Agrowise final conference

October 21st, 2025

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CINEA

Research Consortium: Advancing Innovative Approaches for Sustainable Agriculture

Uniting experts within the European alliance towards a productive pesticide-free agriculture in Europe

Institut Nationale de Recherche pour l'Agriculture, l'Alimentation et l'Environnement (INRAE)

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Instytut Ochrony Roślin – Państwowy Instytut Badawcy (IOR-PIB);

Instytut Ogrodnictwa – Państwowy Instytut Badawczy (InHort);

Welcoming address

Gordon Rennick, DG SANTE

Opening address:
Presentation on of the Agrowise project and its objectives

Maud Blanck, Agrowise coordinator, INRAE, France

Morning session: Agronomical guidelines on IPM

EU toolbox of best IPM practices with harmonised taxonomy

Presenter: Prof. Riccardo Bommarco
Swedish university of agricultural sciences

Discussant: Amélie Dupendant
French ministry of agriculture

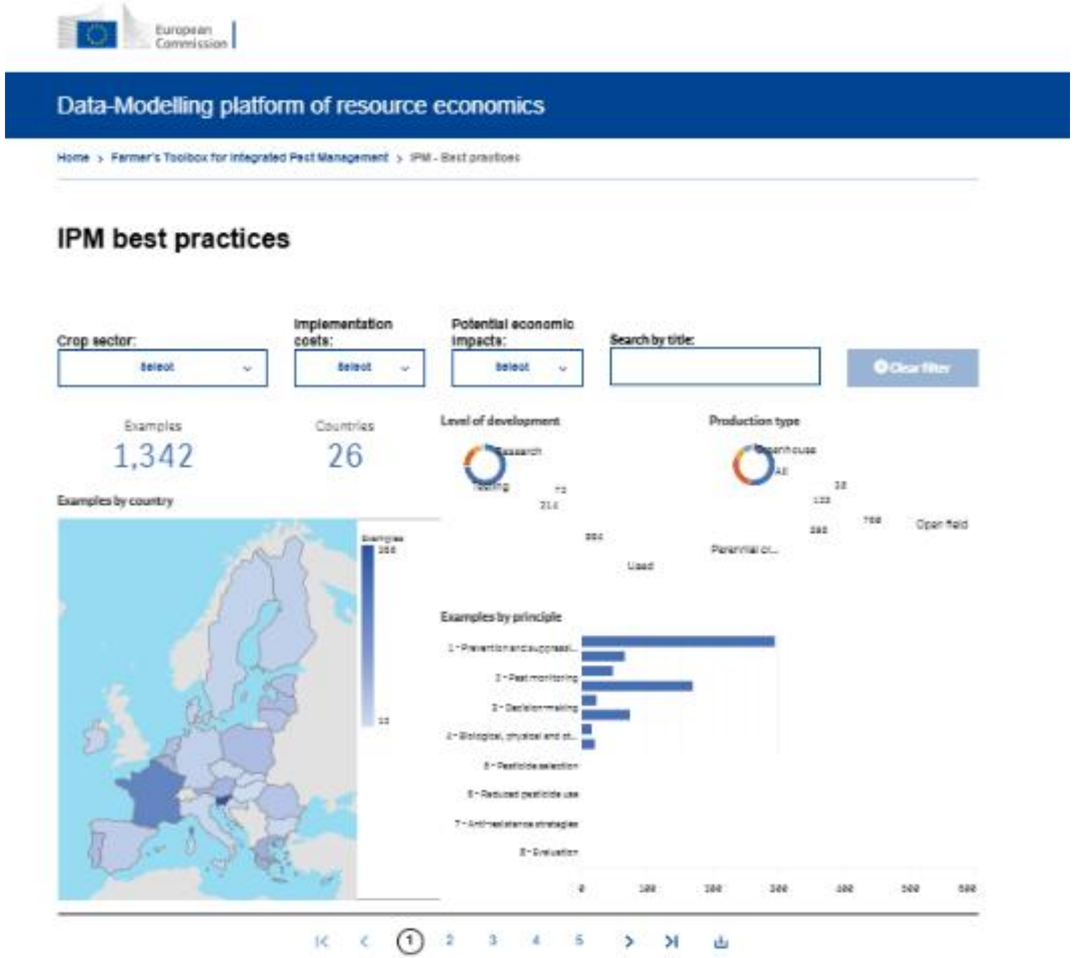
Reducing pesticide usage requires:

a coherent searchable toolbox for Integrated Pest Management (IPM) practices with:

- unified taxonomy that interlinks IPM principles, practices, and guidelines
- procedures for continuous enrichment of innovative practices,
- assessment of efficiency and economics of practices,
- implementation of policy and guidelines

Building on the Farmer’s Toolbox for Integrated Pest Management (IPM)

https://datam.jrc.ec.europa.eu/datam/mashup/IPM/index.html



Agrowise targets:

- Unify language across the EU
- Improved organisation of IPM options in a hierarchical taxonomy

IPM principle

1. Prevention, suppression
2. Monitoring
3. Decision making
4. Non-chemical methods
5. Pesticide selection
6. Reduced pesticide use
7. Anti-resistance strategies
8. Evaluation

<-- LINK ? -->

<-- LINK ? -->

4. Options

Optional IPM-practices for specific contexts, regulations, recommenda-tions etc.

IPM principle	1. Target	2. Strategy	3. Practice	4. Options

1. **Prevention, suppression**
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1.1 Crop selection

1.2 Crop estab-lishment

1.3 Cultivation

1.4 Amendments

1.5 Increase of natural regulation

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1.1.1 Cultivar diversity

1.1.2 Crop species diversity

1.3.1 Soil cultivation

1.3.2 Harvesting

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1.1 Crop selection
- **1.1.1 Cultivar diversity**
  - **Cultivar mixtures**
  - **Cultivar monoculture**
- **1.1.2 Crop species diversity**
  - **Crop rotation**
  - **Intercropping**

1.2 Crop estab-lishment

1.3 Cultivation
- **1.3.1 Soil cultivation**
- **1.3.2 Harvesting**
  - **Reduced tillage**
  - **Direct seeding**
  - **Inversion tillage**

1.4 Amendments

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Optional IPM-practices for specific contexts, regulations, recommenda-tions etc.

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Cultivar mixtures
Cultivar monoculture

Crop rotation
Intercropping

1.3.1 Soil cultivation
1.3.2 Harvesting

Reduced tillage
Direct seeding
Inversion tillage

Optional IPM-practices for specific contexts, regulations, recommenda-tions etc.

6.1 Reduced pesticide use

6.1.1 Adapting spraying technology
6.1.2 Spray application

Equipment/machinery
Mode of application
Precision application

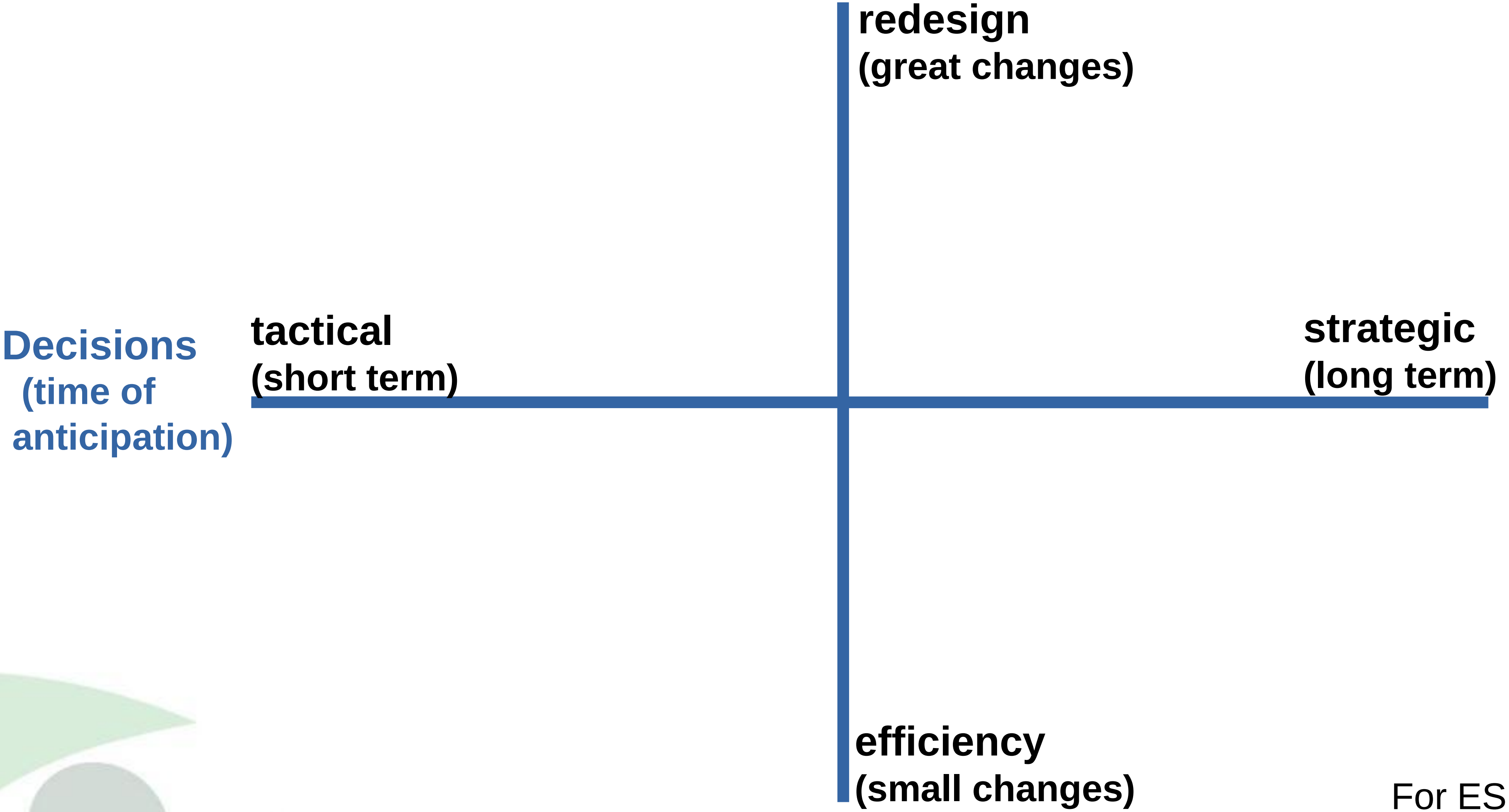
Pesticide dosage
Pesticide timing
Pesticide frequency

Upgraded toolbox:
Number of entries by IPM-principle and layer

IPM principle	Taxonomy layer			
	1 Target	2 Strategy	3 Practice	4 Options
1. Prevention, suppression	6	18	37	99
2. Monitoring	1	3	11	22
3. Decision making	1	3	5	6
4. Non-chemical methods	4	10	19	37
5. Pesticide selection	1	1	2	3
6. Reduced pesticide use	1	2	7	15
7. Anti-resistance	1	1	4	7
8. Evaluation	2	6	22	27

https://agrowise-ipm.softr.app/

Efficiency, Substitution, Redesign (ESR)



For ESR see Hill and McRae 1995 J Sust Agric

Efficiency, Substitution, Redesign (ESR)

redesign
(great changes)

1. Prevention, suppression

4. Non-chemical methods

Decisions (time of anticipation)

tactical (short term)

strategic (long term)

2. Pest monitoring

3. Decision making

5. Pesticide selection

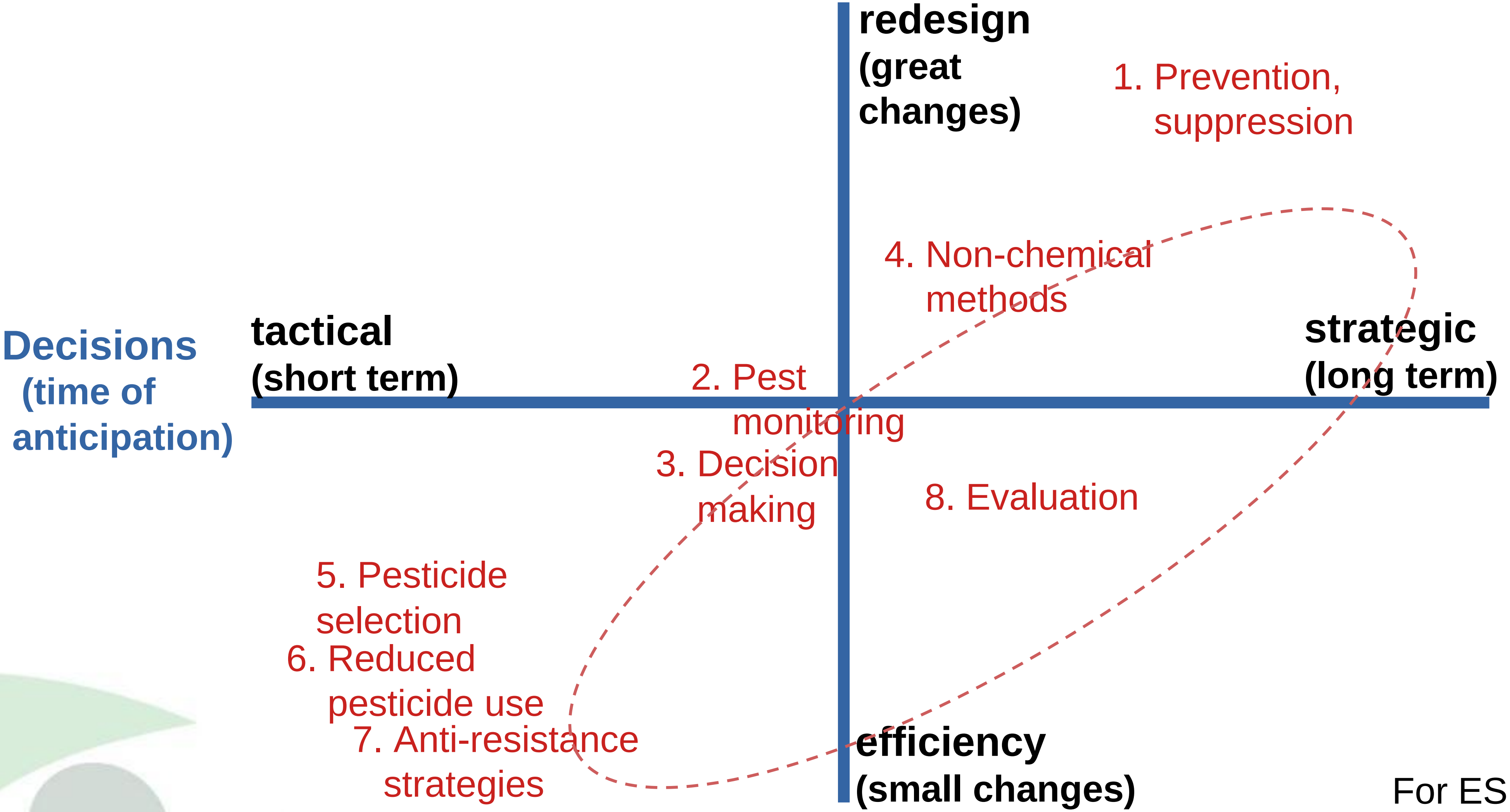
6. Reduced pesticide use

7. Anti-resistance strategies

efficiency
(small changes)

For ESR see Hill and McRae 1995 J Sust Agric

Efficiency, Substitution, Redesign (ESR)



For ESR see Hill and McRae 1995 J Sust Agric

The unified toolbox taxonomy is basis for:

- continuous enrichment innovative IPM practices
- assessed efficiency and economics of practices
- implementation of appropriate policy and guidelines

Critical to consider farming system change needed, and decision anticipation time, to install appropriate supporting policies and guidelines

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How could we use the taxonomy for R&I programs ?

Amélie Dupendant

General Directorate for Food

FRENCH Ministry of agriculture, FOOD INDUSTRY and food sovereignty

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PARSADA

Set up a collective organization with industry and research to ensure that no farmer is left without a solution

Anticipate which AS are at risk of being withdrawn at European level

Accelerate the Search for alternatives for these AS threatened with withdrawal

Support the operational deployment of these alternatives

PARSADA

The four pillars of the action plans

Knowledge of pests and beneficials

Solutions at plant level

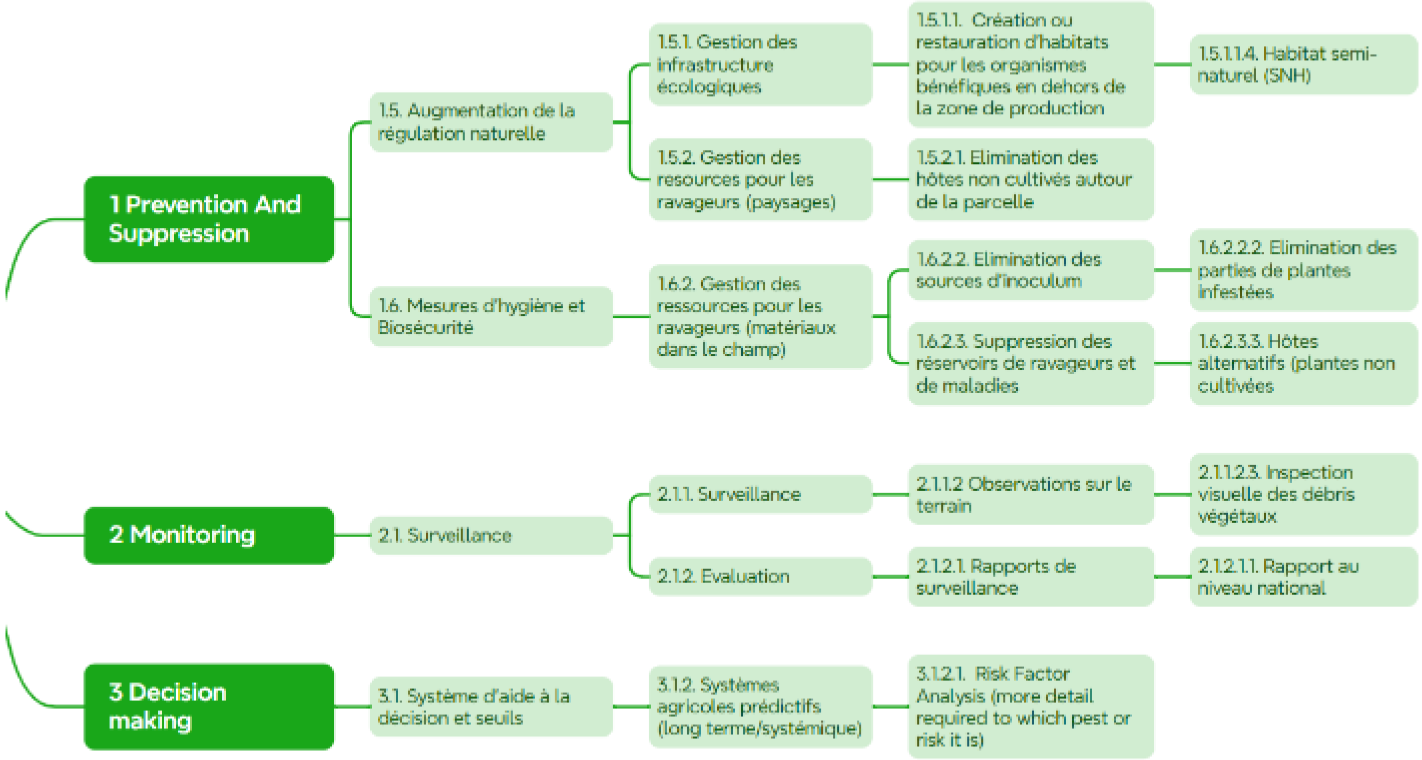
Solutions at plot and landscape levels

Transfer and deployment

Crossing the taxonomy with a PARSADA project

QUANDINSKII
Quantification of infestations and recommendations for managing *Drosophila suzukii* reservoirs initiating the first contaminations of cherry trees, at the landscape and local levels

Source: ACTA



1er DECCLIC

Developing Knowledge, Combining and Deploying to Better Control Dicotyledonous Weeds

Le PARSADA
est financé dans le cadre
de la stratégie **écophyto**

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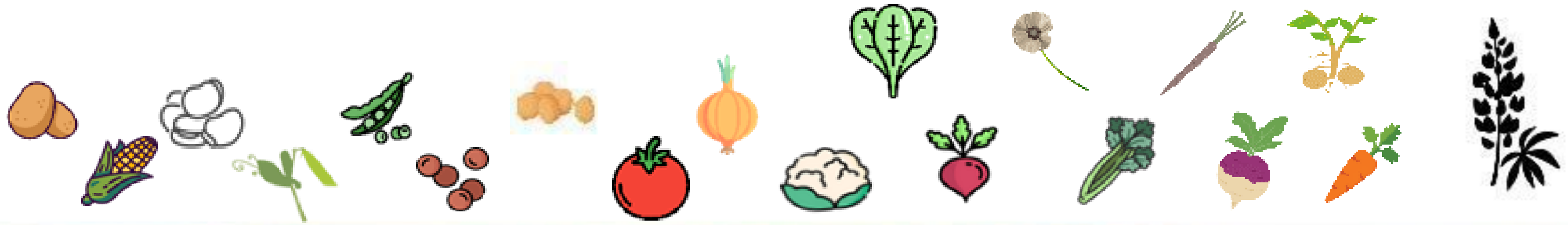
1st DECCLIC

These weeds cause economic problems (yields/additional costs), quality issues (fragments, harvesting difficulties), and health risks (alkaloids, allergens)

- Combine levers for action at the crop system level
- Accelerate and scale up to adapt innovations to the diversity of crops and territories
- Adopt an incremental approach to deploy new practices, in order to support farmers and advisors with operational solutions

19 crops grown for processing:



8 partners

4 pillars

58 months

4 M€

The 4 pillars of PARSADA are explored

Pillar 1

- Define harmfulness thresholds per crop to better support decisions

Pillar 2

- Adapt the machines to crops and vice-versa
- Avoid or reduce as quickly as possible the use of substances threatened with withdrawal and provide access to SA with a better profile for certain crops

Pillar 3

- Redesign cropping systems (rotation, prevention, …) in co-construction with farmers, and downstream stakeholders for sharing the risks

Pilar 4

- Facilitate the demonstration and sharing of references

Pillar 2 : some initial results

Spot spraying

- With AI, allows herbicide to be applied only to weeds, with an accuracy of a few cm².
- Promising strategy : it can be relatively easily integrated into current farming practices, allows the use of selective and potentially more sustainable herbicides, and reduces the treatment frequency index.
- Images have so far been taken for tomatoes, carrots, beetroot, spinach, beans, onions and peas to train the AI.

Difficulties

- Slightly lower efficiency in difficult conditions
- Expensive equipment and slower work rate

Next steps

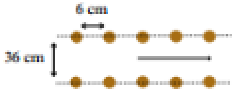
- Analysis of 2025 bean trials underway
- Measures to determine onion yield gains currently being analysed
- The tool is starting to be deployed on beans and onions
- Images taken of new crops to adapt the tool

Sowing in holes and weed with a hoe

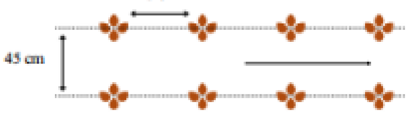
Because spacing between plants (in the row) is too narrow to allow most tools to pass through.

2025 bean results (1 trial)

- Beans sown in groups of 4 seeds rather than in rows
- Develop similarly to beans sown in rows
- Do not cause problems during machine harvesting under ideal conditions



Motif de semis en ligne



Motif de semis en poquet 4 graines

The hoe tested:

- Does not cause excessive loss of plants (good selectivity)
- Appears to be more effective than conventional organic methods.
- Comparison with conventional methods will be carried out.
- Low working speed (3-4 km/h)

Next steps

- Evaluation of other equipment for weeding

New trials in 2026 to:

- Confirm that planting in holes has no impact on harvest quality under bad conditions
- Confirm the tool's good selectivity
- Assess its effectiveness in situations with heavy weed growth
- Economic evaluation to come

Let's Open the Discussion

Evaluating the Efficiency of Practices to Reduce Pesticide Use and Risk

Renata Bažok

Dana Čirjak Pavić

University of Zagreb Faculty of Agriculture, Croatia

Challenges in IPM

- Integrated Pest Management (IPM) – strategy based on eight main principles
- Challenge – understand how practices interact and how they can be tailored to different conditions

- Research community must address the complex challenges associated with making IPM practical and effective for farmers

Existing Indicators – Limitations

- Focus mainly on pesticide sales (use) and health/environment impact
- Not suitable for monitoring IPM implementation
- Do not promote systemic change (Principle #1 – prevention and suppression)
- Cannot separate effects of different IPM principles

Objective and Key Messages

Objective: To propose standardized metrics that can be applied to **all crop protection practices**, whether they involve pesticides or not

Science based assessment of all the practices – useful basis for policy making

Appropriate metrics allow all member states to evaluate efficiency of practices - on European and national level

Case Studies

- Apple - Codling moth

– 19 practices

- Vineyards - Powdery mildew

– 22 practices

- Arable crops (cereals) - Weeds

– 43 practices

Evaluation steps

1. Determine the list of practices
2. Evaluate each practice - using 11 parameters
3. Assess ASP - based on the evaluated parameters
4. Define reference practice for every country
5. Assess IASP for practices not included in the standard strategy

Case study: codling moth - evaluated IPM practices – from taxonomy (Task 2.1)

IPM principle	Practice
1. Prevention and suppression	1.5.1 Management of ecological infrastructure (Promote the impact of naturally occurring beneficial insects)
	1.6.2.2 Removal of infested plant parts - Collecting infested apple fruits (removing dropped fruit as a reservoir)
	1.6.2.3 Suppression of Pest and Disease Reservoirs (Proximity of potential pest reservoirs that can support pests)
2. Monitoring	2.1.1.2 Field observations - oviposition marks on fruits from May on (depending on region)
	2.1.1.4 Monitoring with traps / Smart traps
	2.1.2.2 Advisory service
3. Decision making	3.1.1.1 Use of pest and disease prediction models
	3.1.3. Thresholds
4. Non-chemical solutions	4.1.1 Supplemental Release of Live Beneficials - Cydia pomonella Granulovirus - CpGV
	4.1.1 Supplemental Release of Live Beneficials - *Steinernema carpocapse, Steinernema feltiae*
	4.1.1. Supplemental release of live beneficials -*Trichogramma* species
	4.2.2.1 Use of Pheromone Traps - Mating disruption (Pheromone dispensers for insect confusion)
	4.2.2.1 Use of Pheromone traps - Mass trapping
	4.2.4.1 Sterilized insect pest or organism - SIT
	4.3.1.2 Barriers: Other Physical - Nets - Insect proof nets mesh size (2.4 x 4.8 mm) used to protect orchards from hail
	4.3.1.2 Barriers - cardboard banning (belts) - Cardboard banding applied to the trunks of host trees
	4.4.1.2 Biopesticides/Botanical pesticides
6. Reduced pesticide use	6.1.1.1 Pesticide application techniques - spray drift control technologies - recycling sprayer
7. Resistance management	7.1.1.3 Pesticide replacement/rotation - alternation of active ingredients

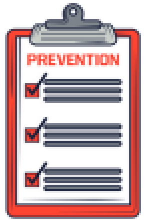
Assessment of the practices – 11 parameters

Effectiveness Against Target

Capacity to Reduce Pesticide Use

Level of Pest Harmfulness

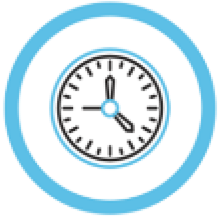
Effect on Biodiversity



Associated with Prophylaxis

Effect on Other Environmental Domains

Territorial Scale



Temporal Scale

Anticipation

Capacity of the Method to Withstand Resistance Risks

- Resistance Risk Against the Practice
- Modulation of Resistance Risk

Agronomic Service Provided (ASP)

- Metric that measures how effectively a crop protection practice can be integrated into a farmer's routine, while maintaining:

1. Comparable quality and yield
2. Similar or better income

Levels of ASP

MAJOR ASP: ASP III
(ESTIMATED SERVICE 80-100%)

MODERATE ASP: ASP II
(ESTIMATED SERVICE 50-80%)

LOW ASP: ASP I
(ESTIMATED SERVICE 20-50%)

INSUFFICIENT ASP: ASP 0
(ESTIMATED SERVICE 0-20%)

4.2.2.1 Use of Pheromone Traps - Mating disruption (Pheromone dispensers for insect confusion)

PARAMETER	VALUE	SOURCE
Effectiveness Against Target (%)	75	Barić and Pajač Živković 2017 Knight et al. 1995 Płuciennik 2013 Stelinski et al. 2008 Witzgall et al. 2008
Capacity to Reduce Pesticide Use /5	5	
Level of Pest Harmfulness /5	5	
Effect on Biodiversity (--, -,0, +, ++)	0	
Associated with Prophylaxis (Yes/No)	Yes	
Effect on Other Environmental Domains (-,0, +)	+	
Territorial Scale	Block of fields	
Temporal Scale	Cumulative effect	
Anticipation /5	2 - 3	
Capacity of the Method to Withstand Resistance Risks- Resistance Risk Against the Practice	Low	
Capacity of the Method to Withstand Resistance Risks- Modulation of Resistance Risk	Reduction of resistance risk	
ASP (Agronomic service provided)	**III - Major**	

Reference practices

Country	Reference practice
Croatia	5-7 insecticide treatments/season
France	6-12 insecticide treatments/season or 2 insecticide treatments + mating disruption (1-3)
Germany	mating disruption + 2-3 insecticide treatments/season
Ireland	2-4 insecticide treatments/season
Italy	average 6 insecticide treatments/season

Improvement of Agronomic Service Provided (IASP)

- Evaluates the progress of a new practice compared to existing practices (“reference practice” in each country) for the same crop-pest combination
- Considers the introduction of new modes of action and efficacy
- Proposes combinations of practices

Levels of IASP

MAJOR IMPROVEMENT: ASP III

IMPORTANT IMPROVEMENT: IASP II

MODERATE IMPROVEMENT: IASP I

NO IMPROVEMENT: IASP 0

Major Improvement (IASP III)	-	Low efficacy on a pest that is not controlled by any other practice	Moderately effective against a poorly managed pest	Ideal solution, effective alone and much better than the current solution
Important Improvement (IASP II)	-	Practices that can be supported by the reference strategy		A high contribution to protection used alone
Moderate Improvement (IASP I)	-	very useful practices combined with the reference strategy		Equivalent or superior to the reference strategy used alone
	Insufficient ASP (ASP0)	**Low ASP (ASP I)**	**Moderate ASP (ASP II)**	**Major ASP (ASP III)**

Practices that change protection strategy

Practices that are used in combination

Practice	ASP	IASP				
		Croatia	France	Germany	Ireland	Italy
1.5.1 Management of ecological infrastructure	**I** - Low	**I**	**I**	**I**	**I**	**I**
1.6.2.2 Removal of infested plant parts - collecting infested apple fruits	**I** - Low	**I**	**I**	**I/II**	**I**	**I**
1.6.2.3 Suppression of Pest and Disease Reservoirs	**0** - Insufficient	**0**	**0**	**0**	**0**	**0**
2.1.1.2 Field observations - oviposition marks on fruits	**II** - Moderate	**I**	**I**	**I/II**	**II**	**0**
2.1.1.4 Monitoring with traps / Smart traps	**II** - Moderate	**I**	**I**	**I**	**II**	**0**
2.1.2.2 Advisory service	**II** - Moderate	**II**	**II**	**I**	**II**	**I**
3.1.1.1 Use of pest and disease prediction models	**II** - Moderate	**I**	**I**	**I**	**I**	**0**
3.1.3 Thresholds	**II** - Moderate	**II**	**II**	**0**	**II**	**II**
4.1.1 Supplemental Release of Live Beneficials - CpGV	**II** - Moderate	**II**	**II**	**0**	**II**	**III**
4.1.1 Supplemental Release of Live Beneficials - *S. carpocapse*, *S. feltiae*	**II** - Moderate	**II**	**II**	**II**	**II**	**I**
4.1.1 Supplemental release of live beneficials - *Trichogramma* species	**II** - Moderate	**III**	**II**	**I**	**II**	**I**
4.2.2.1 Use of Pheromone Traps - Mating disruption	**III** - Major	**III**	**I**	**0**	**III**	**0**
4.2.2.1 Use of Pheromone traps - Mass trapping	**II** - Moderate	**I**	**I**	**I**	**I**	**II**
4.2.4.1 Sterilized insect pest or organism - SIT	**III** - Major	**III**	**III**	**II**	**II**	**III**
4.3.1.2 Barriers: Other Physical - Nets	**III** - Major	**III**	**III**	**II**	**I**	**I**
4.3.1.2 Barriers - cardboard banning (belts)	**II** - Moderate	**I**	**II**	**I**	**I**	**I**
4.4.1.2 Biopesticides/Botanical pesticides	**II** - Moderate	**I**	**I**	**I**	**I**	**I**
6.1.1.1 Pesticide application techniques - recycling sprayer	**II** - Moderate	**I**	**I**	**I**	**II**	**0**
7.1.1.3 Pesticide replacement/rotation - alternation of active ingredients	**I** - Low	**I**	**I**	**I**	**I**	**0**

Conclusion and Key Messages

1. ASP scoring is comprehensive tool for assessing the efficiency of **all practices** from taxonomy (Task 2.1)
2. Science based assessment of all the practices – can be useful basis for policy making
3. The scoring allows all member states to evaluate efficiency of practices – **ASP** – can be used on **European level**, and **IASP** can be estimated on **national or regional level**
4. By **linking ASP score** with **context dependency score**, it can be distinguished which practices should be **mandatory,** and which should remain **optional** in IPM guidelines

IPM works in complex systems – and those systems react slowly – and not always as expected.

Mieke Jürgens

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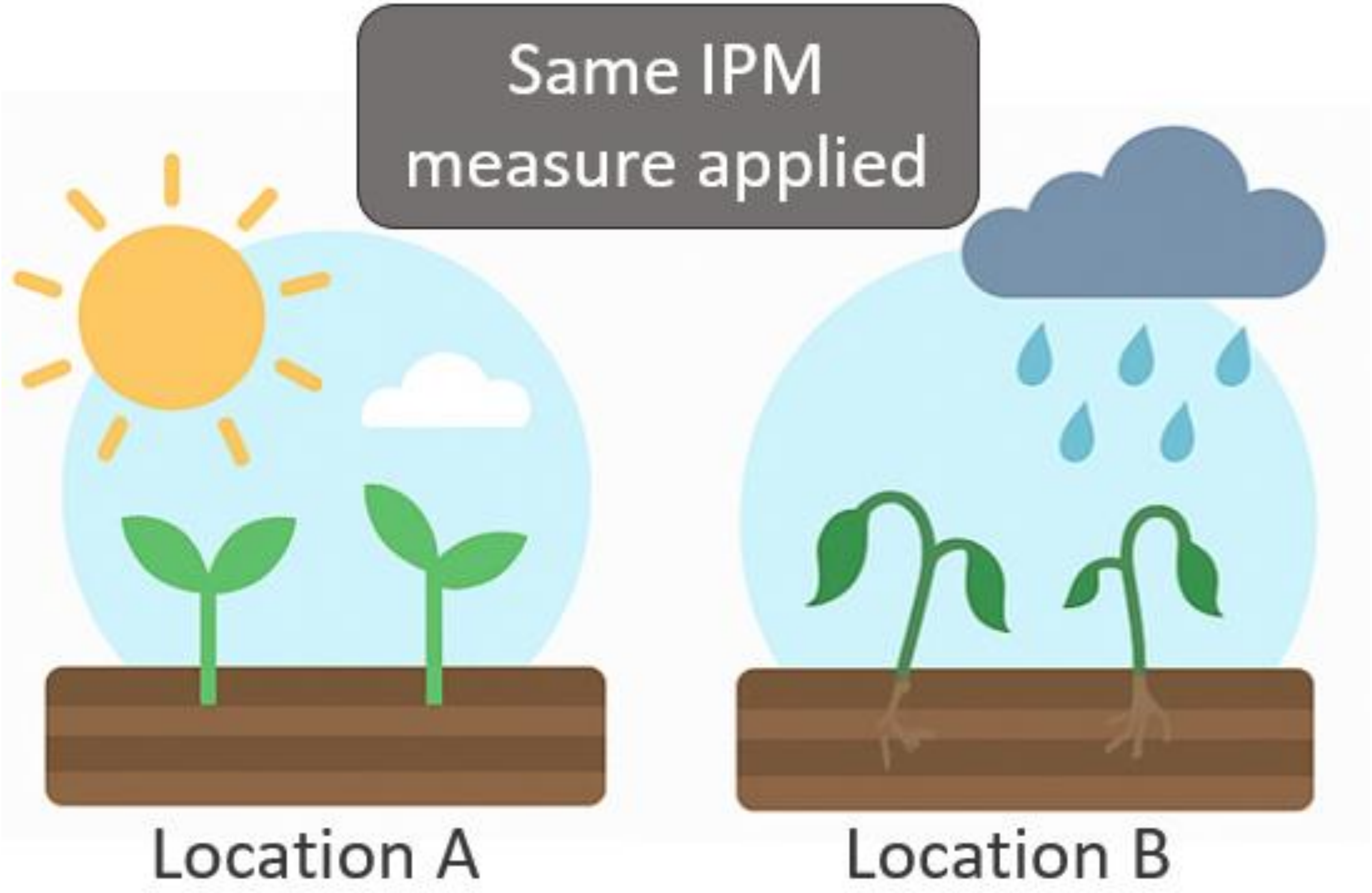
Key Messages

One policy cannot fit all — but most IPM perform reliable across Europe

Understanding context-dependency helps us adapt the few sensitive practices where needed.

What is Context Dependency?

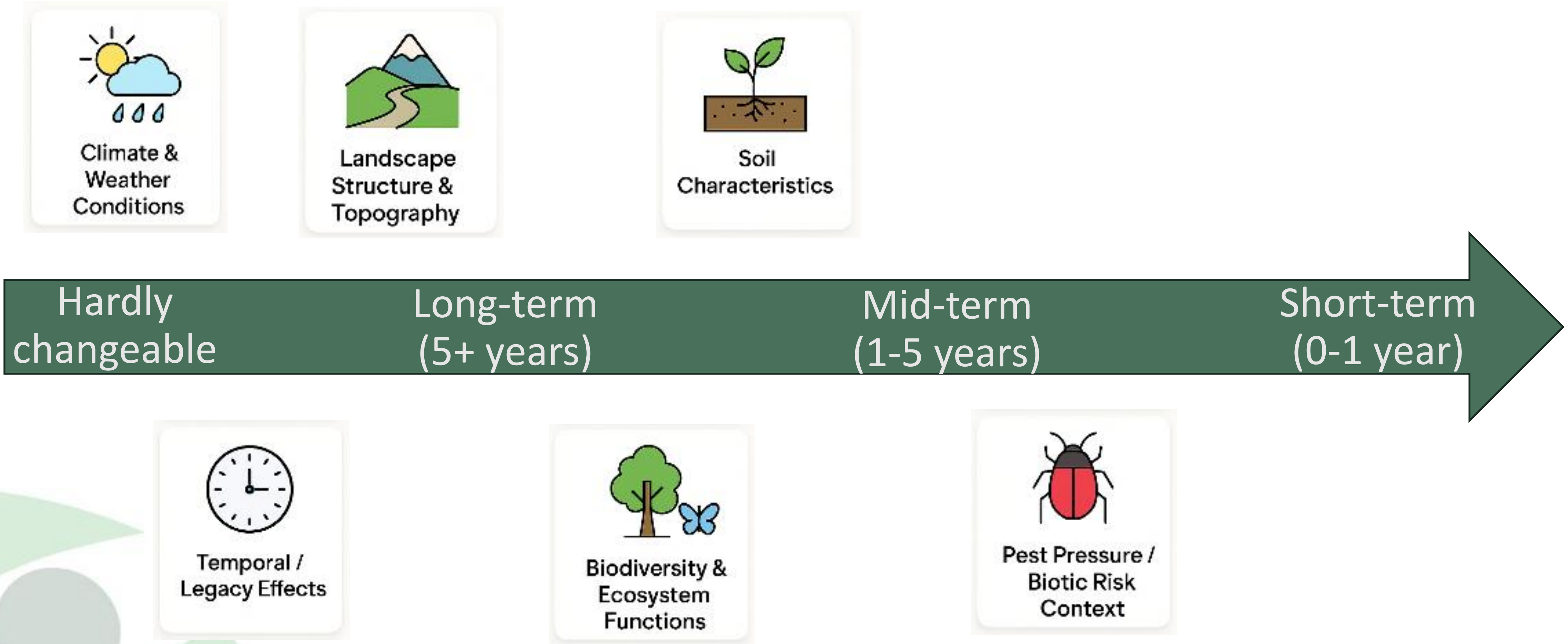


Objective: Quantifying Context Dependency in IPM

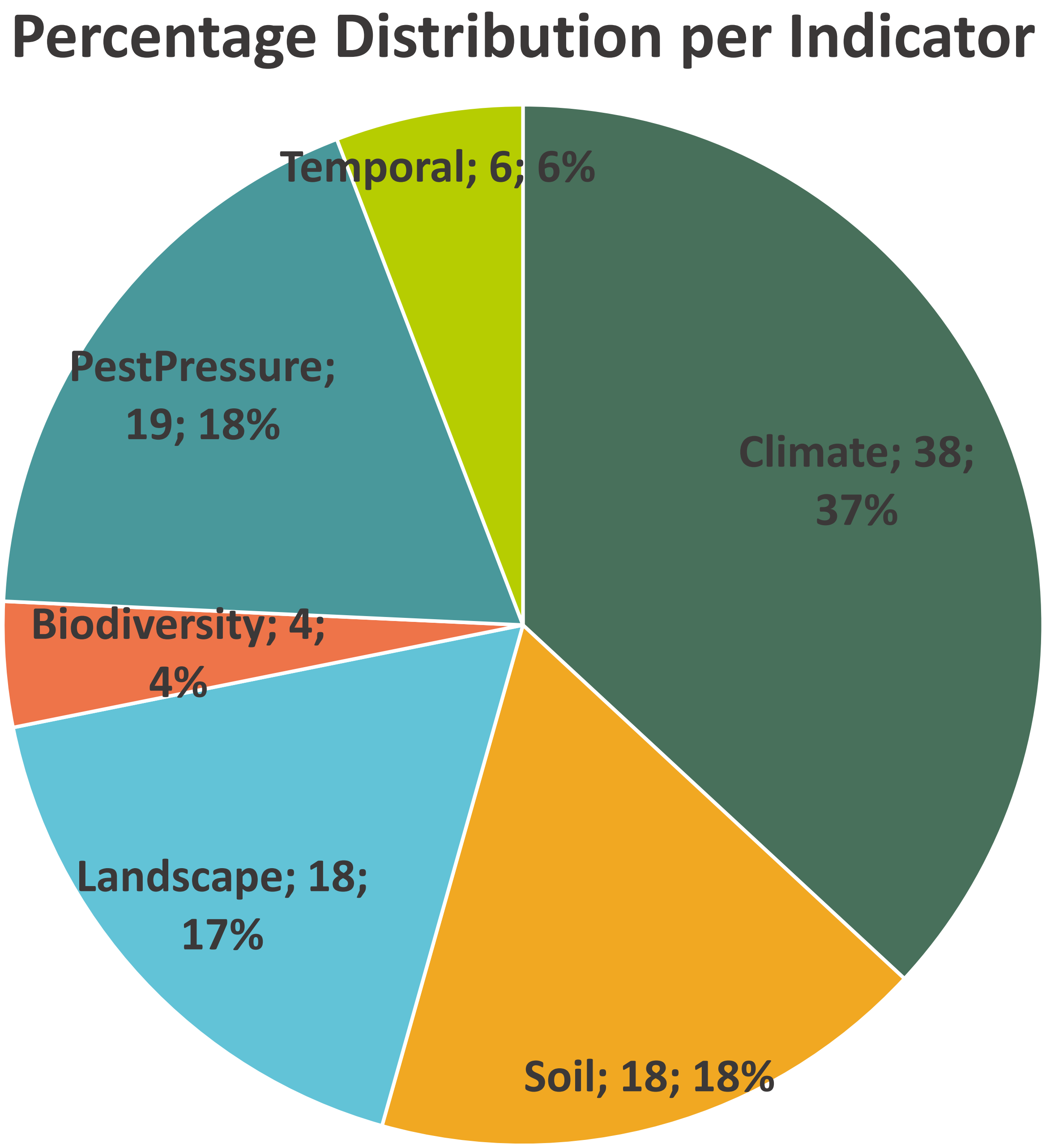
- Develop a **framework** to assess context dependency of IPM practices
- Focus on **biophysical & agronomic drivers**
- Identify six key indicators:

  climate, soil, landscape, biodiversity, pest pressure, legacy effects
- Link context dependency with:
  - **Efficiency (ASP/IASP)**
  - **Time of Anticipation**
- Provide science-based criteria for:
  - **Binding vs. optional implementation**
  - **Fair pesticide reduction across EU regions**

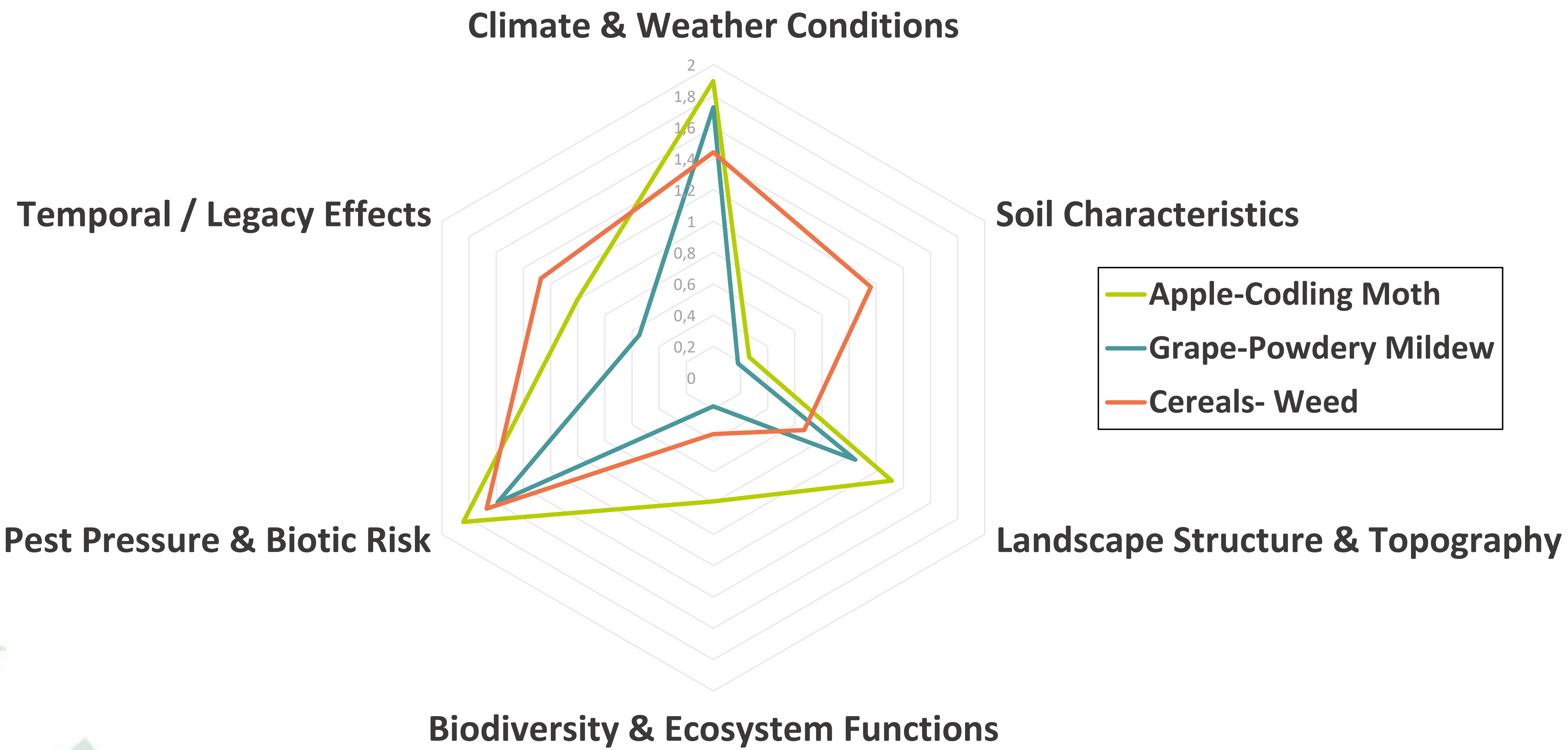
Which Contexts Can Be Influenced from Farmers – and How Fast?



Results from the Systemic Literatur Review



Results from the Case Study Analysis

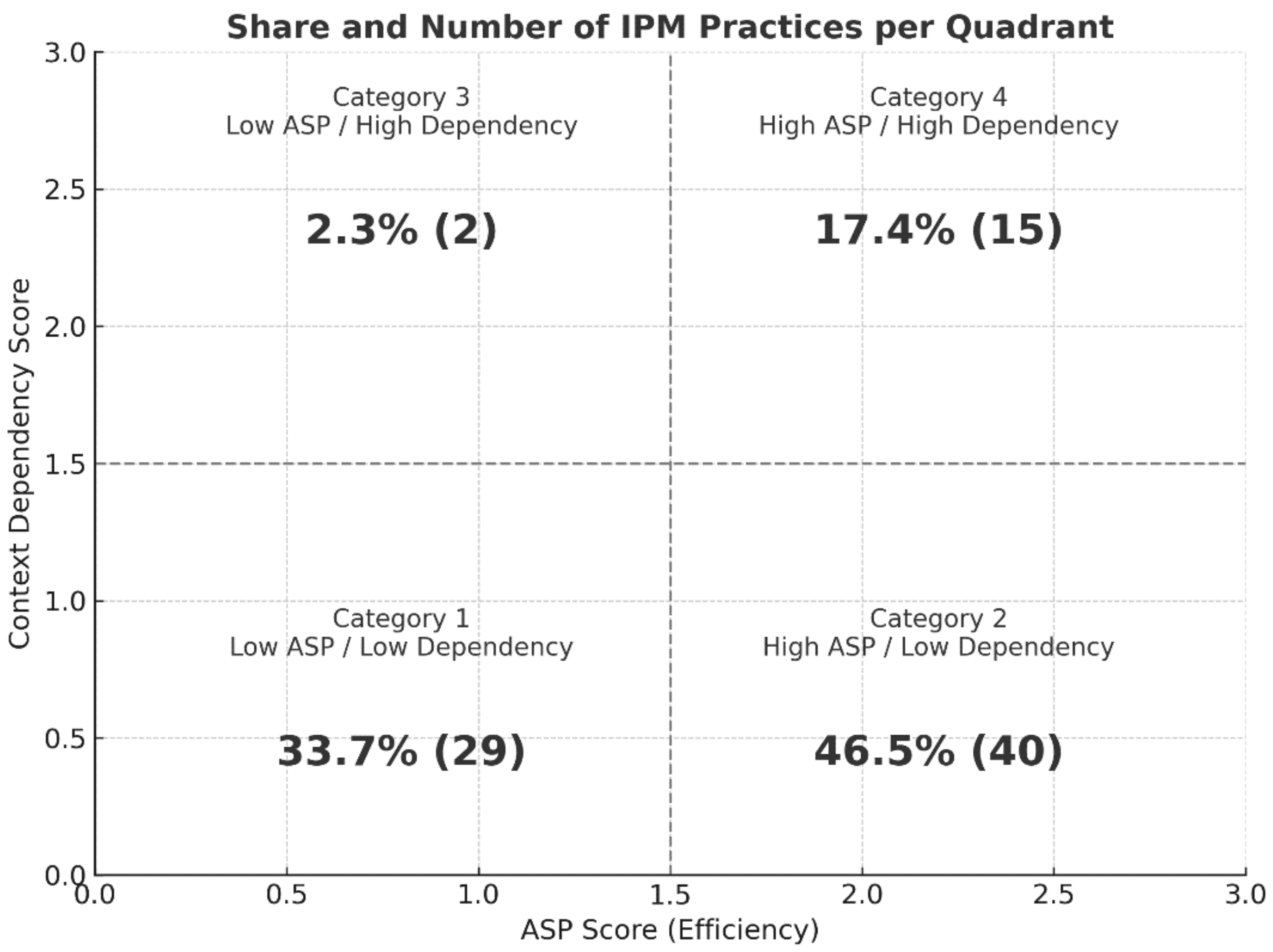


From Scoring to Policy: Linking Efficiency and Context Dependency

- **0–3 scale** per indicator → average = *Context Dependency*
- Combined with **ASP (efficiency)**
- Enables transparent rule setting

Policy relevance:

1. **Low dep. + Low ASP → Optional**
2. **Low dep. + High ASP → Binding**
3. **High dep. + Low ASP → Not recommended**
4. **High dep. + High ASP → Targeted / Incentive-based**



Context Dependency as Guidance

What we learnt:

- Context dependency is **measurable and structured** (6 indicators)
- **Climate** and **Pest Pressure** are dominant drivers
- **Biodiversity** and **Legacy effects** remain underrepresented but are key for system resilience

What it means for policy:

- **Binding rules** = robust, high ASP, low dependency
- **Optional rules** = high ASP but context-sensitive
- **Support schemes** = long-term, high-dependency practices
- Regulation should be **phased, adaptive & regionally differentiated**

Regulatory design should align with system dynamics to ensure long-term effectiveness!

Let's Open the Discussion

Identification and availability of EU and national projects' results on IPM practices and systems

Gina Fîntîneru, Beatrice Iacomi, Roxana Ciceoi, Butcaru Ana Cornelia, Andrei Moț, Mihai Frîncu, Miruna Nemecz, Mituko Ionela Vlad

University of Agronomic Sciences and Veterinary Medicine of Bucharest

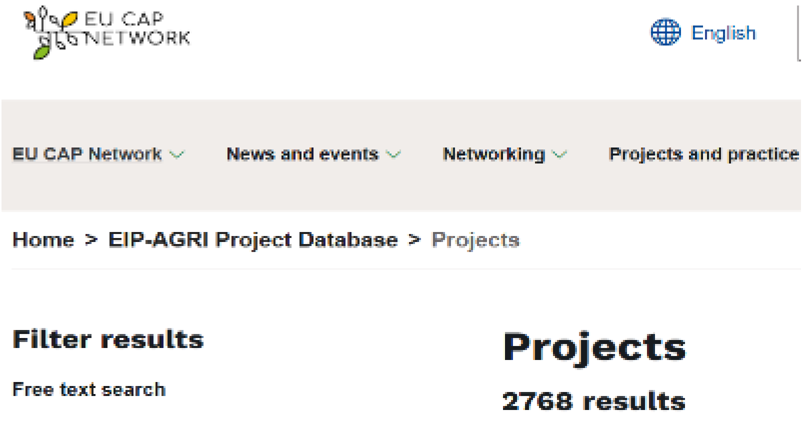
The objective of this task ►to develop **a method** to identify existing additional practices to enrich the existing IPM toolbox

Two main steps:

1. Establish a list of relevant European and national projects on IPM, crop protection, and agroecology

2. Look inside the identified projects to identify and classify IPM practices according to the categories in the harmonized taxonomy

1. Starting with the lists of European projects downloaded from the CORDIS and EU-CAP-NETWORK websites



Results:

Initial = over 70,000 projects from all fields

Filter and check

Final = 965 projects with the potential to have useful practices

2. Identification and Classification of IPM Practices from the short list of projects

Two main crop categories:

→ **Annual field crops**

→ **Perennial crops, including vineyards and orchards**

IPM practices were collected, considering **26 descriptors**:

- Crop category
- Crop
- Production system
- ESR
- IPM-principle
- Level 1 (target)
- Level 2 (strategy)
- Level 3 (practice)
- Level 4 (conditions)
- Practice description
- Current level of development
- Level of benefit (1-5)
- Implementation cost
- Potential economic impact
- Impact indicators (Climate, Biodiversity, Natural resources)
- Country (where it was tested)
- Region (where it was tested), GPS
- Period when was tested/ analysed
- Best practice link
- Project acronim/ Article/ Source
- Project link
- Who introduced the data - Partner (list to choose)
- Verified
- The practice was tested in other countries/ regions

For collecting IPM practices, the steps 1-4 were followed

1. Review the sources

- project deliverables
- scientific articles
- reports
- project website
- partner institutions
- European platforms

2. Practices recording

- Independent work of each member
- use of mandatory 'practice descriptors' template

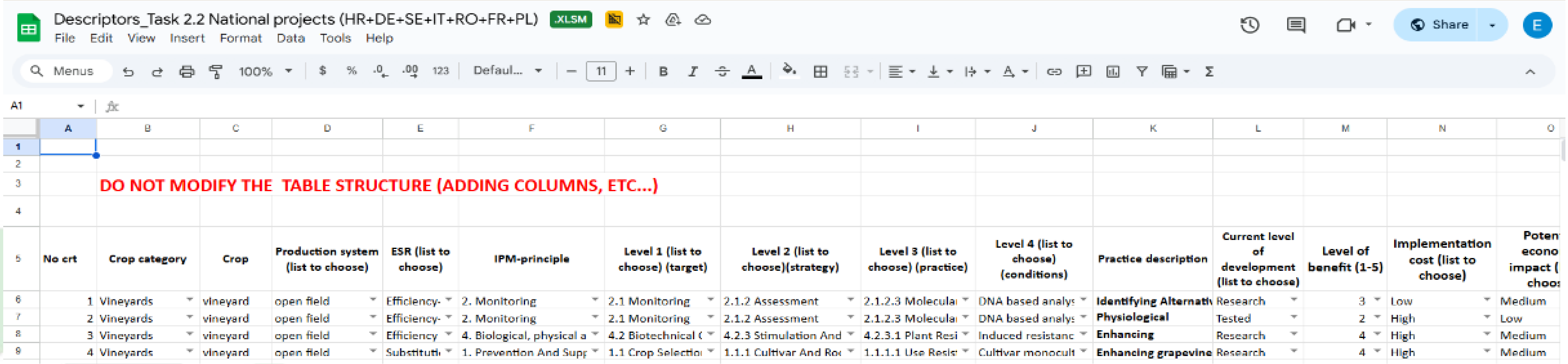
3. Double check

- Validation of all identified practices
- conducted by domain specialists

4. Result

Three practice lists → for the three project categories:

- European projects
- EIP-AGRI
- national projects



Descriptors_Task 2.2 National projects (HR+DE+SE+IT+RO+FR+PL) .XLSM

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DO NOT MODIFY THE TABLE STRUCTURE (ADDING COLUMNS, ETC...)

No crt	Crop category	Crop	Production system (list to choose)	ESR (list to choose)	IPM-principle	Level 1 (list to choose) (target)	Level 2 (list to choose)(strategy)	Level 3 (list to choose) (practice)	Level 4 (list to choose) (conditions)	Practice description	Current level of development (list to choose)	Level of benefit (1-5)	Implementation cost (list to choose)	Poten econo impact (choos
1	Vineyards	vineyard	open field	Efficiency-	2. Monitoring	2.1 Monitoring	2.1.2 Assessment	2.1.2.3 Moleculai	DNA based analys	**Identifying Alternati**	Research	3	Low	Medium
2	Vineyards	vineyard	open field	Efficiency-	2. Monitoring	2.1 Monitoring	2.1.2 Assessment	2.1.2.3 Moleculai	DNA based analys	**Physiological**	Tested	2	High	Low
3	Vineyards	vineyard	open field	Efficiency	4. Biological, physical a	4.2 Biotechnical (	4.2.3 Stimulation And	4.2.3.1 Plant Resi	Induced resistanc	**Enhancing**	Research	4	High	Medium
4	Vineyards	vineyard	open field	Substituti	1. Prevention And Supp	1.1 Crop Selectio	1.1.1 Cultivar And Ro	1.1.1.1 Use Resis	Cultivar monocult	**Enhancing grapevine**	Research	4	High	Medium

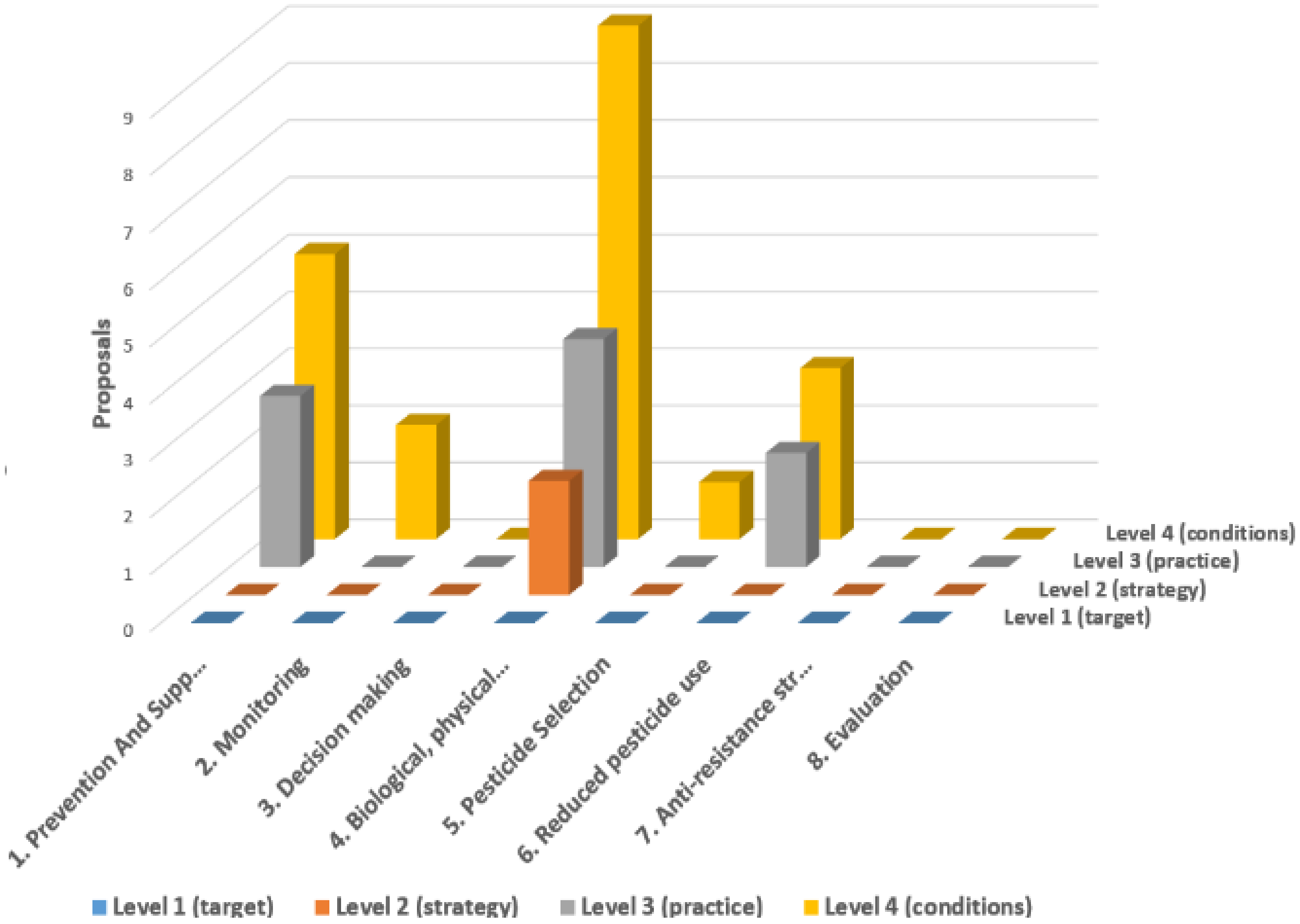
Key Benefits of Standardizing Practices:

Accessibility and comprehensibility for all users

Alignment with a well-defined taxonomy; if no suitable category in the taxonomy was relevant for a practice, **a new category in the taxonomy was proposed**

4. Biological, physical and other non chemical methods	4.1 Biological Control	4.1.1 Supplemental Release Of Live Beneficials	4.1.1.2 Release of Microflora and Fauna (bacteria, fungi, nematoda)	**Microorganisms**
4. Biological, physical and other non chemical methods	4.1 Biological Control	4.1.1 Supplemental Release Of Live Beneficials	4.1.1.2 Release of Microflora and Fauna (bacteria, fungi, nematoda)	**Mix of plants extracts, microorganisms and resistance inducers**
4. Biological, physical and other non chemical methods	4.4 Natural Substances	4.4.1 Natural Substances	**4.4.1.4. Antimicrobial peptides**	**Replace traditional antibiotics**
1. Prevention And Suppression	1.4 Amendments	1.4.1.Suppressive Amendments	1.4.1.2 Organic Fertilisation	**Mixt organic based fertiliser: microbial+animal derived fertiliser**

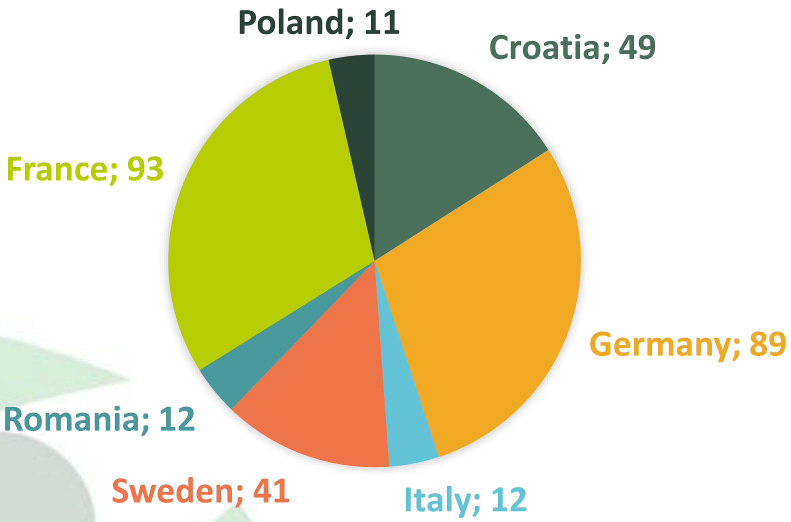
Number of taxonomy proposals



Total: 585 new practices

- 250 practices found in European projects (Horizon Europe, Horizon 2020, FP7)
- 25 practices found on the EIP-AGRI database
- 310 practices found in national projects (**preliminary results** – extras):

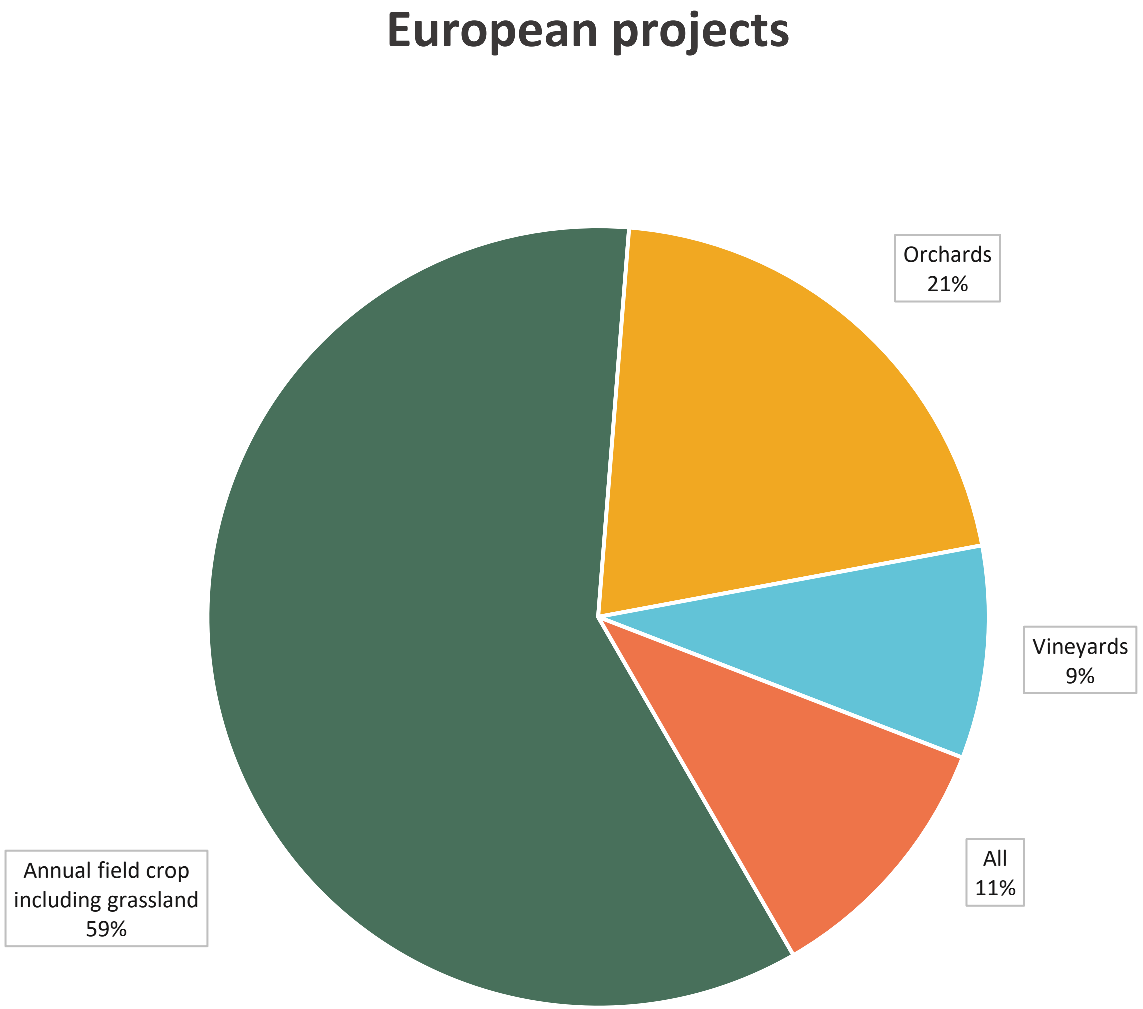
PRACTICES FOUND IN NATIONAL PROJECTS

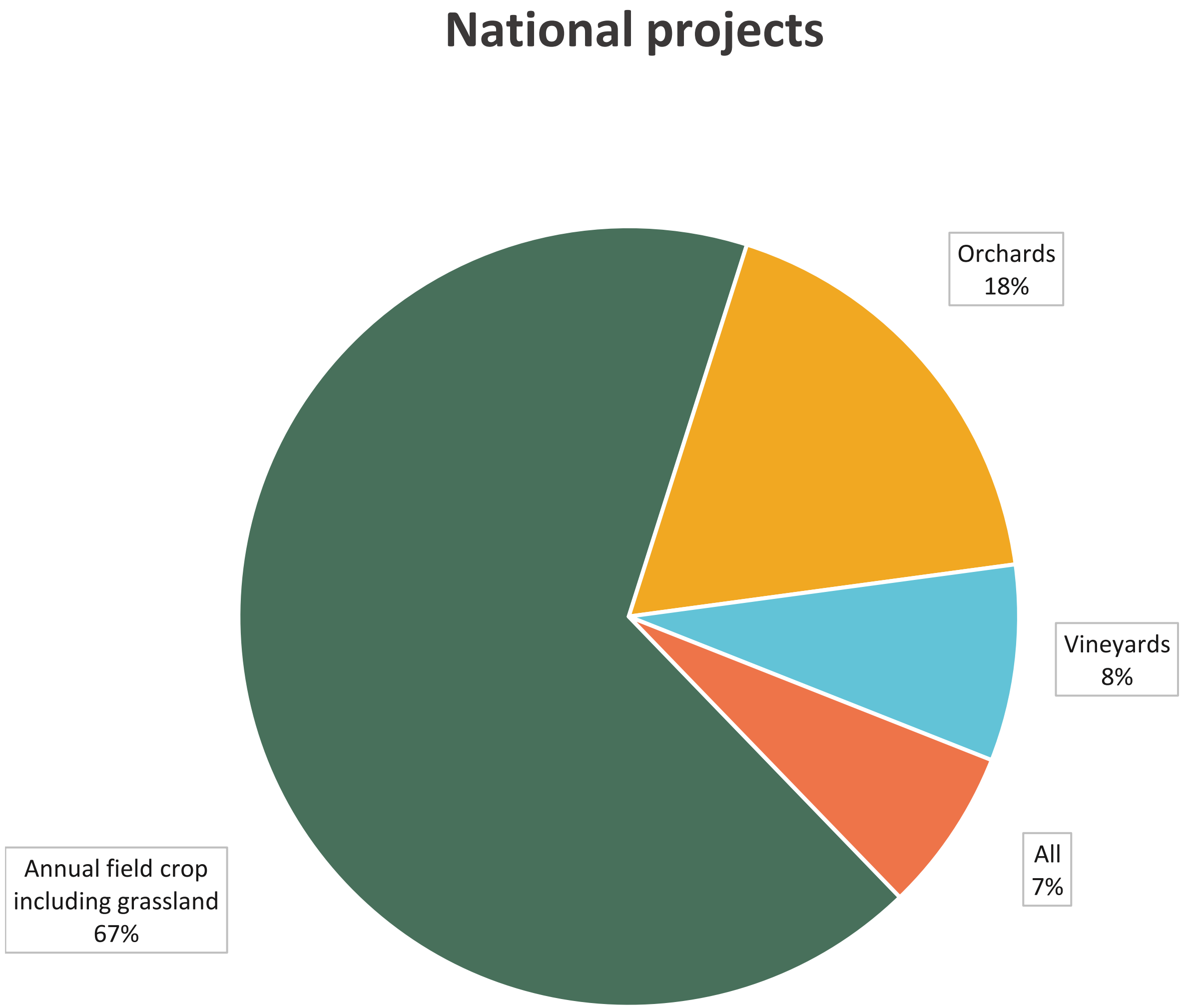


Limitations

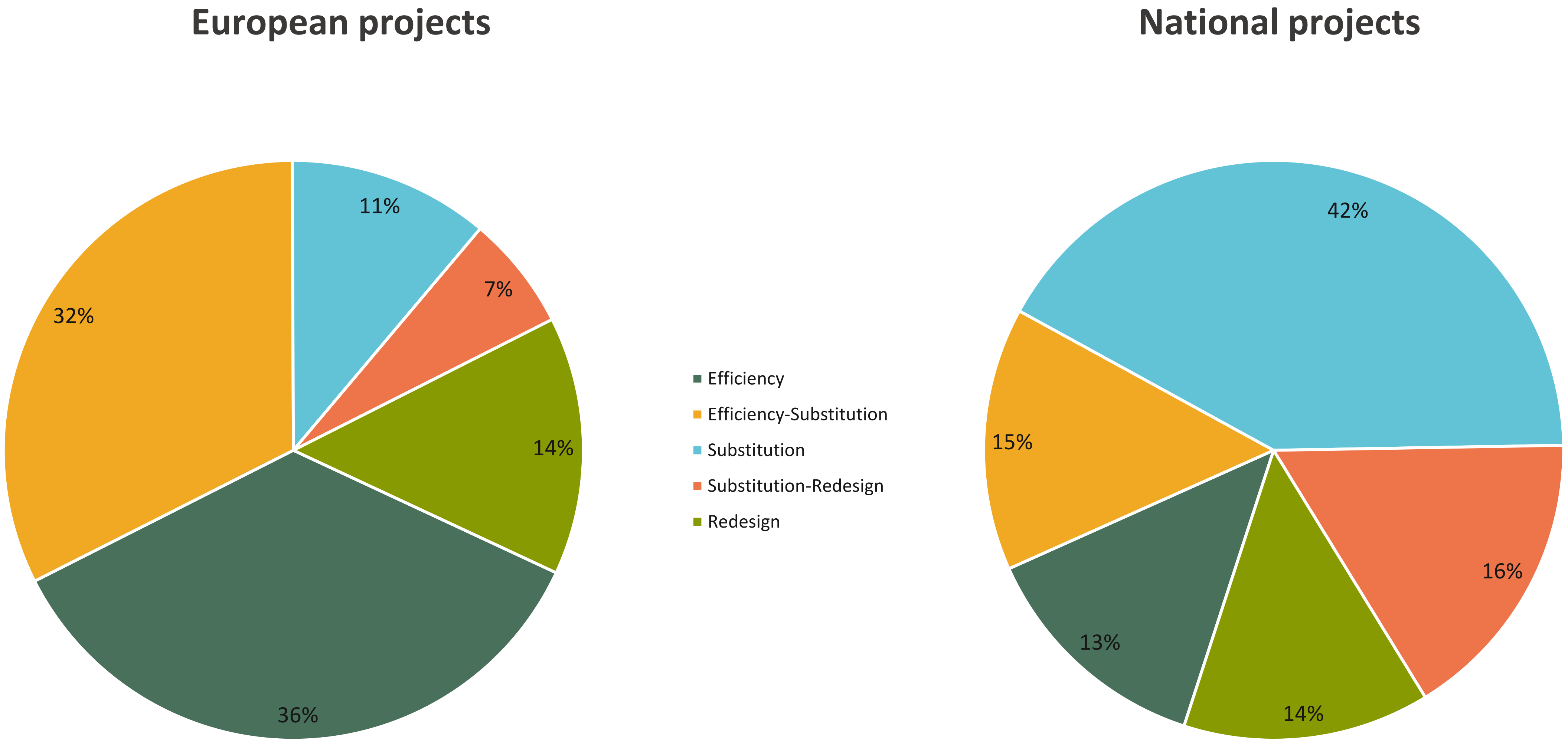
- Many of the newer projects are still ongoing, and their websites have not been updated with the latest deliverables.
- In the case of older projects, many websites were either non-functional or no longer available.
- Deliverables often lacked in-depth information on IPM practices, resulting in considerable time being spent on finding relevant data.

Distribution of IPM practices per crop category

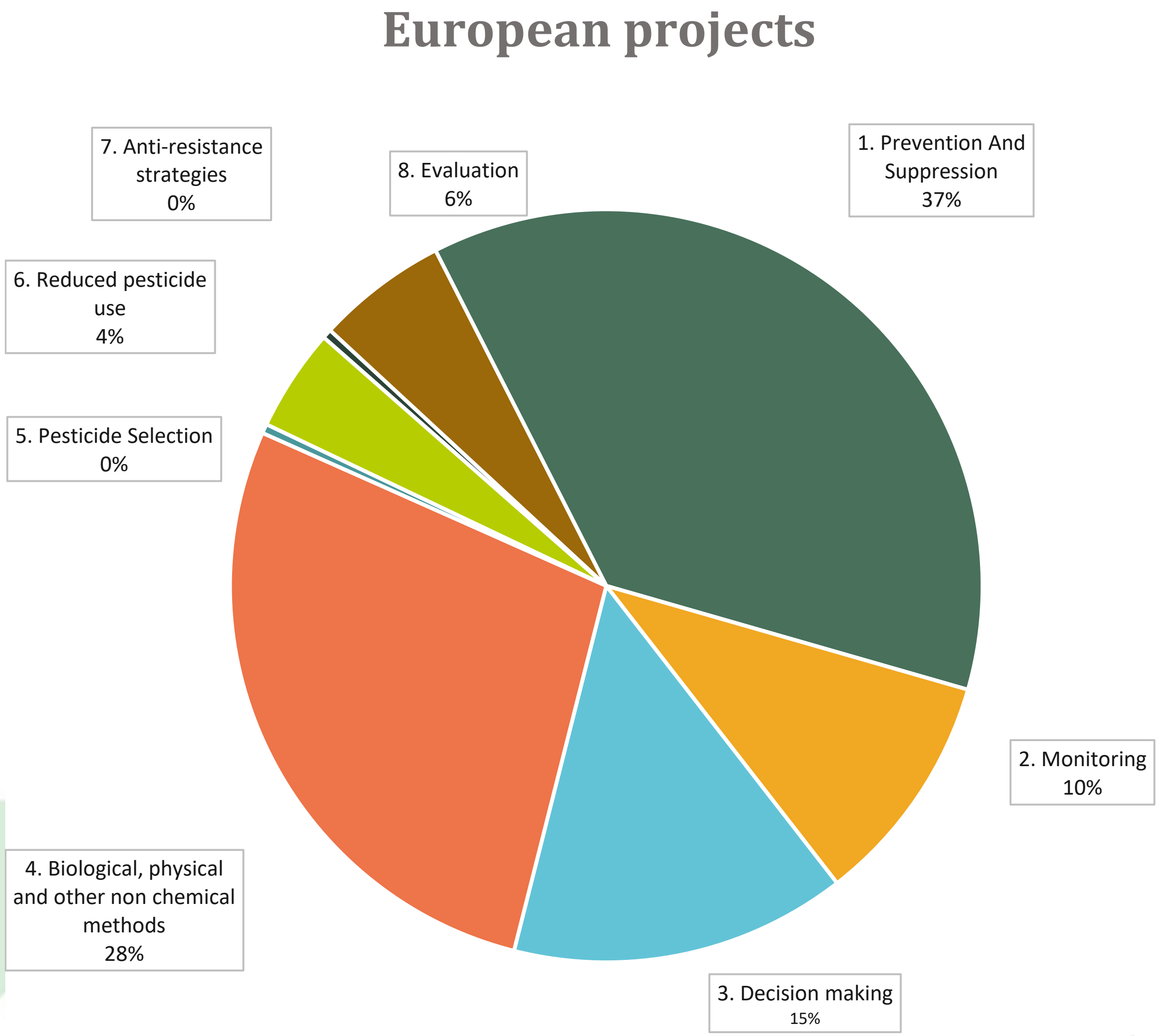


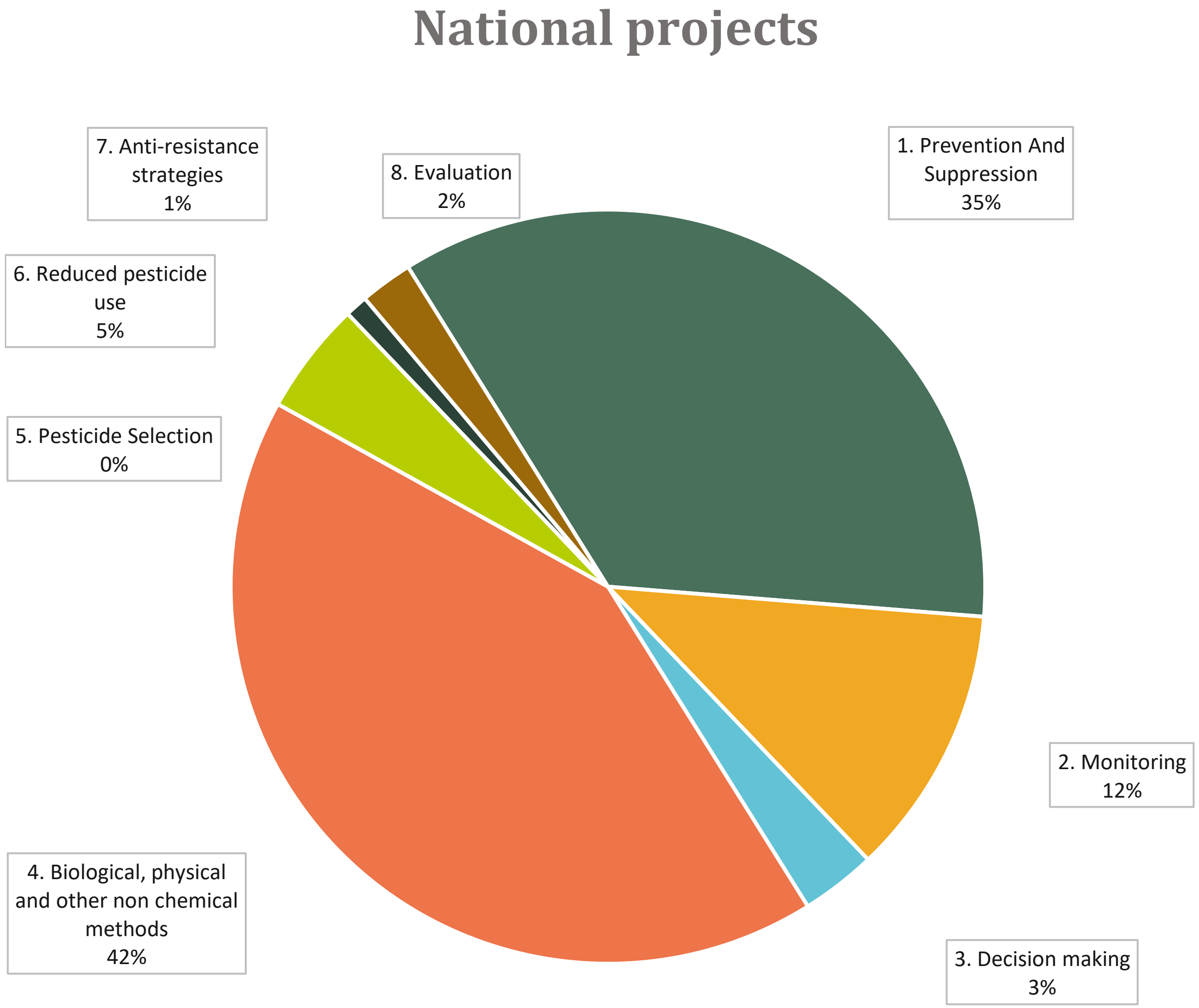


Distribution of IPM practices on ESR scale



Distribution of IPM practices by principle





Key messages

1. Tremendous effort to identify IPM European + national projects lists and extract practices

2. The number of practices per principle can be a starting point for the following strategy on IPM implementation

3. The taxonomy proved to be reliable. The proposals for new layers were minimal. Remains open for future research income.

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FORTUNA

Future InnOvation foR pesTicide Use reductioN in Agriculture

Silke Dachbrodt-Saaydeh (JKI)
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Funded by the European Union

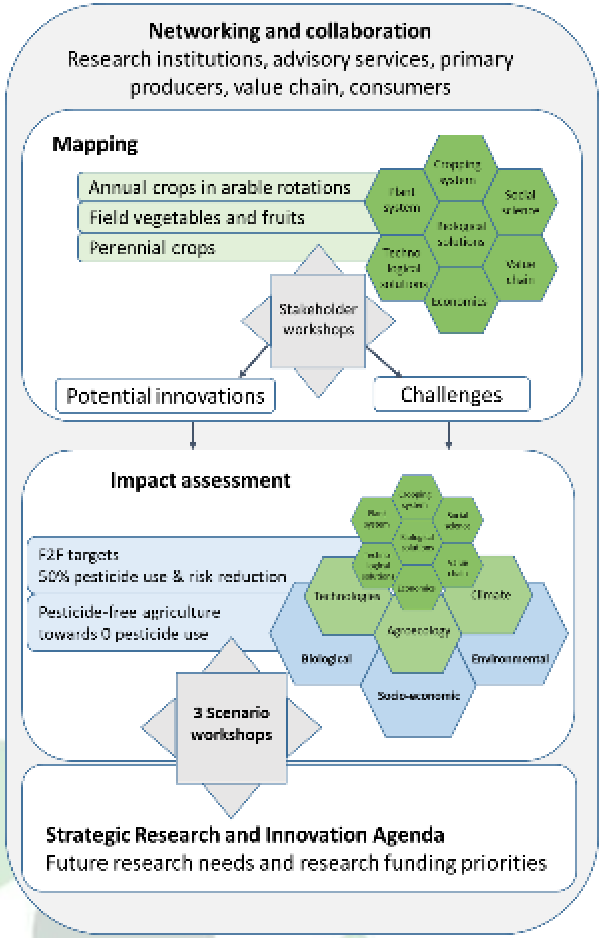
Who we are

- Coordination and Support Action
- Horizon Europe Grant Agreement No 101137089
- Funding period: 3 years (01.01.2024 – 31.12.2026)
- Coordination: Julius Kühn-Institute
- 11 partner institutions from 9 European countries

FORTUNA objectives

FORTUNA

Support the implementation of the **F2F strategy**, the **EU Biodiversity strategy** for 2030 and the EU **climate policy**



- To increase networking and knowledge exchange across Europe promoting a reduction in pesticide use and risk, also beyond the Farm to Fork targets.
- To identify potential innovations and challenges as well as knowledge gaps.
  - ➢ Collection of crop-specific innovations
- To improve understanding of main knowledge gaps as well as of drivers and barriers to go beyond the F2F targets for chemical pesticides.
  - ➢ Analyses of the levers for successful uptake and identification of gaps
- To identify research needs for further reductions or phasing out chemical pesticides in agriculture
  - ➢ to drive the transition in pesticide use towards and beyond F2F-targets

Transition of agricultural systems

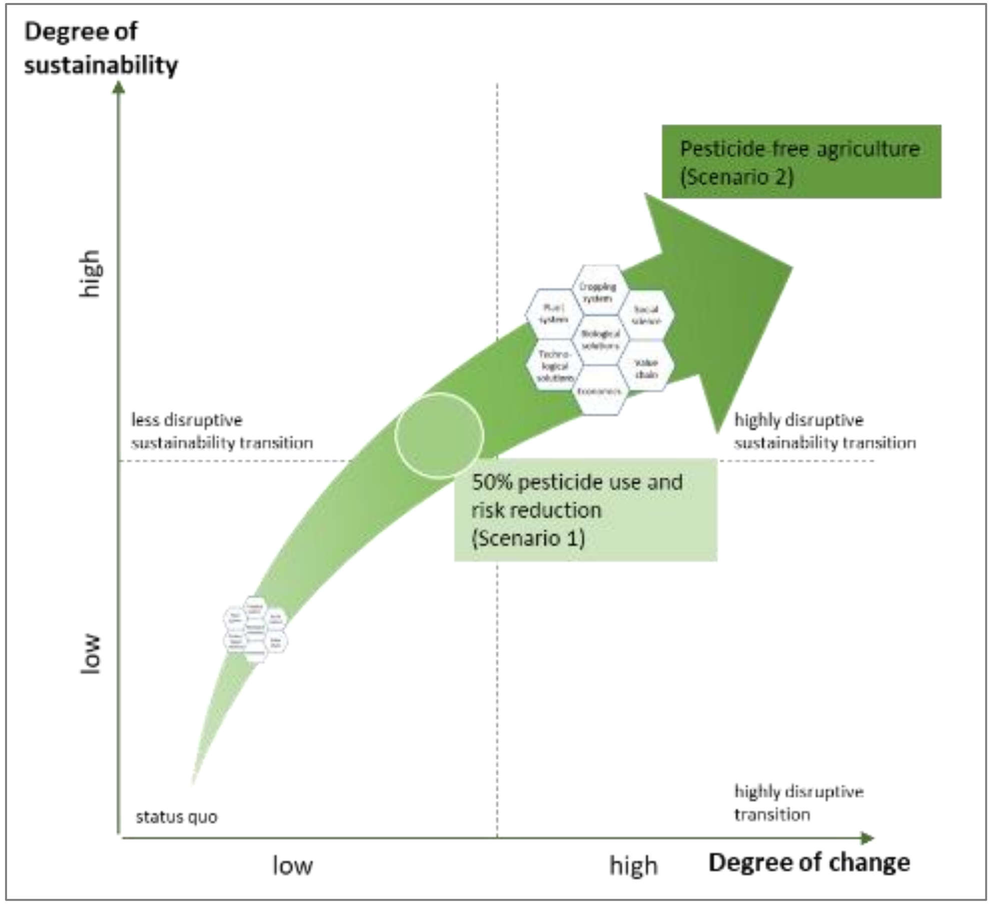
Identify research topics and outcomes required for 1) further reductions or 2) phasing out chemical pesticides in agriculture.

Scenario 1:

- Methods and strategies enabling a significant reduction of pesticide use (F2F-targets 2030)
- Address challenges for adoption resulting from the quantitative reduction in use and risk of chemical pesticides

Scenario 2:

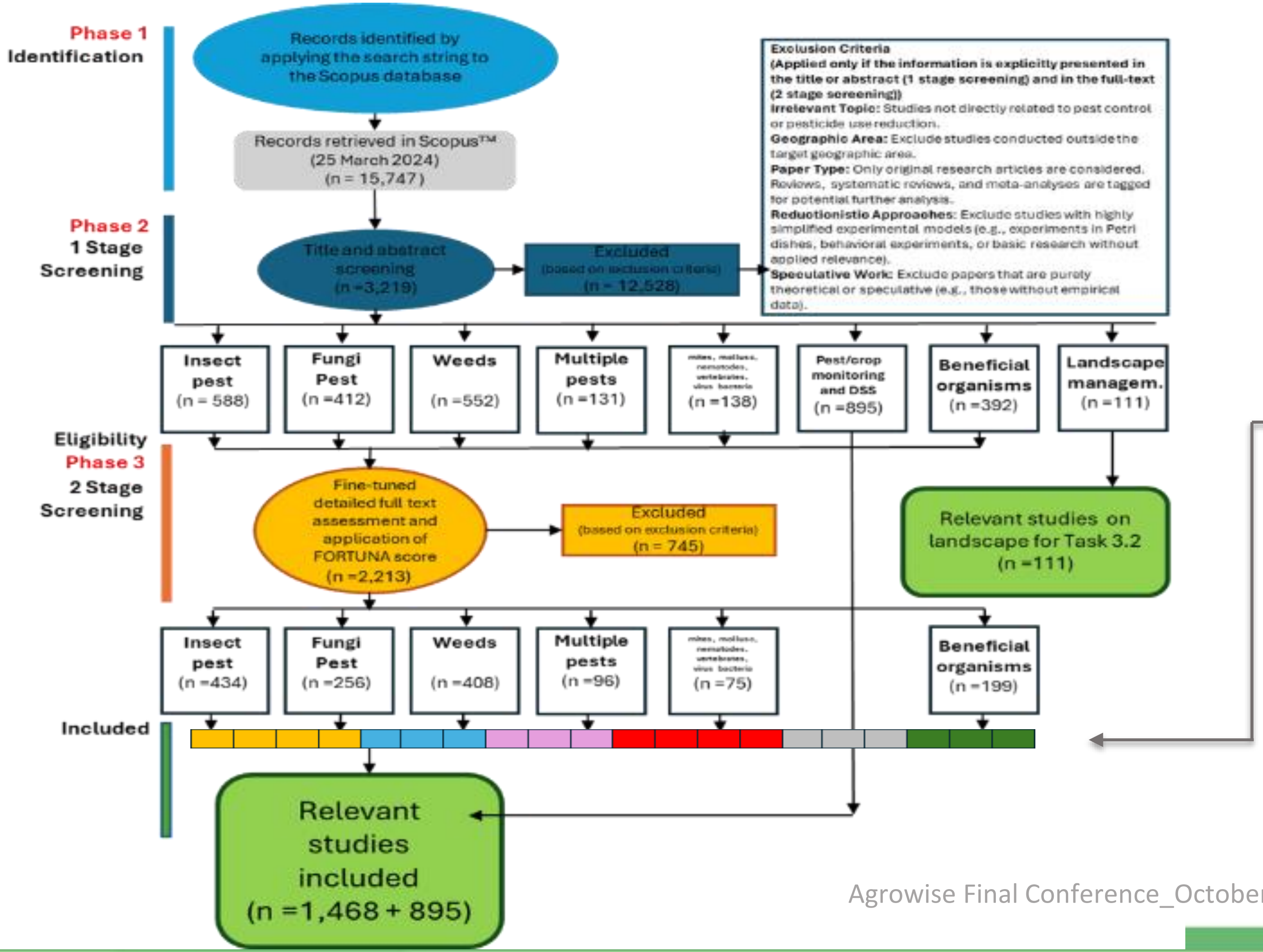
- Methods and strategies for making EU agriculture pesticide-free by 2050
- Identify research needs



Approach: Literature Review & FORTUNA score

FORTUNA

Scopus™ Database Systematic literature review (2014-2024)



TRL
- **1**: Research (TRL 1-3)
- **2**: Early Development (TRL 4-5)
- **3**: Advanced development (TRL 6-7)
- **4**: Operational (8-9)

Test setting
- **0**: Lab or controlled conditions
- **3**: Field or farm

IPM
Does the measure combine several tactics into a strategy
- **0**: No
- **3**: Yes

Effectiveness
What level of efficacy does the measure deliver?
- **0**: None
- **1**: < 30 %
- **2**: 30 - 70 %
- **3**: 70 - 90 %
- **4**: > 90 %

Robustness
Does the measure consistently control pests under different conditions?
- **1**: 1 year or location
- **2**: 2 years or locations
- **3**: >2 years or locations

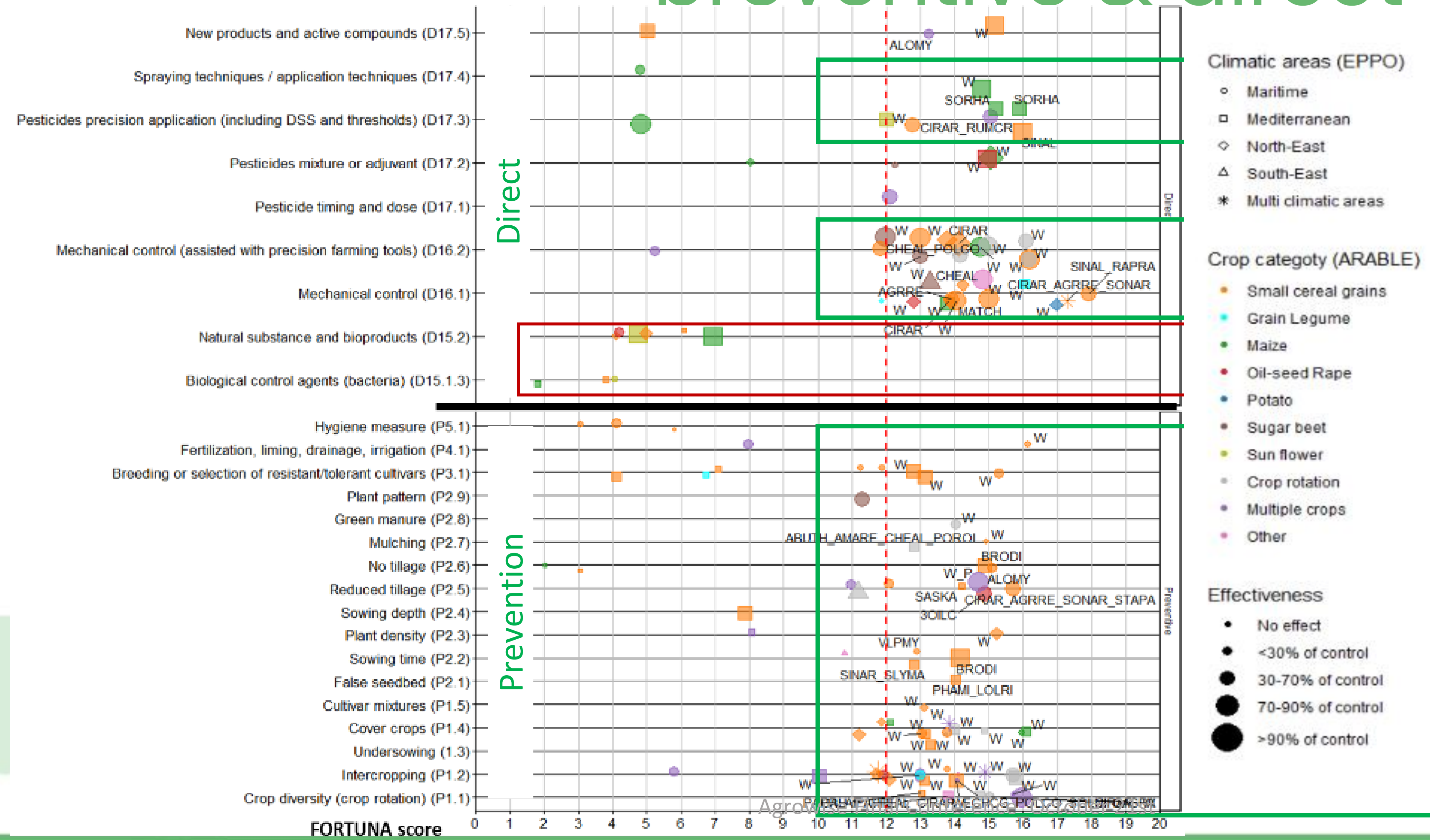
Applicability
Does the measure deliver control against a broader group of pests?
- **0**: No
- **3**: Yes

Number of scored records

Sectors	Crops	Weeds		Fungal diseases		Insect pests	
		FS < 12	FS ≥ 12	FS < 12	FS ≥ 12	FS < 12	FS ≥ 12
Annual crops in arable rotations	Arable (potato, maize, sugar beet, sunflower, winter oil seed rape)	11	43	28	17	**42**	29
	Cereals	16	**84**	27	**34**	22	14
	Grain legumes	2	11	7	1	14	7
Open field vegetables and fruits	Vegetables (Onion, cabbage, carrots, tomatoes)	5	25	22	7	**42**	20
	Berries	0	0	12	7	19	6
Perennial crops	Orchards	0	7	9	14	27	**31**
	Vineyards	2	18	**26**	20	27	24
	Citrus	2	1	4	1	14	7
	Olives	0	6	13	6	16	6

n=855

ARABLE CROPS – weed management preventive & direct methods



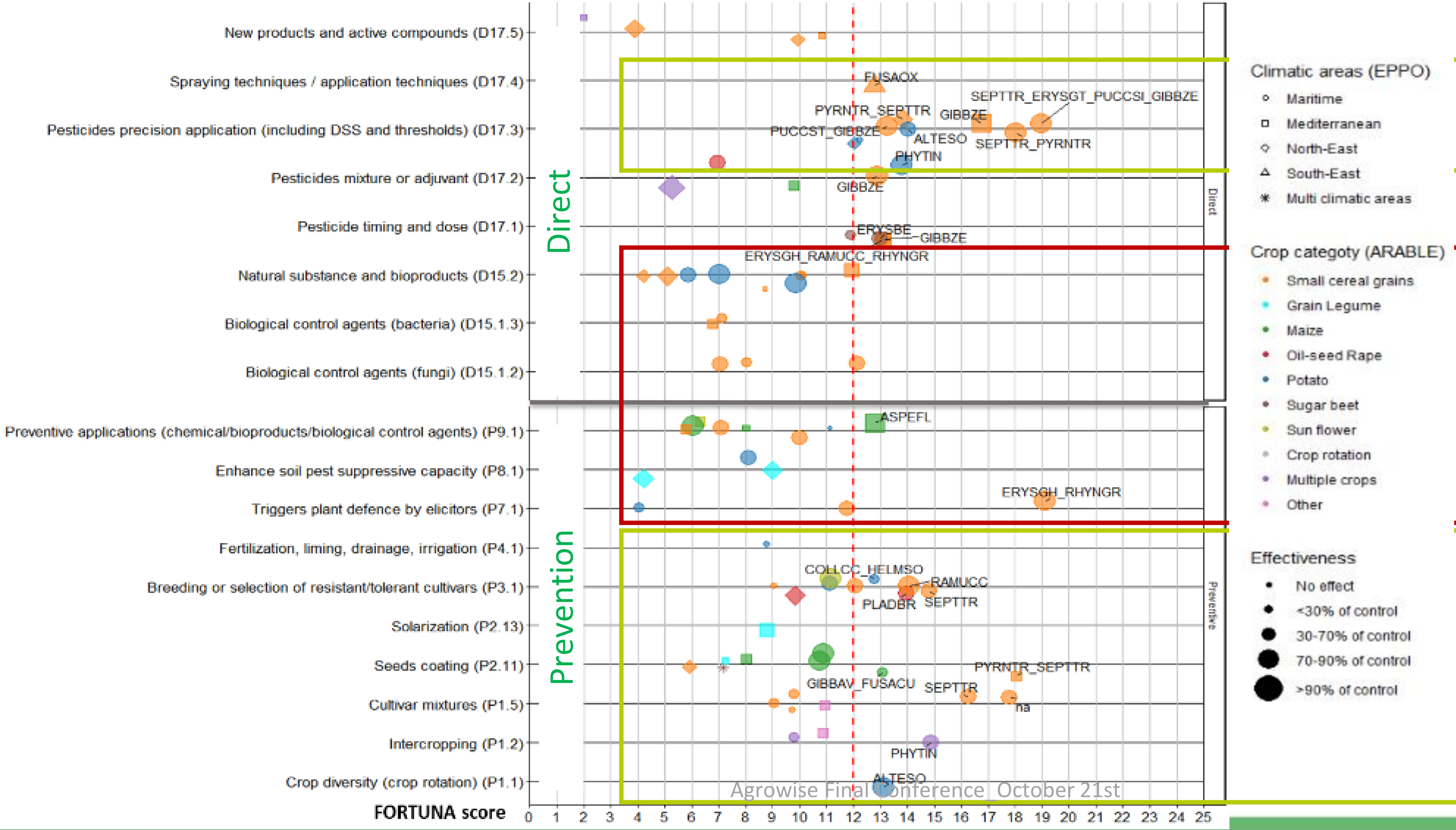
Application techniques

Mechanical control methods

Natural substances, biocontrol

Efficient preventive methods

ARABLE CROPS – disease management preventive & direct methods

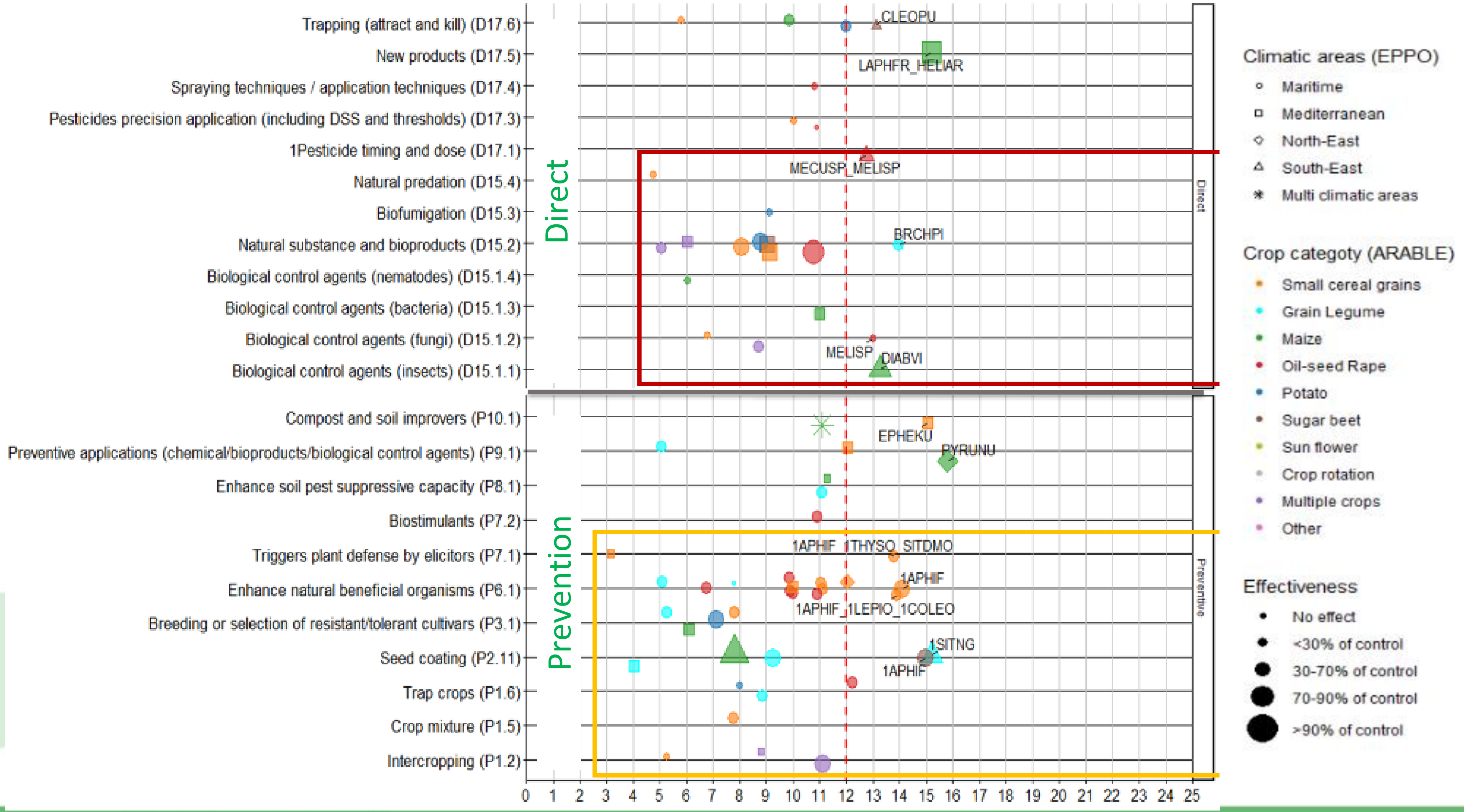


Application techniques

Biological control
Priming, elicitors

Preventive methods

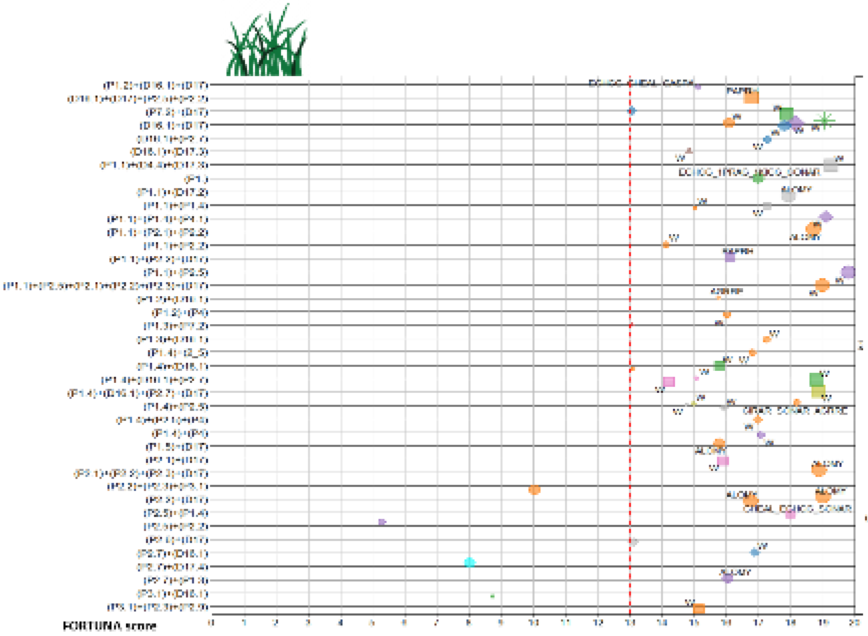
ARABLE CROPS – insect pest management preventive & direct methods

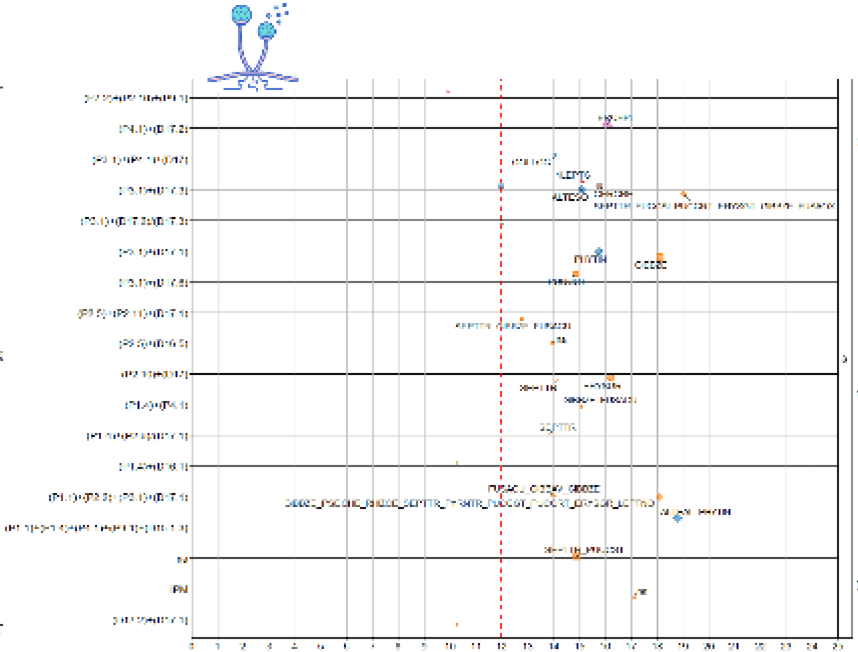


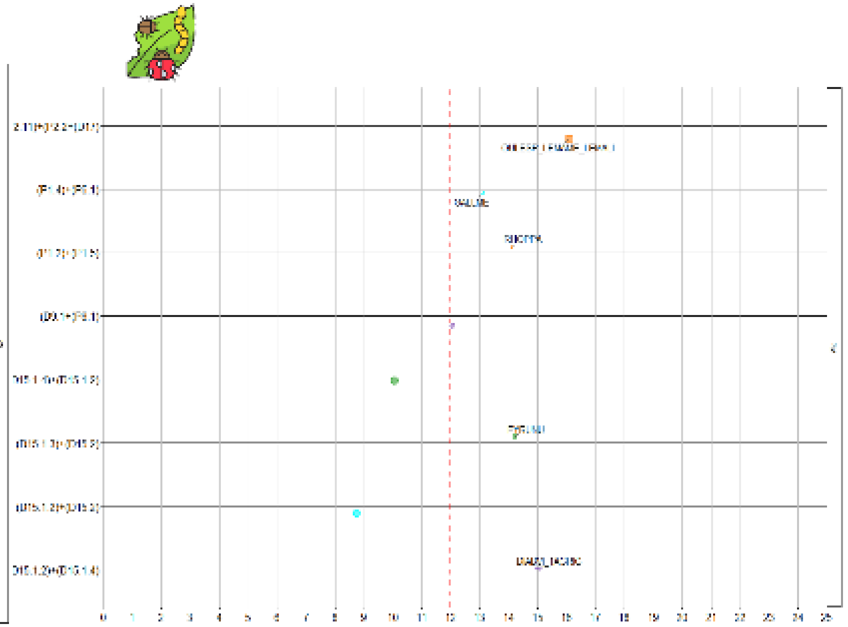
Biological control

Preventive methods

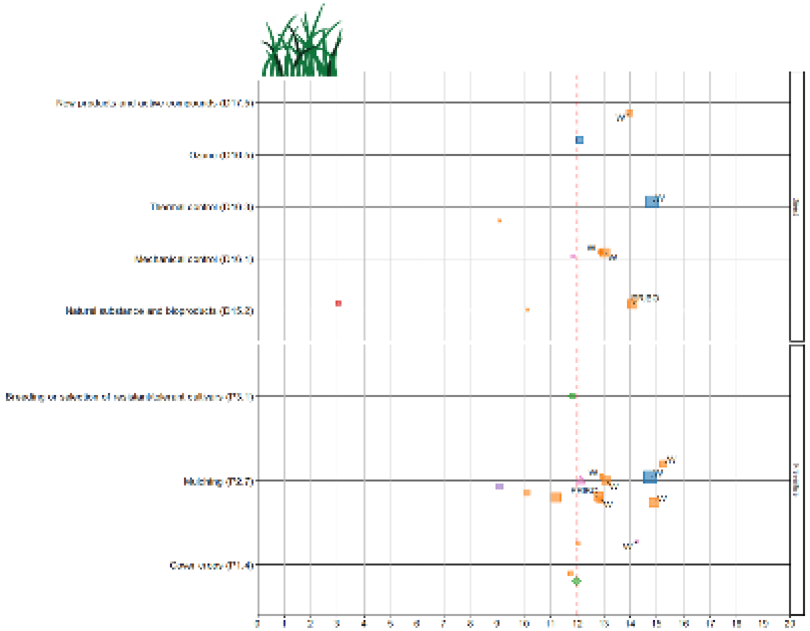
ARABLE CROPS – combination of methods

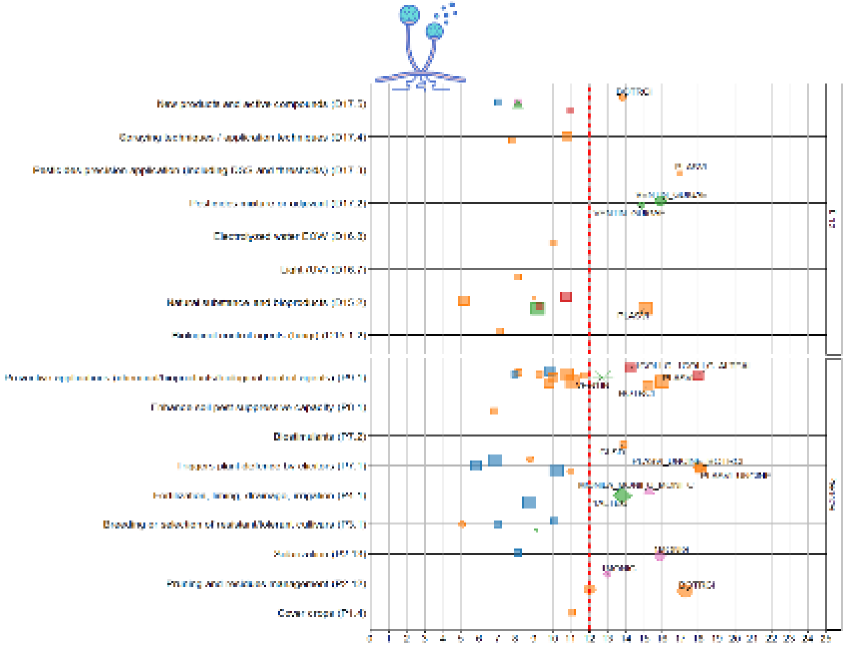


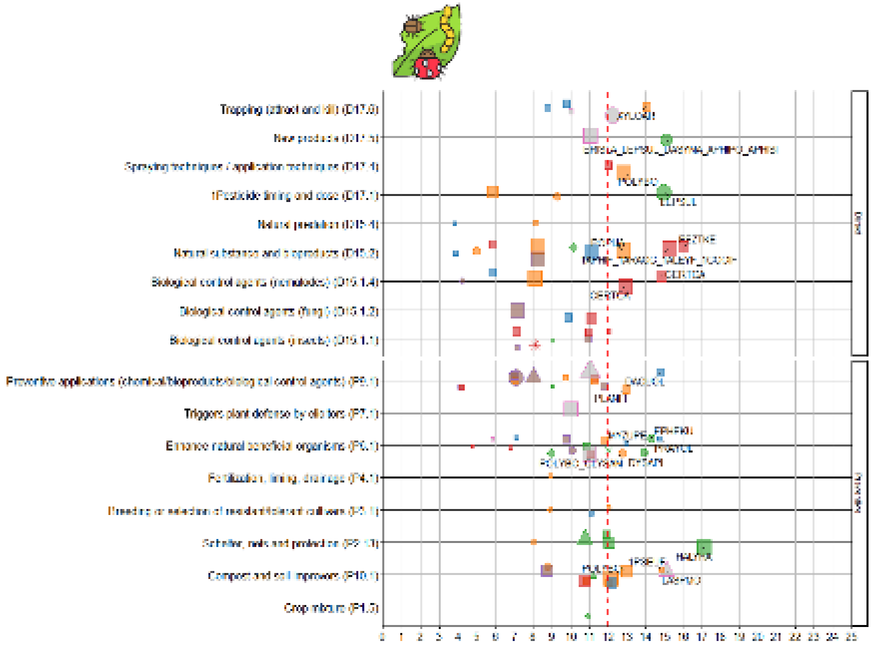




PERENNIAL CROPS – preventive & direct methods







preventive & direct methods

combination of methods

Key Messages

FORTUNA

- availability of all types of control methods in arable crops
- varying records on the availablity of preventive and direct control methods in field vegetables and fruits
- Combination of control methods into crop protection strategies seems less studied (or published)

Expectation:

➢ Insight to research needs for systemic transition of crop protection

➢ Recommendations to policy makers and funders

Which solution are suitable for pesticide use reduction and can be further advanced?
Which solution are missing?
Who and what might block,
facilitate or is missing for the implementation and scaling up of the solutions?

Long term expectation:

- ➢ Anticipating the translation of R&I results into working solutions to contribute to expected targets
- ➢ What do agricultural system need to look like to fully enable a successful transition

Role of the FORTUNA CSA:

- ➢ Insight to research needs for systemic transition of crop protection
- ➢ Recommendations to policy makers and funders

Which solution are missing?
Who and what might block,
facilitate or is missing for the implementation and scaling up of the solutions?

Let's Open the Discussion

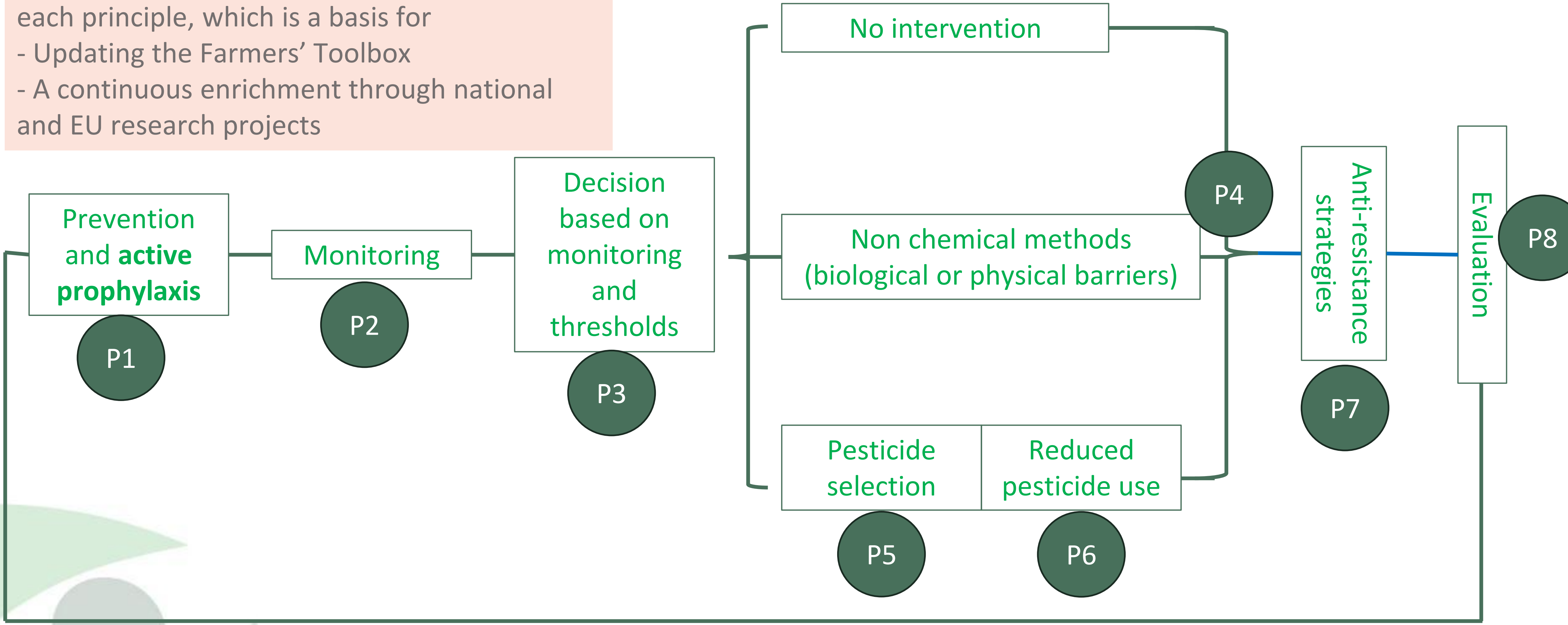
Highlights of the session:

the advantage of the introduction of a basis principle of “active prophylaxis” to define a mandatory IPM baseline and adequate guidelines

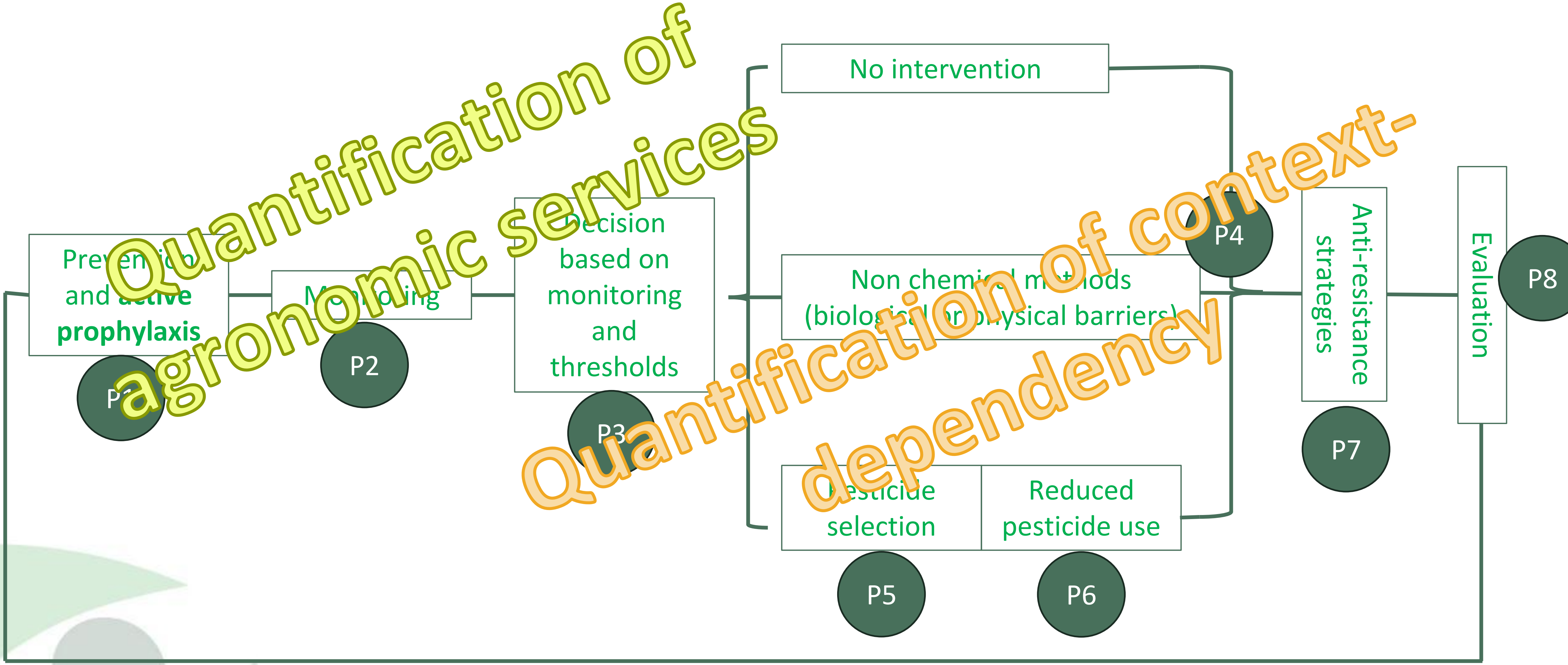
Christian Huyghe, former scientific director for agriculture at INRAE, France

A new IPM paradigm emerged

A very precise taxonomy has been defined for each principle, which is a basis for
- Updating the Farmers' Toolbox
- A continuous enrichment through national and EU research projects



A new IPM paradigm emerged



Consequences

- Implementing taxonomy into JRC Toolbox
- Eu and national research projects must better document Agronomic Services and Dependency to context
- Modification of Annex 3 of SUD directive
- A strong basis for future syllabus and training and for strategic/tactical advice

Lunch

The conference will resume at 1.30 PM.