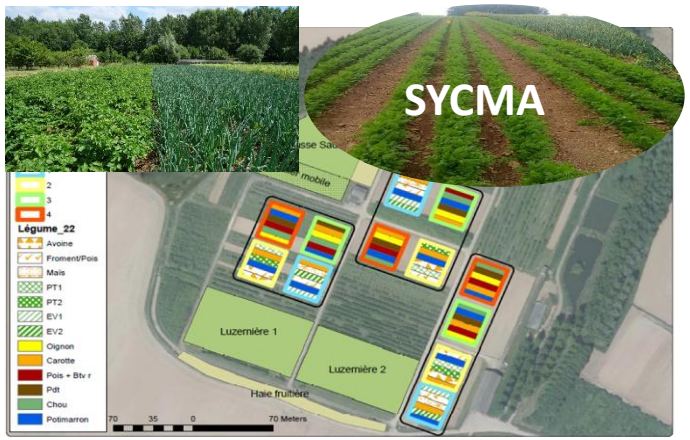
Exploiting the Untapped potential of Fruit tree Wild DIVersity for Sustainable Agriculture
2024-2028 HORIZON CL6 (14 partners)
Coordinator : INRAE Unit BFP (FR)
Contact CRA-W : f.vanroozendael@cra.wallonie.be

HOLICOW

Enable small/med dairy farmers to benefit from big data for holistic decision-making
2023-2026 https://www.cra.wallonie.be/en/holicow-1
Interreg (6 partners)
Coordinator : ELEVEO (BE)
Contact CRA-W : c.grelet@cra.wallonie.be

Some Practical Results

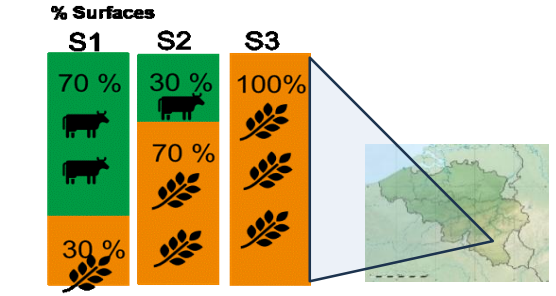
1. Four Long term Organic Experimental Platforms

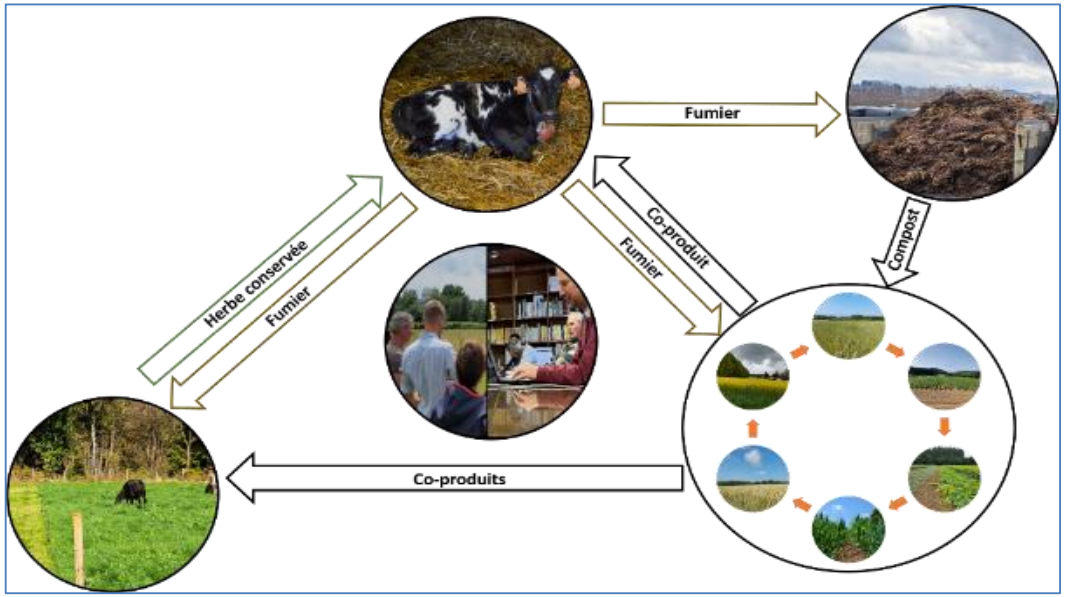


ORGANIC VEGETABLES

ORGANIC FRUIT TREE EXP. ORCHARDS

- Genetic Resouces & Breeding
- Variety & rootstock testing
- Agroforestry





SPOT – ORGANIC Mixed farming and livestock systems

Strategies for maintaining soil fertility in cropping systems

ORGANIC ARABLE CROPS

Which systems of mixed farming and agro-ecological practices in response to local and global issues ??

Some Practical Results

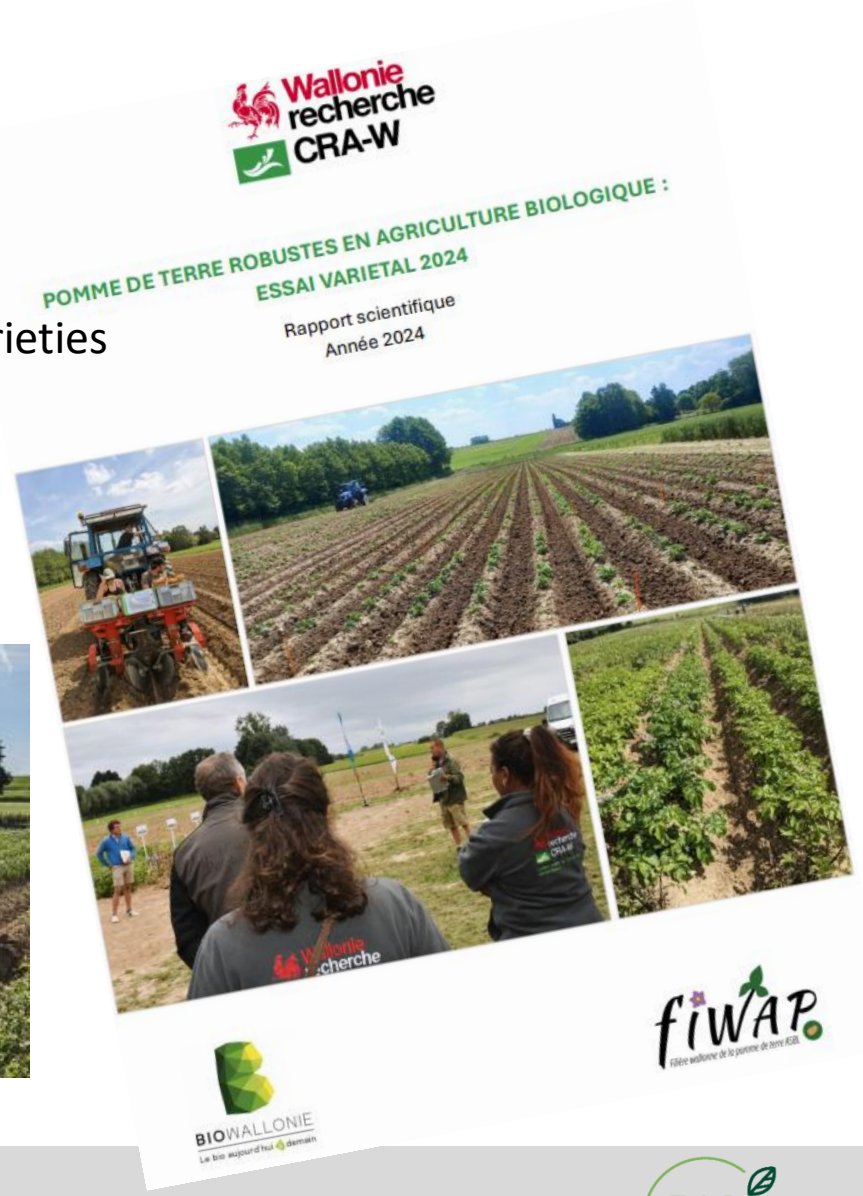
2. Organic variety Testing Trials – Cereals, Potatoes

Collaborative Organic trials

Best organic performant varieties of
Wheat, Spelt, Hard Wheat, Triticale

https://www.cra.wallonie.be/fr/varcerbio

3 released CRA-W
Late blight resistant potato varieties



itab
l'Institut de l'agriculture et de l'alimentation biologiques

Province de Liège
Agriculture
CPL-Végémar

Province de HAINAUT
Carah

Some practical Results

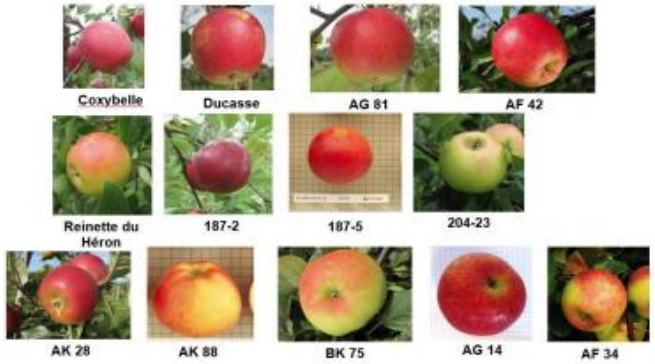
3. Participatory Organic Fruit Breeding & Variety & rootstocks Testing Trials

Crosses – hand pollination

Seedling nursery

Experimental orchard

36 organic growers



Elite new cultivars

Testing by & with growers

NOVA FRUITS

A.S.B.L. GAWI

GROUPEMENT D'ARBORICULTEURS PRATIQUANT EN WALLONIE LES TECHNIQUES INTEGREES

Wallonie recherche CRA-W

BIO mon choix

Merci bramin p’o m’awès choutè

Bedankt voor uw aandacht

Merci pour votre attention

Welcome by Marleen Delanoy, Policy advisor Organic Production, Agency for Agriculture and Fisheries, Governement of Flanders

Flanders
State of the Art

Organic research in Flanders

Marleen Delanoy
Policy Advisor Organic Production

AGENCY
FOR AGRICULTURE &
FISHERIES

Policy framework and objectives

Organic strategic plan 2023 -2027

Objectives:

5 % agricultural area: the area under organic production increases to 30 000 ha by the end of 2027

5% turnover of organic animal production: the turnover of organic animal production grows to 5% of the turnover value of total animal production (including dairy)

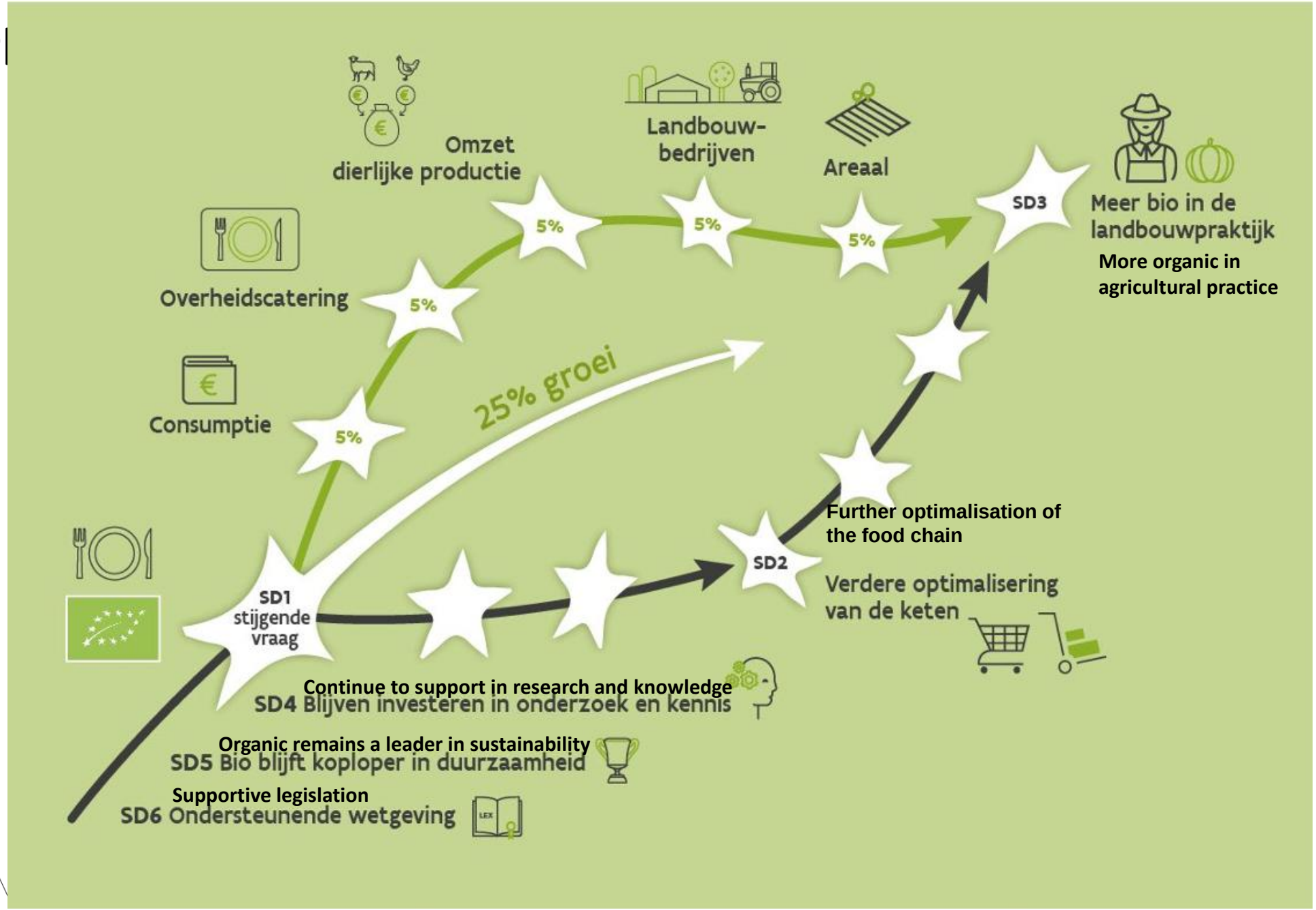
5% organic farms: at least 5% of farms will be organic by the end of 2027

5% organic consumption: the volume of organic consumption will grow to 5% of the total consumption by the end of 2027

5% organic in government catering: organic will account for 5% of government catering by the end of 2027.

Flanders
State of the Art

Sup


Omzet dierlijke productie
Landbouw-bedrijven
Areaal
SD3
Meer bio in de landbouwpraktijk
More organic in agricultural practice
Overheidscatering
Consumptie
5%
5%
5%
5%
25% groei
SD1 stijgende vraag
SD2
Further optimalisation of the food chain
Verdere optimalisering van de keten
Continue to support in research and knowledge
SD4 Blijven investeren in onderzoek en kennis
Organic remains a leader in sustainability
SD5 Bio blijft koploper in duurzaamheid
Supportive legislation
SD6 Ondersteunende wetgeving

OD10. Financial support for individual organic farmers and in conversion farmers

- **Easier access for organic farmers to become an Active farmer**
- **Higher subsidies for organic in CAP**
  - Higher subsidies for in conversion farmers
    - Grassland, perennial fodder crops: 390 euro/ha (⇔ 300 euro/ha previous CAP)
    - Arable crops: 900 euro/ha (⇔ 480 euro/ha previous CAP)
    - Fruit, vegetables, ornamental plants and herbs : 1.700 euro/ha (⇔ 850 – 860 - 1320 euro/ha previous CAP)
  - Organic farmers
    - Top-up for organic production
      - → First 5 ha: 300 euro/ha
      - → Following 70 ha: 100 euro/ha
      - → Above 75 ha: 50 euro/ha
    - More access to eco-schemes and agri-environmental climate measures
- **VLIF (Flemish Investment Fund) Productive - Non-productive**
- **Support for certification cost**

OD14. Strengthening the Organic knowledge network as a center for demand driven research

- **Funds for CCBT**
  - Staff and operational cost
  - Yearly call for projects:
    - Demand driven, within 2 years, each subsector has a project
    - 2-3 project duration
    - Carried out by practise centres
    - Communication of research results: BioPraktijk – www.ccbt.be
    - ≈ 300 000 €/budget

Flanders
State of the Art

OD15. Organic agriculture research is given a full place within agriculture and food research

- European Partnership for Innovation (EIP)- projects
- Demonstration projects
- VLAO La-call

Flanders
State of the Art

OD 16 In depth research on organic farming

- **Yearly ≈300 000 € budget for**
  - Flemish call
    - 2-3 project duration
    - the theme(s) of the call are determined in consultation with the organic sector
    - Fundamental research
    - Carried out by Flemish research institutions and Flemish educational institutions (universities and university colleges) without commercial objectives. Collaboration with practice centres is possible

    OR
  - Participation in international calls
    - Past: Core organic
    - Partnership on agroecology living labs and research infrastructure

- **VLAIO : 1 000 000 € for**
  - Partnership on agroecology living labs and research infrastructure
    - No specific requirement for organic research

Flanders
State of the Art

Plenary pitches: Discover research from Flanders and Wallonia

Medegefinancierd door de Europese Unie

Biodiversikas

Sander Fleerakkers

Proefstation voor de Groenteteelt (PSKW)

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

ILVO CCBT BioForum Wallonie recherche CRA-W Wallonie BIO mon choix PLAN BIO 2030 AGENTSCHAP LANDBOUW & ZEEVISSERIJ

Context & objectives

Diversified unheated greenhouse growers

≠ open air culture

≠ heated greenhouse culture

→ How to increase biodiversity
+ enhance natural pest control?

→ Research & knowledge exchange

* What natural enemies are present and can enter the greenhouse?
* installing agro-ecological measures and what is their impact?

Medegefinancierd door de Europese Unie

ILVO CCBT BioForum Wallonie recherche CRA-W

The 13 principales of agroecology

TRANSFORMATIONAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

INCREMENTAL

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

AGROECOSYSTEM

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

ILLUSTRATIONS:DOROTTYA PÓR

Collaboration with farmers

BioForum
SECTORORGANISATIE BIOLANDBOUW EN -VOEDING

+

proefstation
VOOR DE GROENTETEELT

HO GENT


Moesland


't Schaaphof


De Molenkouter


Rawijs


Groenlof


Plukboerderij Grondig

➡

ILVO CCBT BioForum Wallonie recherche CRA-W

Medegefinancierd door de Europese Unie

Implementation & communication

+

Medegefinancierd door de Europese Unie

Next steps

Project started only recently

→ **monitoring natural enemies** in greenhouse + what is entering?

→ identify adapted commercial **beneficials**

→ identify and test agro-ecological **measures for biodiversity** & soil quality

→ visits to **inspirational cases** in and outside Flanders

Medegefinancierd door de Europese Unie

Contact

sander.fleerakkers@proefstation.be

Biodiversity at the service of farmers for a more resilient and autonomous agriculture

BOERAEVE Fanny

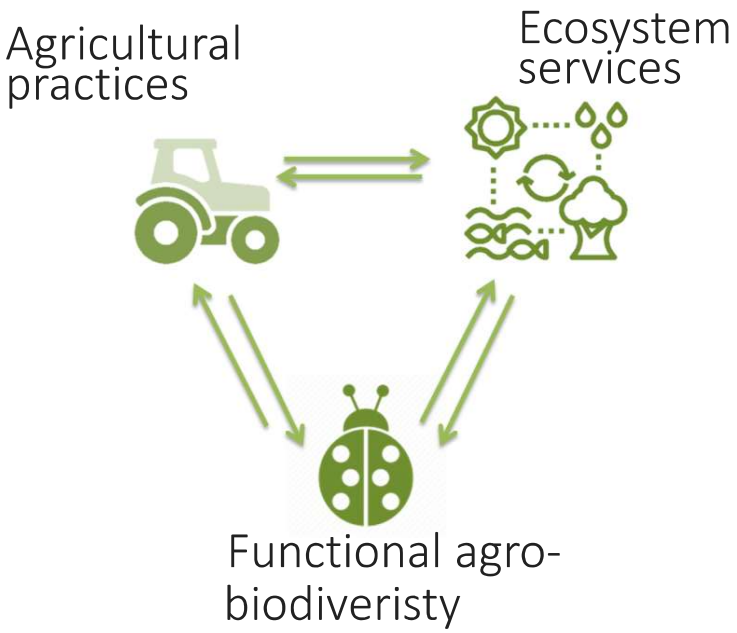
Plant Sciences, Gembloux Agro-Bio Tech, Liege University

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context & objectives

Unravelling the complex relationships



Working with network of farmers

Understand levers and lockins to transision

Reflexive analyses of participatory research processes

Using policy as a lever to transition

Understaning how the CAP is a lever / lockin to transition

Fostering policy supporting agroeocological transition

ILVO CCBT BioForum Wallonie recherche CRA-W

The 13 principales of agroecology

Principles linked to my research

Principles of interest

TRANSFORMATIONAL

INCREMENTAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

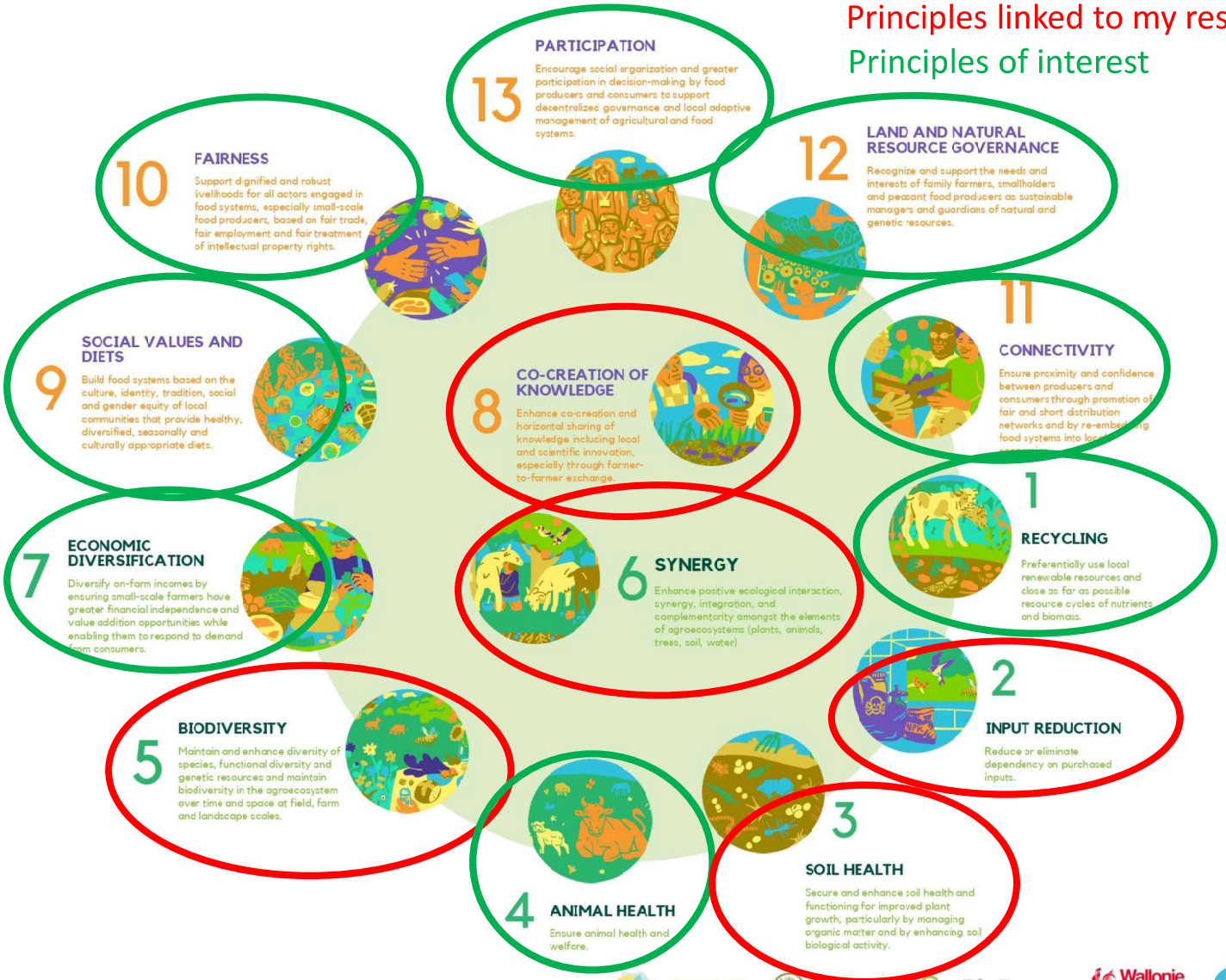
LEVEL 3
Redesign agroecosystems

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

AGROECOSYSTEM



ILLUSTRATIONS:DOROTTYA PÓR

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

Collaboration with farmers

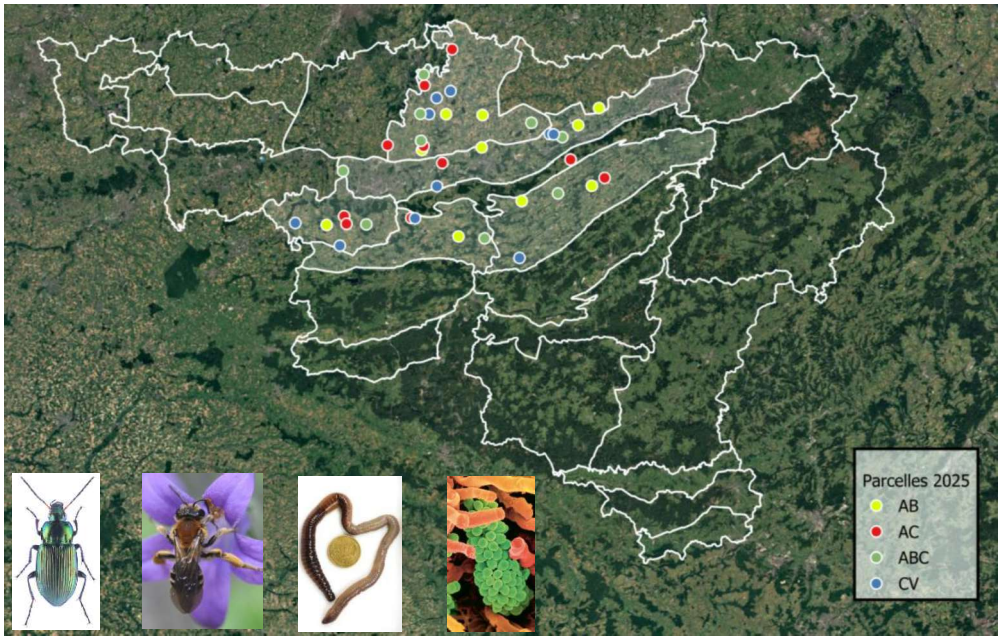
40 farms, 4 modalitie, all in winter cereals:

- CV = conventionnelle (conventional)

- AB = biologique (organic)

- AC = conservation des sols (conservation)

- ABC = biologique de conservation des sols (organic-conservation)



Implementation & communication

Individual reports to each farmers

Collective restitutions with the group (& partner projects working on functional agro-biodiversity)

Next steps

Ongoing:

Create a Living Lab around functional agro-biodiversity

Construction of an interdisciplinary edaphic lab
- Rhizosphere, roots (Prof. Pierre Delaplace)
- meso and macrofauna (Myself)
- microflora, non rhizospheric soil (Prof. C. De Clerck)
- strong interactions with physical and chemical soil Labs of GxABT

Education: Strenghten the Master on Agroecology (ULB- ULiege)

Dreaming:

Create networks of Living Labs at the belgian scale

Submit project proposals with colleagues also working in a Living Lab approach

Fanny BOERAEVE

f.boeraeve@uliege.be

Monitoring Biodiversity in Agricultural Areas

Mieke Lateir

INBO

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context & objectives

	Birds and mammals	Pollinators	Aquat. inverte brates	Soil biodiv	BVM + farmland flora	Natural Envir.
Nature Resto -ration law	Agriculture Birds	Pollinators Grassland Butterflies			Elements high div	
LULUCF Regulation					Ecosystem change	
CAP	Agriculture Birds	Species HD			Elements high div	
Proposal Soil monitoring directive				Soil biodiv		
Proposal directive Ecosystem Cal.	Agriculture Birds	Pollinators			Ecosystem surface	
HD + BD + PAS + KRW	Agriculture Birds Habitat D.	Agriculture species HD	Water quality agriculture		Agriculture habitats species	Ground water Surfacewater Soil

Birds And mammals	Pollinators	Aquat. inverte brates	Soil biodiv	Farmland flora	BWK	Natural Envir.
Statistics						
Data Management						
Cocreation with farmers						
Coordination and communication						

ILVO CCBT BioForum Wallonie recherche CRA-W

The 13 principales of agroecology

TRANSFORMATIONAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

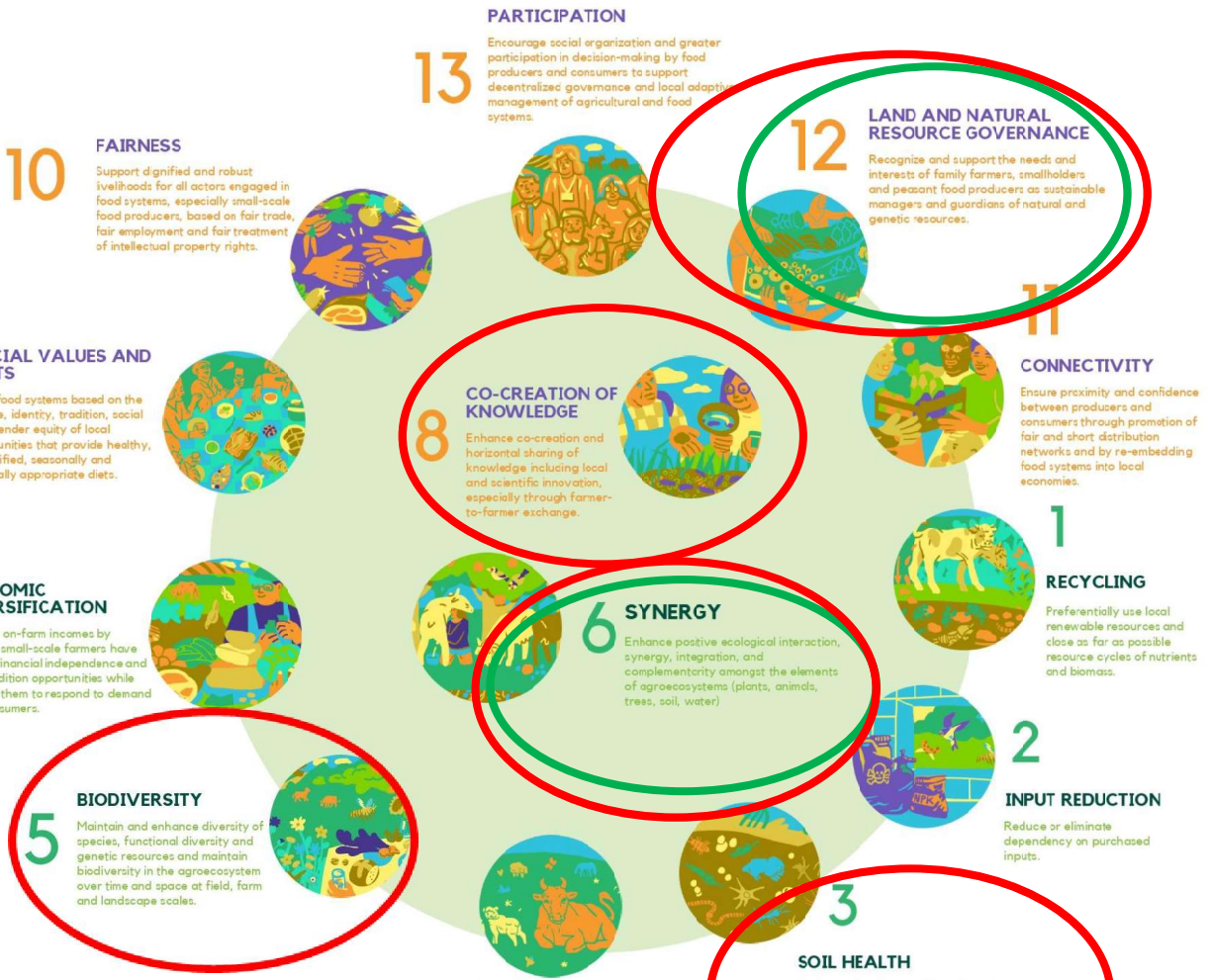
INCREMENTAL

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

AGROECOSYSTEM



SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

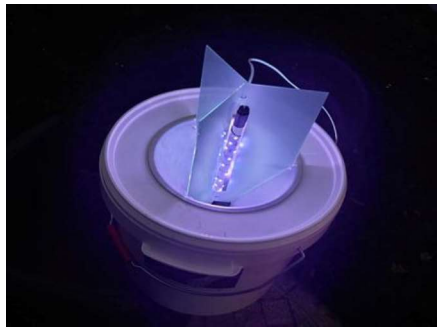
ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

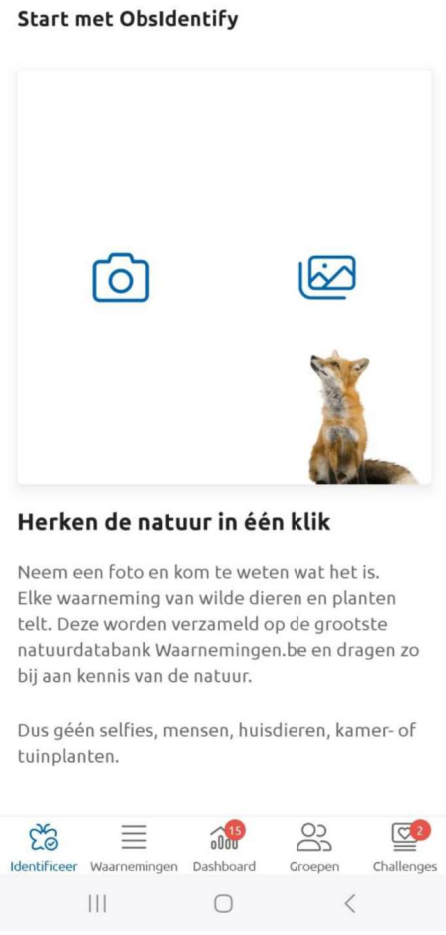
ILLUSTRATIONS:DOROTTYA PÓR

Collaboration with farmers

- Share results
- Exchange of knowledge and perspective
- Measuring biodiversity on farm level

➢ DIT and DIY – hands-on tools



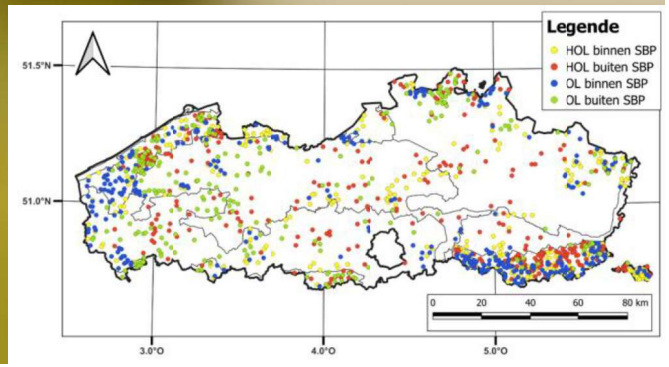


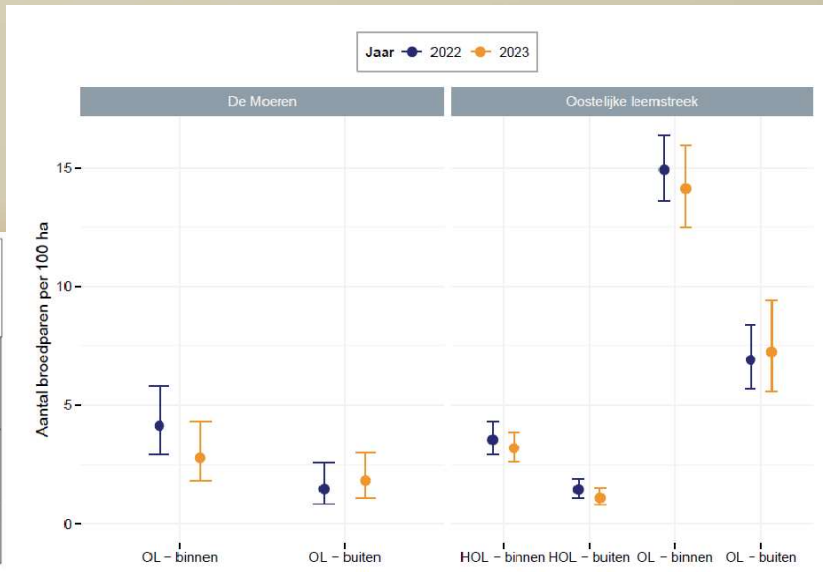
ILVO CCBT BioForum Wallonie recherche CRA-W

Implementation & communication

FARMLAND BIRDS

- SBP – species protection areas – umbrella species
- 1450 measuring points Flanders
- Professionals and volunteers
- Linked to agricultural parameters and the farmer's perspective





Next steps

Long term monitoring for different modules (TBC)

Joint project INBO-ILVO for Soil Biodiversity and Cocreation with farmers

Publications & data available to public according to INBO Open Access policy, Open Data policy, complying with FOSB Open Science KPI's and Belgian Open Access and Belgian Open Data regulation

Contact

mieke.lateir@inbo.be

myriam.dumortier@inbo.be

Evaluating varieties and developing innovative technical itineraries to meet the challenges of organic field crops

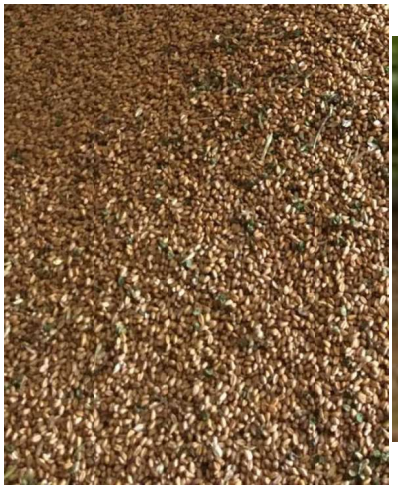
Anne-Michelle Faux, Feriel Ben Abdallah, Jean Bouvry, Coline Crevits, Damien Eylenbosch, Quentin Limbourg, Rodrigo Meza, Fabienne Rabier

CRA-W, Crop Production Unit

Stronger together: researchers from Wallonia and Flanders join hands for organic farming
March 25, 2025, Gembloux

Challenges in organic field crops

(… among many others)



How to meet the quality requirements of the processing sector

How to control weeds

How to manage crop diseases

ILVO CCBT BioForum Wallonie recherche CRA-W

Objectives (1/2)

Support farmers in their **choice of varieties**

- Winter cereals :
  - **Common wheat**
  - **Spelt**
  - **Triticale**

  } since 2014
  - **Durum wheat** (since 2021)
  - **Oat** (since 2024)

  www.cra.wallonie.be/fr/**varcerbio**
  - Variety **mixtures** in bread wheat (since 2021)
  - Screening to identify **varieties tolerant to the common wheat bunt** (*Tilletia caries)*

  www.cra.wallonie.be/fr/**varcerbio-plus**
  - Improving the characterization of traits of interest in organic farming

  www.cra.wallonie.be/fr/**caraccerbio**
- **Potatoes** (since 2019)

  www.cra.wallonie.be/fr/**pdt-robustes-bio**
- **Sunflower**
- **Millet**

  } new in 2025

  https://www.cra.wallonie.be/fr/**abc-to-food**

Objectives (2/2)

Develop **adapted technical itineraries**

Improve the product quality

- Improving the technological quality of the grain in **durum wheat** through **adapted fertilisation schemes**
  www.cra.wallonie.be/fr/ble-dur,
  www.cra.wallonie.be/fr/itkbio

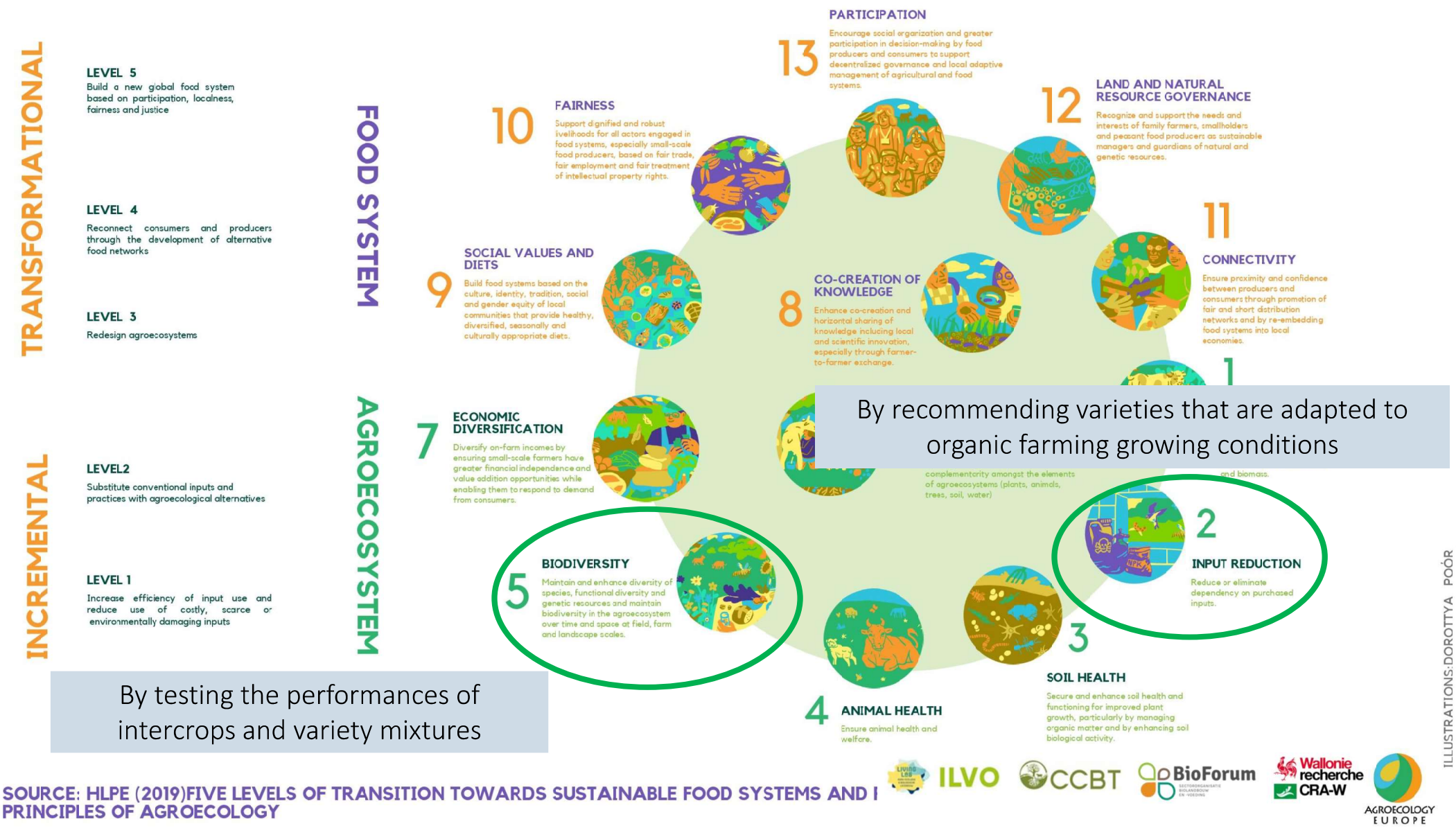
BioCoCrop

Controlling weeds by using intercrops

- **Co-cultivating a permanent legume crop** together with the cash crop **to control weeds** in organic no-till cropping systems
  www.cra.wallonie.be/fr/biococrop
- **Multi-performance evaluation** of weed management systems based on **intercropping**
  www.cra.wallonie.be/fr/cropfightsweeds
- Growing **bread wheat intercropped with white clover** (new 2025)
  www.cra.wallonie.be/fr/abc-to-food

ILVO CCBT BioForum Wallonie recherche CRA-W

The 13 principales of agroecology



By recommending varieties that are adapted to organic farming growing conditions

By testing the performances of intercrops and variety mixtures

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

Collaboration with farmers

Trials are set up either on the CRA-W's fields
or on farmers' fields

ILVO CCBT BioForum Wallonie recherche CRA-W

Communication

- Organisation of **trial visits**
- Participation to **agricultural events** and **fairs**
- Info evenings for farmers
- **Messages for the warning network** in cereals and in oilseed and protein crops, managed by the CePiCOP
- Trial **reports and articles**
  - www.livre-blanc-cereales.be
  - www.biowallonie.com/documentation/itineraires-bio/
  - fiwap.be/documentation-fiwap/biologie-pdt/

Implementation of results

- Use of recommended varieties by the farmers
- Contribution to the development of value chains (potatoes, bread wheat, durum wheat, …)
- Development of a prototype seeder adapted for sowing co-crops in alternating rows

ILVO CCBT BioForum Wallonie recherche CRA-W

Next steps

- Long-term research:
  - **Variety trials** in **winter cereals**
    - Integrating additional cereal species (e.g., oats)
    - Going further in the evaluation of varietal mixtures in bread wheat
    - Adding trial sites in other agroecological regions ?
  - **Variety trials** in **potatoes**
- The **BioCoCrop** project : validating the equipment prototypes (strip seeder, inter-rows mower, rotary tiller)
- New challenges with the recently started research projects **CropFightsWeeds** and **ABCTOFOOD**

ILVO CCBT BioForum Wallonie recherche CRA-W

Contact

a.faux@cra.wallonie.be

From Farm to Future: Elevating Local Quinoa Through Collaboration

Gerda Cnops

ILVO

Medegefinancierd door de Europese Unie

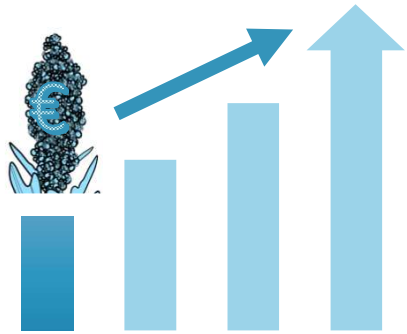
QUIKLA: quinoa becomes a classic

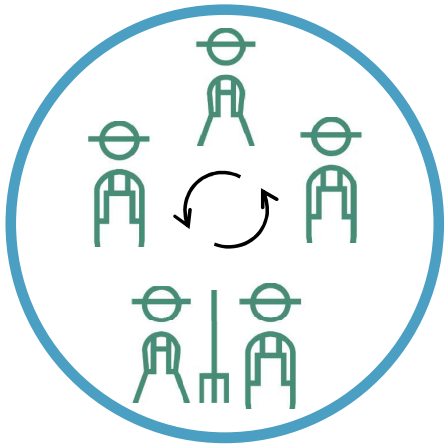
?

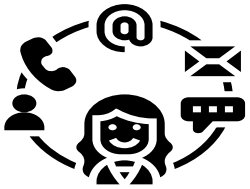
Local?

Sustainable?

healthy?







The 13 principales of agroecology

TRANSFORMATIONAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

INCREMENTAL

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

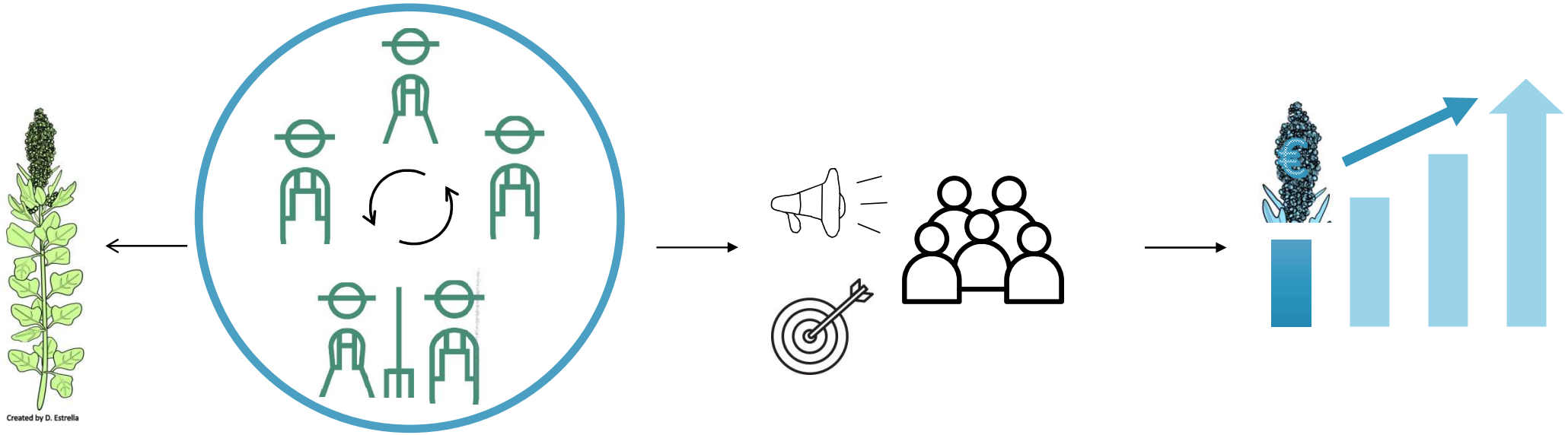
AGROECOSYSTEM

ILLUSTRATIONS:DOROTTYA PÓR

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND PRINCIPLES OF AGROECOLOGY

EUROPE

Collaboration with farmers



Together: INFO + promotion → profitabel businessmodel

Medegefinancierd door de Europese Unie
ILVO
BOEREN BOND
UCLL HOGESCHOOL
PRAKTIJKPUNT LANDBOUW VLAAMS-BRABANT
SPARKLING ARROW COMMUNICATE BETTER

Food for athletes: Ien Vitse
Vlaamse Wielrijdersbond vzw
Gezond en Ethisch Sporten vzw
Decolef Belgian **Branch**
Pieter Serry

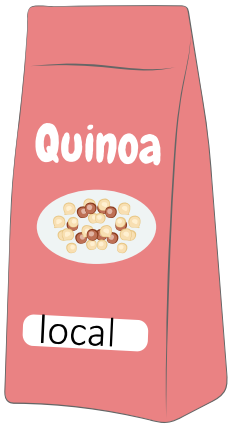
VLAM.be

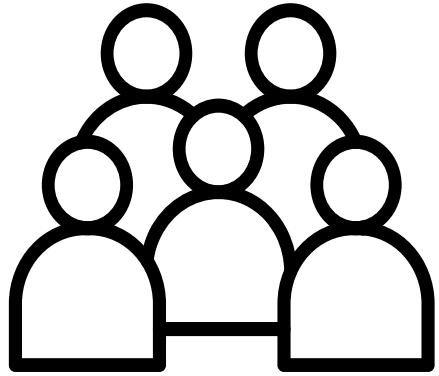
Implementation & communication

Portfolio's for different target groups

Cyclists, Sportieq, website, recipes, cycling magazines,

events, makethon,….





Food for athletes: Ien Vitse
Vlaamse Wielrijdersbond vzw
Gezond en Ethisch Sporten vzw
Decolef Belgian **Branch**
Pieter Serry

VLAM.be

Medegefinancierd door de Europese Unie ILVO BOERENBOND UCLL HOGESCHOOL PRAKTIJKPUNT LANDBOUW VLAAMS-BRABANT SPARKLING ARROW COMMUNICATE BETTER

Next steps

quinoa

- VLAIO submitted: germination efficiency/ youth growth/ resilience downy mildew/ biostimulants/product development/market
- Quinoa Breeding ILVO: # varieties (yield, saponins, protein content, color, size, disease resistance, …)

Mixed cropping:

- Protein crop + grain/oil crop: CoolFarmLab, Tweespan, Lego, Farmers Benefits

Contact

Gerda.cnops@ilvo.vlaanderen.be

Technological quality of food cereals for organic farming

Bruno Godin

Walloon Agricultural Research Center (CRA-W)

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context

- No good technological food grain quality → Not a commodity

  Depends on the final buyer, the targeted product and the transformation

  Define your own specific criteria in terms of quality

  → Depend on the variety

- Short commercial lifespan and low availability of food cereal seed varieties in Belgium

ILVO CCBT BioForum Wallonie recherche CRA-W

Objectives

- Assess and rank the processing suitability of technologically robust varieties and nitrogen fertilization specific to organic food applications and Walloon pedoclimate

→ Varietal choice: Wheat, Spelt, Barley, Durum, Oat, Triticale

→ Varietal mix and population

→ Nitrogen fertilization: Wheat, Durum

The 13 principales of agroecology

TRANSFORMATIONAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

INCREMENTAL

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

AGROECOSYSTEM

13 PARTICIPATION
Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems.

12 LAND AND NATURAL RESOURCE GOVERNANCE
Recognize and support the needs and interests of family farmers, smallholders and peasant food producers as sustainable managers and guardians of natural and genetic resources.

11 CONNECTIVITY
Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies.

1 RECYCLING
Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass.

2 INPUT REDUCTION
Reduce or eliminate dependency on purchased inputs.

3 SOIL HEALTH
Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and by enhancing soil biological activity.

4 ANIMAL HEALTH
Ensure animal health and welfare.

5 BIODIVERSITY
Maintain and enhance diversity of species, functional diversity and genetic resources and maintain biodiversity in the agroecosystem over time and space at field, farm and landscape scales.

6 SYNERGY
Enhance positive ecological interaction, synergy, integration, and complementarity amongst the elements of agroecosystems (plants, animals, trees, soil, water)

7 ECONOMIC DIVERSIFICATION
Diversify on-farm incomes by ensuring small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.

8 CO-CREATION OF KNOWLEDGE
Enhance co-creation and horizontal sharing of knowledge inclucing local and scientific innovation, especially through farmer-to-farmer exchange.

9 SOCIAL VALUES AND DIETS
Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.

10 FAIRNESS
Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.

ILLUSTRATIONS:DOROTTYA PÓR

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

Collaboration with farmers

- Farmers : Pionneer
- Farmer-stone millers and stone millers
- Local Action Groups (GAL)
- Food cereal cooperatives : Belgrain, Cultivae, FarmForGood, …

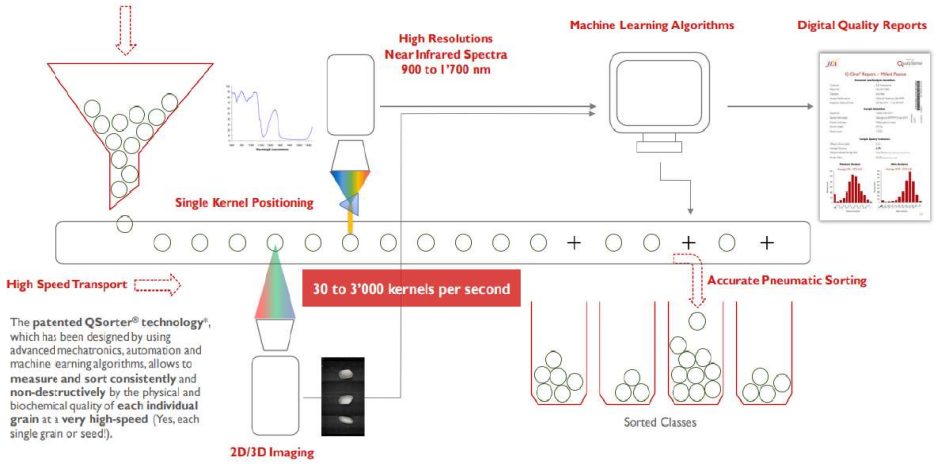
Implementation & communication

- Livre Blanc Céréales
- Biowallonie (Itinéraire BIO, BioCérès, events, visits)
- CePiCOP (weekly newsletter, visits)
- Collège des Producteurs (periodical newsletter, events, visits, supply chain, fair price)

Next steps

- Enhance technological evaluation with breadmaking and cookies test

- Post-harvest technics to ensure quality to avoid the economical loss
→ Infrared single kernel sorting (also high-speed quality control and phenotyping)



ILVO CCBT BioForum Wallonie recherche CRA-W

Bruno Godin

b.godin@cra.wallonie.be

Crop Diversification as a way to resilience

Hilde Muylle

ILVO

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context & objectives

- How to increase the number of species in a rotation system?
- What species/crop to grow?
- What are the prerequisites to establish a new crop?

ILVO CCBT BioForum Wallonie recherche CRA-W

The 13 principales of agroecology

TRANSFORMATIONAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

INCREMENTAL

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

AGROECOSYSTEM

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I PRINCIPLES OF AGROECOLOGY

ILLUSTRATIONS:DOROTTYA PÓR

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

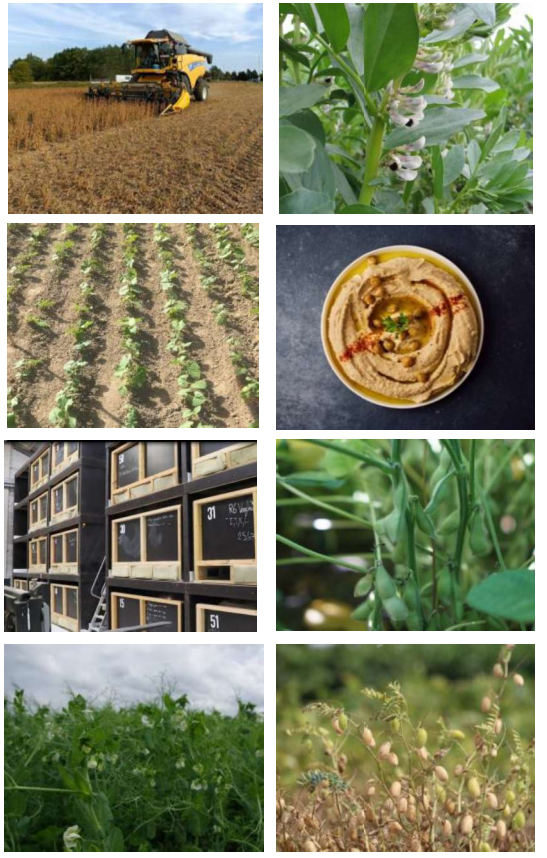
Collaboration with farmers

Participatory (pre-)Breeding

Agronomy research (nodulation, variety testing, strip cropping, mixtures, …)

Pilot facilities open to farmers : post Harvest processes (drying, cleaning, dehulling, storage, …), food pilot

Chain Development (animal husbandry, food, bio-economy, …)



ILVO CCBT BioForum Wallonie recherche CRA-W

Implementation & communication

- Participatory research facilitates implementation and communication
- Through vivid Whatsapp groups
- Online tools
- Building new cooperations including different stakeholders in the value chain

ILVO CCBT BioForum Wallonie recherche CRA-W

Contact

Hilde.Muylle@ilvo.vlaanderen.be

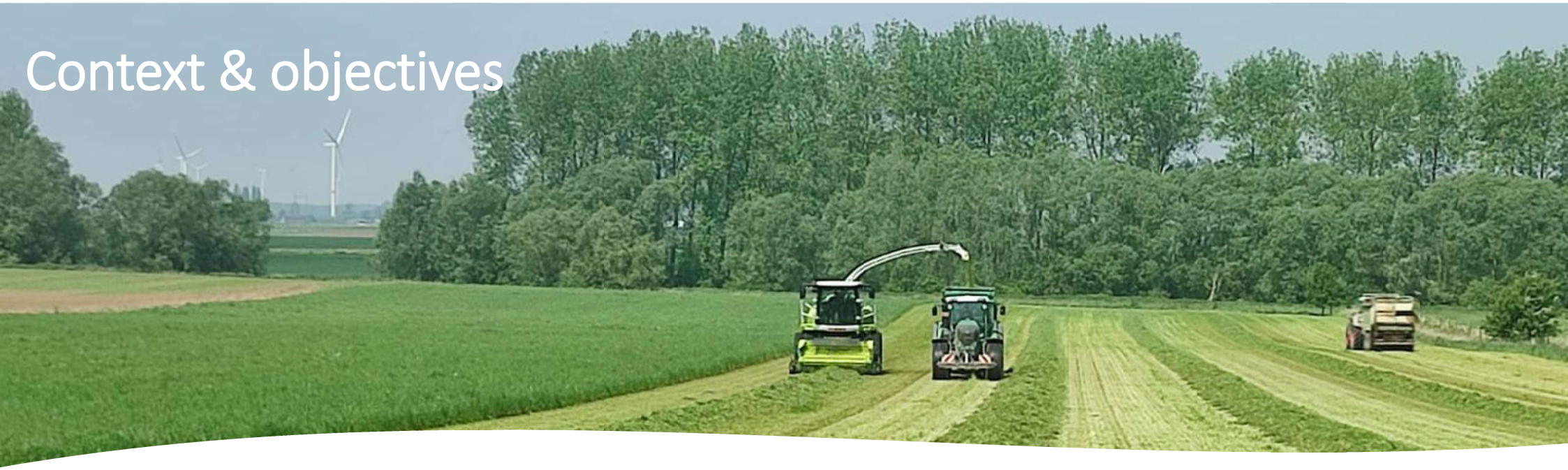
PréFertiBio

E. Montignies, R. Lambert, M. Detoffoli

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context & objectives



A systemic approach combining forage and fertiliser production and redesigning land parcels to achieve an important range of agro-ecological objectives

ILVO CCBT BioForum Wallonie recherche CRA-W

The different pillars of agroecology

A systemic approach

Field of production =

- Soil structuring
- Deep incorporation of OM (dead roots)
- Deep water storage (sponge)
- Limits annual and perennial weeds (thistles)
- Limits erosion in the catchment area

Alfalfa =

- Large quantity of high-quality fodder
- Adapted to drought and no inputs
- Storage and self production of fertilizer

ILVO CCBT BioForum Wallonie recherche CRA-W

Economic approach

Alfalfa containt :

Kg N/TMS	Kg P/TMS	Kg K/TMS
34,9	3,9	32,3
+/- 350 UN/HA	+/- 40 UP/ha/an	+/- 320UK/ha/an

Harvesting cost (€/ha)

Mowing /Swathing (9M)	170€/h => 24,3 €/ha
silage	200€/h =>28€/ha
spreading	72€/h (5 spreaders/h) => 14,4 €/ha
Total	66,7 €/ha/cut

1,9 € for 1 UN

Without CAP aid (910€/ha)

Depreciation of alfalfa on 3 years

270€ location + 330 € sowing works (=1090€ year 1, on 3 years) = **600 €/ha**

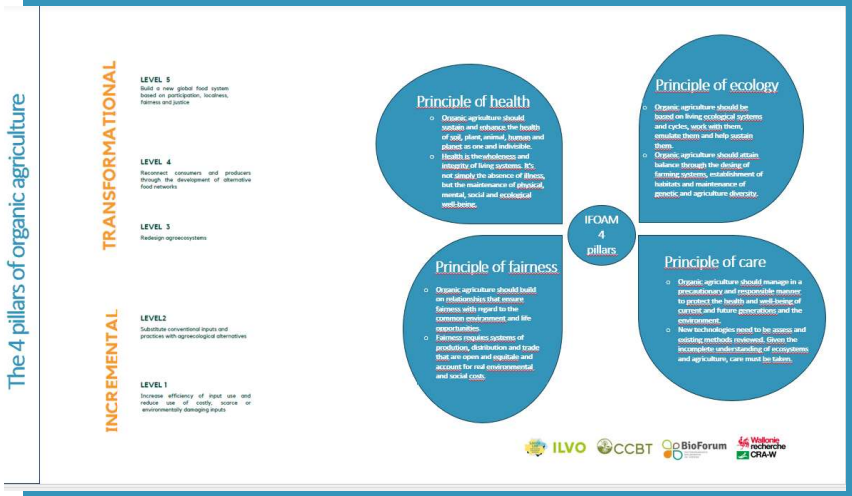
Comparaison: **organic fertiliser 10-5-0**: 450 €/t = **4,5 € UN** versus **N27 conv: 1,2 €UN**

Collaboration with farmers

- Surveys in some farms who use this method of fertilizing
- Forrage production for 3 local farmers (sheep, cow and goat with milk transformation
- Visit and demonstration in the field

ILVO CCBT BioForum Wallonie recherche CRA-W

I think we touch all the 5 goals for Ifoam …



Implementation & communication

- consolidate results on different crops up to September 2027
- improve our knowledge of the mineralisation of this type of om in the field and in the lab
- Visit and exchanges in the fields
- Publications

Next steps

- Open doors on this “LIVING LAB” tho improve knowledges
- Collective intelligency
- Your are welcome

E. Montignies

Eddy.montignies@brioaa.bio

brio .aa
Belgian
Research Institute of Organic
Agriculture and Agroecology

ILVO CCBT BioForum Wallonie recherche CRA-W

Non-inversion tillage versus “eco-plow”

Joran Barbry

Inagro vzw

inagro

RESEARCH & ADVICE IN AGRICULTURE & HORTICULTURE

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

ILVO CCBT BioForum Wallonie recherche CRA-W Wallonie BIO mon choix PLAN BIO 2030 AGENTSCHAP LANDBOUW & ZEEVISSERIJ

Context & objectives

Context

- **Climate Change Impact:** A challenge to make the soil management more robust.
- **Regenerative Soil Management:** How to apply to Flemish organic farming practices?
- **Current Practices**: Non-inversion tillage and green manures are key concepts, but there are still knowledge gaps.

Challenges

- **Intensive Non-Inversion Tillage:** Often still quite intensive.
- **Dry Conditions:** Organic material from crop residues and manure lays inert on the surface.

Project Goals

Explore Alternative Strategies: Investigate whether the eco plow, the application time of manure and/or the use of inoculants to stimulate decomposition of organic matter can be part of the solution.

ILVO CCBT BioForum Wallonie recherche CRA-W

Main conclusions

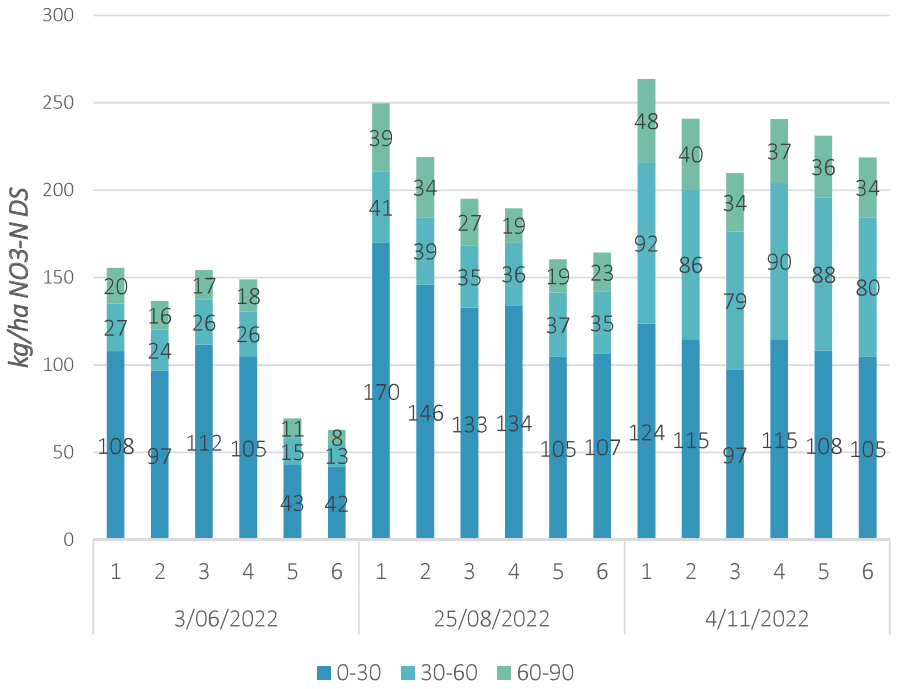
- **Soil structure** and **crop rotation choice** are most important factors

Possibilities to skip deep cultivation in spring when conditions are favorable

- Choice between eco-plow or non-inversion tillage has **limited impact**
- For leek: results depend heavily on climate conditions

Non-inversion tillage combined with timely grass clover destruction has good results in dry and wet conditions

- The application time (autumn vs. spring) of farmyard manure has no effect on yield and/or nitrogen residues in the soil -> chances for further research



The 4 pillars of organic agriculture

TRANSFORMATIONAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

INCREMENTAL

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

Principle of health

- Organic agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible.
- Health is the wholeness and integrity of living systems. It's not simply the absence of illness, but the maintenance of physical, mental, social and ecological well-being.

Principle of ecology

- Organic agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them.
- Organic agriculture should attain balance through the desing of farming systems, establishment of habitats and maintenance of genetic and agriculture diversity.

IFOAM
4
pillars

Principle of fairness

- Organic agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities.
- Fairness requires systems of prodution, distribution and trade that are open and equitale and account for real environmental and social costs.

Principle of care

- Organic agriculture should manage in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment.
- New technologies need to be assess and existing methods reviewed. Given the incomplete understanding of ecosystems and agriculture, care must be taken.

ILVO CCBT BioForum Wallonie recherche CRA-W

Collaboration with farmers

Our research is **demand** driven:

1. Before projects/research:

- **Technical advisory board**
- **1 on 1 contact** e.g. advisory services, mail

2. During projects:

- **Steering committees**
- On-farm experimentation
- **Field visits**

ILVO CCBT BioForum Wallonie recherche CRA-W

Implementation & communication

Communication:

- Field visits, newsletter articles, presentations

Implementation:

- Trial farm at Inagro
- New knowledge is used to guide farmers (advisory services, demonstrations…)

Next steps

Further research is needed into the best **application period for farmyard manure** in combination with **reduced (deep) tillage techniques**

- *Long term effect of application in autumn*
- *Reducing (deep) tillage even further*

New research opportunities for **the application of innoculants or ferment products** to **boost the microbial life** in the soil and to **accelerate the decomposition** processes of organic material in the soil

Possible cooperations

- *To verify our findings in the cropping systems in other regions, other soil types etc.*
- *To tackle new research opportunities together*

ILVO CCBT BioForum Wallonie recherche CRA-W

Joran Barbry

joran.barbry@inagro.be

051 27 32 27

inagro

RESEARCH & ADVICE IN AGRICULTURE & HORTICULTURE

ILVO CCBT BioForum Wallonie recherche CRA-W

Participative multi-actor research in organic cropping systems :

reduced tillage (ABC) - protein intercrops (Assobio)

Aline Fockedey, Morgane Campion and Pénélope Lamarque

CRA-W

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Logo Assobio

Context & objectives

*Collaboration on a shared **subject** between different **actors**, including farmers researchers …*

Exploratory or to handle an (previously) identified problem

Each bringing its own skills, knowledge, experience, and point of view

Putting to test **low till organic cropping systems**

7 farmers
including 2 in no-ploughing
On farm experimentation

Wallonie recherche CRA-W ⟷ agroecology transect
Performance assessment

Greenotec
Advisor, technical expertise

Barriers along the supply chain in organic **legumes-cereals intercrop**

~ 10 farmers
On farm experimentation

& downstream actors
Exchanges on barriers

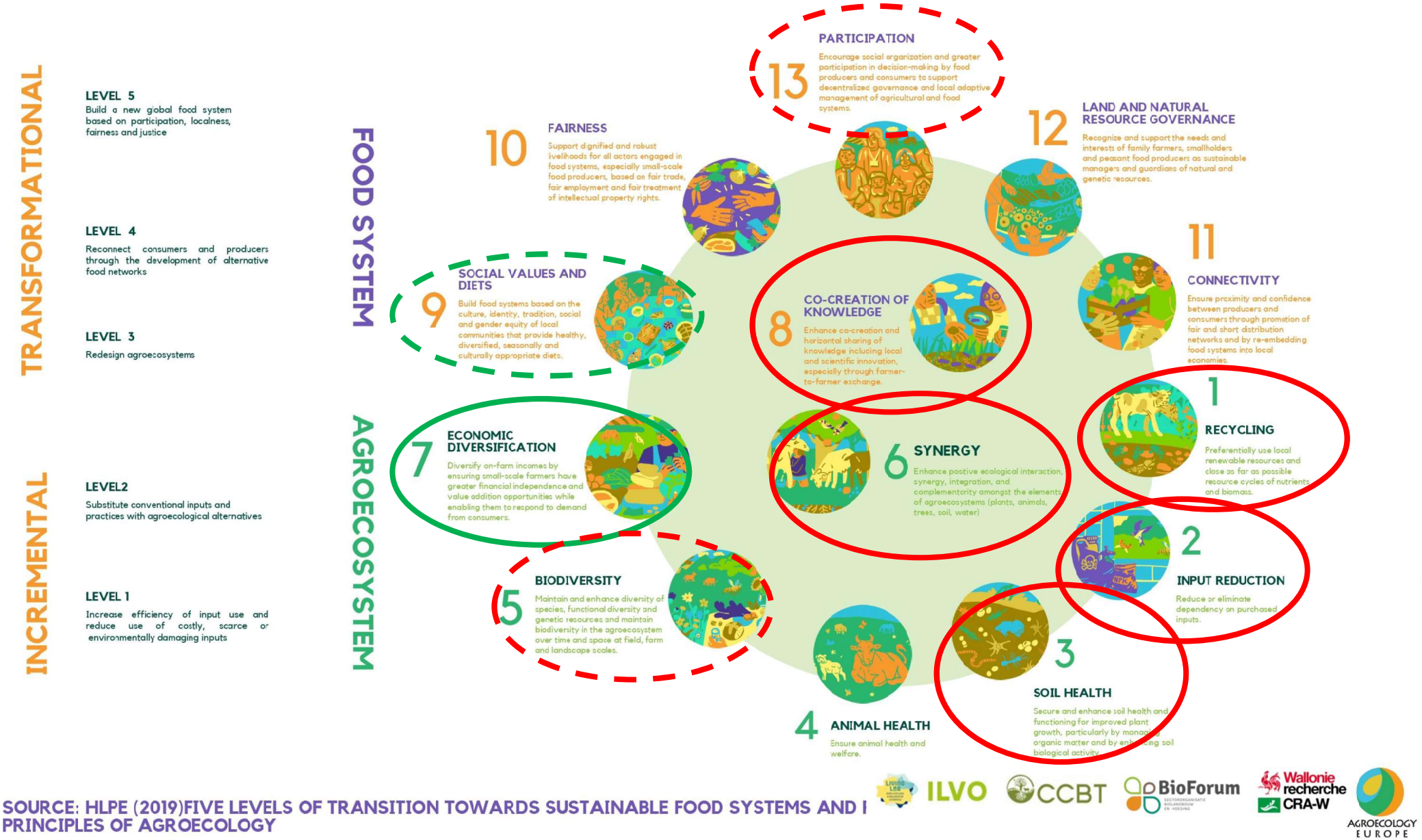
Wallonie recherche CRA-W
Performance assessment

BIOWALLONIE
Technical expertise

*… through **co-creation** of solution (combining different agroecological **practices**), and **experimenting** these **in real conditions** (on farm)*

ILVO CCBT BioForum Wallonie recherche CRA-W

The 13 principales of agroecology

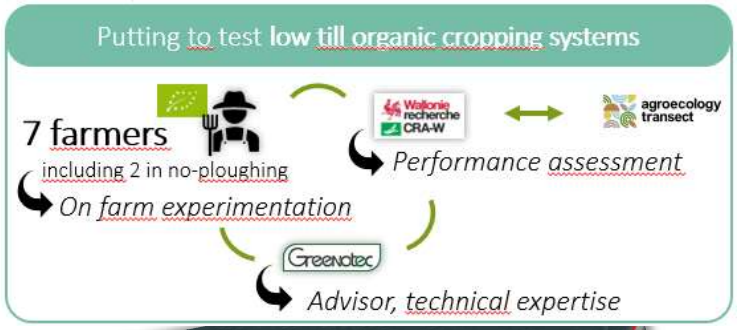


SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

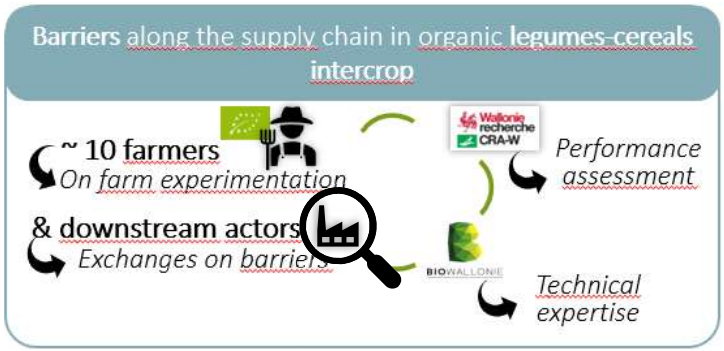
ILLUSTRATIONS:DOROTTYA PÓR

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

Collaboration with farmers



Shared interest for thematic between **actors**
(peripherical actors)
*Use of **tools** such as workshops, interviews, **facilitation skills**, …*



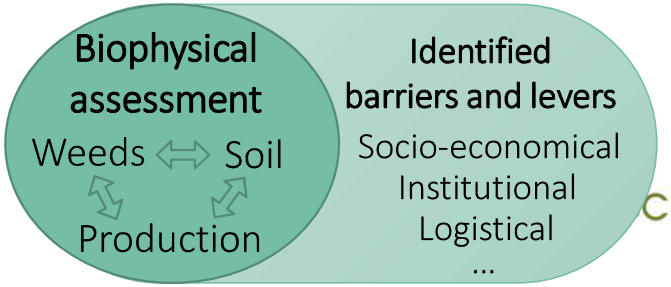
On farm experimentation
(systemic, long term) (systemic, yearly)

Co-construction of solutions,
with **iterative** loops from year to year
(at researcher or group level)

Collective + **individual** approach

(workshops, groups' assessment)
(group or network)

(technical itinerary adaptations, plots monitoring)
(qualitative and quantitative data)



CBT BioForum Wallonie recherche CRA-W

Implementation & communication

- **Identification** of problematics (illustrated and/or assessed by field experiments) **:**
  - **Raising awareness of problematics** of different actor,
  - Searching **viable solutions**

- Links with **downstream actors** (discussion of alternatives, …) **directly** or **indirectly**

- In collaboration group at first
  (+ by word of mouth / mimicry)
  - Field visits
  - Experiment assessment
  - Joint reflections

- End-of-project events and festivals : Greenotec, Biowal'innov, …

- Press release

- Possible educationnal resources for dissemination (Epasc - Ciney)

- Scientific publication and conferences

Next steps

Identification, within the issues raised, of :

I. What **participatory research can still make progress on** (and with which disciplines, focus)
E.g.: what protocols (researchers) can make it easier for collaborators (farmers - downstream) to find their way around, e.g. for the cereal-protein crop ratio?

Thematic focus

- Experiment with reduced tillage (in organic systems)
- Appropriate monitoring of perennial weeds (thistle)
- Disease/pests on legumes in cereals-protein crops ?
- Socio-economic study for better intercrop valorization

Methodological / LL approaches

- Follow-up of systemic long-term trials
- Experience in participatory research (scientific - methodological)
- Exchanges between livings labs (actors)

II. What **needs to be taken care of at other levels** (giving over to other institutions, legal framework, … => non-scientific organizations)
E.g.: Since we see that **weed management capacity** and **nitrogen requirements** are strongly linked to the **presence of livestock**, how can we manage the reduction of livestock in arable farming areas? (Wallonia)
Or, value chain development in intercrop?

ILVO CCBT BioForum Wallonie recherche CRA-W

Contact

a.fockedey@cra.wallonie.be Aline Fockedey
m.campion@cra.wallonie.be Morgane Campion
p.lamarque@cra.wallonie.be Pénélope Lamarque

Ammonia emissions in organic poultry & pig farms

VLAIO

Reconciling organic and welfare-enhancing practices with emission regulations for pigs and poultry (BOWIE)

Laura Peeters

ILVO

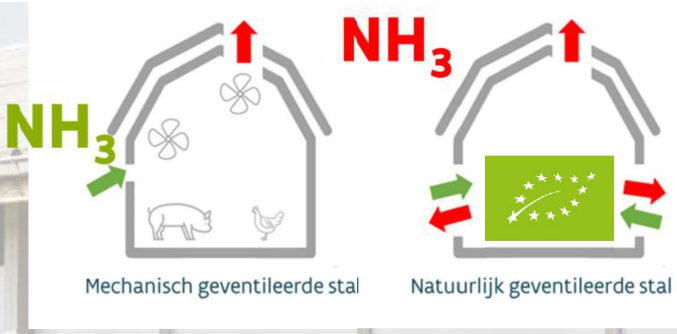
Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

ILVO CCBT BioForum Wallonie recherche CRA-W Wallonie BIO mon choix PLAN BIO 2030 AGENTSCHAP LANDBOUW & ZEEVISSERIJ

Context & Objectives

NH3 in
NH3 out



WHAT ?

Emission NH3 (g/s) =
Conc NH3 (g/m^3) x Flow rate (m^3/s)

No data available for **organic or other non-conventional farms!**

HOW ?

No methods available for emission measurements **naturally ventilated** barns with **outdoor run**

WHY ?

EF organic = EF conventional ...

effect organic management practices?

How to reduce emissions?

ILVO CCBT BioForum Wallonie recherche CRA-W

Photo: Bioforum

The 4 pillars of organic agriculture

Principle of health

- Organic agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible.
- Health is the wholeness and integrity of living systems. It's not simply the absence of illness, but the maintenance of physical, mental, social and ecological well-being.

Principle of ecology

- Organic agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them.
- Organic agriculture should attain balance through the design of farming systems, establishment of habitats and maintenance of genetic and agriculture diversity.

IFOAM 4 pillars

Principle of fairness

- Organic agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities.
- Fairness requires systems of production, distribution and trade that are open and equitale and account for real environmental and social costs.

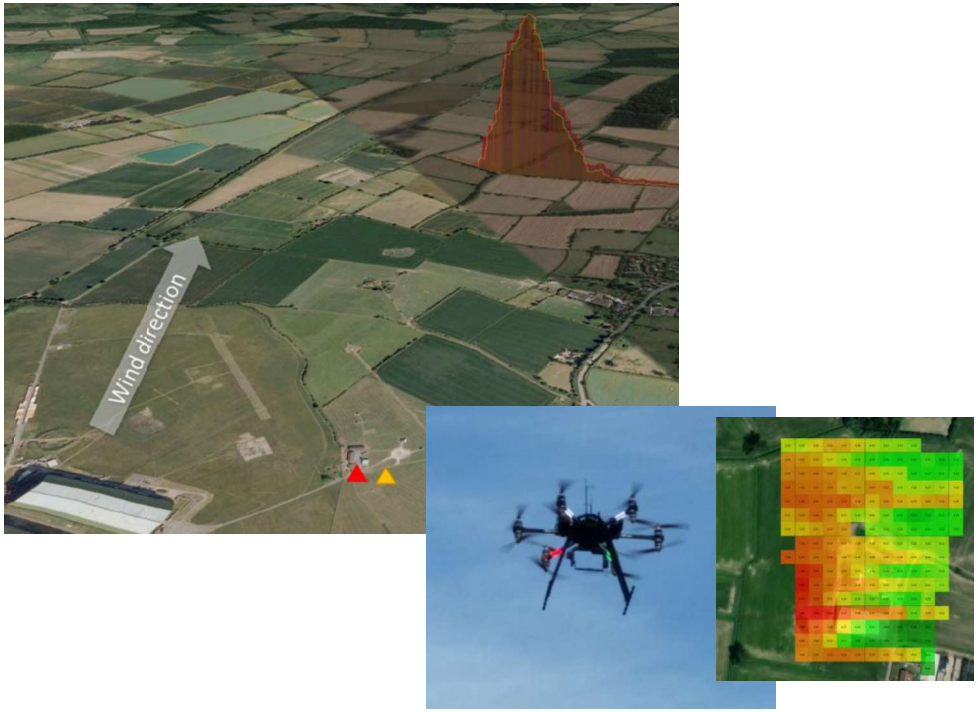
Principle of care

- Organic agriculture should manage in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment.
- New technologies need to be assess and existing methods reviewed. Given the incomplete understanding of ecosystems and agriculture, care must be taken.

ILVO CCBT BioForum Wallonie recherche CRA-W

Collaboration with farmers

1. Emission measurements at farms



2. Measures for ammonia reduction

- Co-create **selection criteria** for measures that should be tested in the project
- **Input** of potential ammonia reducing management practices /measures

ILVO CCBT BioForum Wallonie recherche CRA-W

Implementation & communication

WHAT ?

Events

Yearly workshops farmers
1st: 22-05-2025

Two demonstration events
Closing event
Yearly Steering Committee

WHAT ?

Written/online communication

4 monthly newsflashes with vlogs

Social media, webpages

Scientific and vulgarizing articles

Guide: ammonia emission reduction in organic pigs/poultry

WHO ?

BOERENBOND
BioForum
ILVO
Provincie Antwerpen

Steering committee

Policy, farmers, sector org., scientists, companies,…

ILVO CCBT BioForum Wallonie recherche CRA-W

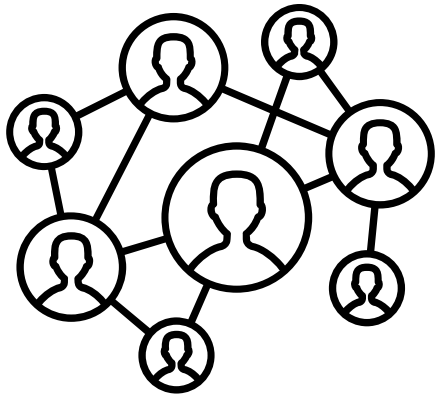
Photo: Bioforum

Next steps

1. **Development of methodology**

2. **Emission measurements at farms**

Recruitment of volunteers!



3. **Potential ammonia reducing measures?**

(experiments 2027)

ILVO CCBT BioForum Wallonie recherche CRA-W

VLAIO

Reconciling organic and welfare-enhancing practices with emission regulations for pigs and poultry (BOWIE)

Contact

Laura Peeters – Laura.Peeters@ilvo.vlaanderen.be

Liên Romeyns – Lien.Romeyns@bioforum.be

How to measure soil health, and how soil health responds to management practices in OA?

Brieuc Hardy

Centre wallon de Recherches Agronomiques

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context & objectives

1. How to measure soil health?

The IQSW project (Index of soil quality in Wallonia) : developing a methodology to measure soil quality
https://www.cra.wallonie.be/fr/iqsw

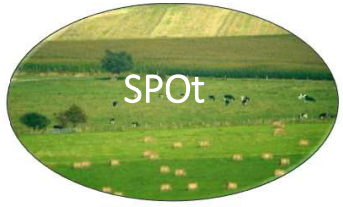
2. How soil health responds to agricultural practices in OA ?

Sol-plateformes : the effect of innovative organic cropping systems on soil chemical, physical and biological fertility
https://www.cra.wallonie.be/fr/sol-plateformes

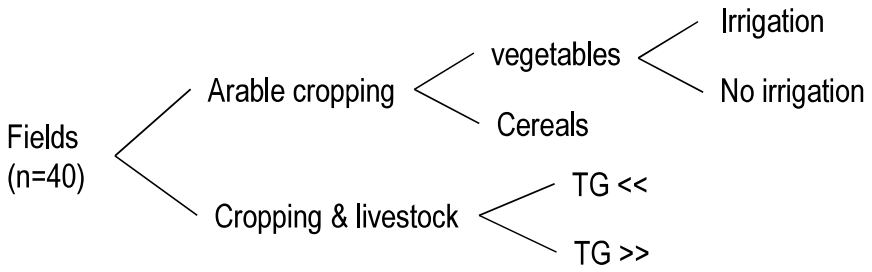
Market gardening

Arable cropping

Mixed crop-livestock



SolAB : Soil management in organic farming : How to optimize soil ecosystem services ?
https://www.cra.wallonie.be/fr/solab



The 13 principales of agroecology

TRANSFORMATIONAL

INCREMENTAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

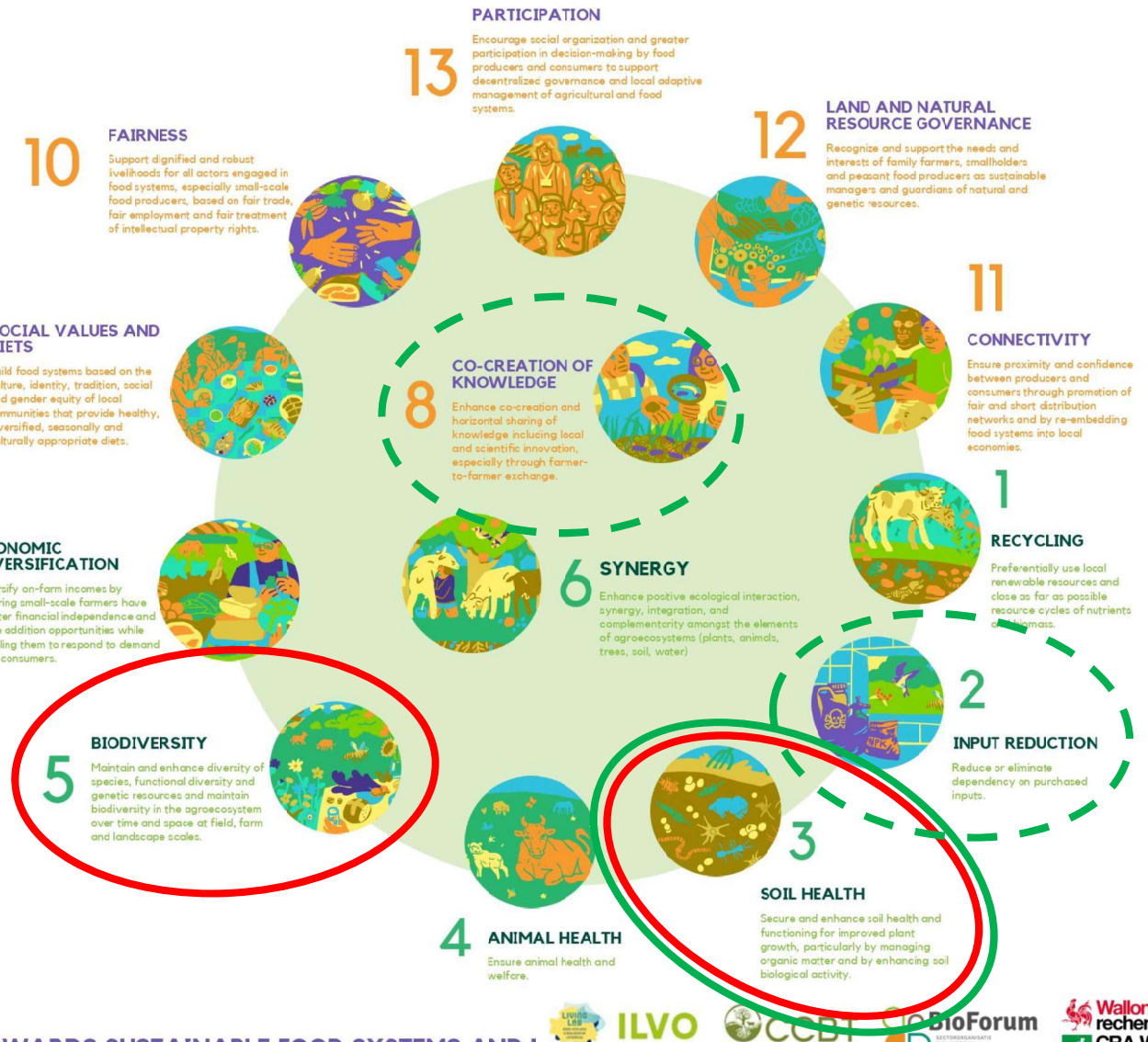
LEVEL 3
Redesign agroecosystems

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

AGROECOSYSTEM

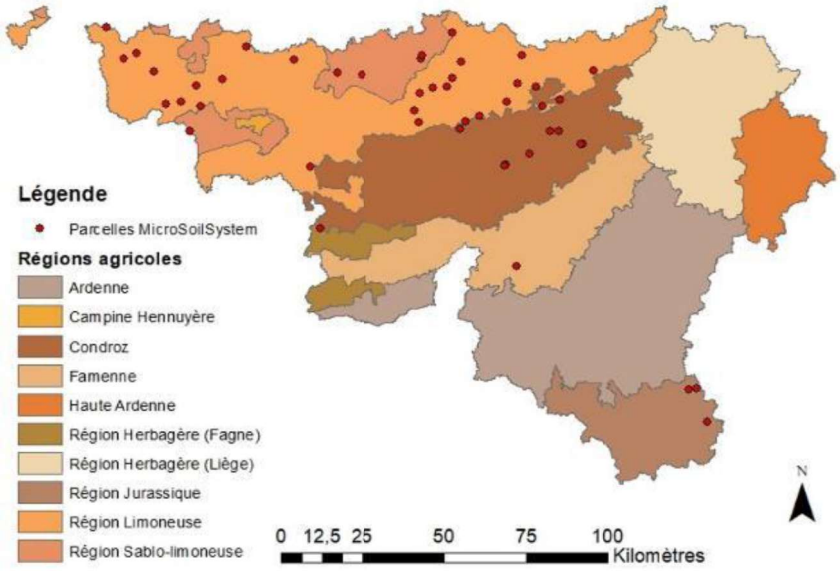


SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

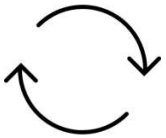
ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

ILLUSTRATIONS:DOROTTYA PÓR

Collaboration with farmers
SolAB project



Phytotechnical data



Results

Implementation & communication

- Feedback to farmers
- Field visits/excursions
- Agricultural press articles
- Scientific publications
- Seminar to present the results

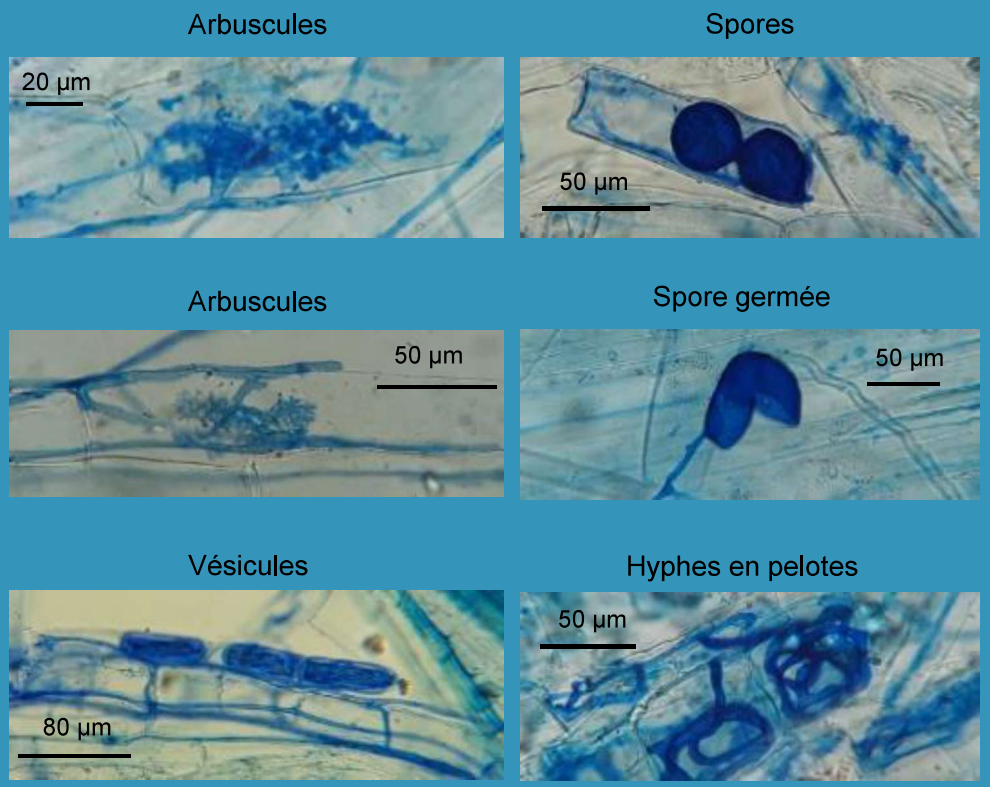
Next steps

Integrating/creating a soil living lab at EU level ?

Unité Sols, Eaux & Productions Intégrées

rue du bordia 4, 5030
Gembloux
Belgique

Brieuc Hardy
b.hardy@cra.wallonie.be
081/874340



AM fungi structures in winter wheat roots, Microsoilsystem project

ILVO CCBT BioForum Wallonie recherche CRA-W

Smart organic cultivation

Koen Willekens

Research Institute for Agriculture, Fisheries and Food (ILVO)

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context & objectives

Topics

–Soil Organic matter supply and turnover

–Smart cropping systems

–On farm composting

Objectives

–Closing nutrient cycles

–Enhancing soil health

–Optimizing crop performance and yield

The 4 pillars of organic agriculture

Principle of health

- Organic agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible.
- Health is the wholeness and integrity of living systems. It's not simply the absence of illness, but the maintenance of physical, mental, social and ecological well-being.

Principle of ecology

- Organic agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them.
- Organic agriculture should attain balance through the desing of farming systems, establishment of habitats and maintenance of genetic and agriculture diversity.

IFOAM 4 pillars

Principle of fairness

- Organic agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities.
- Fairness requires systems of prodution, distribution and trade that are open and equitale and account for real environmental and social costs.

Principle of care

- Organic agriculture should manage in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment.
- New technologies need to be assess and existing methods reviewed. Given the incomplete understanding of ecosystems and agriculture, care must be taken.

ILVO CCBT BioForum Wallonie recherche CRA-W

Collaboration with farmers

Farmers fields monitoring for a better understanding of nutrient availability and soil quality building in relation to soil management (fertilization, tillage practices and crop choice)

Demand-driven research on ILVO organically managed experimental fields

Experimental Platform for Agroecology - PPAE Hansbeke

Initialising composting practices on farm

Implementation & communication

–User groups

–Professional press

–Lectures (study days and webinars)

–Demonstrations

Next steps

Documenting by research and teaching basic mechanisms of:

–soil fertility building

–plant nutrition

–crop protection

Developing advisory basis for N-supply in organic cropping systems, using a system approach

Contact

koen.willekens@ilvo.vlaanderen.be

Co-design and experimentation of sustainable mixed crop-livestock systems in Belgian Ardenne (SPoT-)

Mathot M., Lagneaux S., Mertens A., Stilmant D.

CRA-W

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context & objectives

Can mixed crop-livestock systems, relying on agroecological management, be a solution to :

- High food production
- Climate challenges (reduction and adaptation)
- More circularity (reduce losses and resources consumption)

=> Test on experimental site of three contrasted (various share in crop and grassland cattle) and independent systems for their ability to reach the main goals

The 13 principales of agroecology

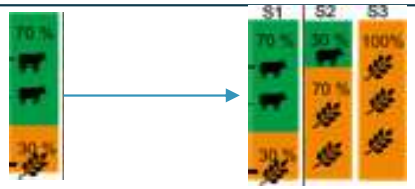
TRANSFORMATIONAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

INCREMENTAL



Feed to food, innovation, levers and barriers, implication of value chain actors

FOOD SYSTEM

13 PARTICIPATION
Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems.

12 LAND AND NATURAL RESOURCE GOVERNANCE
Recognize and support the needs and interests of family farmers, smallholders and peasant food producers as sustainable managers and guardians of natural and genetic resources.

11 CONNECTIVITY
Ensure proximity and confidence between producers and consumers through promotion of local and short distribution networks and re-embedding food systems into local economies.

10 FAIRNESS
Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.

9 SOCIAL VALUES AND DIETS
Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.

8 CO-CREATION OF KNOWLEDGE
Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.

7 ECONOMIC DIVERSIFICATION
Diversify on-farm incomes by ensuring small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.

6 SYNERGY
Enhance positive ecological interaction, synergy, integration, and complementarity amongst the elements of agroecosystems (plants, animals, trees, soil, water)

1 RECYCLING
Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass.

2 INPUT REDUCTION
Reduce or eliminate dependency on purchased inputs.

5 BIODIVERSITY
Maintain and enhance diversity of species, functional diversity and genetic resources and maintain biodiversity in the agroecosystem over time and space at field, farm and landscape scales.

3 SOIL HEALTH
Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and by enhancing soil biological activity.

4 ANIMAL HEALTH
Ensure animal health and welfare.

See posters

ILLUSTRATIONS:DOROTTYA PÓR

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

Collaboration with farmers

- Value chain actors and advisors implied in the governance of the project

- Regular visits and discussions about the project, recording and analysis of the feedbacks

- Related research programs on particular topics for accompanying transition with farmers

    Transdisciplinary exploration of organic dairy beef production based on grassland and by-products

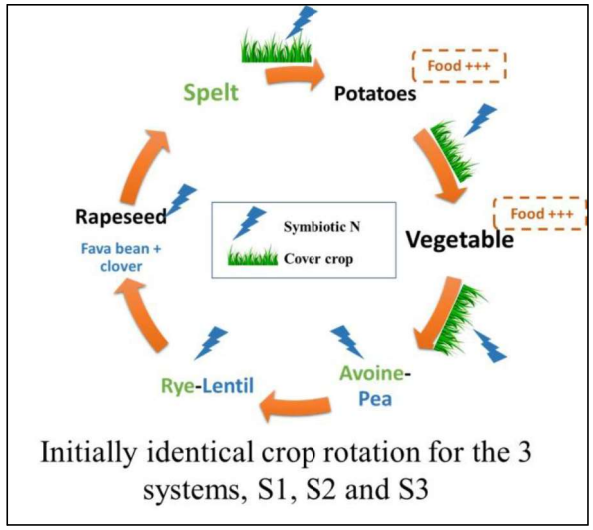
        Group of farmers

        Experimentation in farms

        etc.

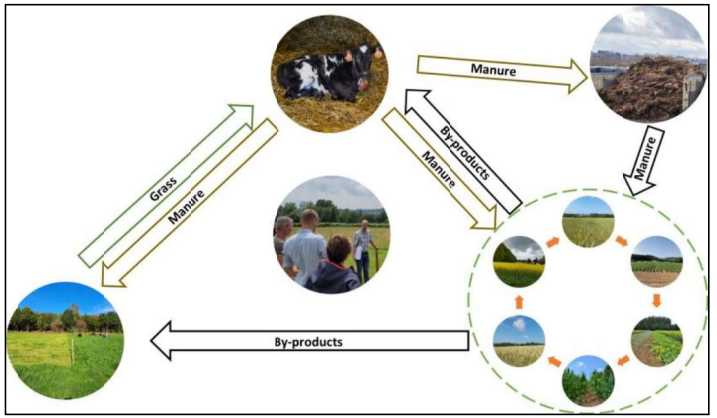
Implementation & communication

- 2022 for 12 years
- 3 experimental systems (about 30 ha)
- Implementing co-design (particular governance)
- Rules and decision trees
  - First food then feed (which rotation?)
  - Constrain on inputs (see poster)
  - Agroecological management (ex: prevention then curative), …
- Evolutive
- Measure (productions, GHG, internal flows, etc.)
- Analysing transition (levers and barriers, etc.) => transdisciplinary team
- Frequent visits



Initially identical crop rotation for the 3 systems, S1, S2 and S3

Next steps



- Lots of… and … on long term, evolutive.
- Detailed comprehension of the systems (incl products characteristic and images)
- Optimisation of “internal resources” and management
  => Crop rotation
  => Animal feeding
- Accompanying transition at local scale with living labs

  => New topics (ex : circularity, food vs feed, climate change, …)

ILVO CCBT BioForum Wallonie recherche CRA-W

Contact

m.mathot@cra.wallonie.be

FOOD AUTONOMY IN WALLONIA
Towards sustainable diets and farming systems through land use optimization

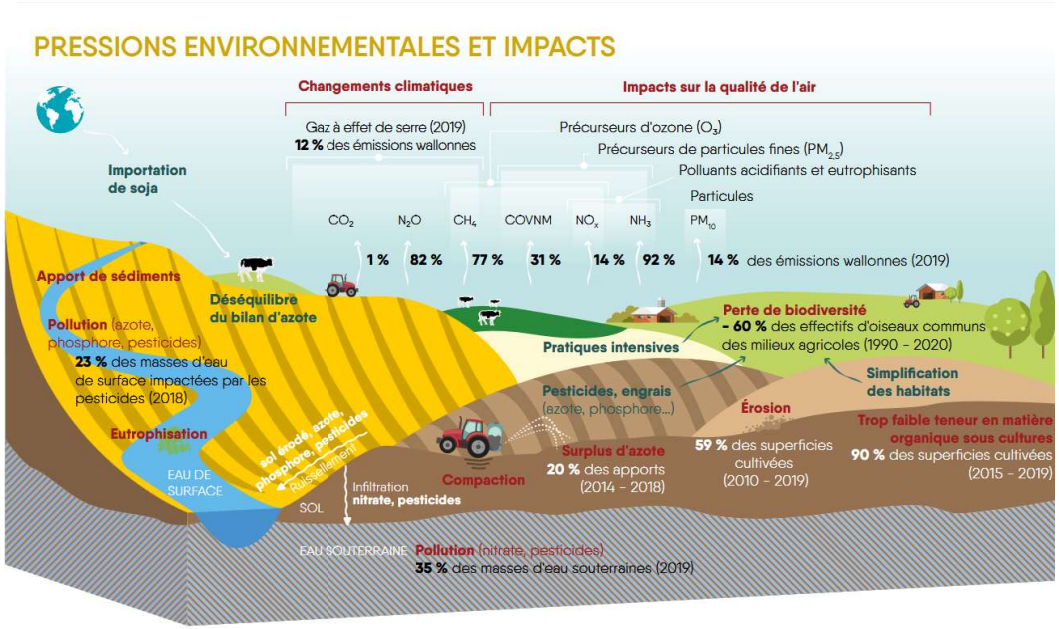
Tom Desmarez

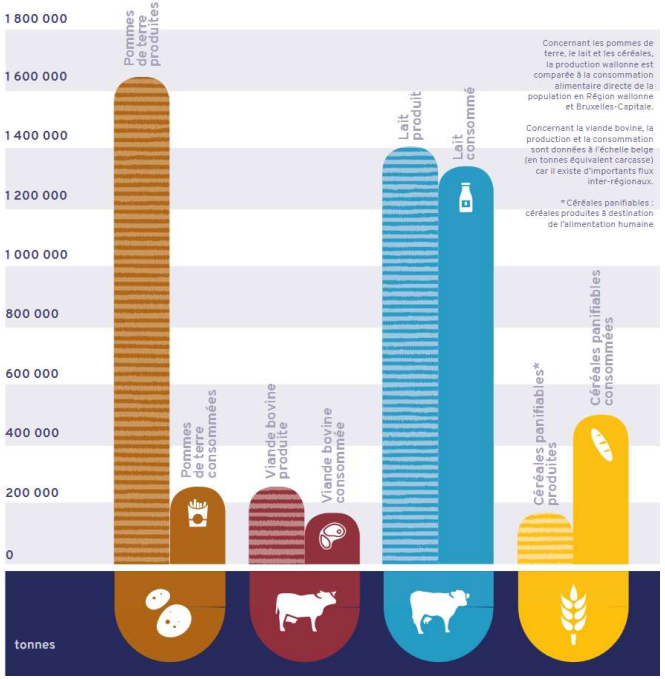
Gembloux Agro-Bio Tech - ULIEGE

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context & objectives





Is it possible to feed the inhabitants of Wallonia and Brussels with organic food using the available arable land in Wallonia?

ILVO CCBT BioForum Wallonie recherche CRA-W

The 13 principales of agroecology

TRANSFORMATIONAL

INCREMENTAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

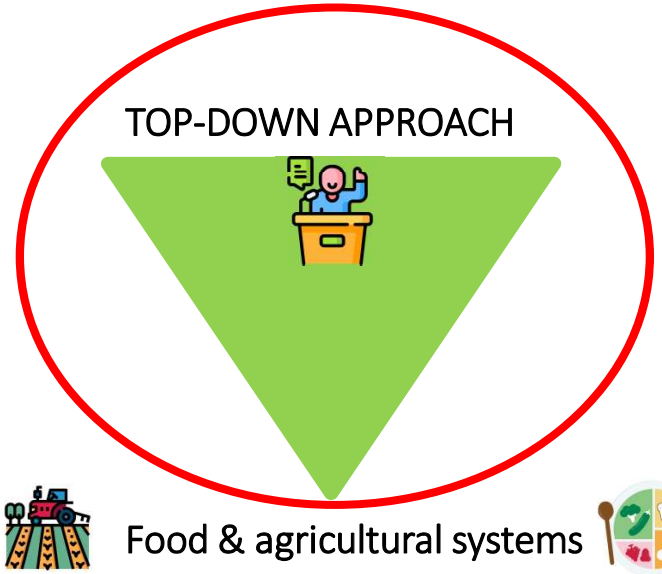
AGROECOSYSTEM

ILLUSTRATIONS:DOROTTYA PÓR

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

Collaboration with farmers



Key Results

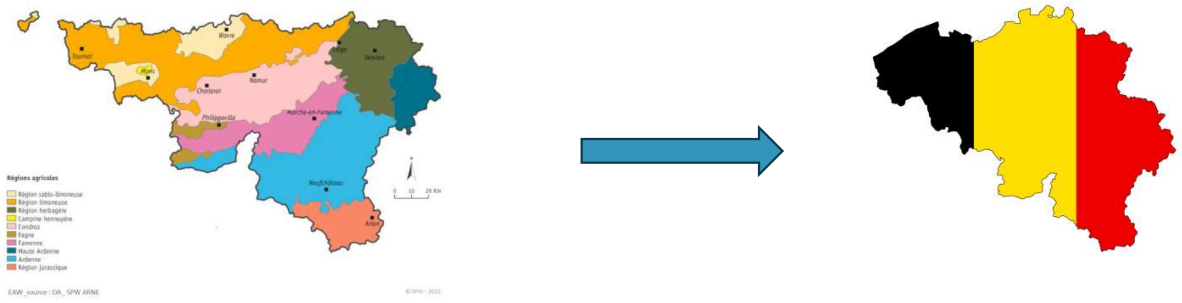
- Feeding Wallonia and Brussels with current dietary habits is not feasible under current practices.
- Full food self-sufficiency is achievable if the population adopts alternative diets
- Transitioning to sustainable diets frees up land for other crop uses.
- Reducing food waste from 30% to 10% is crucial for achieving food self-sufficiency in an organic farming scenario

Implementation & communication

Oral communications

Scientific papers online linked to my PhD

Next steps

- 

- Assessing the performances of our agricultural system in the future according to different IPCC scenarios

Contact

E-mail : tom.desmarez@uliege.be or during the poster session

Promoting biocontrol with banker plants and insect frass

Femke Temmerman

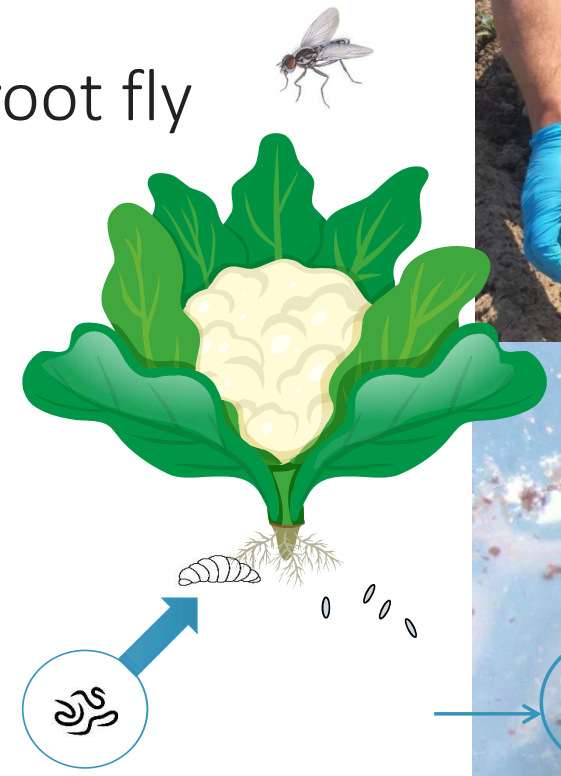
Inagro vzw

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

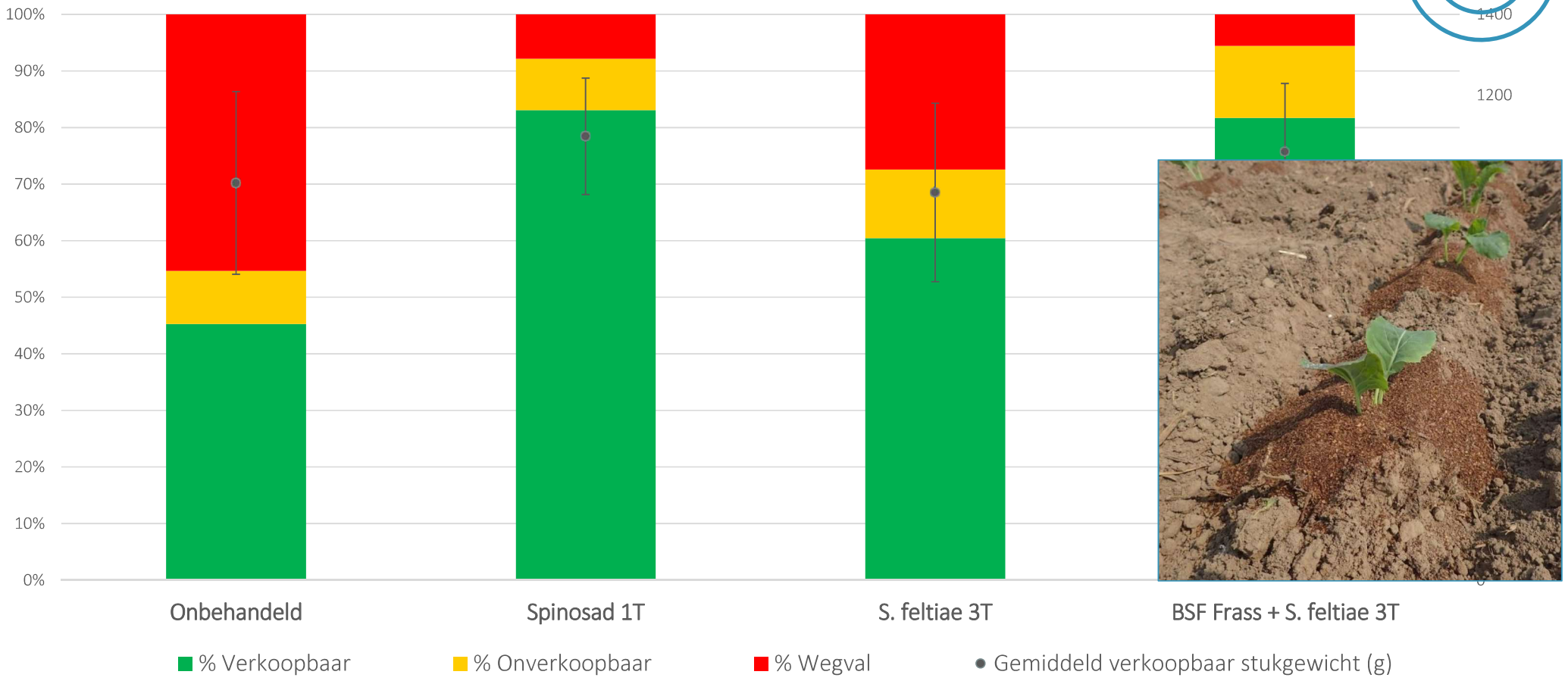
March 25, 2025, Gembloux

Context & objectives

Improve biocontrol of cabbage root fly & thrips in leek

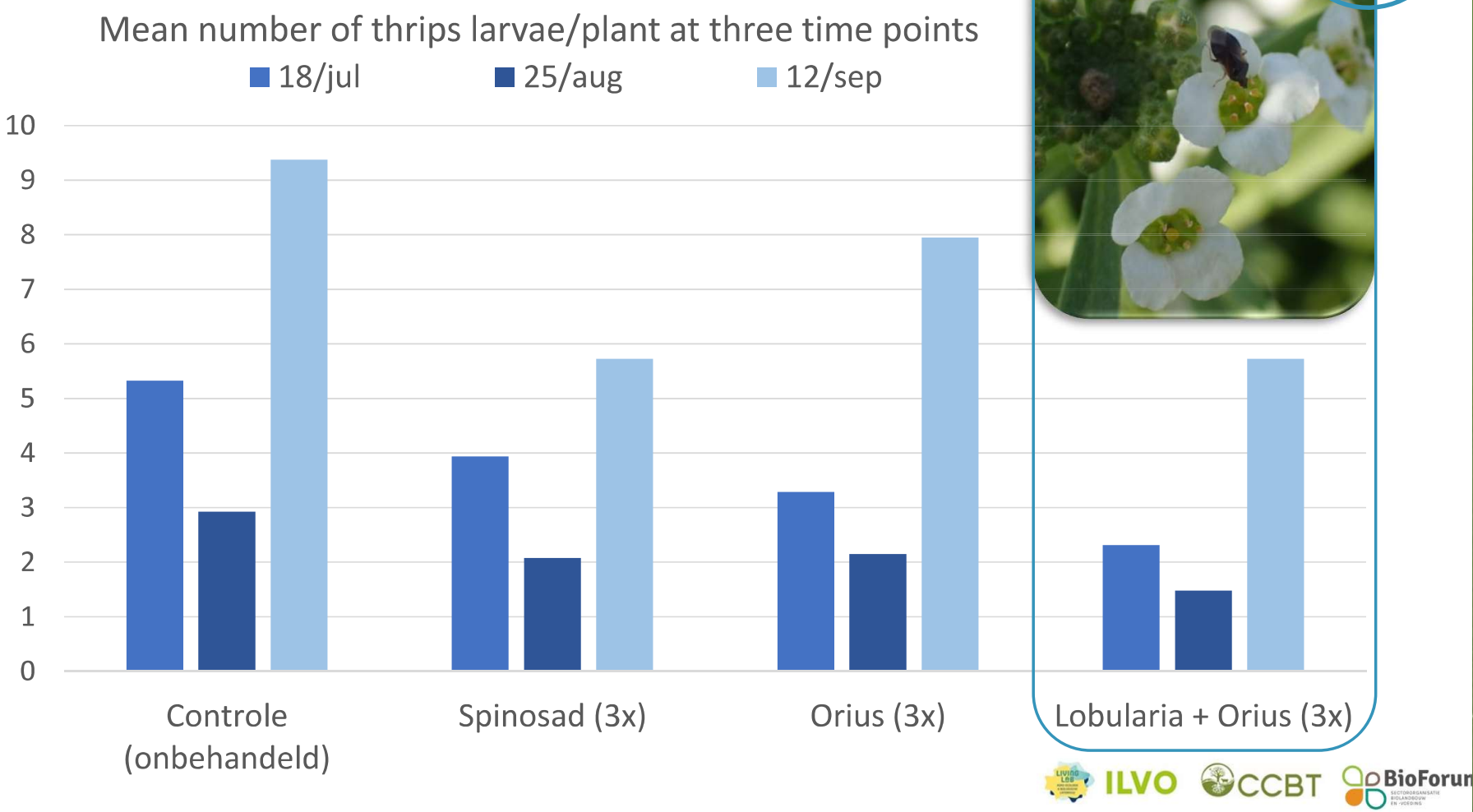


Trial results in cauliflower



Average of resp. 12, 12, 8 en 3 field trials in 2021 - 2024 in cauliflower spring culture.

Trial results in leek 2023



The 13 principales of agroecology

TRANSFORMATIONAL

INCREMENTAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

AGROECOSYSTEM

13 PARTICIPATION
Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems.

12 LAND AND NATURAL RESOURCE GOVERNANCE
Recognize and support the needs and interests of family farmers, smallholders and peasant food producers as sustainable managers and guardians of natural and genetic resources.

11 CONNECTIVITY
Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local

10 FAIRNESS
Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.

9 SOCIAL VALUES AND DIETS
Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.

8 CO-CREATION OF KNOWLEDGE
Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.

7 ECONOMIC DIVERSIFICATION
Diversify on-farm incomes by ensuring small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.

6 SYNERGY
Enhance positive ecological interaction, synergy, integration, and complementarity amongst the elements of agroecosystems (plants, animals, trees, soil, water)

5 BIODIVERSITY
Maintain and enhance diversity of species, functional diversity and genetic resources and maintain biodiversity in the agroecosystem over time and space at field, farm and landscape scales.

4 ANIMAL HEALTH
Ensure animal health and welfare.

3 SOIL HEALTH
Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and by enhancing soil biological activity.

2 INPUT REDUCTION
Reduce or eliminate dependency on purchased inputs.

1 RECYCLING
Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass.

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

ILLUSTRATIONS:DOROTTYA PÓR

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

Implementation & communication

1. • Field trials on experimental farm
2. • Field visits
   • Dissemination of results
3. • Explore feasibility in practice
   • adoption by commercial suppliers
4. • Demonstration on experimental farm
   • On-farm trials

Next steps

1. Field trials on experimental farm
2. Field visits
   - Dissemination of results
3. Explore feasibility in practice
   - adoption by distributors
4. Demonstration on experimental farm
   - On-farm trials

Contact

femke.temmerman@inagro.be

Organic vegetable cropping systems
- a long term experiment

Clément Nieus, Laurent Jamar

CRA-W

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context and objectives

Context :

- Vegetable production growing in Wallonia
- But many challenges :
  - *labour and equipment intensive,*
  - *weed and pests management,*
  - *soil conservation,*
  - *lack of organic matter,*
  - *use of nutrients from conventionnal source.*

Objectives :

- Reduce reliance on import of external ressources in organic vegetable production
- Build references through long term experimentations

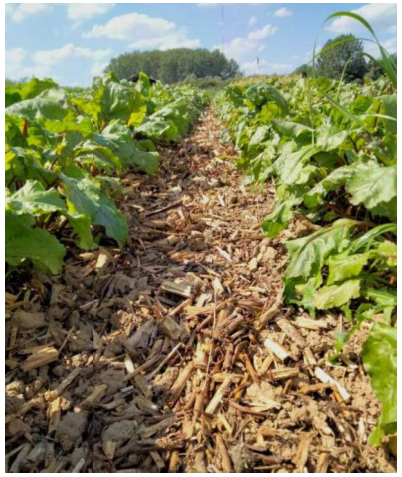
ILVO CCBT BioForum Wallonie recherche CRA-W

Co-Design of the cropping systems

Design of the cropping systems with farmers and stakeholders of the horticultural sector

After the first 6-year rotation : the cropping systems will be refined

The 4 cropping systems

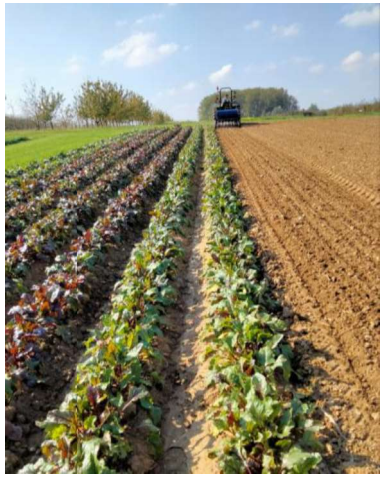


CS-1
Multi-crop farming without livestock

CS-2
Mixed farming with livestock

CS-3
Soil-conservation vegetable farming

CS-4
Standard vegetable organic farming



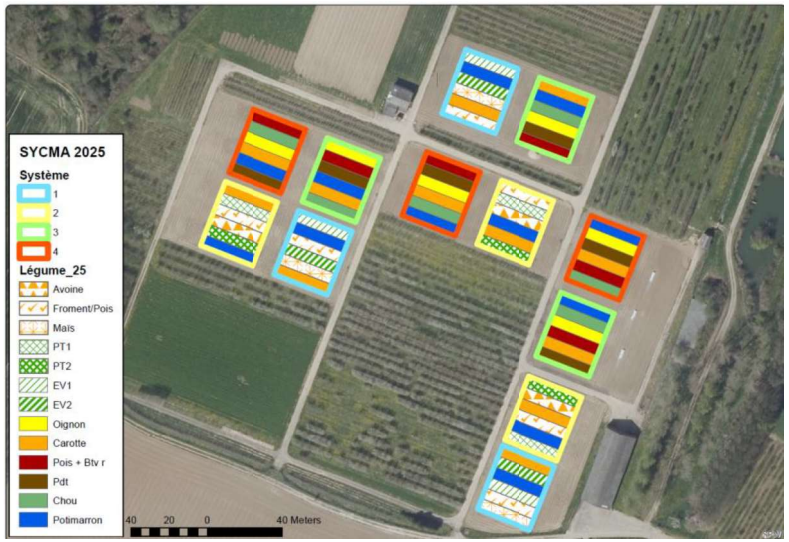
4 agronomic levers

1. rotation
2. tillage
3. fertilisation
4. cover-crops

ILVO CCBT BioForum Wallonie recherche CRA-W

The experimental design

- Since 2020, over 3 rotations of 6 years
- Every year, all crops of the rotation are cultivated in each 4 cropping systems
- 72 experimental plots
- Split-plot design (3 replicates)
- Alfalfa and rameal wood chips (willow) produced on site to be used as input



ILVO CCBT BioForum Wallonie recherche CRA-W

Scientific Monitoring

- Every farming operations
- Nutrient flows
- Crop yields and quality
- Pests and diseases
- Weeds
- Soil (mineral, biological and physical)

ILVO CCBT BioForum Wallonie recherche CRA-W

The 13 principales of agroecology

TRANSFORMATIONAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

INCREMENTAL

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

AGROECOSYSTEM

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I PRINCIPLES OF AGROECOLOGY

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

ILLUSTRATIONS:DOROTTYA PÓR

Communication

- Technical days dedicated to growers
- Several visits of the experimental fields every year
- Articles in technical and scientific journals
- National and international conferences

Ongoing collaborations and next steps

- Project “Semences d’ici”

- Project Interreg VI “REFLECHI”

- Project “SOL-PLATEFORMES”

We are open to participate in projects with trials in vegetable production and willing to network with projects with a similar cropping system approach

Contact

c.nieus@cra.wallonie.be

l.jamar@cra.wallonie.be

ILVO CCBT BioForum Wallonie recherche CRA-W

Research related to agroecological principles at Viaverda

An Van de Walle

Viaverda – Researcher organic agriculture

Stronger together: researchers from Wallonia and Flanders join hands for organic farming

March 25, 2025, Gembloux

Context & objectives

An Van de Walle

Researcher organic agriculture – vegetables under protection – at Viaverda

- (Non) heated greenhouses
- Plastic tunnels

Also (personal interests) :

- Ornamentals (slow flowers)
- Permaculture
- Agro forestry
- Local production- CSA communities

viaverda

ILVO CCBT BioForum Wallonie recherche CRA-W

The 4 pillars of organic agriculture

Principle of health

- Organic agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible.
- Health is the wholeness and integrity of living systems. It's not simply the absence of illness, but the maintenance of physical, mental, social and ecological well-being.

Principle of ecology

- Organic agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them.
- Organic agriculture should attain balance through the desing of farming systems, establishment of habitats and maintenance of genetic and agriculture diversity.

IFOAM 4 pillars

Principle of fairness

- Organic agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities.
- Fairness requires systems of production, distribution and trade that are open and equitale and account for real environmental and social costs.

Principle of care

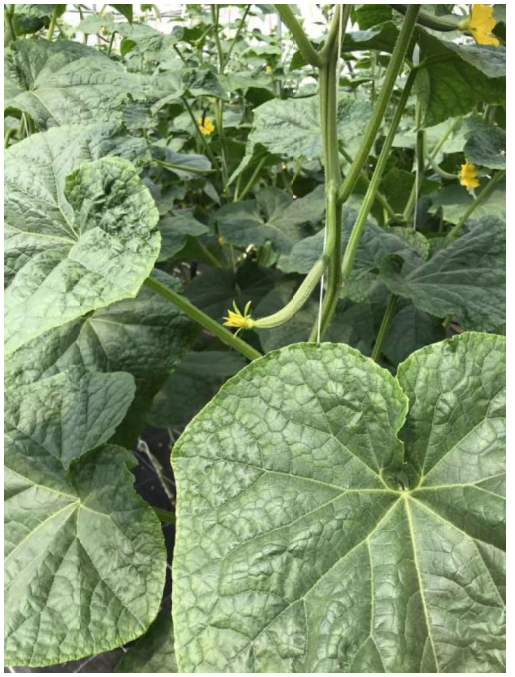
- Organic agriculture should manage in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment.
- New technologies need to be assess and existing methods reviewed. Given the incomplete understanding of ecosystems and agriculture, care must be taken.

ILVO CCBT BioForum Wallonie recherche CRA-W

The four pillars of organic agriculture—Health, Ecology, Fairness, and Care.

Principle of Health – Strengthening plant resilience

- *By supporting plant and soil health, we reduce the need for chemical treatments, contributing to a more* ***balanced ecosystem and healthier food production****.*
- *This also aligns with my personal interest in finding* ***natural ways*** *to strengthen plant resilience.“*
- *project Resculeaf “****Boost Resilience of Cucumber plants to powdery mildew through foliar applications****”*



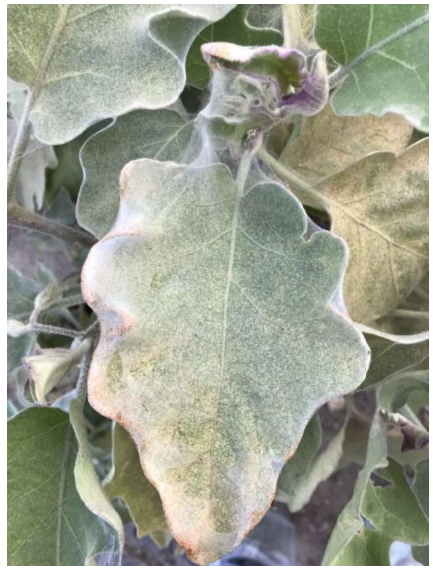
ILVO CCBT BioForum Wallonie recherche CRA-W

The four pillars of organic agriculture—Health, Ecology, Fairness, and Care.

Principle of Ecology – Enhancing soil life and biodiversity

"Soil is the foundation of agriculture".

- *organic fertilization strategies and organic matter management in plastic tunnels*
- *BIOBM: support organic farmers in **good organic fertilization practices** so that they can further develop as a 'sustainable cultivation practice'.*
- *B-Lab / WWBIO: monitor pests and **benificial insects** to investigate how we can attrack natural enemies against aphids in plastic tunnels .*
- *JOWOBO: recycle on the farm "**waste streams**" to (worm) compost, bokasshi, Johnson Su*



ILVO CCBT BioForum Wallonie recherche CRA-W

The four pillars of organic agriculture—Health, Ecology, Fairness, and Care.

Principle of Fairness – Circular and local resource use

- ***CSA communities and local production****, where farmers and consumers work together for fairer food systems.*
- *Once I hope to gave my own CSA (even if it is a very small one…) ☺.*
- *I hope to find projects where this principle can be explored.*

ILVO CCBT BioForum Wallonie recherche CRA-W

The four pillars of organic agriculture—Health, Ecology, Fairness, and Care.

Principle of Care – Innovation with sustainability in mind

- *collaborate more with farmers to test agroecological alternatives, ensuring that **innovations** are not just **effective** but also **environmentally** responsible and **sustainable**.*

- *interest in sustainable farming approaches like permaculture, which emphasize **working with nature** rather than against it."*

Collaboration with farmers

All my projects are

- *started from **problems or opportunities** mentioned by **farmers** and*
- *together with them I **seek for solutions** and then*
- *we start **projects**.*

Some experiments take place at Viaverda and some at growers places.

Implementation & communication

- (Winter)meetings- symposia with farmers
- Articles

✓ Proeftuinnieuws : https://www.proeftuinnieuws.be/

✓ Boer en tuinder: https://www.boerenbond.be/publicaties/boertuinder

✓ CCBT: https://www.ccbt.be/nl

- Website

✓ Viaverda

✓ Facebook – Linked in

- Farm/ cultivation oriented advice to farmers

Next steps

Organic farming is about more than just growing food—

it is about respecting nature, improving health, and ensuring fairness.

I want to focus on practical solutions that bring these principles to life in greenhouse vegetable production.

I invite you to collaborate, share ideas, and work together toward a more sustainable food system!“

The 13 principales of agroecology

TRANSFORMATIONAL

LEVEL 5
Build a new global food system based on participation, localness, fairness and justice

LEVEL 4
Reconnect consumers and producers through the development of alternative food networks

LEVEL 3
Redesign agroecosystems

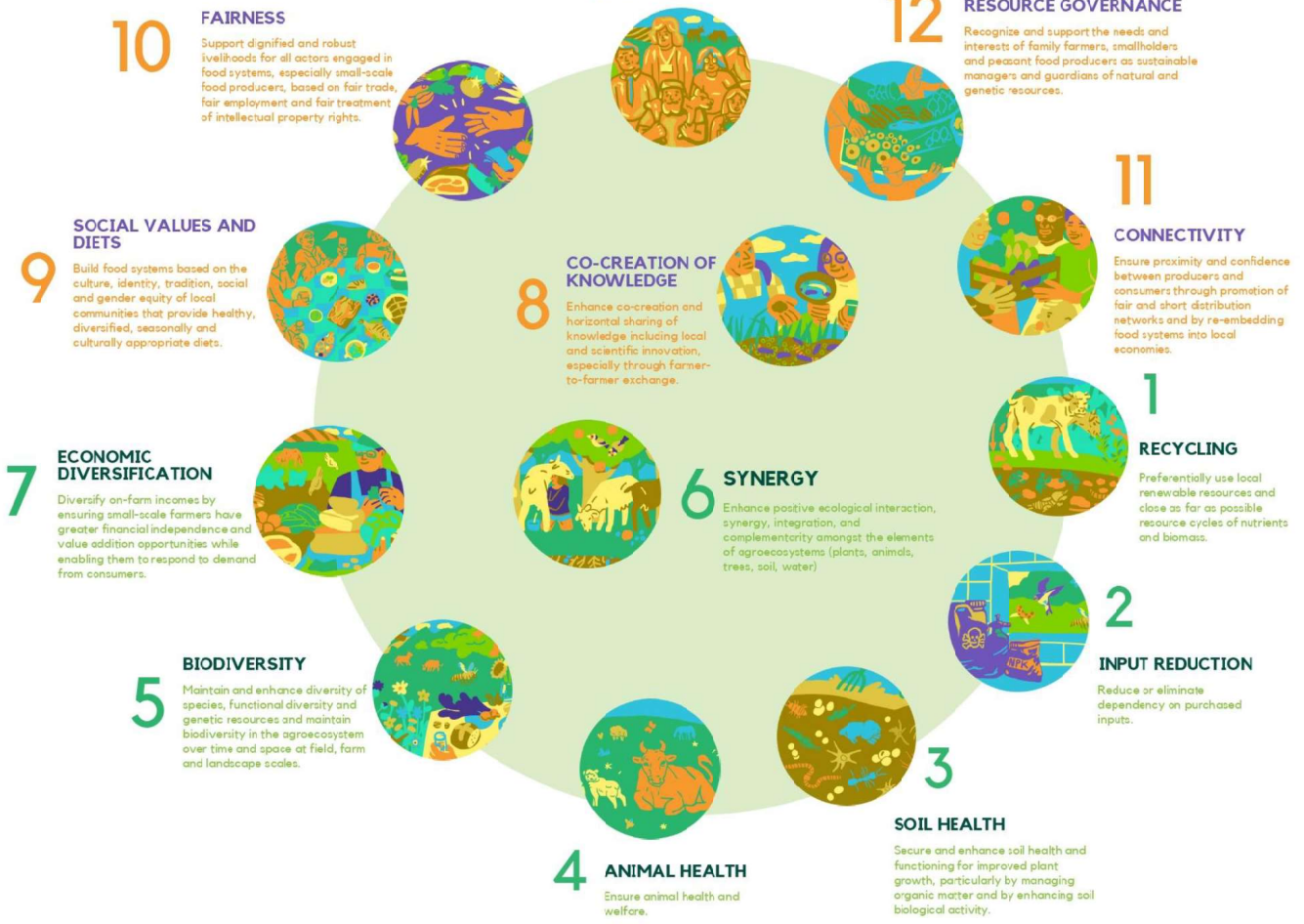
INCREMENTAL

LEVEL2
Substitute conventional inputs and practices with agroecological alternatives

LEVEL 1
Increase efficiency of input use and reduce use of costly, scarce or environmentally damaging inputs

FOOD SYSTEM

AGROECOSYSTEM



13 PARTICIPATION
Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems.

12 LAND AND NATURAL RESOURCE GOVERNANCE
Recognize and support the needs and interests of family farmers, smallholders and peasant food producers as sustainable managers and guardians of natural and genetic resources.

11 CONNECTIVITY
Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies.

1 RECYCLING
Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass.

2 INPUT REDUCTION
Reduce or eliminate dependency on purchased inputs.

3 SOIL HEALTH
Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and by enhancing soil biological activity.

4 ANIMAL HEALTH
Ensure animal health and welfare.

5 BIODIVERSITY
Maintain and enhance diversity of species, functional diversity and genetic resources and maintain biodiversity in the agroecosystem over time and space at field, farm and landscape scales.

6 SYNERGY
Enhance positive ecological interaction, synergy, integration, and complementarity amongst the elements of agroecosystems (plants, animals, trees, soil, water)

7 ECONOMIC DIVERSIFICATION
Diversify on-farm incomes by ensuring small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.

8 CO-CREATION OF KNOWLEDGE
Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.

9 SOCIAL VALUES AND DIETS
Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.

10 FAIRNESS
Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.

ILLUSTRATIONS:DOROTTYA PÓR

SOURCE: HLPE (2019)FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND I
PRINCIPLES OF AGROECOLOGY

ILVO CCBT BioForum Wallonie recherche CRA-W AGROECOLOGY EUROPE

Contact

An.vandewalle@viaverda.be

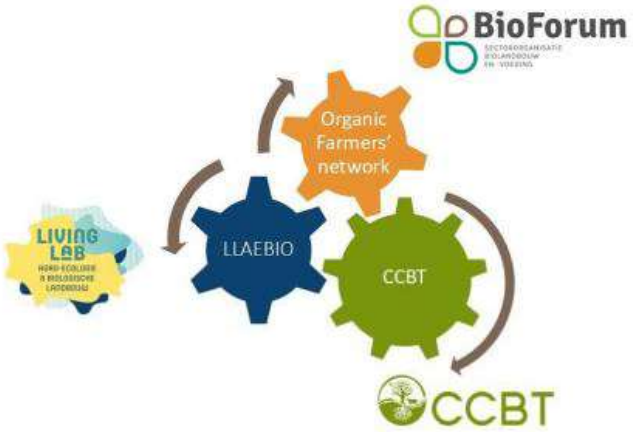
+32 9 381 86 82

"Stronger together: Researchers from Wallonia and Flanders join hands for organic farming"

Tuesday 25 March 2025
Gembloux

Poster presentations during lunch time

The FORK network:
The Flemish Organic Research and Knowledge network



Context

The FORK-network is a platform for organic farming research and knowledge exchange, connecting previously fragmented actors into a strong and collaborative network. The network consists of CCBT, LLAEBIO, and BBN, working together to support organic farming in Flanders.

Objectives

The network aims to optimize knowledge exchange, stakeholder interaction, and the development of research matching with the demands of organic farming stakeholders. Co-creative research and tailored knowledge dissemination are at the core of its approach.

Methodology

- ***Participatory knowledge exchange***: *Farmers, researchers, and advisors collaborate, with farmers taking an active role in defining research needs.*
- ***Need-based research***: *Research topics are developed based on real farming challenges, leading to small-scale practical projects and longer-term applied and fundamental research.*
- ***Tailored information and dissemination***: *Research findings are shared through reports, newsletters, conferences, workshops, and the BioKennis.org platform.*

System approach

Low — High

Results and perspectives

By strengthening collaboration, multidisciplinary expertise and avoiding duplication in efforts, the FORK network is fostering innovation, is making knowledge more accessible and is enhancing research impact.

Future challenges are:

- *expanding (inter)national cooperation,*
- *securing resources for continued research and development,*
- *strengthening research in organic livestock production,*
- *bringing system thinking in Flemish research projects.*

Impact

Low — High

Interaction with organic actors

Low — High

Contact :

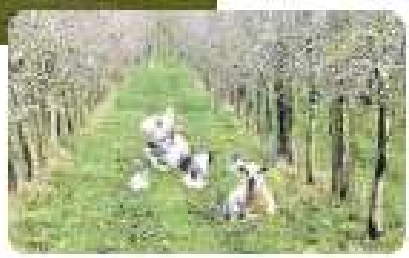
An Jamart,
anjamart@bioforum.be,
Organic Farmers' Networks (BBN)

Carmen Landuyt,
carmen.landuyt@ccbt.be
Coordination of applied research and extension on organi agriculture (CCBT)

Lieve De Cock,
lieve.decock@ilvo.vlaanderen.be
Living Lab Agroecology and Organic Agriculture (LLAEBIO)

BIO mon choix
AGENTSCHAP LANDBOUW & ZEEVISSERIJ
LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW
BioForum
ILVO
CCBT
Wallonie recherche CRA-W
PLAN BIO 2030

Towards More Resilient Organic Fruit Orchards



Context

Fruit tree cultivars used in organic farming exhibit low genetic diversity and are typically not bred specifically for organic cultivation. As a result, they are often poorly adapted to organic farming systems and show relatively low to moderate tolerance to major diseases and abiotic stresses, necessitating substantial phytosanitary support. Moreover, climate change is exacerbating these challenges, with prolonged droughts, heatwaves, and intense rainfall increasing stress on fruit trees. Unlike annual crops, fruit trees accumulate stress over the years, making them more vulnerable to diseases and pests, which can ultimately lead to tree mortality.

Objectives

- To support organic fruit producers by selecting robust varieties with greater tolerance to major diseases and increased resilience to stresses related to climate change.
- To evaluate and promote innovative, well-adapted farming practices that enhance the resilience of organic farming systems.

Methodology

- ✓ Evaluation of genetic resources, breeding populations, and cultivars using common descriptors for selected traits relevant to the organic sector (INNOBREED project).
- ✓ Participatory breeding and exchange of genetic resources.
- ✓ Study of 10 apple and 3 pear rootstocks better suited for organic farming.
- ✓ Evaluation of over 125 apple and 50 pear varieties. Participatory research in collaboration with organic producer organizations NOVAFRUITS & GAWI.
- ✓ Participatory agroforestry trials with vegetable growers and orchard meadows integrating poultry, sheep, and cattle.

System approach

Low — High

Results and perspectives

- ✓ Establishment of a European Network for Organic Participatory Breeding.
- ✓ Harmonization of descriptors and protocols, with a focus on prioritizing the most relevant traits.
- ✓ Initial rootstock results reveal differences in growth, flowering time, and resistance to pests such as the apple rosy aphid.
- ✓ The organic apple variety Ducasse, developed by CRA-W, is increasingly being planted.
- ✓ Development of a network of stakeholders engaged in participatory approaches.

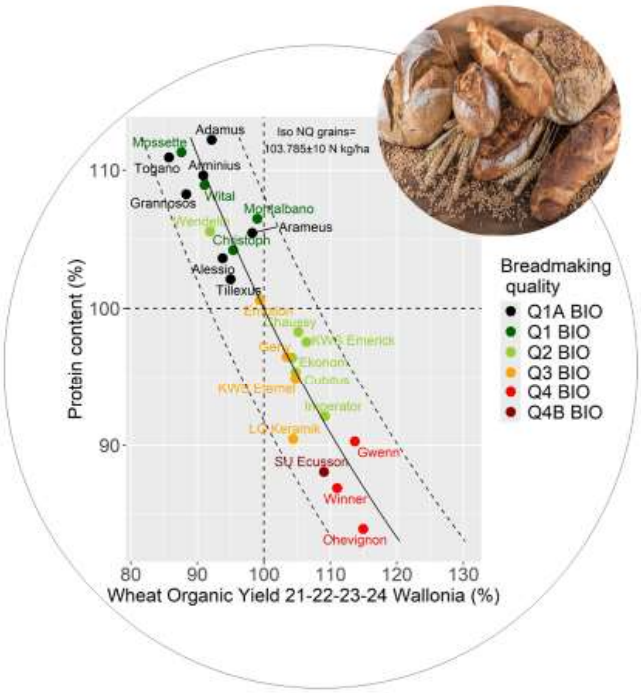
Impact

Low — High

Interaction with organic actors

Contact : Alain RONDIA: a.rondia@cra.wallonie.be
Baptiste DUMONT: b.dumont@cra.wallonie.be

Technological quality of food organic cereals: Varietal choice and Nitrogen fertilization



Context

The characterization of the technological quality of food grains is essential to ensure the technical feasibility of their use in processing methods.
The choice of variety determines the final product and the possible manufacturing process.

Objectives

Evaluate and rank the processing suitability of technologically robust varieties and nitrogen fertilization specific to organic food applications, and Walloon pedoclimate
Varietal choice: Wheat, Spelt, Barley, Durum, Oat
Varietal mix and population

Methodology

Agronomic trial:
- 3 variety sites (Condroz, Hainaut, Hesbaye)
- 1 nitrogen fertilization site (Wheat, Durum)

Technological analysis:
- Alveograph, Mixolab+, Damaged starch, Flour color, Hagberg, Zeleny, TW, TKW, Cylinder and Stone milling

Enhance evaluation with breadmaking and cookies test

Technological communication to the sector:
- Livre Blanc Céréales, Biowallonie, CePiCOP, SoCoPro and technical events

System approach

Low — High

Results and perspectives

Recommend yearly from the technological point of view specific organic robust food varieties to anticipate their replacement because of the short commercial lifespan and low availability of their seeds in Belgium.

Recommend an organic nitrogen fertilization strategy specific to breadmaking wheat and durum.

Improve technological quality with our visible and infrared single kernel sorting device (QSorter).

Impact

Low — High

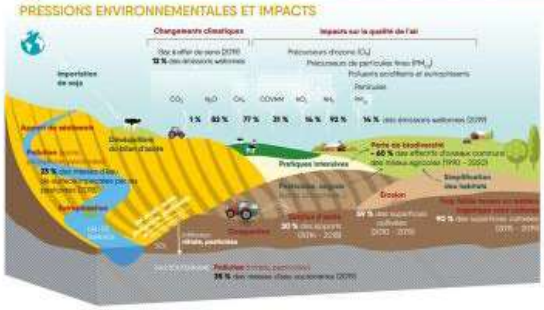
Interaction with organic actors

Low — High

Contact :  Godin, Bruno, b.godin@cra.wallonie.be

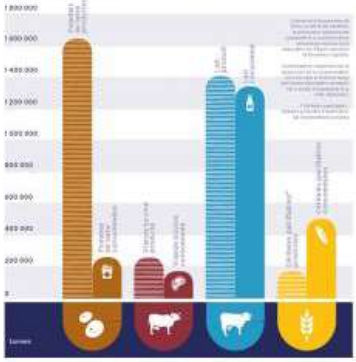
BIO mon choix · AGENTSCHAP LANDBOUW & ZEEVISSERIJ · LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW · BioForum · ILVO · CCBT · Wallonie recherche CRA-W

FOOD AUTONOMY IN WALLONIA
Towards sustainable diets and farming systems through land use optimization



Context

Agriculture in Belgium is predominantly agro-industrial, leading to negative environmental externalities. The agricultural market is also highly globalized, with a strong reliance on imports and exports, resulting in a significant mismatch between local agricultural production and consumer consumption.

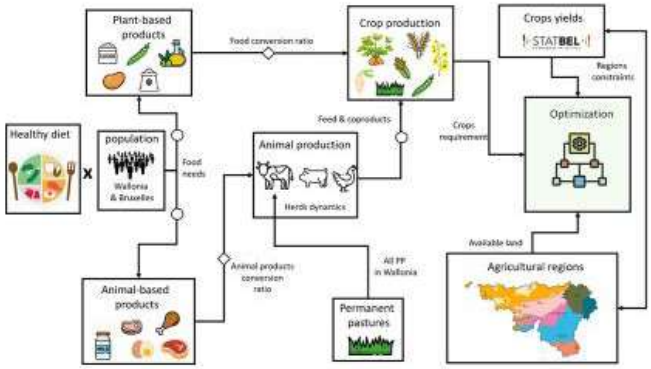


Objectives

The aim of this study was to assess whether it is possible to feed the inhabitants of Wallonia and Brussels by optimizing land allocation across different agricultural regions in Wallonia. This analysis was conducted using various dietary patterns, different levels of food waste, and assumptions of both 100% conventional and 100% organic farming.

Methodology

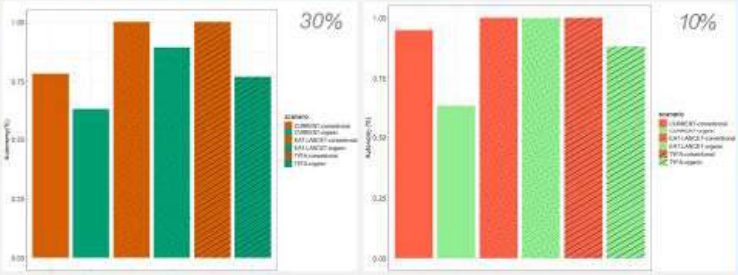
- *Optimize land allocation in agricultural regions to align food production with consumption.*
- *3 diets : current – TYFA – EAT-Lancet*
- *Food waste : 30% – 10 %*
- *Farming system : full conventional – full organic*



System approach

Low — High

Results and perspectives



- Feeding Wallonia and Brussels with current dietary habits is not feasible under current practices.
- Full food autonomy is achievable if the population adopts alternative diets.
- Reducing food waste from 30% to 10% is crucial for achieving food autonomy in an organic farming scenario.

Impact

Low — High

Interaction with organic actors

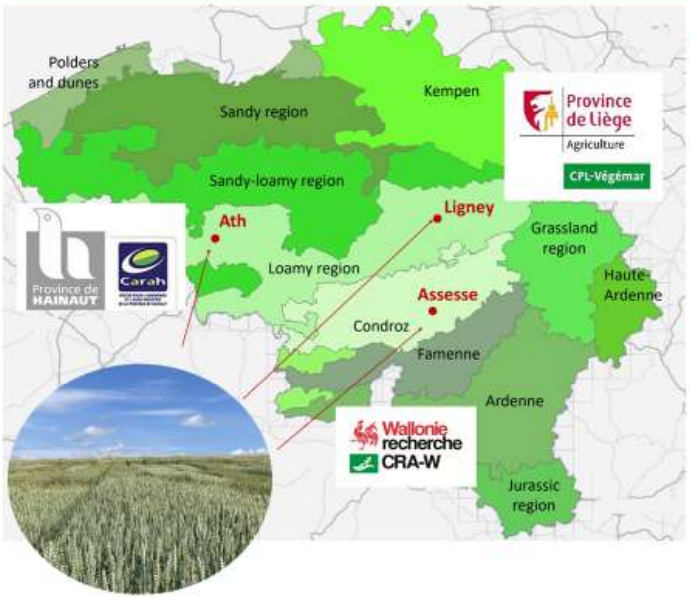
Low — High

Contact :  Tom Desmarez – tom.desmarez@uliege.be

BIO mon choix · AGENTSCHAP LANDBOUW & ZEEVISSERIJ · LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW · BioForum · ILVO · CCBT · Wallonie recherche CRA-W

PLAN BIO 2030

Recommending varieties of cereals to farmers based on a network of field trials



Context

In organic farming, choosing the right variety is essential to control the development of diseases and to secure the harvest in terms of both quantity and quality.

Objectives

Support farmers in their choice of winter cereal varieties

- Determining the **agronomic and technological performances** of winter cereal varieties under organic growing conditions
- Assessment of the performances of **variety mixtures** and **farm-saved seeds** in wheat and of **CCP's** in wheat and spelt (CRA-W only)

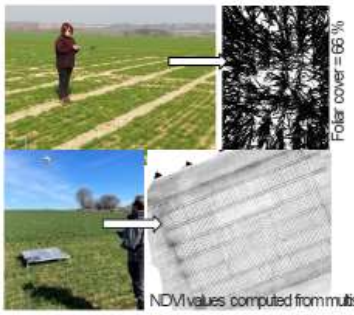
Methodology

→ 3 trial sites managed by the CARAH, the CPL-Végémar and the CRA-W, respectively.

→ ~ 70 pure varieties from 4 species: bread wheat, durum wheat, spelt and triticale.

→ The following traits are characterized:

- Plant growth and development: tillering habit, **covering power**, heading time, height at heading



NDVI values computed from multispectral images of the trial platform

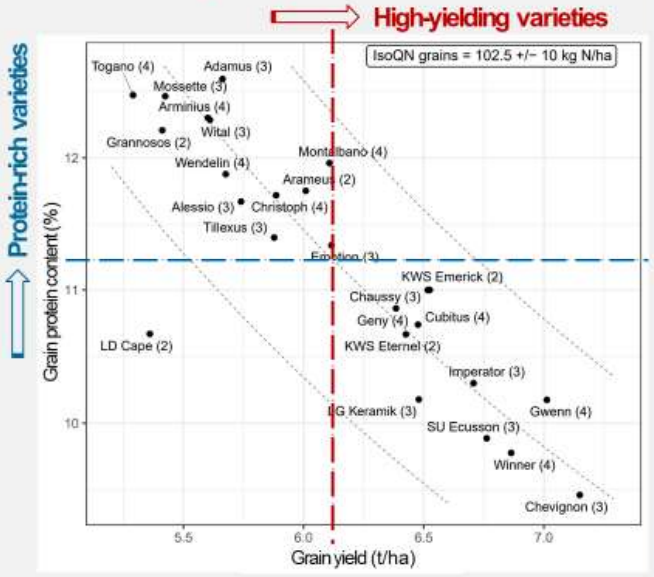
is defined as the ability of a crop to cover the soil and thereby, to compete with weeds.

Determined by image analysis.

- Tolerance to biotic and abiotic stresses: cold resistance, tolerance to leaf diseases, tolerance to lodging
- Grain production: grain yield, hectoliter weight, TKW
- Grain quality: Hagberg falling number, Protein content, Zeleny index

Low — System approach — High

Results and perspectives



Next steps

- Integrating additional cereal species (e.g., oat)
- Going further in the evaluation of varietal mixtures
- Adding trial sites in other agroecological regions ?

Low — Impact — High

Interaction with organic actors

Low — High

Contact :

Anne-Michelle Faux
a.faux@cra.wallonie.be
www.cra.wallonie.be/fr/varcerbio

BIO mon choix
AGENTSCHAP LANDBOUW & ZEEVISSERIJ
LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW
BioForum
ILVO
CCBT
Wallonie recherche CRA-W
PLAN BIO 2030

BIO-UITLOOP: Valorisation of the outdoors for organic pig and poultry production systems

Context

Organic production systems have outdoor space, where animals can express natural behavior. This space provides nutrients, depending on intake, composition, management and season. However, its contribution to overall nutrient intake is yet unknown.

Objectives

- Get insights in the nutritional value of the outdoors
- What is the importance of the nutrient uptake from the outdoors for the organic production of pigs and poultry

Methodology

- Variation in nutritional value from the outdoors will be assessed,
- Variation in nutrient uptake by the animals from the outdoors will also be assessed.
- Factors that play a role in this variation will be taken into account:
  - type of outdoors and its management
  - Season
  - animal category
- Commercial farms will be involved and followed-up during this project

System approach

Perspectives

Insights obtained during this project will help in the valorization and use optimalisation of the outdoors within the pig and poultry organic production systems.
Nutritionists will have insight in the nutrient uptake from the outdoors and will be able to formulate feed that take the latter into account.

Impact

Interaction with organic actors

Contact : Lourenço, Marta, marta.lourenco@ilvo.vlaanderen.be

BIO mon choix
AGENTSCHAP LANDBOUW & ZEEVISSERIJ
LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW
BioForum
ILVO
CCBT
Wallonie recherche CRA-W
PLAN BIO 2030

Wallonie service public SPW

BiO mon choix — PLAN BIO 2030

Stronger together : Researchers from Wallonia & Flanders join hands for organic farming (25 March 2025, Gembloux)

SolAB
Appel RPB 2024
(D65-1461)

Wallonie Relance

Soil management in organic farming : How to optimize soil ecosystem services in Wallonia, Belgium ? SolAB

Context

- 60 to 70 % of EU soils are degraded (Veerman et al. 2020)
- The main threats on agricultural soils in Wallonia

Biodiversity loss

Quantify the benefits of OA on soil biota, multifunctionality of OA

Soil organic matter loss

How to increase SOM in OA, climate resilience of organic farms

Soil loss, erosion

Reduction of soil tillage in OA to decrease erosion risks

Study sites

Field trials

SYCBIO (n=9) — « ABC » Network (n=18)

- Control *vs* innovative cropping system
- Available phytotechnical & soil data
- Field repetition/paired design

Farm network

Fields (n=40)
- Arable cropping → vegetables, Cereals
- Cropping & livestock → TG <<, TG >>

- Gradient of intensivity
- Collection of phytotechnical data
- Multicriteria analysis

Goals

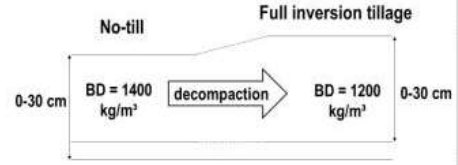
- To identify agronomic factors controlling soil quality in organic farming systems and provide OA-specific references and recommendations
- To test agricultural practices with a high level of economic risk (OA without full inversion tillage) for farmers to test their technical feasibility in walloon organic farms and benefits for soil quality

Soil quality measurement

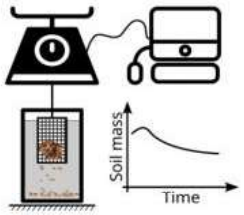
Soil monitoring and resilience Law (COM/2023/416) defines **soil health** based on « a good **physical, chemical and biological** state, allowing soil to provide continually and as much as possible **ecosystem services**»

- **Biomass production** ↕ Nutrients, acidity, …
- **Climate regulation** ↕ Soil organic matter, carbon
- **Water cycle regulation** ↕ Soil structure, porosity
- **Biodiversity habitat** ↕ Abundance, activity & diversity of microorganisms

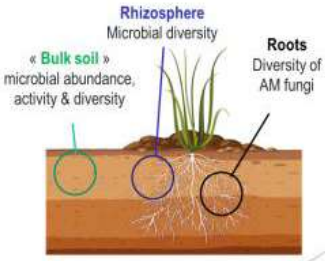
- **Mesures:**
  - C, N organic
  - Texture
  - pH
  - Available nutrients(Ca, K, Mg, P)
  - Labile C ($KMnO_4$ 0.02 M)
- **Calculs:**
  - C stocks
  - Corg/Clay ratio
  - Clabile/Corg ratio



- Calculation of C stocks based on fixed depth may introduce a bias (-15 % under FIT)
- Comparaison on an equivalent soil mass **(« ESM » method) allows an unbiased comparison between FIT and no-till or reduced tillage**



Soil structural stability measurement by the QuantiSlake Test method, Vanwindekens & Hardy (2023)

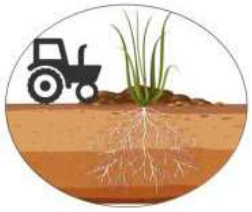


A multidisciplinary team

Farm network
CRA-W, Biowallonie

Agricultural practices
CRA-W, Biowallonie

Soilstructure
CRA-W



Microbial abundance, activity and diversity
Uliège

AM fungi diversity
UCLouvain

Chemical fertility & C stocks
CRA-W

Partners:

HARDY B., MOTET, A. & HUYGHEBAERT B. (CRA-W) ✉ b.hardy@cra.wallonie.be
GROGNA P. & Sylvestre, P. (Biowallonie)
DECLERCK, C. (Uliège, Gembloux ABT)
CALONNE-SALMON, M. & DECLERCK, S. (UCLouvain)

Agricultural practices

Quantitative/categorical indicators of agricultural practices

Soil cover

- Soil cover
- Living soil cover
- Mulch cover
- Cumulated period of bare soil

Plant diversity

- Crop diversity
- Total plant diversity
- Intensive crops
- Winter/spring crops

OM inputs

- Mandatory crop residues
- Optional restitutions
- Exogenous organic matter

Mecanical disturbance

- STIR (Soil Tillage Intensity Rating)
- Area impacted by traffic
- Plowing frequency
- Plowing depth

Monitoring Biodiversity in Agricultural Areas Flanders

Context

The agricultural area is losing its biodiversity. With MBAG, we keep our finger on the pulse and evaluate the results of nature-oriented efforts. Also for agriculture itself biodiversity in the agricultural area is of great importance.

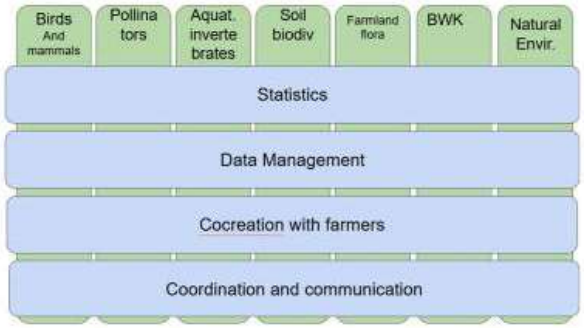
Objectives

The monitoring system focuses on (European and regional) reporting obligations and knowledge dissemination on biodiversity.

	Birds and mammals	Pollinators	Aquat. invertebrates	Soil biodiv	BVM + farmland flora	Natural Envir.
Nature Restoration law	Agriculture Birds	Pollinators Grassland Butterflies			Elements high div	
LULUCF Regulation					Ecosystem change	
CAP	Agriculture Birds	Species HD			Elements high div	
Proposal Soil monitoring directive				Soil biodiv		
Proposal directive Ecosystem Cal.	Agriculture Birds	Pollinators			Ecosystem surface	
HD + BD + PAS + KRW	Agriculture Birds Habitat D.	Agriculture species HD	Water quality agriculture		Agriculture habitats species	Ground water Surfacewater Soil

Methodology

MBAG is made up of several modules, which mutually interact, such as field birds, pollinators, soil biodiversity.



Cocreation with farmers

We share and discuss the results with farmers. We look for opportunities to involve farmers in the monitoring network, e.g. identify invertebrates via pitfall traps, moths via Led Buckets,...

System approach

Results and perspectives

E.g. MBAG-MAS tracks breeding birds and fauna of the agricultural area. Volunteers and professionals count more than 1,450 points in Flanders every year.
The counting points are randomly distributed within the different agricultural regions in Flanders. Within the agricultural regions, a distinction is made between open and semi-open landscape (OL and HOL) and inside and outside species protection programme (SBP). This allows us to make both small-scale statements about these specific strata and larger-scale statements about the agricultural region and Flanders as a whole.

Impact

Interaction with organic actors

Contact : Lateir, Mieke, mieke.lateir@inbo.be

Brochure

BIO mon choix · AGENTSCHAP LANDBOUW & ZEEVISSERIJ · LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW · BioForum · ILVO · CCBT · Wallonie recherche CRA-W

PLAN BIO 2030

Towards more circularity in crop livestock systems: design and first learnings from the SPoT project

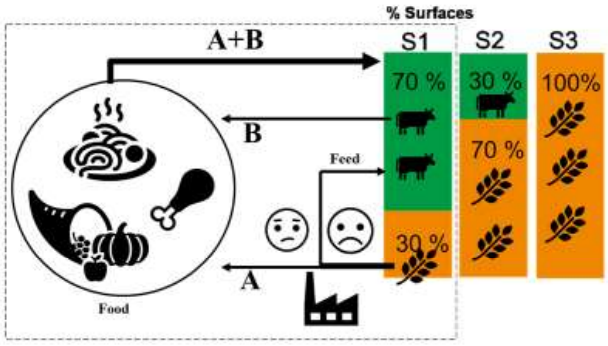


Figure 1 : Experimental systems are designed to maximize food production and are limited in inputs. They must be similar in N, P, and K to food production. The form of inputs is questioned to minimize the effects of mining elsewhere in the food system (other farms) or in nature (mineral mining).

Context

The environmental burden of agriculture is partly related to nutrient losses. Mixed and integrated crop-livestock systems are raised as potential solutions to reduce nutrient losses to the environment.

Objectives

Within the SPoT project, we aim to question 3 types of mixed crop-livestock systems for their capcacity to minimize losses and their integration in nutrients recycling strategies in complete food production systems.

Methodology

Constrained systems in terms of nutrients inputs:

- Similar to the amount exported as food (figure1)
- From the anthroposphere or simulated so and avoiding of mining effect elsewhere in the food system.

Nutrients flows measurements and modelling.

Frequent exchanges with farmers regarding the ongoin experiment

System approach

Low — High

Results and perspectives

- Limited amount and type of input available.
- Perceived barrier to implementing systems ("food waste", "why not buy straw elsewhere", etc.)
- Decision tools to be developped to minimize nutrients losses and manage organic matter.

Impact

Low — High

Interaction with organic actors

Low — High

Contact :

Michaël, Mathot, m.mathot@cra.wallonie.be

BIO mon choix
AGENTSCHAP LANDBOUW & ZEEVISSERIJ
LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW
BioForum
ILVO
CCBT
Wallonie recherche CRA-W
PLAN BIO 2030

Groupe ABC,

Co-apprentissages d'Expérimentations Systèmes en Réseau de parcelles (ESR)

Aline Fockedey - a.fockedey@cra.wallonie.be

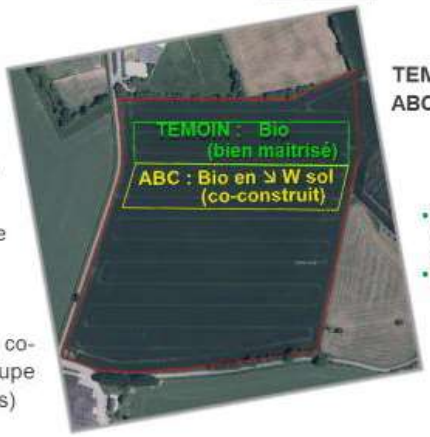
Dispositif

Focus du groupe ABC*
Réduction du travail du sol, en systèmes biologiques
(notamment, non labour)

Objectifs de l'expérimentation

- **Ancré** dans la réalité de terrain
- **Exploratoire** d'un nouveau système
- **Systémique**
- **Long** terme

- **Co-apprentissage** par co-création, co-observations et co-réflexion, en groupe (agriculteurs, conseillers, chercheurs)



Méthodologie

TEMOIN : itinéraire **classique** de l'agriculteur, **bien maitrisé**
ABC : système avec un objectif de **réduction de travail du sol**, mobilisant différentes **combinaisons de pratiques**, **adaptées** au contexte particulier de la parcelle

- **Suivi** (observations, mesures) des deux systèmes (productions, adventices, sol)
- **Bilan collectif** : comparaison des deux systèmes
  → compréhension, hypothèses, adaptations envisagées

* Agriculture Biologique de Conservation des sols

Retours d'expériences et réflexions du groupe

GESTION MÉCANIQUE DES ADVENTICES

Principaux défis :
Chardons et graminées

Gestion du chardon
- Seuil de compensation : 6-8 feuilles

Scalpages
- Seuil d'intervention vs potentielles remises en germination
- Plusieurs passages
- Descendants (terre ferme)
- 1er scalpage au collet (min. de terre)

Rupture de densité
- Pas uniquement
  - en mauvaises conditions (lissages)
  - une question de semelle de labour

→ Anticiper avec test bèche avant semis

Ouvrir la « boite de Pandore » ?
- Quelles sont les adventices particulièrement problématiques sur cette parcelle ? Quelle période de désherbage éviter afin de ne pas provoquer leur germination ?

DESIGN

Cultures en bandes de semis
- Concurrence sur le rang
- Possibilité de binage

→ BioCoCrop : Prototype semoir + régulateur pour alternance de céréale – légumineuse en bandes

COUVERTS

Semis multi-espèces
- Gérer les modes de semis et types de semences

Post-moisson
→ Stratégie plusieurs scalpages
→ Stratégie couvert (l'implanter en avance)
Eviter les solutions intermédiaires

TECHNIQUES D'IMPLANTATION

Semis direct
- Absence de minéralisation (faim) → intérêt de la ferti localisée
- Anticiper la gestion de la concurrence du couvert par une combinaison de leviers

StripTill
- Intéressant lorsque défaut de structure 0-20 cm

StripTill vivant
- Complément de légumineuse + plante non gélive facilement destructible au printemps

Wallonie recherche CRA-W
Centre wallon de Recherches agronomiques
Répondre aux questions d'aujourd'hui et relever les défis de demain
www.cra.wallonie.be

agroecology transect
Co-funded by the European Union
interreg France-Wallonie-Vlaanderen
DiverIMPACTS
TRANSAE

Exploring the Potential of Forage Silage Rich in Protein as a Nutritional Source in Poultry Production

Parameter	Control	Experimental	SEM	P_Value
Initial weight (g)	1823.3	1749.6	28.1	0.06
Final weight (g)	1923	1781	29.2	0.002
Weight gain (g)	99	27	12.6	0.001
ADG (g/D)	4.75	1.48	0.64	0.001
Egg weight (g)	56.4	55.6	0.28	0.003
Feed Intake (g)	147.2	129.6	1.70	0.001
FCR	2.9	2.5	0.06	0.001
Laying rate (%)	90.5	92.9	1.05	0.13
Yolk color	7.62	10.4	0.16	0.001
ω-3 (PUFA)	3.41	4.6	0.12	0.001
ω-6/ (ω-3) ratio	7.31	5.36	0.38	0.001

Context

Alfalfa-based dehydrated silage pellets (ABSP) are available non-conventional source of protein and other nutrients in organic layer hen farming. They represent an option to be used as poultry feeds to overcome the problem of high cost of soybean meal and therefore contributing to reducing the costs of production.

Objectives

The objective of the present study was to replace part of a commercial diet with ABSP as an alternative source of ingredient and nutrients in the feed of organic laying hens.

Methodology

Trial carried out in Modave (Belgium), from January to March 2023;
40 Laying hens divided into two groups, and 4 sub-groups each, randomized block design;
T diet: 10% substitution of commercial feed with ABSP;
C diet: commercial organic feed;
Measurements: Daily egg weight and laying rate, weekly WG and overall FI and FCR, physico-chemical parameters measured after random selection of 3 eggs per box on day 7 and 21.

System approach

Low — High

Results and perspectives

ABSP had negligible or even positive impact on animal performance of organic hens and allowed the production of eggs with more pronounced color and increased PUFA content, probably owing to nutrient and metabolites characteristics of Alfalfa. Alfalfa-based silage pellet could enhance income for organic poultry farms. However, further research is needed to determine the feasibility of ABSP use in formulating broiler feed.

Impact

Low — High

Interaction with organic actors

Low — High

Contact : Isabelle Dufrasne, isabelle.dufrasne@uliege.be,

PLAN BIO 2030

Managing the chicory root aphid.

Context

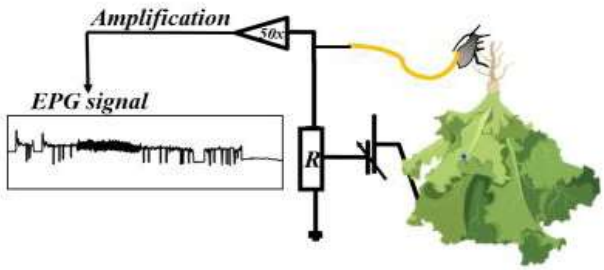
The lettuce root aphid *Pemphigus bursarius* is a serious pest of chicory (*Cichorium intybus*), causing economic losses in the Franco-Belgian basin. Climate change, with rising temperatures and drought, may impact aphid pressure on crops (Leybourne et al., 2021).

Objectives

As part of the INTERREG programme, this thesis project aims to increase our knowledge of the consequences of climate changes, on chicory-aphid interactions, to develop integrated strategies for the control of the lettuce root aphid.

Methodology

Analyze the **feeding behavior** of *P. bursarius* on **two chicory varieties (one susceptible and one potentially resistant)** to identify resistance factors. Compare with the resistance of aerial parts to *Myzus persicae* (polyphagous) and *Nasonovia ribisnigri* (oligophagous).



System approach

Low — High

Results and perspectives

Our first results showed no effect of the chicory variety on the feeding behavior of *M. persicae*. However, *N. ribisnigri* took longer to reach the sap elements of the variety that is susceptible to the chicory root aphid. Future results about the feeding behavior of *P. bursarius* will verify the resistance of the chosen variety and help to understand the relationship between root resistance and leaf resistance. Our results will help providing new control solutions for producers.

Impact

Low — High

Interaction with organic actors

Low — High

Contact :  Thomas Cochenille, thomas.cochenille@student.umons.ac.be

Interreg France - Wallonie - Vlaanderen REFLECHI
UMONS Université de Mons
Université de Picardie Jules Verne
inagro
FREDON
Les Producteurs d'endives de France
Soutiens financiers :
Oost-Vlaanderen
Wallonie

Reduced soil tillage in organic cropping system (ABC)

Collaboration group (farmers-researchers-advisors) carrying out on-farm (systemic and long-term) experimentations (Wallonia)

Group

Wallonie recherche CRA-W — Greenotec

Objectives

Exploring a new system : **reducing tillage in organic systems (ploughing)**

Grounded in field reality → **Systemic**
→ **Long** term
→ **Flexible & coherent** exp. design

Co-learning through **co-creation, co-observation** and **co-reflection**, by benefitting from the **ideas, knowledge, skills** of the **group**

Context

*« **ABC** » doesn't asnwer to a immediate problematic, but to a **long term vision***

Diverse motivations :

- Enhance **soil fertility** (phys-chem-biol), and **crops resilience**
- Limit **weed germination**
- Reduce **costs** and **energy**, **time** or **organisation** on farm

Limiting technical elements faced in « ABC » :

- **Weed management** (grasses, perennial weeds)
- **Nitrogen availability** (poor mineralisation without soil tillage)

Methodology

*Control : **Classic** farmer's itinerary, well mastered.*
*ABC : System with the aim of **reducing tillage**, using different **combination of practices**, **adapted** to the specific context of the plot (**flexible**)*
***Follow up** of both systems (productions, weeds, soil)*
***Collective assessment** : comparison of the two **systems** → understanding, hypotheses, proposed adaptations*

Reduced tillage (no-till)
- *Reduced depth (shallow scalping, direct seeding, etc.)*
- *Reduced intensity (less animated tools and fewer passes)*
- *% area worked (strip-till, BioCoCrop, etc.)*

Fertilization
- *Localized*

Plant cover
- *Crop rotation (legumes, temporary grassland, etc.)*
- *Crops and/or varieties association*
- *Cover crops (diversification, sowing techniques, etc.)*

Results and perspectives

I. Test the agronomical & technical limits

Through experiences and collective discussions : identification of the keys to success, identification or hypothesization of the reasons for failure and attempt to forge group expertise (intervention -> conseq.)

II. Compare system trade-offs

Compared biophysical (and economical) assessment of both systems (productions, weeds, soil)
Plot's results + Multivariate & multicriteria analysis

III. Identify barriers for a viable system

Identification of the barriers (social, economic, technical, logistical, etc.) the farm and this system encounters in order to be viable

Grasses and perennial weeds management, poor mineralisation, density fracture with repeated same depth preparation, …

Effects and trade-offs of each system on different dimensions

Productions Low — High
Soil fertility Low — High
Weeds manag. Low — High

Lack of specific machinery, entrepreneurs availability and shared vision, ecosystem services valorisation, …

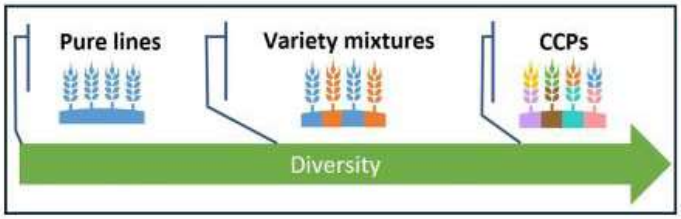
Contact :  Fockedey, Aline, a.fockedey@cra.wallonie.be

Interreg — agroecology transect — Co-funded by the European Union
DiverIMPACTS
BIO mon choix — AGENTSCHAP LANDBOUW & ZEEVISSERIJ — LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW — BioForum — ILVO — CCBT — Wallonie recherche CRA-W

Organic Heterogeneous Material (OHM) :
Bread wheat and spelt Composite Cross Populations (CCP)

Context

Intraspecific diversity within the field can enhance crop resilience and adaptability through compensation and complementarity ecological mechanisms, and through population evolution over the course of generation under the effect of natural selection. Composite Cross Populations (CCP) are highly diverse populations that are created by bulking of the progeny of multiple crosses.



Objectives

We are developing and observing the performance of wheat and spelt CCPs designed for **organic farming** and **artisan breadmaking** in Belgium.

Methodology

1) **Participatory choice of parent varieties** based on phenotypic observations (soil cover, disease tolerance, yield, baking quality) while maximizing genetic diversity and diversity of origins.

2) Half-diallel crosses between all parents.

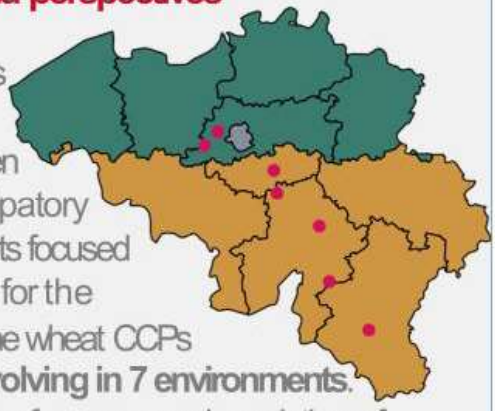
3) Constitution of founding populations by mixing the F3 generations.

4) Multiplication and **evolution in different environments** (different regions, **on-farm** and in experimental trials).

System approach

Low — High

Results and perspectives



Two spelt CCPs and two wheat CCPs have been created. Participatory choice of parents focused on old varieties for the wheat CCPs. The wheat CCPs are currently **evolving in 7 environments**. Observations (performance and evolution of diversity) are ongoing, along with the establishment of a **participatory breeding network** for further selection within the CCPs.

Impact

Low — High

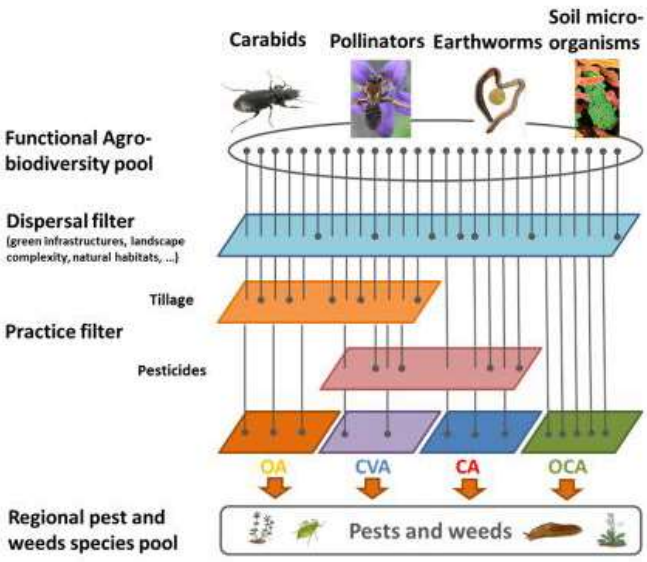
Interaction with organic actors

Low — High

Contact : Dominique Mingeot, d.mingeot@cra.wallonie.be

PLAN BIO 2030

FAB4Farming: Functional AgroBiodiversity for Farming



Context

Walloon Pesticide Reduction Programme III (PWRP)

A project in collaboration between ULB – Agroecology Lab (Prof. Thonar, Prof. Vereecken) and ULiege – Gembloux Agro-Bio Tech (Prof. Dufrêne, Dr. Boeraeve)

ULB ÉCOLE DE BIOINGÉNIERIE DE BRUXELLES

LIÈGE université Gembloux Agro-Bio Tech

Objectives

Highlight technical itineraries favoring both a reduction in PPPs and an increase in functional agro-biodiversity (FAB) to support the development of resilient and autonomous farming systems

Methodology

A network of 40 farms

- CVA = conventional agriculture
- OA = organic agriculture
- CA= conservation agriculture
- OCA = organic-conservation agri

→ Sampling FAB and pests and detailing technical itineraries in terms of practice gradients rather than broad farming categories

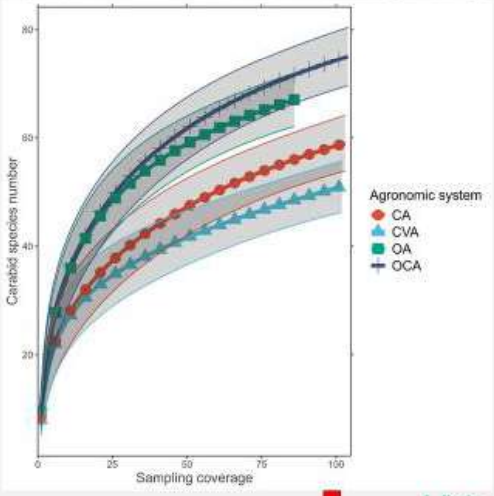
System approach

Low ——— High

Preliminary outcomes

A gradient appears in terms of FAB as follows: OCA>OA>CA>CVA

Further analyses ongoing to better hierarchize individual practices rather than farming categories



Impact

Low ——— High

Interaction with organic actors

Low ——— High

Contact : BOERAEVE Fanny, f.boeraeve@uliege.be / Follow us: @FAB4FARMING

BiO mon choix PLAN BIO 2030

AGENTSCHAP LANDBOUW & ZEEVISSERIJ

LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW

BioForum ILVO CCBT Wallonie recherche CRA-W

Four cropping systems for vegetable production

a long term experiment

Context

The management of organic cropping system for vegetable production require the use of substantial imported fertilizers, but various European countries gradually ban the use of nutrients from conventional sources of organic matters in organic agriculture.

Objectives

The aim of the present study is to experiment, for two 6-years long rotations, innovative approaches of organic vegetable productions, designed to reduce the reliance on import of external resources.

On-farm-produced cut-and-carry alfalfa

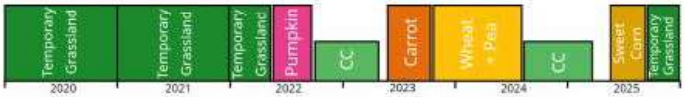
On-farm-produced ramial wood chips

Cover-crop : complex mixed species

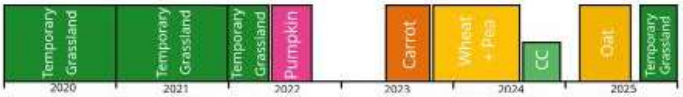
Methodology

The cropping systems were co-designed through a participatory process involving farmers, advisors & scientists. Four cropping systems including multiple fertility-building crops are implemented in Gembloux since 2020 under a split-plot experimental design. Through various approaches, cropping systems are relying on green manures, cover-crops or on-farm-produced cut-and-carry alfalfa and ramial wood chips (RWC) as their main source of soil fertility. The RWC come from a perennial willow short rotation coppice planted in Gembloux in 2020.

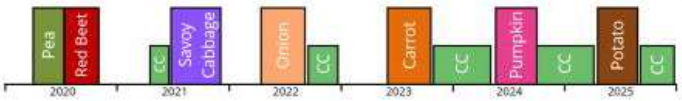
***Cropping system 1** : Multi-crop farming without livestock (only carbon import under ramial wood chips from willow trees / no ploughing)*



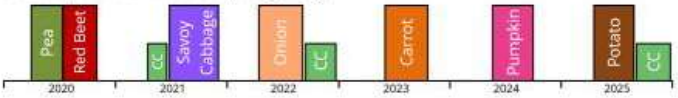
***Cropping system 2** : Self-fertility mixed farming with livestock (balanced animal manure / ploughing)*



***Cropping system 3** : Soil-conservation vegetable farming (carbon import from ramial wood chips and alfalfa imports, without animal manure / no ploughing)*



***Cropping system 4** : Standard organic vegetable farming (commercial organic fertiliser, animal manure / ploughing)*



Results and perspectives

- While N can be naturally catch by leguminous crops, the experiment shows first sign of decrease for non-renewable K resource in low-input organic cropping systems in the top soil layers..
- Cropping systems with annual winter ploughing were easier to manage regarding weed control, refining seedbed, water management in spring, but decrease soil structural properties.
- Intensive tillage in vegetable cropping systems reduce soil biodiversity if vegetable cash crop are present each year.
- Nutrient management and soil quality could be improved in organic vegetable cropping systems by intensive use of fertility building crops, which also could reduce nitrogen losses to the environment. It requires a well-managed destruction of the fertility building crops in spring.
- Each cropping system should maintain the same objectives for the next six years such as carbon based for CS1, self-fertility for CS2, soil conservation for CS3, standard organic for CS4.

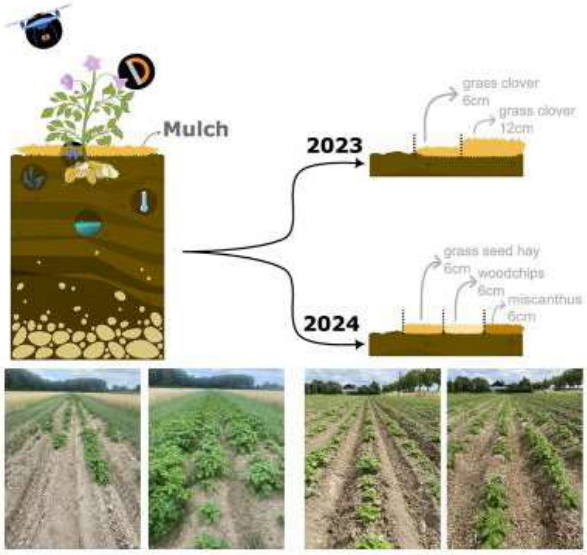
System approach & Impact

Interaction with organic actors

Contact :  Clément Nieus, c.nieus@cra.wallonie.be and Laurent Jamar l.jamar@cra.wallonie.be

BIO mon choix
AGENTSCHAP LANDBOUW & ZEEVISSERIJ
LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW
BioForum
ILVO
CCBT
Wallonie recherche CRA-W
PLAN BIO 2030

Even in a wet year, mulch can prove its usefulness



Mulching trials potatoe 2023 (left) & 2024 (right)
@ILVO, Melle, België, sandy loam

Context

Mulch can play an important role in climate adaptation by:

- buffering extreme temperatures
- improving infiltration of water into the soil
- preventing evaporation of soil moisture

Hence, soil and crops are more resistant to extreme weather conditions

Objectives

- Examining effect of different thicknesses/types of mulch on soil temperature, water and nutrient dynamics as well as on crop development and yield
- Close collaboration with farmers to identify common mulching practices and to investigate their impact under field conditions
- Synthesis report of common mulching practices including a SWOT analysis

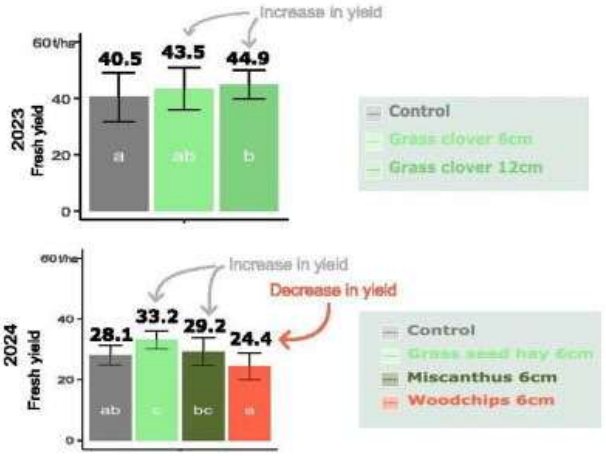
Results

Mulching trial 2023

- More stable soil conditions in terms of temperature and soil moisture when mulch was applied allowed the crop to develop better in the early stages resulting higher yields

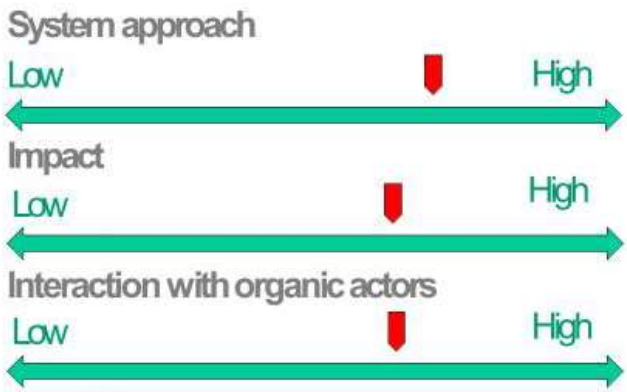
Mulching trial 2024

- Biodegradability of mulch type largely determined crop development & yield



Take home message

- Applying mulch is complex because it interacts with both the water and temperature balance and the nutrient dynamics of the soil
- Weather conditions play a major role in the effect, but in both a dry and wet year, mulch can prove its usefulness



Contact : Maarten De Boever; maarten.deboever@ilvo.vlaanderen.be

Research of alternative methods for controlling pests and diseases in organic fruit orchards

Context

Increasingly stringent national and European legislation is reducing the range of solutions available to control pests and diseases in orchards. In addition, climate change and human activities are causing new pests to appear in our regions. These factors, plus society's growing desire for sustainable agricultural production, make it essential to find solutions that are more respectful of nature and the environment.

Objectives

CRA-W is working to find alternative methods to plant protection products against the main pests and diseases that growers face. The aim is to provide them with pragmatic solutions that can be applied in a professional, economically viable context.

Methodology

The CRA-W is thereforeinvolvedin different research projects on the following main themes:

- alternatives to copper,
- improvedcontrolof applescab (decision-support tools, monitoring, treatment strategy, …), zero-phyto control of pear gall midge, apple blossom weevil, codling moth, etc.
- adapting to climate change,
- enhancing functional biodiversity,
- Etc,

System approach

Low — High

Results and perspectives

- Testing of a sex pheromone for monitoring leek midge flights and confirmation of its reliability,
- Identification of biopesticide molecules with action against apple scab.
- Effectiveness of sticky white strips against apple sawfly.
- Positive effect of flower strips in the row spacing on auxiliary entomofauna.

Impact

Low — High

Interaction with organic actors

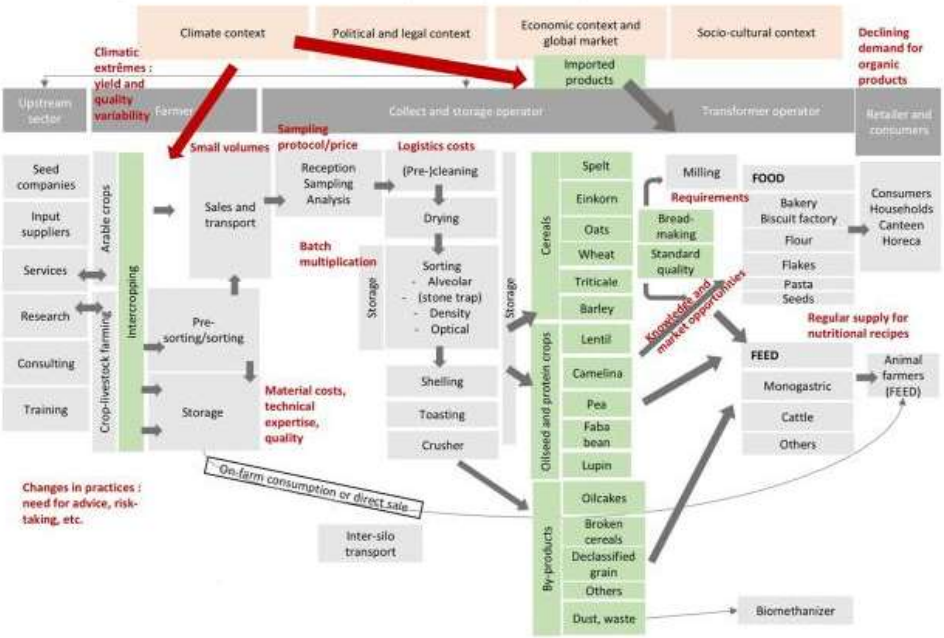
Low — High

Contact : Jorion Alexis, a.jorion@cra.wallonie.be

PLAN BIO 2030

Obstacles and opportunities to the development of protein intercrops sector

Cereal-legumes intercrops barriers (in red) faced by different value chain actors



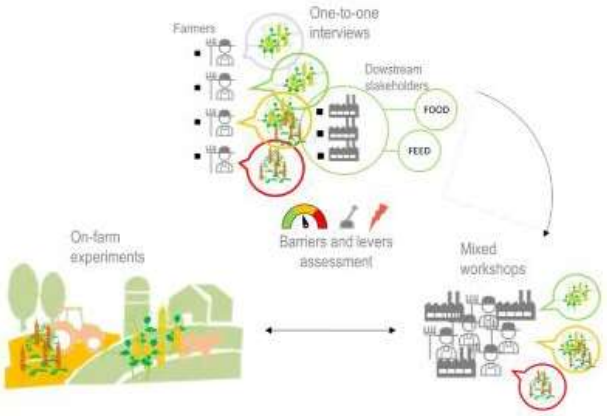
Context

Protein intercrops can meet the many challenges facing organic farming such as dependence on inputs, weeds control or protein self-sufficiency for example. Nevertheless, this agricultural technique is more complex to manage, both for the farmer (place in the rotation, technical itineraries) and for downstream operators (sorting, storage, distribution).

Objectives

AssoBIO research project is based on a participatory approach combining multi-stakeholder workshops and on-farm trials, with the aim of highlighting actionable knowledge and removing obstacles to the development of protein intercrops.

Methodology



System approach

Low — High

Results and perspectives

Ways of overcoming the barriers to the development of a sector for cereal-legume combination crops

Improved dialogue between farmers and downstream operators to understand and take account of each other's constraints

Varietal and species choices in the intercrop

- Set up a standardized **sampling** protocol → Towards a fairer remuneration; Increases storage capacity by grouping small batches together
- Optimising **volumes** → Lower logistics prices; Taking account of this type of crop in the supply chain (e.g. new feed formulation); Choosing the most suitable and least expensive sorting method
- More flexible **quality criteria** → Test for acceptable residual organoleptic and technological value; Knowledge about varieties to limit the impact of anti-nutritional factors

Impact

Low — High

Interaction with organic actors

Low — High

Contact : Morgane, Campion, m.campion@cra.wallonie.be and Pénélope Lamarque, p.lamarque@cra.wallonie.be

PLAN BIO 2018

Transdisciplinary exploration of organic dairy beef production based on grassland and by-products

Context

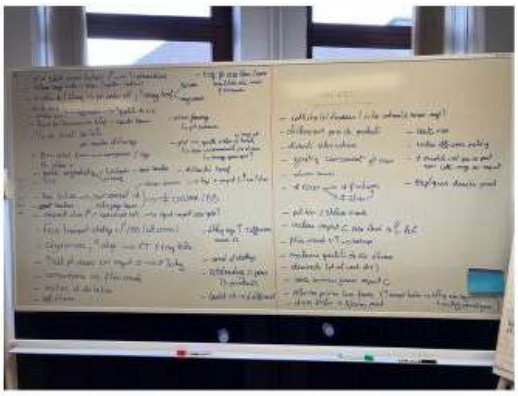
- Maximize food production
- Reduce environmental impact
- Close the loops: valorize grass and co-products, and produce manure

Objectives

- Provide reference zootechnical scheme for sustainable beef production from dairy herds
- Co-construct strategies to valorize products from these farms

Methodology

1. Study two systems where animals are fed with grass and by-products, based on the proportion of permanent pastures in each system. Ingestion (quality and quantity), meat production, methane emissions and the behavior are monitored.
2. Set up a group of farmers testing, on farm, different production and valorization schemes for dairy calves to beef. Co-construction of innovations, implementation and performance evaluation.
3. Co-construction of the image of products : study of the value chain and multi-stakeholder workshops.

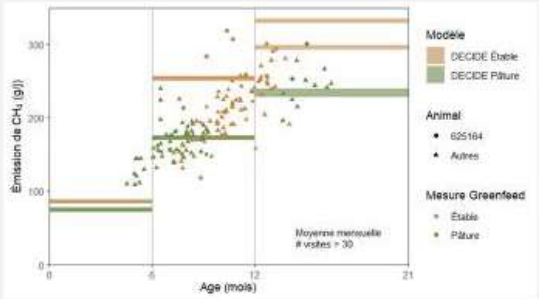


System approach

Low — High

Results and perspectives

- Initial results on performance and methane emissions from crossbred dairy-to-beef bulls valorizing only grass and by-products.



- Study of barriers and levers to the consumption and production of beef from dairy herds in Wallonia.
- Support the development of a beef production sector from dairy herds as an alternative to long supply chains.

Impact

Low — High

Interaction with organic actors

Low — High

Contacts :

Mertens Alexandre, a.mertens@cra.wallonie.be
Lagneaux Séverine, s.lagneaux@cra.wallonie.be

BIO mon choix · AGENTSCHAP LANDBOUW & ZEEVISSERIJ · LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW · BioForum · ILVO · CCBT · Wallonie recherche CRA-W

PLAN BIO 2030

Undersowing cover crops in vegetables

Context

Cover crops play a crucial role in soil-forming processes. In intensive vegetable cultivation, there is little room for cover crops after harvest.

Objectives

Small-scale organic vegetable farms can introduce diversity into their crop plans by:

➔Undersowing (composite) cover crops in vegetables
➔Keeping the patch and/or tracks green

But HOW do you implement that?

Methodology

PARTICIPATORY PROJECT IN 2025 AND 2026

- Inventory of existing knowledge and experience
- **Annual on-farm tests** (about 20) with varied sowing dates and green manure mixtures
- **4 practical trials @inagro** with about 15 treatments
- Annual on-farm trials (3) for 'green paths'
- Further development of **mechanization** for undersowing and maintaining green paths in collaboration with Bert Vandergeynst – Boer Bricoleur
- **Experience exchange** among participants through field visits, WhatsApp group, etc.
- Collaboration with Viaverda: flower growers
- In-depth trajectory for green manures in vegetables in collaboration with ILVO in the project 'Ground2Live'

Impact

Low — High

Interaction with organic actors

Low — High

System approach

Low — High

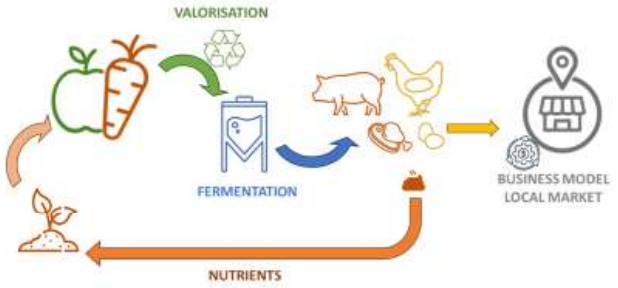
Contact : Vanbesien, jasper.vanbesien@inagro.be

Medegefinancierd door de Europese Unie

BIO mon choix | AGENTSCHAP LANDBOUW & ZEEVISSERIJ | LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW | BioForum | ILVO | CCBT | Wallonie recherche CRA-W

PLAN BIO 2030

VALORAGRO: Valorization of agricultural production wastes through fermentation into pig and poultry feed



Context

Agroecological and organic production systems focus on self-sufficiency and closure of nutrient cycles at farm level. Animal production is under pressure to reduce inputs, be sustainable, while increasing animal health and welfare

Objectives

Implement agroecological principles to mixed animal production systems, through the valorization of agricultural waste streams via fermentation, for use in pig and poultry feed. Fermentation is a simple technique that farmers can use.

Methodology

- Consultation with farmers and stakeholders of the different LLs over the most interesting agricultural wastes.
- Look at feed composition and ingredients availability in different production systems
- Match fermented wastes with other feed ingredients to guarantee a positive effect on animal nutrient use efficiency, health and welfare
- Ecological and socio-economic impact at farm level will be assessed

System approach

Low — High

Perspectives

Deeper understanding on how to integrate animal production in agroecological production systems.

Throughout the project, the direct training and follow-up during implementation of the proposed methods will help to smoothen the transition of animal production systems into agroecology at farm level, increasing their sustainability and decreasing environmental impact

Impact

Low — High

Interaction with organic actors

Low — High

Contact : Lourenço, Marta, marta.lourenco@ilvo.vlaanderen.be

BIO mon choix · AGENTSCHAP LANDBOUW & ZEEVISSERIJ · LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW · BioForum · ILVO · CCBT · Wallonie recherche CRA-W

PLAN BIO 2020

CPL-Vegemar Research in Vegetable Organic Farming

1) Efficacy of different bioinsecticides against pea aphids

Context

The aphid is the most important pest in peas, in addition to damage related to sap removal, aphids transmit viruses. Viruses can cause major yield losses in peas.

There are many bioinsecticides (fatty acid, essential oil, azadirachtin, …) on the market, but unfortunately their efficacy is not always proven.

Objectives

The aim of this trial is to compare the efficacy of different bioinsecticides against pea aphids.

Methodology

Trials are carried out in microplots in organic peas. Treatments are carried out according to aphid infestations. The efficacy of different products is measured (aphid count) and presence of virus on peas.

System approach

2) Intercropping management before organic beans

Context

Organic industrial beans are sown late in the season, mid-June at the earliest. This implies a very long intercropping period, during which there are risks of weed growth and erosion. The lot of mechanical works dry out the soil.

Objectives

The aim of this project is to find the best solutions for managing this long intercropping period (planting a double cover crop, timing and method of destroying the cover crop, …) Beware that seed flies can be a problem if organic matter is not decomposed.

Methodology

The trials are carried out in strips in an organic bean field where various cover crops are sown in spring (clover, oats, buckwheat, etc.). The cover crops are destroyed at different times. The bean emergence is observed.

System approach

3) Efficacy of different biofungicides against carrot foliar diseases

Context

The two main leaf diseases affecting carrots are powdery mildew (*Erysiphe heracleid)* and altemaria (*Altemaria dauci*).

Solid sulfur is commonly used in organic farming to combat carrot diseases. It is effective but less convenient to use. There are many other biofungicides (bacteria, biostimulants, …) on the market and it's not always clear how effective they are.

Objectives

The aim of this project is therefore to compare the efficacy of different biofungicides against foliar diseases in carrot and compare them with sulfur (solid and liquid).

Methodology

Trials are carried out in microplots in organic carrot. Foliar treatments are carried out every 10-15 days. The efficacy of different products is observed visually, as well as yields.

System approach

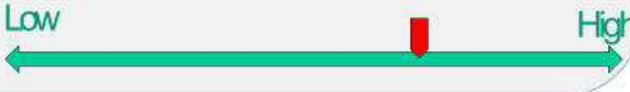
Results and perspectives

For project 1, unfortunately the year 2024 was not conclusive due to the low presence of aphids. The trial will be repeated in 2025.

Project 2 and 3 are financed by the Walloon Region as part of the "Plan de Relance". The two research themes have been selected by organic farmers. The second test year for both projects will take place in 2025. We hope to be able to present results by the end of 2025.

Impact

Interaction with organic actors



Contact :

Province de Liège – CPL-Végémar
Julie LEGRAND julie.legrand@provincedeliege.be
Valérie GLESNER valerie.glesner@provincedeliege.be

Wallonie Relance

BIO mon choix · AGENTSCHAP LANDBOUW & ZEEVISSERIJ · LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW · BioForum · ILVO · CCBT · Wallonie recherche CRA-W

PLAN BIO 2030

Organic field cropping systems trial (SYCBIO)

Context

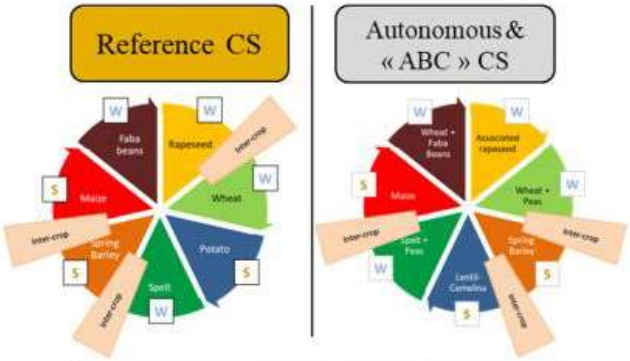
This experimentation was build between 2016 and 2018, when the conversions of farms specialized in main crops were increasing. In these farms, the main issues concern weed management and soil fertility.

Objectives

The major challenge is to maintain sufficient profitability without livestock and vegetable crops, while considering the positive or negative impacts of agricultural practices on agronomic aspects (soil characteristics, quality of the productions, plant health, …). The objective is to compare cropping systems with each other but also to observe the evolution of the characteristics of a cropping system over time.

Methodology

Two cropping systems compared to a reference one are assessed in this trial with the monitoring of a set of indicators focused on plant, soil or system compartements.



CS	Name	Fertilization	Soil Tillage	Rotation
1	Reference system	COF* inputs	Plowing	Pure crops
2	Autonomous system	No COF*	Plowing	Associated crops and legumes
3	« ABC » system	No COF*	No plowing	Associated crops and legumes

*COF = Commercial Organic Fertilizer

System approach

Low — High

Results and perspectives

The monitoring of a high number of indicators allows to compare the global performances of the three systems. One of the perspective is to redirect the crop management technique by learning from inefficient practices based on the results from the first rotation.

Impact

Low — High

Interaction with organic actors

Low — High

Contact : 

Abras, Morgan, m.abras@cra.wallonie.be

BIO mon choix — AGENTSCHAP LANDBOUW & ZEEVISSERIJ — LIVING LAB AGRO-ECOLOGIE & BIOLOGISCHE LANDBOUW — BioForum — ILVO — CCBT — Wallonie recherche CRA-W

PLAN BIO 2030

Workshops summaries

ROUND 1: WORKSHOP SOIL

Trends, evolutions, innovations

The discussion in the first part of the workshop revolved around following topics:

- **Soil quality monitoring / indicators:** The upcoming Soil Directive obliges soil health monitoring ð Search for suitable indicators. An "indice de qualité des sols wallons (IQSW)" is being created. Important for indicators is that they reflect the effect of farmers' practices; can quantify impacts and ecosystem services; are specific enough for the region, but general enough to compare throughout EU; are relevant for both research and farmers; can be used as decision support tools. Indicators are needed for soil biodiversity, humidity, aggregate stability, soil metabolism,…
- **Carbon farming:** It is important to differentiate between Cstocking (which can be measured) and Csequestration (which is a climate change mitigation goal). This will necessitate assessment methods for Cstocking; better understanding of mineralisation and impact of fertilisation; linking farming practices to Cstocking; business models for Cstocking; and a better understanding of Cdynamics, i.e. balance between soil respiration (organic matter turnover ð CO_2-production) and Cstocking. Next to the need for climate change mitigation, there also is the need for climate change adaptation, i.e. making soils more resilient.
- **Soil biodiversity increase and other ecosystem services**: indicators, link between above and below ground biodiversity, effect of inoculants. As ESS are a collective responsibility and not just the farmers', there is need for support, incentives and citizens' consciousness.
- **Water**: good practices needed to enhance both infiltration and retention ð effect of practices in wet / dry years. Erosion mitigation.
- **Good farming practices:** what are good practices for all the above? e.g. cover crop management versus non-inversion tillage
- **Participatory research:** need for co-creation of knowledge with farmers, advisors and researchers; for more bottom-up research; for research for action; for more insight in how to collaborate well with farmers; for more demo- and lighthouse farms. Possibilities for participatory soil sampling in citizen science?

Important remark: there is overlap between these topics, they are all interrelated!

Voting showed most interest to collaborate was in

- Participatory research
- C-dynamics
- Farming practices

Joint actions on participatory soil research:

- **Short term: Farm visits in Wallonia and Flanders** (one in each region): Goal = learn from each other about good practices for participatory research. ð Visit a farmer who has good experiences with participating in research. The TRANSECT project may serve as an example.
  - Maarten De Boever (ILVO) will initiate contacts in autumn to organise an exchange within the OhFine/Ground2Live projects.
- **Longer term: a cross-border Living Lab on soil**, including both Walloon and Flemish organic farmers. Prepare a proposal with a common soil LL for the next Soil Mission call, which will probably open in May. Need to think about how such an interregional LL can be managed consistently in both regions. Researchers may link, as they can communicate in English. Relating to farmers' practices will be essential. Participatory soil monitoring as a subject?

ROUND 1: WORKSHOP ARABLE CROPS

Summary

This workshop brought together key insights and initiatives around the latest trends and innovations in organic arable cropping systems. The topic was very broad reflecting the wide range of themes that were discussed. Participants emphasized the need for collaborative approaches and co-creation that connect farmers, researchers, breeders, and industry partners.

Main trends and innovations

Seed and varieties

- Use of more robust varieties (e.g., potatoes); need for collaboration with industry
- Genetic resources in minor crops and participatory breeding for better adaptation.
- More wheat varieties to increase yield stability and quality.
- Availability of seeds varieties with good bread making characteristics

Soil Fertility, Biodiversity, and Inputs

- Use of complex green manure mixtures for soil improvement.
- Place of legumes in rotation to avoid mining soil resources.
- More tools for biodiversity analysis at farm level.
- Mechanical innovation for cover crop termination.
- Use of organic bio stimulants to enhance crop performance.
- Living mulches (herbal leys) and under sowing (e.g., grass in maize) for weed control, reduced nitrogen leaching, soil fertility and increased biodiversity.

Crop Diversification

- Introduction of new crops for food (e.g., quinoa) and non-food uses (e.g., hemp and lime for textiles).
- Development of new fodder crops like maize-bean mixtures, sorghum, sunflower.
- Mixtures of species/intercropping, especially legumes with cereals or vegetables (e.g., onions + cereals, green manure + vegetables).
- Legume intercropping and rotation strategies (e.g. place of legumes, new crops in the rotation) to enhance fertility and system resilience.
- Managing rotations with new/marginal crops to reduce externalities and maintain soil health.

Integrated and Diversified Farming Systems

- Integrated crop-livestock systems for improving soil organic matter and weed control.
- Integration of sheep in temporary meadows and vegetable crops—emerging practice in larger farms.
- Systemic approaches combining food and feed production in more circular systems.

Post-Harvest and Processing

- Need for specialized tools for harvesting crops like soybeans and sorting grains.
- Sorting systems that serve both cleaning seeds from weed seeds and sorting after harvesting
- How to maintain food-grade quality
- Small-scale, on-farm processing (e.g., grain mills) to support short supply chains.
- Maintaining food-grade standards through better handling and processing innovations.

Supply Chain

- Building supply chains for intercropped (vegetables/cereals) and novel crops.
- Matching farmers with supply chain actors to increase value.
- Research on food marketing: how and why consumers should engage with these crops.

Joint actions:

- **Exchange day on new crops** with high added value (different groups per crop, topic) (added value in crop, food or feed systems)
  - For whom? Researchers, pioneer (experienced) farmers, nutritionists, breeders.
  - Organised by ILVO (Hilde Muylle) together with CRA-W
  - When? November 2025
- **Sharing information** about demo days are organised during summertime
  - CCBT will collect and send around (in 2025)
- **Collecting interest** in different topics by online form
  - CCBT will create a form and put it online
- Depending on the approvement of a project Mieke Lateir (INBO) will take action related to the biodiversity tool

ROUND 1: WORKSHOP ANIMAL WELFARE

Summary

We identified different trends regarding animal welfare in organic production systems.

Main trends

Awareness and societal concerns about animal welfare

- How society sees how animal production is done: sometimes society (citizens and consumers) do not always have all the facts or necessary information, and this can lead to false opinions. Sometimes animal welfare organizations take advantage of this and polarize the societal discussion with wrong facts or with not all the information.

Environmental impact of alternative production systems

- Often technical aspects of alternative production systems are further developed in research projects, but their environmental impact and profitability is not always known.

Data collection and analysis

- There is more and more data being collected related to animal welfare status, but data is not always explored to its full potential. For example it is often used to say something about the welfare status of the animals, but not to look at evolutions over time of a sector for example.

Business models

- If a farmer wants to prioritize animal welfare, this is difficult to translate into a business model. How can this added value be renumerated, who pays for this, how to monitor this. Can we create value chains based on animal welfare? Are these chains economically viable and sustainable? Is the consumer asking for this?

Most important trends

- business model: Business models seem to be a very difficult subject since there hasn't been too much research done regarding this topic. Certainly not in the Belgian context and context is particularly important for business models.
- data collection For issues regarding data collection and distribution, a lot could be learned from initiatives abroad or other types of livestock.

Joint actions

- **Approach supermarkets together** with possible ideas of new business models for organic farmers.
- **Visit pioneer farms in Flanders and Wallonia** regarding business models. This could be organized by Bioforum.
- **Sharing data** (compatible, link to WALLeSmart / DjustConnect). Bring together Eleveo, ILVO, CRA-W to integrate organic specifications in data sharing platforms.

ROUND 1: WORKSHOP PLANT PROTECTION

Trends, evolutions, innovations

Alternatives are being sought for some plant protection products (PPPs)

- **Spinosad** = non-selective insecticide, quite harmful for bees, beneficials and aquatic life.
  - Alternatives: PPPs: Bacillus thuringiensis, NeemAzal, pheromones; insect frass (phytofortifyer); resistant winter wheat and apple varieties
- **Copper:** To date, organic production still profoundly relies on the use of copper fungicides, which show critical toxicological and ecotoxicological properties. Therefore withdrawn end 2025. The FOD has negatively assessed the reduced dose proposed by the groups (max. 3 kg a.i. Cu/ha*year)

Potential solutions:

- **Resistant varieties:** variety screening for robust potato varieties and cereals @CRA-W (see pitch A-M. Faux); @CRA-W (participatory) breeding for organic production in apple, pear, wheat, spelt, durum wheat and potatoes; @ILVO only breeding programme for chickpeas, quinoa, grasses.
  - Develop collaborative work FL-WAL on plant breeding for robust c.v.'s adapted to organic?
  - Is participatory breeding a solution? Chain approach needed e.g. hops: farmers and brewers work together; @the Netherlands for potatoes; @Vives for yacon, tomato and sweet potato; @CRA-W in close partnership with North French CRRG and NOVAFRUITS organic producers association and GAWI.
- **Importance of tackling diseases at an early stage:** i.e. stopping or reducing the primary infection ð Better knowledge needed of life cycle and spread (via wind, rain?). Not only focus on agents, also need more knowledge of the fungus e.g. phytophthora: research @ILVO. How to treat aggressive types? Will always be a combination of PPPs and other methods.
- **Intercropping** may be a solution, but needs adaptation of harvesting and processing machinery.
- **Biostimulants:** Is limesulfur - polysulfurcalcium a solution? - not allowed as PPP (Phytoweb), only allowed for apple with 120 days derogation.

Conclusion

- Few specialised researchers in Belgium, rather generalists.
- There is a need for more information on copper at national level.
- Do we have an overview of the research taking place abroad? No, as it turns out.
- There is a need for more exchange between researchers in Belgium - sharepoint? What exactly do we want with this?

Joint actions

- **Collect research from abroad:** The Flemish Agency for Agriculture and Fisheries takes action.
- **More exchange on research regarding alternatives for Cu:** know better what other researchers are doing. Create a national sharing tool on bibliography (references) and results/reports of efficiency/alternatives, ecotoxicology, etc. Who takes the lead on that??
- **Focus on stopping primary infection via**
  - Varying planting times of various varieties;
  - Advise on removal of potatoes left in the field;
  - Monitoring disease pressure;
  - Longer crop rotation?
  - Better warning systems that take the level of disease susceptibility of various cultivars into account (both potatoes, apple, pear, grapes).

ROUND 2 – WORKSHOP VALUE CHAINS

Summary

Organic farmers are part of bigger value chains. The interaction with value chain actors influence the profitability and thereby the practices used in the production process on a farm. To develop organic agriculture in Belgium we need to provide farmers a economically interesting perspective within organic value chains. We believe that these value chains and the interaction between these actors can be improved to make organic production systems more appealing for farmers and consumers.

Certain characteristics of value chains seem to have a big impact on organic production systems. The factors we identified are:

- Models of economic risk sharing and transparency between producer and transformer
- Lack of transformators or transformation infrastructure in Wallonia
- Stable quality of the products
- The scale of production (small scale production vs. large scale transformation)
- Willingness to collaborate among farmers
- The demand for organic products

We identified the risk sharing models and the demand for organic products to be the most important characteristics of organic value chains. The scale of production and geographical distribution of value chain actors were also perceived to be important, albeit slightly less.

Joint actions

- For the scale of production and geographical distribution we identified an excursion to Cultivaé where we could be inspired by their logistical chain and sorting infrastructure in a profitable way. There is no lead to be identified but Dylan Feyaerts (ILVO) will send a mailing to the participants to see everyones' interest in this excursion.

- For the risk sharing models, we could organize an excursion to the 'interprofessionelles agricoles' and be inspired by their models of risk sharing. Prix juste for the producer.
  - Think about community supported systems. Grow together.
  - In France, they have the "interprofession". There they can communicate. Can discuss and agree about the issues.

- I would be interest to write a paper together where different Belgian or Western European examples on value chains would be compared. Within this paper we could evaluate the adventages and disadvantages of certain value chain models. This could be done if we would write together on a Horzion Europe project proposal. No lead identified but Dylan Feyaerts (ILVO) will send a mailing to the participants to see everyones' interest in this and schedule a meeting where we could identify a lead.

ROUND 2 - WORKSHOP FARM PROFITABILITY

Summary

To evaluate and improve the profitability of farming systems and facilitate the transition to more organic production, we need robust and transparent (economic) data. Without it, we lack the evidence to support farmers, guide policy, and design viable business models. Data not only helps us understand short-term profitability but also supports long-term system thinking. This summary outlines key discussions during the workshop identifying differences in data collection and availability across Flanders and Wallonia and potential actions for improvement and exchange.

Data collection and profitability analysis In Flanders data collection and profitability analysis for the organic sector is not structured or centralized and mainly done related to project, field trials at ILVO and practical research centres. Available data are dispersed and often not accessible or shared. The Flemish organic sector is characterized by small and diverse farms, making data collection difficult and comparing farms complex. Organic farms are not well represented in the FADN. There is a distrust of farmers to share economic data collection.

In Wallonia more data is available, particularly through the FADN and tools liken WALLeSmart where organic farms are better represented then in Flanders. BRIOAA, the Belgian Research Institute of Organic Agriculture and Agroecology owns a 60 hectares organic farm for research and collects data per crop and new crops to assess profitability. CRA-W is working to systematically gather cost data from their field using tools like SYSTERRE (a French tool).

Useful and existing tools:

- **CropExplores**: CropExplore for Farmers
- **Pea-PACT** (Flander -Hogent): EiwitTool
- **Djust2Connect** (Flanders - ILVO): Can potentially link and share data across regions
- **WALLeSmart** (Wallonia – CRA-W): serves a similar function as Djust2Connect in Flanders.
- **KLIMREK** (Flanders- ILVO) and **DECIDE** (Wallonia-CRA-W): LCA based tools to calculate sustainability metrics for farms, can potentially link and share data across regions and tools, including organic farming and LCA/carbon- based metrics.
- **Cost estimation tool for fodder crops, no organic data**: includes scenario fiches for crop rotations and dairy productivity
- **Studies related to relance project on value chain profitability** (ILVO), risk analysis for crops like chickpea and soy also organic.

Gaps and needs

- Lack of a central database aggregating research-based cost and profitability data.
- Efforts needed to better incorporate organic data in existing tools.
- Profitability data analysis should focus on more then euro earned per hectare, also other benefits should be monitored.

Joint actions

- Exchanges on the tools and databases in Wallonia and Flanders
    - Explore what we have and exchange what there is and make the data more visible
- Integration of organic data into the existing platforms like DJustconnect, WALLeSmart, KLIMREK and DECIDE. This can be done together.
- Working on a system valorisation in a future project

Florence Van Stappen will take initiative.

ROUND 2 - WORKSHOP FARM REDESIGN

Summary

Farm redesign is the process of restructuring the entire farming system—not just tweaking individual practices—to better align with ecological, economic, and social goals. It's a transition from input-substitution (e.g., replacing chemical fertilisers with organic ones) toward a systems-based, regenerative approach.

Trends and innovations

- Emphasis on **longer, diversified crop rotations** that balance cash crops with soil fertility-building crops, integrating fodder and food crops.
- **Management of ley crops** (a crop rotation system in which a grass-legume mixture is grown in rotation with agricultural crops)
- Movement towards **plant-based fertilisers** and ABC systems to manage nitrogen availability more sustainably.
- **Focus on landscape-level resource management** to build and maintain soil fertility.
- Increased interest in mixed cropping, successional agroforestry, grazed orchards, and winter grazing on crops to boost resilience and productivity. **Integrating livestock** in production systems.
- Exploring how to combine **no-till practices** with organic systems, supported by innovations in mechanical weeding and cover crop management.
- Promotion of **new breeds and cultivars** suited to organic and low-input systems.
- **Use of banker plants and functional agro-biodiversity** (FAB) to manage pests naturally and new and robust cultivars/varieties to cultivate with no/less pesticides.
- Innovation in **lightweight machinery and mechanical weeding** to avoid soil compaction and reduce chemical dependence.
- **Holistic design approaches to navigate trade-offs** between productivity, biodiversity, economic viability, and climate goals.

Joint actions

- **Organization of exchange day** (or 2 days including a visit to long term field trials in Flanders and Wallonia)
  - What? Visit Ecofoodsystem (other field trials?) (Long term experiments) /A half-day presentation of the various long-term trials on innovative crop rotation
  - Who? Tom Desmarez (Gembloux Agro-Bio Tech)
  - When? mid May 2026
- **Organization of workshop** on Rotations to feed soil to feed human
  - Who? Koen Willekens (ILVO)
  - When? May 2026

ROUND 2 - WORKSHOP Mixed farming systems

Definition & importance

The first discussion focussed on defining "mixed farming systems", as they can take multiple forms. The group agreed on "farms combining any form of crop production with animal production". Mixed farming systems are often less intensive, not specialized in one crop or animal species, but integrating a diversity of crops, plants and animals. They optimise natural resource use and allow closing nutrient cycles (manure use in crops, fermenting plant waste as feed, own feed and protein production, ...). They fit with societal demand for less animal production and enjoy positive consumer perception.

Trends, evolutions, innovations

- **Agroforesty** can be a specific form of mixed farming systems. **Silvo-pastoral systems** could e.g. combine sheep/pigs/poultry with low-stemmed (cf. P'Orchard & PPILOW projects) or cattle with high-stemmed orchards. Agroforestry Vlaanderen is a knowledge hub and can provide farm advice.
- Another form of a mixed farming, is **incorporating animals in a crop rotation**, e.g. rotating pigs on crop land, an old practice, or letting them graze cover crops
- **Using fruit hedges to diversify production** (e.g. grapes, berries, nuts), allows to bring and increase biodiversity in the system, while contributing to the interaction between the systems' components.
- **Knowledge gap: quality of the products produced (plant or animal)** and what is the added nutritional value of these products when they are produced in these mixed farming systems.
- **Stability**: economically and agronomically stable systems, that need less external inputs.
- **Circularity:** Mixed farming systems offer opportunities for closing nutrient cycles and contributing to waste reduction or valorisation. Examples: Black soldier fly can be reared on vegetable waste and the larvae fed to pigs/chickens. Insect frass can be used in mushroom cultivation or as biostimulant. Wastewater from stable cleaning or manure treatment or excess grass can be used to produce algae, which can be fed to poultry. Interactions between systems are of interest.
- **Sustainability (assessment):** mixed farming systems are also more complex systems (not only at one farm, but also at the higher level of multiple adjacent farms and their interactions), and the impact thereof needs to be taken into account in all dimensions of sustainability:
  - ***Economic feasibility:*** Often small scaled farms with good ecological practices and benefits from diversification, but often with limited resources, while they require more skills and investments (e.g. various machinery). The farmer's management skills are very important!
  - ***Social impact***: both internal, e.g. farmer's welfare, and external, e.g. consumer perception (small scale farms give the idea that all is happening and being produced at a more human level and this leads to a positive image of the production system).
  - ***Environmental impact:*** does mixed farming contribute to lower food-feed competition? Are any systems in place that allow testing? What are impacts of N-deposition from animals?; of (bio)pesticides on animals?; on biodiversity?; on climate? ð how to measure?

Joint actions

- **On a short term:** Sharing indicators used to define, monitor and assess performance of mixed farming systems is the first step. It was Suggested to work on a common paper where performance indicators are compared between Flanders and Wallonia, such as production, economics, biodiversity, and environment. At the same time, a common definition of mixed farming systems should be established.
- **On a longer term:** Have a brainstorm on the need or not of specific parameters to assess/monitor these mixed farming systems, due to their complex nature.
  - Michaël Mathot (CRA-W) organises a meeting (support: Marta Lourenço and Hilde Wustenberghs).

Summary of joint actions

Workshop Soil

- *Farm visits in Wallonia and Flanders (one in each region): Goal = learn from each other about good practices for participatory research. ð Visit a farmer who has good experiences with participating in research. The TRANSECT project may serve as an example.*
  - Maarten De Boever (ILVO) will initiate contacts in autumn to organise an exchange within the OhFine/Ground2Live projects.
- *A cross-border Living Lab on soil, including both Walloon and Flemish organic farmers.*
  - Prepare a proposal with a common soil LL for the next Soil Mission call, which will probably open in May. Need to think about how such an interregional LL can be managed consistently in both regions. Researchers may link, as they can communicate in English. Relating to farmers' practices will be essential. Participatory soil monitoring as a subject**?**

Workshop Arable crops

- *Exchange day on new crops with high added value (different groups per crop, topic) (added value in crop, food or feed systems)*
  - For whom? Researchers, pioneer (experienced) farmers, nutritionists, breeders.
  - Organised by ILVO (Hilde Muylle) together with CRA-W
  - When? November 2025
- *Sharing information about demo days are organised during summertime*
  - CCBT will collect and send around (in 2025)
- *Collecting interest in different topics by online form*
  - CCBT will create a form and put it online

Workshop Animal health and welfare

- *Approach supermarkets together* with possible ideas of new business models for organic farmers.
- *Visit pioneer farms in Flanders and Wallonia* regarding business models. This could be organized by Bioforum.
- *Sharing data* (compatible, link to WALLeSmart / DjustConnect). Bring together Eleveo, ILVO, CRA-W to integrate organic specifications in data sharing platforms.

Workshop Plant protection

- *Collect research from abroad:* The Flemish Agency for Agriculture and Fisheries takes action.
- *More exchange on research regarding alternatives for Cu:* know better what other researchers are doing. Create a national sharing tool on bibliography (references) and results/reports of efficiency/alternatives, ecotoxicology, etc. Who takes the lead on that??
- *Focus on stopping primary infection via*
  - Varying planting times of various varieties;
  - Advise on removal of potatoes left in the field;
  - Monitoring disease pressure;
  - Longer crop rotation?
  - Better warning systems that take the level of disease susceptibility of various cultivars into account (both potatoes, apple, pear, grapes).

Summary of joint actions

Workshop Value chain

- For the scale of production and geographical distribution we identified an excursion to Cultivaé where we could be inspired by their logistical chain and sorting infrastructure in a profitable way. There is no lead to be identified but Dylan Feyaerts (ILVO) will send a mailing to the participants to see everyones' interest in this excursion.
- For the *risk sharing models*, we could organize an excursion to the 'interprofessionelles agricoles' and be inspired by their models of risk sharing. Prix juste for the producer.
  - Think about community supported systems. Grow together.
  - In France, they have the "interprofession". There they can communicate. Can discuss and agree about the issues.
- I would be interest to write a paper together where different Belgian or Western European examples on value chains would be compared. Within this paper we could evaluate the adventages and disadvantages of certain value chain models. This could be done if we would *write together on a Horzion Europe project proposal*. No lead identified but Dylan Feyaerts (ILVO) will send a mailing to the participants to see everyones' interest in this and schedule a meeting where we could identify a lead.

Workshop Farm profitability

- *Exchanges on the tools and databases i*n Wallonia and Flanders
  - Explore what we have and exchange what there is and make the data more visible
- *Integration of organic data into the existing platforms* like DJust2connect, WALLeSmart KLIMREK and DECIDE. This can be done together.
- *Working on a system valorisation in a future project*
  - Florence Van Stappen will take initiative.

Workshop Farm redesign

- *Organization of exchange day (or 2 days including a visit to long term field trials in Flanders and Wallonia)*
  - *What? Visit Ecofoodsystem (other field trials?) (Long term experiments) /A half-day presentation of the various long-term trials on innovative crop rotation*
  - *Who? Tom Desmarez (Gembloux Agro-Bio Tech)*
  - *When? mid May 2026*
- *Organization of workshop on Rotations to feed soil to feed human*
  - *Who? Koen Willekens (ILVO)*
  - *When? May 2026*

Workshop Mixed systems

- *Sharing indicators* used to define, monitor and assess performance of mixed farming systems is the first step. It was suggested to work on a common paper where performance indicators are compared between Flanders and Wallonia, such as production, economics, biodiversity, and environment. At the same time, a common definition of mixed farming systems should be established.
- *Brainstorm on the need of specific parameters* to assess/monitor these mixed farming systems, due to their complex nature.
  - Michaël Mathot (CRA-W) organises a meeting (support: Marta Lourenço and Hilde Wustenberghs).

Participant list:

Name	First name	Organisation	Email	Expertise
Abras	Morgan	CRA-W	m.abras@cra.wallonie.be	Soil
Baeten	Vincent	CRA-W	v.baeten@cra.wallonie.be	Analyses
Barbry	Joran	Inagro	joran.barbry@inagro.be	cropping systems, soil sciences, plant protection
Beaugendre	Amaury	CRA-W	a.beaugendre@cra.wallonie.be	Cereals (progressive selection, varietal mixtures, ...)
Berben	Gilbert	CRA-W	g.berben@cra.wallonie.be	Upgrading, processing or characterization of products
Bertrand	Gilles	SPW-ARNE	gilles.bertrand@spw.wallonie.be	Transversal
Bijttebier	Jo	ILVO	jo.bijttebier@ilvo.vlaanderen.be	social sciences, soil sciences
Boeraeve	Fanny	Gembloux Agro-Bio Tech	F.Boeraeve@uliege.be	Agroecology, functional biodiversity, ecosystem service, participatory action research
Bonnave	Mathieu	CARAH asbl	mat.bonnave@carah.be	Varieties of organic cereals
Caliskan	Sarah	CRA-W	c.caliskan@cra.wallonie.be	Communication
Campion	Morgane	CRA-W	m.campion@cra.wallonie.be	Agronomy and social sciences
Cassart	Pauline	CRA-W	p.cassart@cra.wallonie.be	Agroecology, plant proteins, characterization of agro-ecological initiatives
Cnops	Gerda	ILVO	gerda.cnops@ilvo.vlaanderen.be	New crops
Cochenille	Thomas	UMONS	Thomas.Cochenille@student.umons.ac.be	Trophic interactions
De Cock	Lieve	ILVO	lieve.decock@ilvo.vlaanderen.be	knowledge exchange, living lab approach

Name	First name	Organisation	Email	Expertise
De Rooze	Elien	ILVO	elien.derooze@ilvo.vlaanderen.be	Protein crops, strip cropping
Debaets	Renée	ILVO	renee.debaets@ilvo.vlaanderen.be	Animal sciences, heat stress, poultry
Deboever	Maarten	ILVO	maarten.deboever@ilvo.vlaanderen.be	sustainable soil management
Decruyenaere	Florine	CRA-W	f.decruyenaere@cra.wallonie.be	Field crops (potatoes)
Dehon	Fabre	Gembloux Agro-Bio Tech	Fabre.Dehon@uliege.be	Agro-Biodiversity
Delanoy	Marleen	Agentschap Landbouw en Zeevisserij	marleen.delanoy@lv.vlaanderen.be	Policy officer organic production
Desmarez	Tom	Gembloux Agro-Bio Tech	Tom.Desmarez@uliege.be	Modelling alternative cultivation systems to feed Wallonia and Brussels
Dirick	Alain	GAWI	alain.dirick@gmail.com	Fruit
Duerinckx	Alexandre	CRA-W	a.duerinckx@cra.wallonie.be	Coordinator organic research
Dufrasne	Isabelle	Uliège - CTA	Isabelle.Dufrasne@uliege.be	Animal nutrition
Dumont	Baptiste	CRA-W	b.dumont@cra.wallonie.be	Fruit
Faux	Françoise	CEHW	francoisefaux@cehw.be	Nursery and ornamental plants
Faux	Anne-Michelle	CRA-W	a.faux@cra.wallonie.be	crop production, arable crops, mixed varieties of cereals, dairy and poultry farming, food self-sufficiency, quality of fodder
Feyaerts	Dylan	ILVO	dylan.feyaerts@ilvo.vlaanderen.be	living labs
Fleerakkers	Sander	Proefstation voor de Groenteteelt	sander.fleerakkers@proefstation.be	Vegetable culture (open field), crop protection, soil management, varieties, functional diversity, specialty crops

Name	First name	Organisation	Email	Expertise
Fockedey	Aline	CRA-W	a.fockedey@cra.wallonie.be	Organic systems for reducing tillage ("ABC") (systemic experiments, in collaboration with Walloon farmers), system size especially of the soil compartment
Geudens	Katrien	Hooibeekhoeve	katrien.geudens@provincieantwerpen.be	Fodder crops
Glesner	Valérie	CPL-VEGEMAR	Valerie.Glesner@provincedeliege.be	Fight against aphid in organic peas, carrot bio fungicide
Godin	Bruno	CRA-W	b.godin@cra.wallonie.be	Technological quality of cereals
Golsteyn	Laura	CCBT	laura.golsteyn@ccbt.be	Communication
Hardy	Brieuc	CRA-W	b.hardy@cra.wallonie.be	Soil
Henriet	François	CRA-W	f.henriet@cra.wallonie.be	Weed control
Jamar	Laurent	CRA-W	l.jamar@cra.wallonie.be	Cropping system
Jamart	An	Bioforum	an.jamart@bioforum.be	Participatory research in organic, different area's
Jorion	Alexis	CRA-W	a.jorion@cra.wallonie.be	Fruit
Lagneaux	Séverine	CRA-W	s.lagneaux@cra.wallonie.be	Participatory research, social sciences, transmission of farms and knowledge
Lamarque	Pénélope	CRA-W	p.lamarque@cra.wallonie.be	Agronomy and social sciences
Landuyt	Carmen	CCBT	carmen.landuyt@ccbt.be	Coordination & communication
Lateir	Mieke	INBO	mieke.lateir@inbo.be	Monitoring biodiversity - cocreation nature-agriculture
Lateur	Marc	CRA-W	m.lateur@cra.wallonie.be	Fruit

Name	First name	Organisation	Email	Expertise
Leclercq	Nicolas	Université Liège	Nicolas.Leclercq@uliege.be	Agrobiodiversity
Legrand	Julie	CPL-VEGEMAR	julie.legrand@provincedeliege.be	Varietal trials in organic cereals, cultural practices in field vegetables
Lobet	Guillaume	UCLouvain	guillaume.lobet@uclouvain.be	Wheat, roots, drought
Lourenço	Marta	ILVO	marta.lourenco@ilvo.vlaanderen.be	Poultry feed
Mathot	Michaël	CRA-W	m.mathot@cra.wallonie.be	Systems and climate
Mingeot	Dominique	CRA-W	d.mingeot@cra.wallonie.be	Cereals and genetics
MOERMAN	Marie	CRA-W	m.moerman@cra.wallonie.be	Monogastric breeding
Montignies	Eddy	Brioaa asbl	eddy.montignies@brioaa.bio	Alfalfa as a management pillar in organic agroecology.
Muylle	Hilde	ILVO	hilde.muylle@ilvo.vlaanderen.be	Arable cropping
Nieus	Clément	CRA-W	c.nieus@cra.wallonie.be	Cropping system
Peeters	Laura	ILVO	laura.peeters@ilvo.vlaanderen.be	Ammonia emissions livestock
Pissard	Audrey	CRA-W	a.pissard@cra.wallonie.be	NIR spectroscopy for the analysis of the quality of food products
Remience	Virginie	SPW-ARNE	virginie.remience@spw.wallonie.be	Animal health and welfare
Romeyns	Liên	Bioforum	lien.romeyns@bioforum.be	Pig & poultry animal husbandry, emissions, animal welfare
Rondia	Alain	CRA-W	a.rondia@cra.wallonie.be	Fruit
Sinnaeve	Georges	CRA-W	g.sinnaeve@cra.wallonie.be	Agri-food research

Name	First name	Organisation	Email	Expertise
STILMANT	Didier	CRA-W	d.stilmant@cra.wallonie.be	Agroecological systems
Swartebroeckx	Adrien	CRA-W	a.swartebroeckx@cra.wallonie.be	Agroecology
Temmerman	Femke	Inagro	femke.temmerman@inagro.be	Organic crop protection
Thiry	Gilberte	CRA-W	g.thiry@cra.wallonie.be	Coordinator unity
Van de Walle	An	Viaverda	an.vandewalle@viaverda.be	Organic farming, food forests, vegetables under protection, ornamentals
Van Stappen	Florence	CRA-W	f.vanstappen@cra.wallonie.be	
Verdoodt	Raf	ILVO	raf.verdoodt@ilvo.vlaanderen.be	Livestock emissions
Vermeulen	Karen	Experimental poultry centre	karen.vermeulen@provincieantwerpen.be	Broilers, layers, applied research
Visser	Marjolein	ULB	marjolein.visser@ulb.be	Bread making cereals
Willekens	Koen	ILVO	koen.willekens@ilvo.vlaanderen.be	Soil science, soil management, organic/agroecological cropping systems, on farm composting
Willemet	Rémy	ILVO	willemet.remy@outlook.com	Soil - physics and water management
Wustenberghs	Hilde	ILVO	hilde.wustenberghs@ilvo.vlaanderen.be	Social sciences, sustainability assessment, crop protection