



Council of the European Union
General Secretariat

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LIMITE

**AGRI
PESTICIDE
SEMENCES
AGRILEG
ENV
PHYTOSAN
CODEC**

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MEETING DOCUMENT

From: General Secretariat of the Council
To: Working Party on Food and Food Systems (Pesticide Residues)
Working Party on Plants and Plant Health Questions (Pesticides/Plant Protection Products)

Subject: Working Party on Plants and Plant Health Questions (Pesticides/Plant Protection Products) on 7 December 2022 - Agenda item 1: R&I supporting the reduce use of chemical plant protection products

Following the Working Party on Plants and Plant Health Questions (Pesticides/Plant Protection Products) on 7 December 2022, delegations will find in annex the presentation given by the Commission services, on the above subject.



R&I supporting the reduce use of chemical plant protection products

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DG Agriculture and Rural Development

7th December 2022

Outline

- EU R&I: plant health and plant protection in FP7, Horizon 2020, Horizon Europe
- Strategic approach to agricultural R&I
- Multi actor approach
- R&I actions in Horizon 2020 and Horizon Europe
- Fostering knowledge, research & innovation
- Better Training for Safer Food (BTSF)
- Other instruments: EU Mission “A Soil Deal for Europe” and co-funded partnerships
- EP Pilot Project: Farmer's Toolbox for IPM
- Take-home messages

EU R&I: plant health and plant protection



2007-2013

25 projects
+88 million euros

ERA-Net projects:

[EUPHRESKO](#) II for Plant Health
[C-IPM](#) for IPM



2014-2020

+30 projects
+160 million euros

Multi-Actor approach



Interaction with
EIP-AGRI



2021-2027

2021-2024

14 topics
+100 million euros

+

Co-funded partnerships:

Agroecology

Agriculture of Data

+

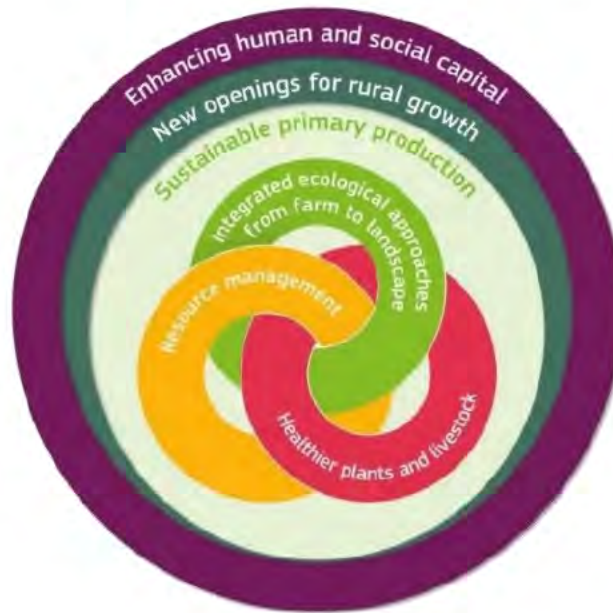
Mission: "A Soil Deal for Europe"



Strategic approach to agricultural R&I: Healthy plants



Five strategic priorities



- R&I to protect plant health
- R&I to reduce the dependency to chemical pesticides

Multi actor approach in R&I



Horizon 2020

Plant health and plant protection

R&I to protect plant health



Horizon 2020

Plant health and plant protection (cont.)

R&I to reduce the dependency to chemical pesticides



Precision Farming



Crop diversification, plant breeding, plant-soil interaction



Horizon 2020

Stepping up IPM (cont.)



IPM Works is an EU-wide farm network demonstrating and promoting cost-effective IPM strategies.

Farmers are working together within small groups coordinated by advisers (so-called “hub coaches”) to progress further in the adoption of holistic IPM.



IPM Decisions created an online platform with a wide range of decision support systems and weather data from across Europe for decision support of IPM.

The network of IPMWORKS demo farms



Case studies with focus on IPM principle 1: prevention and suppression

Reduction of nematicides

Crop: potato

Site: Spain

Strategy: Crop diversification + trap crops:

- ↓ the incidence of cyst nematode
- ↓ use of nematicides
- ↑ crop yields
- ↑ soil biodiversity

Reduction of fungicides

Crop: potato

Site: Germany

Strategy: reduce external input + modified management

- Purpose: strengthen soil intrinsic self-regulating processes
- ↓ management costs
 - ↑ crop quality
 - ↑ soil protection and system resilience



Practice abstracts

The knowledge developed in the multi-actor projects is summarised in practice abstracts.

Practice abstracts facilitate **knowledge flows** and **bring results and lessons learned** within the project to **farmers, farm advisers and other related practitioners** to achieve maximal impact

PRACTICE ABSTRACT

DiverIMPACTS

ARVALIS Institut de l'élevage, Terres Inovia, ITB

Intercropping legumes with rapeseed to reduce nitrogen inputs and pesticide use and improve profitability in a 9-year diversified cropping system in Berry, France

Problem
Rotations in the Berry region are dominated by a 3-year cropping system (rapeseed - wheat - barley) which requires relatively high levels of nitrogen (N) inputs and pesticides, especially herbicides to control weeds such as bedstraw, vulpine, etc., some of which are becoming resistant. 10-year projections of this system show that weed pressure could raise the herbicides Treatment Frequency Index (TFI) from 2.9 to 4.0 and degrade yields by 8% and profitability by 63%.

Solution
A 9-year cropping system is proposed to provide more ecosystem services and reduce the use of mineral N inputs and pesticides. In this system, intercropping rapeseed with legumes (Picture 1 and Figure 1) such as Alexandria clover, faba beans, and fenugreek, improved yields and reduced usage of mineral N inputs and pesticides.

Applicability box

Theme
Intercropping, Ecosystem Services, Assessment, Cropping system

Agronomic conditions
Agronomic conditions of Berry (Center region of France)

Climate : Degraded oceanic

Average T°C in winter : 5°C
Average T°C in summer : 20°C

Precipitation/year : 700-750mm

Soil of the region :
60% (clayey silts)
40% (sandy silts)


Application time
Winter crops

Required time
Sow rapeseed and associated legumes around mid-August

Period of impact
Current and following crops, improved soil quality over the years

Best in
Alternative to relatively short rotations with low-nitrogen availability in soil

Picture 1: Rapeseed intercropped with legumes (source: Terres Inovia)

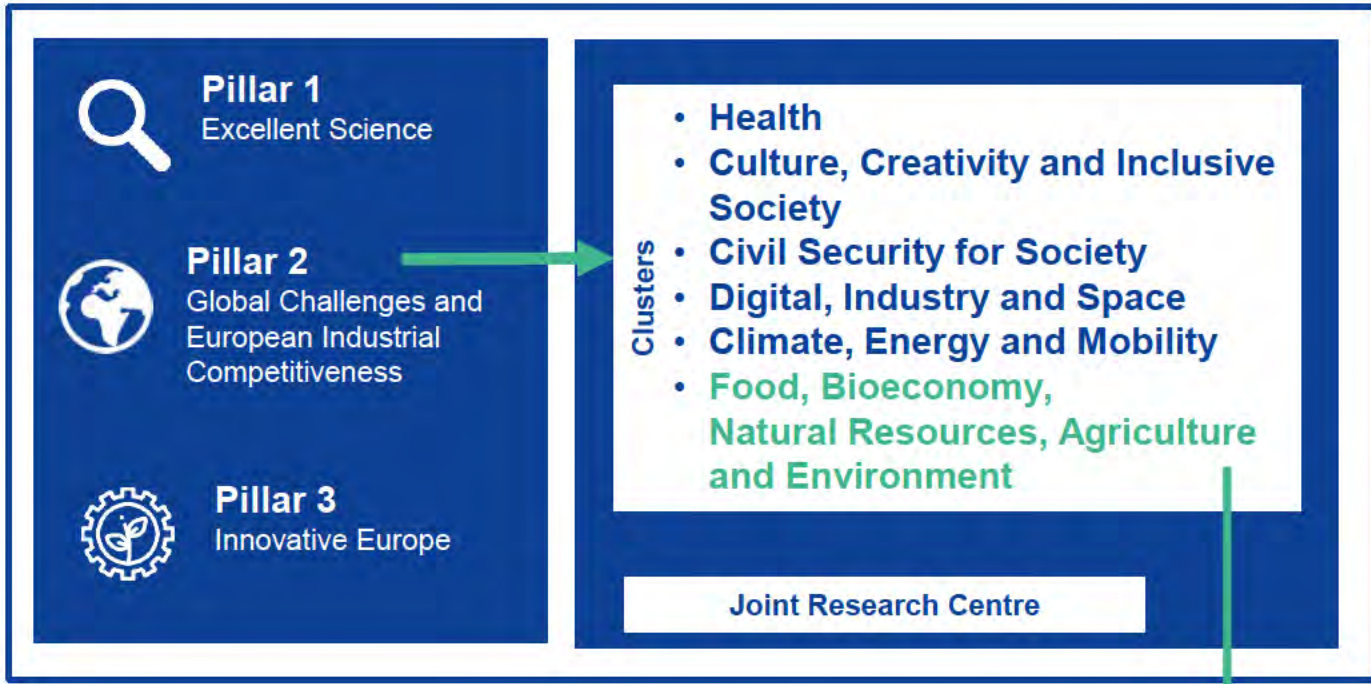


Benefits
Mean results from the first 3 years of a trial: Intercropping rapeseed with legumes after durum wheat resulted in (i) an increase in rapeseed biomass at the beginning of winter compared to rapeseed alone (+0.7 kg.m⁻²); (ii) higher rapeseed yields (3.3 t.ha⁻¹ vs 2.8 t.ha⁻¹); (iii) a TFI reduction (3.0 vs 6.1) due to lower insecticide usage (only occasional flea beetle control) and herbicide usage, as the legumes

Figure 1: 9-year diversified cropping system. Rapeseed intercropped with legumes is displayed in the red box (source: Syppre)



ARVALIS. Intercropping legumes with rapeseed to reduce nitrogen inputs and pesticide use and improve profitability in a 9 year diversified cropping system in Berry, France.



Pillar 1
Excellent Science



Pillar 2
Global Challenges and
European Industrial
Competitiveness



Pillar 3
Innovative Europe

Clusters

- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

Joint Research Centre



€9 billion

Budget 2021-2027



Horizon Europe

Plant Health R&I Priorities



- enhance capacities to **prevent, monitor and control plant pests**
- develop **safe and environmentally friendly** methods for **plant protection (IPM)** and weed control;
- increase the **resilience of plants to biotic and abiotic stresses** by bringing more diversity into farming and forestry systems and provide farmers and other actors in value chains with better-adapted crop varieties
- improve conservation, management and use of **plant genetic resources**, thereby preserving and enhancing agrobiodiversity.

Total budget for 2021-2024: + 100 million Euros

Horizon Europe

Plant health and plant protection

R&I to protect plant health

Work Programme 2021/2022 – 2023/2024

- Tackling outbreaks of plant pests
- **Emerging and future risks to plant health**
- **Tools** to increase the effectiveness of **EU import controls** for plant health
- **Digital technologies supporting plant health** early detection, territory surveillance and phytosanitary measures

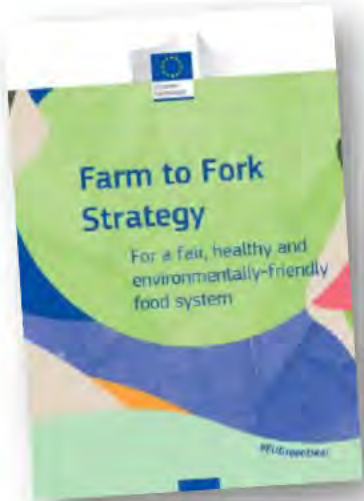
Horizon Europe

Plant health and plant protection (cont.)

R&I to reduce the dependency to chemical pesticides

Work Programme 2021/2022 – 2023/2024

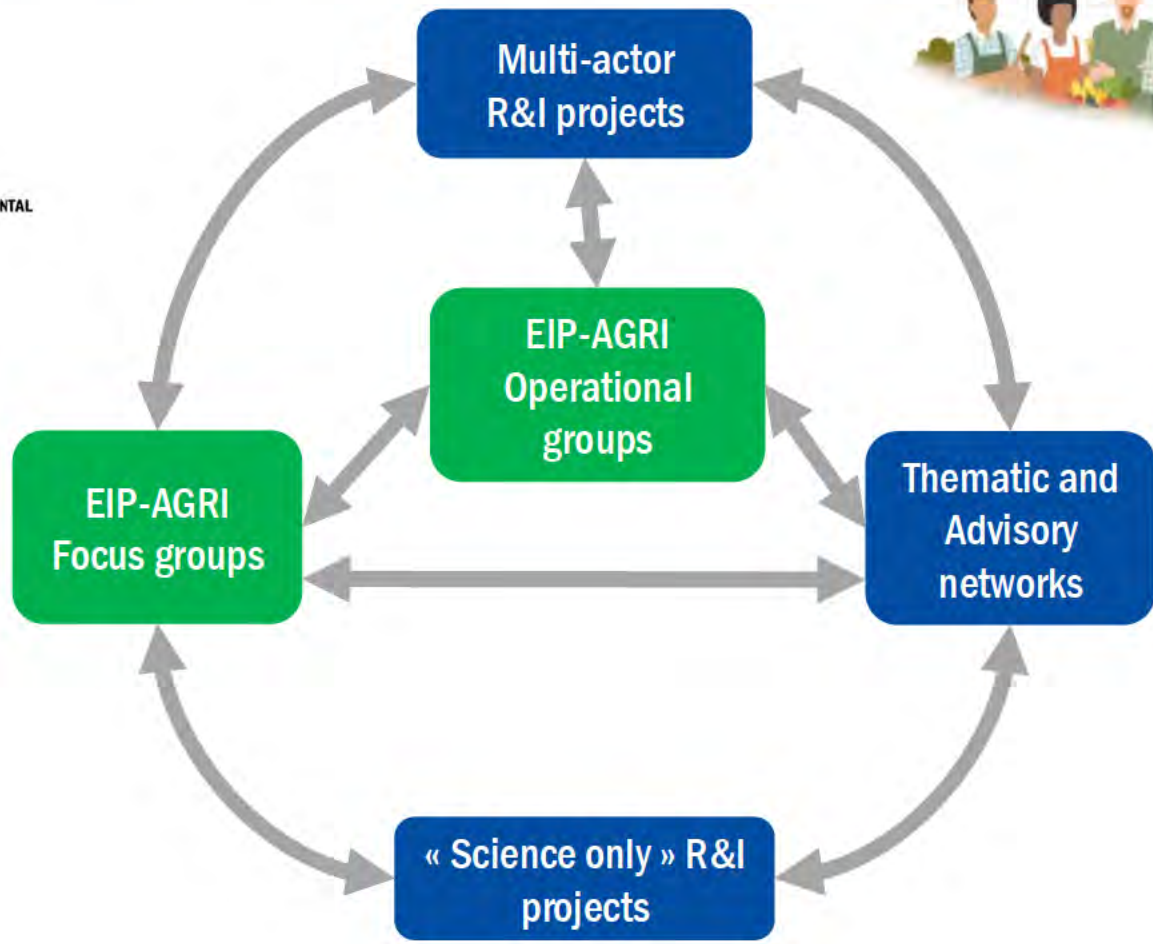
- Risk assessment of new **low risk pesticides**
- **Socio-economics** of pesticide use in agriculture
- **Breeding for resilience**: focus on root-based traits
- Agroecological approaches for **sustainable weed management**
- Biodiversity friendly practices in agriculture – **breeding for IPM**
- **Innovations in plant protection**: alternatives to reduce the use of pesticides focusing on **candidates for substitution**
- Developing **EU advisory networks** to reduce the use of pesticides
- Increasing the **availability and use of non-contentious inputs** in organic farming



Boosting implementation of R&I and impact on the ground



Common Agricultural Policy (CAP)



Horizon 2020
Horizon Europe



*The European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI)

Fostering knowledge, research & innovation

Thematic networks (TNs) compiling knowledge ready for practice:

- collect and develop existing scientific knowledge and best practices that are insufficiently known or ready for farmers, foresters and rural communities to implement.
- translate knowledge into easily understandable material.

Examples



EU-wide Thematic Network dedicated to the world of **spraying technology innovations, training & advising**



Thematic network focusing on knowledge sharing of **SMART Integrated Pest Management (IPM) solutions for vegetables crops for farmers and advisors.**

**New in Horizon Europe supporting the CAP:
Advisory networks**



Developing EU advisory networks to reduce the use of pesticides (Work Programme 2023-2024)

Fostering knowledge, research & innovation

Operational Groups:

447 Operational Groups dedicated to plant health and Integrated Pest Management (over 2600) composed of farmers, researchers, advisors, and businesses, work on finding innovative solutions for the sustainable use of pesticide funded by the CAP.

Examples:

- Vineyard app for plant protection (ES)
- Ideas for IPM (NL, SI, CH)
- A mobile app to monitor pests and diseases in Umbria, Italy (IT)
- Controlling wireworms in potato production (AT)

EIP-AGRI activities related to sustainable use of pesticides [<link>](#)

Example of Focus Group: Sustainable ways to reduce the use of pesticides in pome and stone fruit production (2022)

AgroTrend: Polish Operational Group

Certification of pesticide residue free fruit & vegetables

- Aim: to develop a certification system supporting conventional agriculture to encourage uptake of environmentally friendly farming techniques.
- Field trials in 10 locations across Poland covering a wide range of crops reducing the number of treatments or replacing with other low risk products.
- Partners: food processor, farmers, researchers, advisors.



Better Training for Safer Food (BTSF)

- BTSF is a European Commission training initiative
- A 5 year-training cycle (2018-2023) have been organised specifically on IPM

Year	Num. sessions	Num. Participants
2018	1	20
2019	8	254
2020	1	28
2021	6	134
2022	4	81
2023	5(*)	
TOTAL	20 (25)	436

Locations:

South EU: Malaga (ES), Bari (IT), Toulouse (FR), Bologna (IT), Riga (LV), Valencia (ES), Athens (EL)

Centre-North EU: Delft (NL), Prague (CZ), Berlin (DE), Hamburg (DE),

During 2020 and 2021: only videoconference sessions (due to COVID)

In 2022, 5 planned sessions received a not sufficient number of participants

Total of 20 sessions have been carried out so far, with 436 participants (mainly representatives from EU and non-EU CAs, at central and local level, but also some advisors and some young researchers)

(*) Planned for 2023

Other instruments:

EU Missions

European co-funded partnerships

EU Mission: A Soil Deal for Europe

- **Main Goal:** to establish 100 living labs and lighthouses to lead the transition towards healthy soils by 2030.
- **Living labs and lighthouses** are key to accelerate the adoption of sustainable practices by users and co-developed methods adapted to the local conditions.



The 8 Mission objectives:

1) reduce desertification, 2) conserve soil organic carbon stocks, 3) stop soil sealing and increase re-use of urban soils, 4) **reduce soil pollution and enhance restoration**, 5) prevent erosion, 6) **improve soil structure to enhance soil biodiversity**, 7) reduce the EU global footprint on soils, 8) improve soil literacy in society

European co-funded partnerships

Co-funded with Member States and Associated Countries



Accelerating farming systems transition: agroecology, living labs and research infrastructure



Agriculture of Data

Farmer's Toolbox for Integrated Pest Management



EP Pilot Project: Farmer's Toolbox for IPM

Objectives

- To provide a **comprehensive description of the currently available approaches** to reduce dependency on pesticide use;
- To assess the **potential of these approaches**, and to prove their effectiveness as well as barriers that limit their uptake;
- To propose **specific strategies on how to scale up good practices** throughout the EU;
- To set up an **EU-wide database to enable farmers and advisory services** to reduce the dependency on pesticide use

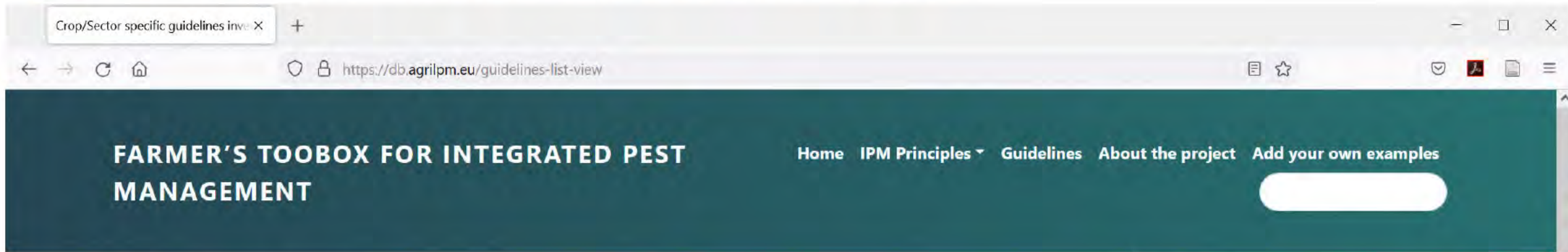
EP Pilot Project: Farmer's Toolbox for IPM

- The final report and deliverables are **submitted to the Commission**. Validation procedure starts.
- The reports, documents and the database **will be made publicly available** after validation.
- There will be a **presentation in an upcoming COMAGRI beginning 2023**.

The **database** includes:

- An **inventory of "crop-specific guidelines"** developed by national authorities pursuant to the SUD
- A **collection of examples of good IPM practices** (collected in literature review and on-the-spot)

Examples from the database




Crop/Sector specific guidelines inve X +

← → ↻ 🏠 🔒 https://db.agrilpm.eu/guidelines-list-view

FARMER'S TOOLBOX FOR INTEGRATED PEST MANAGEMENT

Home IPM Principles ▾ Guidelines About the project Add your own examples



System for Forecasting Disease Epidemics - first system in Poland that aims to forecast the risk of stem canker of oilseed rape

Principle: Principle 3.3 Forecast/prognosis systems, Principle 3 - Decision-making


Geographic Region: Poland

Crop Sector: Arable crops

Production type: Open field

Current level of development: Testing

<http://cropnet.pl/dbases/spec/specUK/index.html>



Pesticides with least environmental impact

Principle: Principle 5 - Pesticide selection

Geographic Region: Netherlands

Crop Sector: Arable crops

Production type: Open field

Current level of development: Used

<https://www.beedeals.nl/wp-content/uploads/2018/01/004-Wijs-middelengebruik-Akkerbouw.pdf>

Take-home messages

- **Increasing EU R&I funds on plant health and plant protection.**
- Solutions in a holistic IPM include a stronger use of ecology-based processes, more (bio)diversity combined with innovative technologies (e.g. digital tools for pest monitoring and early detection).
- **Farmers are key actors in R&I** within a **growing number of tools and instruments** to develop and spread solutions for healthy soils and healthy crops.
- The testing and deployment of solutions adapted to conditions on the ground is boosted through different approaches: **multi-actor approach, living labs, operational groups.**
- **R&I is a continuum:** further efforts needed to foster case-specific solutions in an ever-changing context. Close connection with plant health monitoring and detection needed!

Thank you for the attention

Plant health:
Protecting plants to
safeguard our future



Plant health:
Keeping plants healthy
while protecting the
environment

Links and references

European Commission, Directorate-General for Research and Innovation, *EU-funded plant health and plant protection research (2007-2013) : focus on Seventh Framework Programme KBBE projects*, Publications Office, 2015, <https://data.europa.eu/doi/10.2777/34543>

EU R&I Plant health <https://europa.eu/!RbhJkx>

Horizon 2020 [Plant Health Factsheet](#)

https://research-and-innovation.ec.europa.eu/research-area/agriculture-forestry-and-rural-areas/plant-health_en

[EIP-AGRI activities related to plant health](#)

[EIP-AGRI activities related to sustainable use of pesticides](#)

Pictures:

Strawberry slide 18 <https://www.agrotrend.pl/wiadomo%C5%9Bci?pgid=krq3n336-72fee4fd-8a94-48c1-955f-264811150ded>

Broccoli slide 18 <https://www.agrotrend.pl/wiadomo%C5%9Bci?pgid=krq3n336-ae587417-81f6-4e2d-8cd1-e1c694ddf9>