Policy recommendations for scaling IPM adoption through IPM demo networks

Deliverable D7.4

THIS PROJECT HAS RECEIVED FUNDING FROM THE **EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME** UNDER GRANT AGREEMENT N. 101000339

Disclaimer: The contents of this deliverable are the sole responsibility of one or more Parties of the IPMWORKS consortium and can under no circumstances be regarded as reflecting the position of the Research Executive Agency and European Commission under the European Union's Horizon 2020 programme.

Copyright and Reprint Permissions

"You may freely reproduce all or part of this paper for non-commercial purposes, provided that the following conditions are fulfilled: (i) to cite the authors, as the copyright owners (ii) to cite the IPMWORKS Project and mention that the EC co-finances it, by means of including this statement "An EU-wide farm network demonstrating and promoting cost-effective IPM strategies – IPMWORKS Project no. H2020-101000339 co financed by EC H2020 programme" and (iii) not to alter the information."

How to quote this document:
Wustenberghs H., Wigboldus S., Triste L. (2025). Policy recommendations for scaling IPM adoption through IPM demo networks*. Deliverable 7.4 of the Horizon 2020 project IMPWORKS (GA number 101000339)*, published on the project web site in April 2025: https://ipmworks.net/deliverables-milestones/.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N.101000339

An EU-wide farm network demonstrating and promoting cost-effective IPM strategies

Coordination and Support Action (CSA)

01 October 2020 – 31 March 2025 (54 months)

Deliverable D7.4

Policy recommendations for scaling IPM adoption through IPM demo networks

Due date (as planned in DoA): Month 49 – October 2024

Actual submission date: 04/04/2025

Work package: WP7 – IPM policy engagement and sustainability strategy

WP leader: IAMZ-CIHEAM

WP co-leader: ACTA

Deliverable leader: ILVO

Author List: Hilde Wustenberghs (ILVO)
Seerp Wigboldus (WUR)
Laure Triste (ILVO)

Reviewed by the Coordinator: Nicolas Munier-Jolain (INRAE)

Type: Report

Version: 1.0

Dissemination Level

☒	**PU**	Public
☐	**CO**	Confidential, only for members of the consortium (including the Commission Services)

Abstract

IPM*WORKS* aims to advance holistic Integrated Pest Management (IPM) practices across Europe through a network of demo hubs engaging farmers and advisors, and collaborative frameworks. This document is the result of task 7.4, in which policy recommendations were formulated concerning both IPM demo hubs and holistic IPM. This document describes how the policy recommendations came into being, in a collaborative effort with all IPM*WORKS* partners. The recommendations are set down in two policy briefs, which are included in the results section of this document and will be disseminated to policy makers.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

Contents

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

1. Objectives & reading guide

1.1. Objectives of this IPM*WORKS* deliverable

This deliverable results from IPM*WORKS*' task 7.4. The objective of this task was to formulate a series of recommendations for policy-makers at regional, national and European level, based on the recommendations for scaling IPM adoption through IPM demo networks in the AKIS. These recommendations were developed by Task 1.5 (and in general on the activities in WP1 on Approaches, methods and lessons for the development of IPM demo networks) and the activities in WP7 on IPM policy engagement and sustainability strategy, among which Task 7.1, which established an IPM Network of engaged policy makers across Europe. The focus was to identify best practices in stimulating policies to support active IPM demo networks and activities, and to make recommendations on policy options at both national and EU level.

While developing the policy recommendations, however, we found the IPM*WORKS* project not only yielded results on IPM demo networks that should be brought to the attention of policy-makers, but also interesting insights about IPM itself. The final policy recommendations were therefore split up into two policy briefs on:

1. IPM demo networks
2. Holistic IPM

1.2. Reading guide for this deliverable

In the second chapter, we sketch the context in which IPM*WORKS* has made a contribution and to which the later policy recommendations connect. It describes the current challenges farmers face related to crop protection and IPM adoption. It further describes how IPM*WORKS* addressed these challenges, by (1) promoting a holistic approach to IPM, and (2) setting up an EU-wide network of farmer demo hubs.

The third chapter describes the methodology that was followed to come to the policy recommendations. These recommendations were summarized in two policy briefs, which are presented in the fourth "results" chapter. The final chapter addresses the dissemination of the policy briefs.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

2. Context

2.1. Current challenges related to crop protection and IPM

Pesticide use* and its related pressure on the environment and human health remain high in Europe[1,2]. Also, decades after the introduction of Integrated Pest Management (IPM)[3,4] and 15 years after the Sustainable Use Directive (SUD)[5] came into force, IPM adoption remains poor in many agricultural subsectors. Nevertheless, IPM has been shown to *WORK*, i.e. there is evidence that it can contribute effectively to reducing pesticide use, while sustaining productive cropping systems [6,7,8,9].

At the same time, putting IPM into practice also presents certain **challenges to farmers**. As a result, its practice is not yet as widespread as could be, for which reason the impact of IPM on pesticide use is still limited. Reasons for limited practice of IPM include:

- IPM, as a truly integrated approach, involves applying a coherent set of principles and practices. Farmers tend to only apply a selection of options as a solution to acute problems, without embracing IPM as an **integrated systems approach** to crop health.
- **Preventive** options at the cropping and landscape level are often undervalued.
- Implementation of IPM is **context-specific**. The coherent suite of principles and practices, may differ by region, crop, and individual farm features. It may take farmers years to trial, assess and optimize options and designs for an appropriate IPM farming/crop management approach specific to their farm, and the process requires ongoing review and adaptation thereafter.
- IPM is often perceived to be **complex**.
- Without **advisory support and opportunities to network and exchange experiences with other farmers and related learning**, most farmers will not be able to move beyond the application of only some of the IPM principles and even those may only be implemented to a limited degree.

IPM*WORKS* addressed these challenges by a dual strategy:

1. Promoting a **holistic approach** to IPM
2. Setting up an EU-wide network of **farmer hubs and demo networks, facilitated by advisors**, in which farmers both take their own steps in IPM practice - through peer-to-peer learning and joint efforts - and demonstrate to other farmers that holistic IPM indeed "*WORKS*".

* In this document we use the broad term 'pesticides' to indicate 'plant protection products' used to protect agricultural and horticultural crops from pests, diseases, weeds, etc. IPM*WORKS* did not consider use in forestry, amenity areas or home gardens, nor non-plant/crop uses, such as biocides.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

2.2. Holistic IPM

IPM*WORKS* supports a holistic approach to IPM, which builds on five pillars, as shown in **Figure 1**. This translates into a **vision for the future of pest management in Europe** in which agricultural landscapes and cropping systems are effectively designed to manage pests, diseases and weeds, decision making is optimised on all farms to ensure effective pest management and avoid unnecessary treatments, non-chemical pest control options are preferred by all, efficiency of treatments of pesticides is optimised, and crop production is economically profitable.

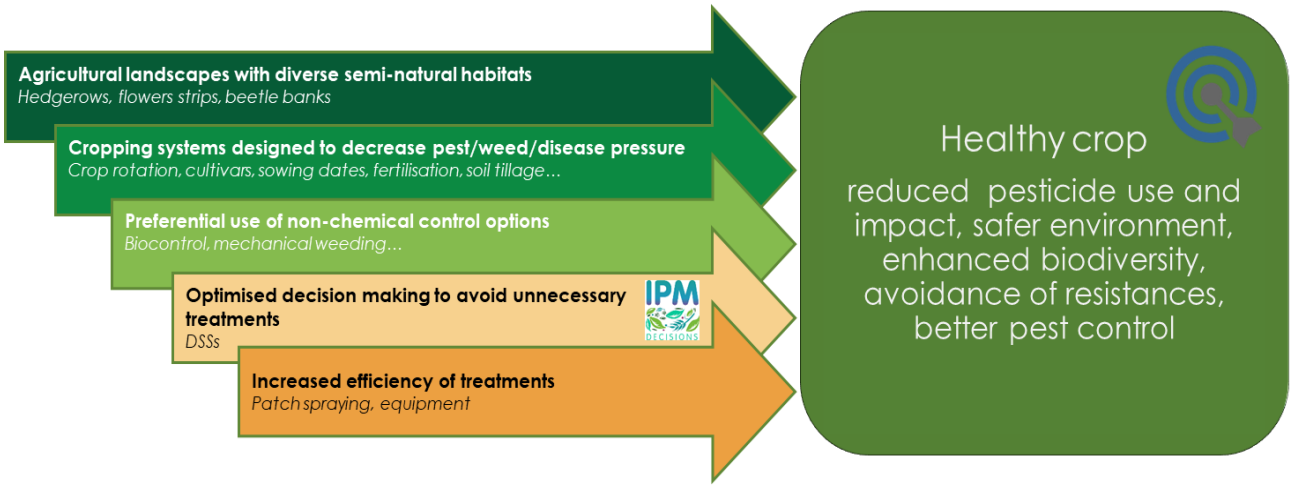


Figure 1. The five pillars of holistic IPM

Implementation of holistic IPM implies a redesign of current cropping systems to adopt a diversified management strategy including a broad range of preventive and curative tactics. The **farm level IPM-based strategies** entails the following approach[10]:

- The objectives of holistic IPM are **healthy crops produced with a limited use of chemical solutions**, particularly of pesticides with some possible impacts on the environment and human health, to provide a safer environment with enhanced biodiversity, and to avoid the selection of resistant biotypes in pest populations. Holistic IPM aims at providing better pest control and should contribute to the economic profitability of European farming;
- The strategy is tailored to the specific needs and context of the region, crop and farm.
- The practical implementation at the field level, in the view of reducing the reliance on pesticide, should consider each of the **five pillars of holistic IPM**, whenever relevant, as they all have the potential to contribute to the various objectives. As defined by IPM*WORKS*, these are:
  - The arrangement and management of **agricultural landscapes**, with diverse semi-natural habitats, hedgerows, isolated trees, flowers strips, beetle banks, to attract beneficial organisms that have the potential to regulate crop pests and decrease pest pressure.
  - The **design of cropping systems** by combining preventing measures able to decrease the local pressure of invertebrate pests, weeds and pathogens, through crop rotations including functional diversity, cultivars resistant to pests and diseases, adapted sowing dates and densities, adapted fertilization and soil tillage whenever relevant, adapted pruning, etc.
  - The preferential use of **non-chemical control options**, when they are available and applicable, such as biocontrol solutions, mechanical weeding or robotics, protective nets.
  - The **optimization of decision making** to avoid unnecessary treatments, by making use of Decision Support Systems, and precise monitoring of local pest pressure. On this topic,

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

IPMWORKS is promoting the IPM-Decisions platform, that provides easy access to a range of Decision Support Systems with this specific purpose.

- The **maximization of the efficiency of treatments**, when they are deemed necessary, by using proper technologies of precision agriculture, such as patch spraying, or the adaptation of the doses to the specificities of the crop and of the pest, without any impact on the efficacy of the treatments to avoid the development of resistances.

The five pillars of holistic IPM should be considered for the management of all potential invertebrate pests, weeds, and plant pathogens likely to provoke yield losses. The systemic approach required for the design of site-specific strategies based on holistic IPM implies to consider a systemic vision in the evaluation of the cost-efficiency of the whole strategy, since the cost of one specific component of the strategy (e.g., cost of biocontrol solutions) can be offset by the cost saving of other components (e.g., saving of pesticides and of fertilizers). IPM*WORKS* demo events might focus on a specific component of the whole holistic strategies (e.g., a specific innovative equipment for mechanical weeding), but this component is always presented as part of a full strategy, with all the consequences for farm economics.

2.3. The demo hub approach

IPM*WORKS* used an innovative approach to tackle farmers' learning needs concerning holistic IPM and to reinvigorate IPM adoption and implementation across Europe. Demo hubs—networks that bring together farmers, advisors, researchers, and other stakeholders to share knowledge and demonstrate innovative practices—have been increasingly recognized for their potential to drive change at the grassroots level. The NEFERTITI project (GA No. 772705) already explored and refined the demo hub approach, demonstrating its effectiveness in fostering collaboration and scaling innovations in agriculture. Also previously existing farm demo networks, notably Déphy-Écophyto (FR), PestiRed (CH), LEAF (UK), DIPS (DL) and GROEN (NL), showed to be effective means to reinforce IPM[10].

The hubs serve as practical platforms where IPM practices can be tested, adapted, and showcased in real-world settings, thereby enhancing their credibility and uptake among farmers. They are designed to enhance holistic IPM adoption by providing practical, hands-on demonstrations and fostering collaborative learning among farmers, researchers, and other stakeholders. By facilitating the exchange of innovative techniques and best practices, demo hubs can significantly contribute to the EU's objectives of reducing pesticide use, minimizing environmental impact, and promoting a more sustainable agricultural future across Europe.

Leveraging the demo hub model, is an opportunity to bridge the gap between IPM theory and practice.

The demo hub approach involves four crucial elements:

1. Groups of 10-15 **motivated farmers**, who test holistic IPM practices and share their experiences within the group. These groups of farmers have a common professional interest and show interest to share experiences. They are committed to the group and its goals to share (good and bad!) experiences. They agree upon a common goal for their hub and organize their activities in accordance.
2. **Hub coaches**, advisors who facilitate the hubs and help farmers to 'think holistically'.
3. **Demonstration events** for farmers outside the hub, organised by the farmers in the hub and the hub coach. These demonstration events allow peer-to-peer learning by larger groups of farmers from the farmers who have tested holistic IPM practices.
4. An **EU wide network** of demo hubs, allowing international peer-to-peer learning.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

Particular emphasis is placed on the role of the **hub coach** among the stakeholders in the IPM environment (**Figure 2**). Hub coaches are knowledge brokers within the hubs. Their role is fivefold:

1. Individual advice, tailored to the hub members' farms;
2. Collective advice to the hub;
3. Facilitation of dialogue within the hub to enable learning;
4. Data collection and processing, on the hub's IPM experiments, to produce quantitative evidences that IPM indeed works;
5. (Inter)national connection with relevant stakeholders on pesticide use and risk reduction, and advisor-to-advisor learning.

The hub coach is critical for the successful operation of the hub, responsible for identifying key actors, analysing the group's needs, facilitating actions within the hub, and ensuring farmers' engagement and motivation. A hub coach must possess both technical knowledge on holistic IPM and soft skills, such as communication abilities, and group management capabilities.

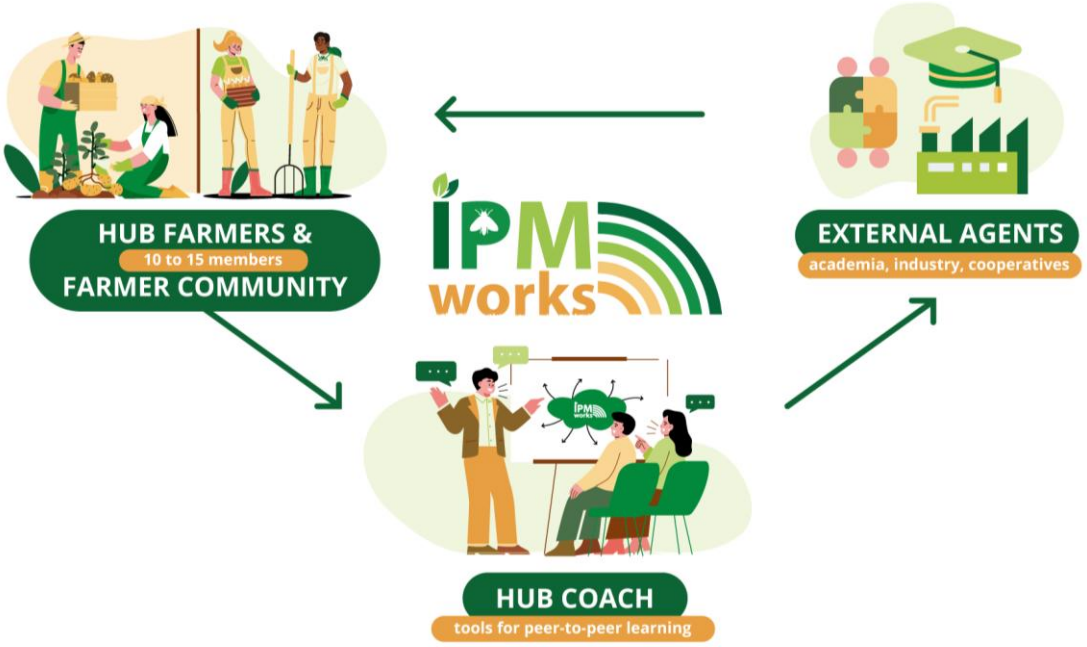


Figure 2. IPM demo hub interconnections

Within IPM*WORKS* an **international network** of demo hubs was set up, with 31 partners spanning most EU regions and impacting farmers in 13 Member States and 3 associated countries. IPM*WORKS* thus established a comprehensive, multi-actor network. This network includes both existing national IPM Farm Demo networks and new hubs (Figure 3). EU-level exchange between the hubs allowed

- EU-level exchange, which was crucial to build a common understanding of / approach to holistic IPM and hub management, and for an accelerated cross-country spread of knowledge about IPM practices.
- Cross-country events (cross-visits), which have been found to be highly enriching for farmers and coaches, as they facilitate knowledge exchange between countries/regions. They help to collect more visions on how to solve common problems and adapt practices to the hub's own case.
- Hub coaches' capacity building, using train-the-trainer and advisor-to-advisor learning.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

- Collecting uniform crop protection data from local hubs, data that can demonstrate that IPM effectively *WORKS*.

More information on the demo hub approach and recommendations for successful exploitation of IPM networks to scale IPM adoption can be found in IPM*WORKS* deliverable D1.5.

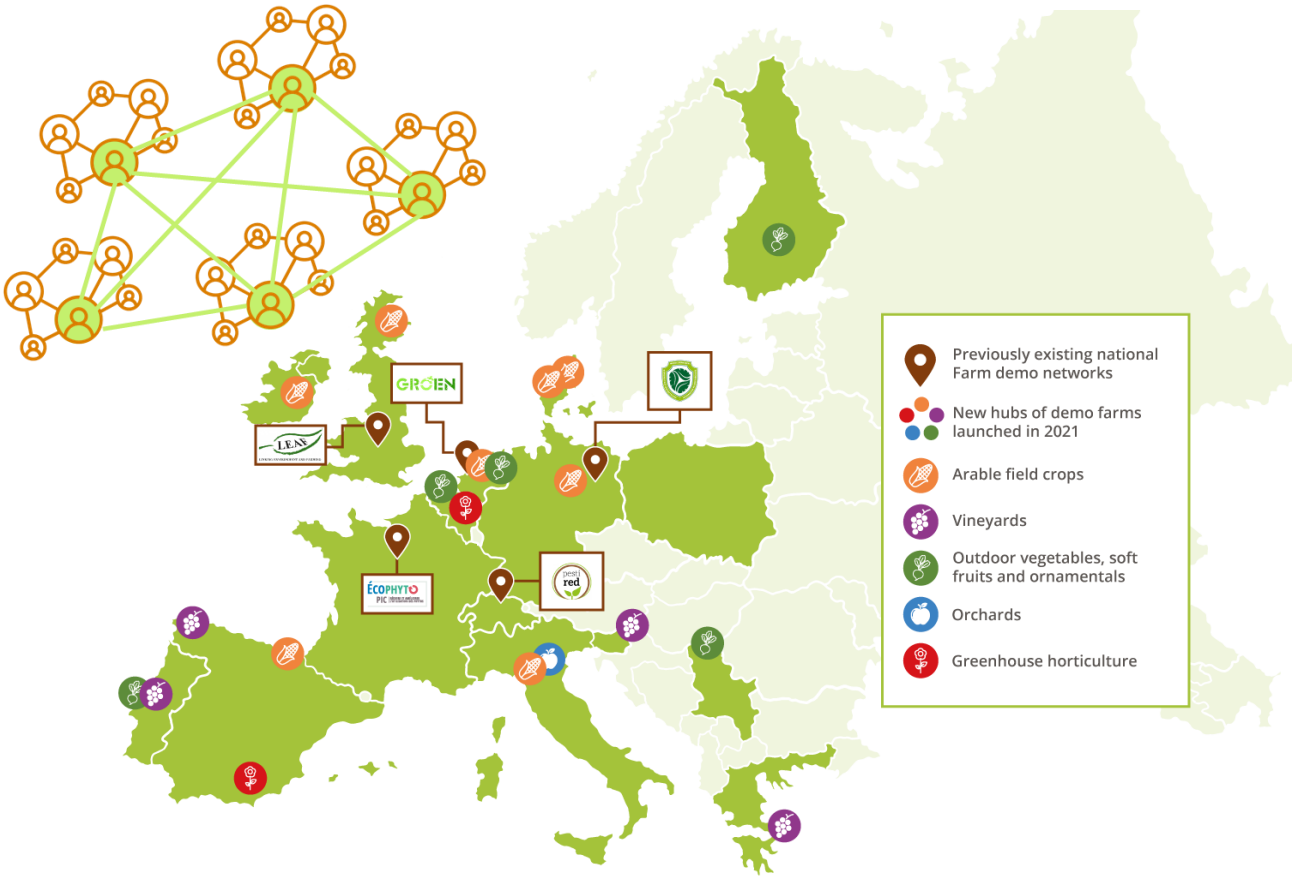


Figure 3: Network of new hubs created and pre-existing national networks integrated in IPMWORKS and schematic representation of the interconnections in and between demo hubs and hub coaches.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

3. Methodology

The IPM*WORKS* policy recommendations were developed in a process involving several feedback loops by the project partners. The process is summarized in **Erreur ! Source du renvoi introuvable.**.

3.1. Review of IPM*WORKS* achievements

As a first step, EV ILVO reviewed the previous IPM*WORKS* deliverables with special emphasis on the project achievements and the needs that were formulated to maintain these achievements after the project's end. These were listed in an Excel table and – where relevant, i.e. where new policies could help to maintain/advance the achievement – the achievements were translated into policy recommendations. Some extracts of this document are shown in

Table 1. The policy recommendations were then summarized, as shown in **Table 3** and **Table 3** (text in black).

This resulted in a first draft text, a rather extensive document covering different types of recommendations, which was not fully structured yet. This document was reviewed by the project leader and WP7 partners. One of the main conclusions of this review was that the document was really too long to make interesting reading for policy makers.

As a result, it was decided to split the document into two short policy briefs and include only the recommendations that the partners felt were most important.

3.2. Main achievements and policy recommendations workshops

To determine the most important policy recommendations, two workshops were organized at the fourth and last IPM*WORKS* annual partner meeting in Minikowo, Poland from Tuesday 10 September to Thursday 12 September 2024.

In the **first "Looking backward" workshop** on the first day, the partners discussed the most significant changes during IPM*WORKS* project. Participants shared micro stories about their experiences over the past four years and why these were significant. Five main themes could be detected in the stories:

1. Farmer hubs and networks, building relationships in networks,
2. Cross visits,
3. Farmer empowerment,
4. Data collection,
5. EU level networking.

The second "Policy recommendations" workshop built on these most significant changes and aimed to derive policy recommendations from them. In the first part of the workshop the participants, in 5 groups, discussed the most significant changes identified, answering questions such as

- Did you see similar changes/impacts in your hub/country?
- What were key factors/conditions that helped make this possible? Or, inversely, what was lacking that made the change/impact not possible?

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

- In terms of an enabling (policy) environment, what would need to change to be able see such impact happen?
- Concretely, what changes in policies would need to be made? Did you see similar changes/impacts in your hub/country?

In the subsequent exercise, posters were used stating the potential policy recommendations derived from the Excel table that was previously made (see section 3.1). The policy recommendations formulated in the previous discussion groups were first amended on the posters. Then participants were asked to prioritize the potential policy recommendations. For the that purpose they were each given

- Four green stickers to indicate which recommendations they mostly support,
- Two red stickers to indicate which recommendations they would like to omit (veto against).

The results of the voting exercise are shown in **Figure 5** and summarized in **Table 2** and **Table 3**.

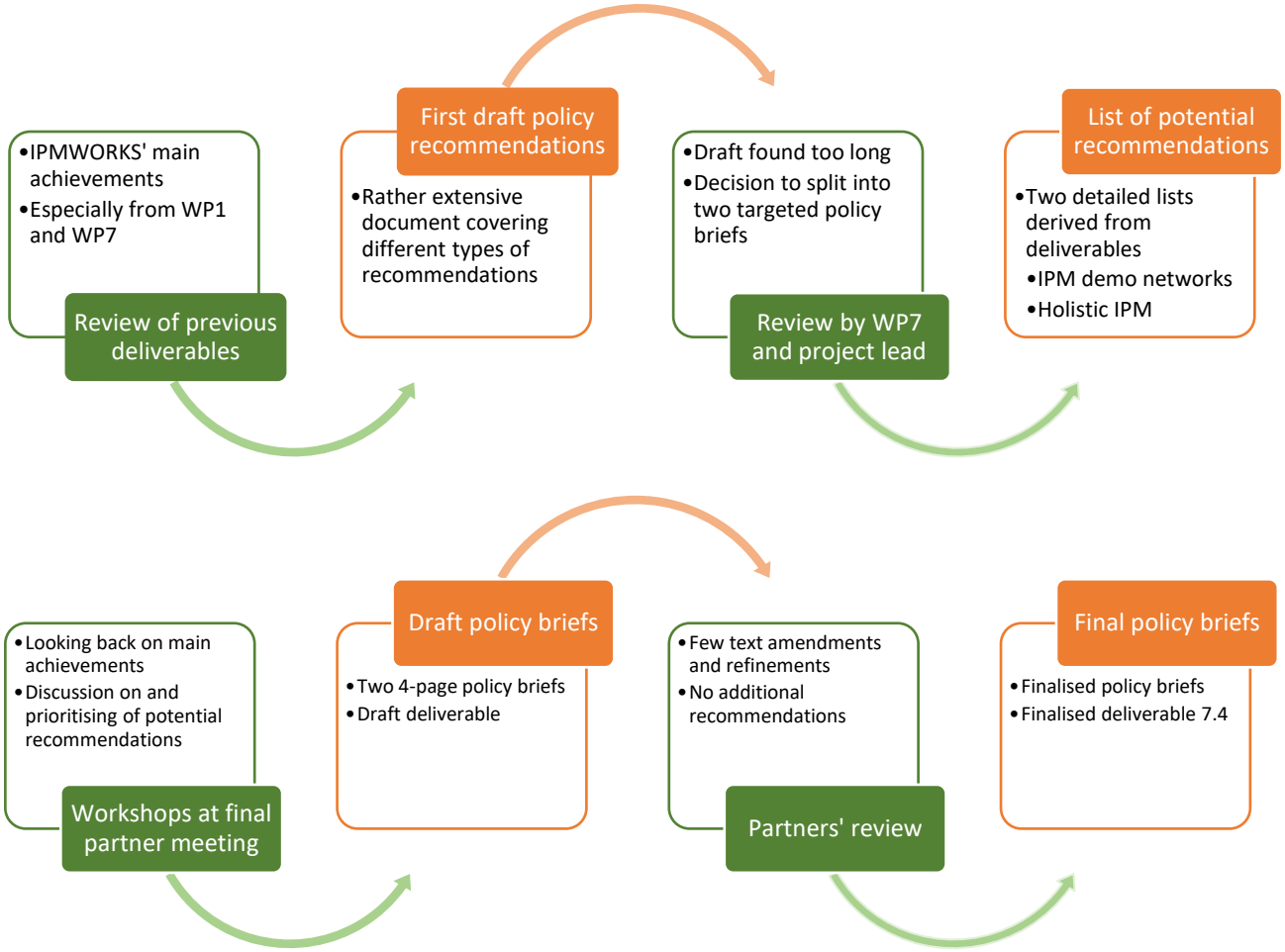


Figure 4: Process leading up to the IPM*WORKS* policy recommendations (green = process step, orange = resulting document)

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

Table 1: Extracts from excel table used in the literature study of previous IPMWORKS publications to distil potential policy recommendations

Resource	Text from resource	Relates to	page	Additional info	Potential policy recommendation	page	Quote
D1.3	1. Enhance Learning through Practical Demonstrations: Organize field demonstrations and on-farm events to show real-world applications of IPM practices, facilitating easier understanding and positive choices by farmers.	Peer-to-peer learning	12	By facilitating the exchange of innovative techniques and best practices, demo HUBs can significantly contribute to the EU's objectives of reducing pesticide use, minimizing environmental impact, and promoting a more sustainable agricultural future across Europe.	Fund demonstrations - research infrastructure - lighthouse farms - commercial farms = best option => farmers need funds	12	*"Seeing the tangible benefits of reduced pesticide use on my farm has been a real eye-opener, not just for me but for my peers as well."*
D1.3	2. Promote Peer-to-Peer Learning: Encourage knowledge exchange among farmers through community meetings and digital platforms, leveraging the power of peer experiences and successes to motivate wider choices for IPM.	Peer-to-peer learning			Promote peer-to-peer learning - promote the uptake of farmer hubs in the operations of practice research centres, cooperatives, etc. => - funding - operating requirements?	20 27	*"The hub fosters an environment where innovative ideas are shared, leading to collective growth and improvement in practices."* *"It is essential to look for avant-garde farmers who are an example for others."*
D1.3	4. Support Hub Coaches with Continuous Training: Provide hub coaches with ongoing training and resources in both technical IPM knowledge and facilitation skills, ensuring they are well-equipped to support and motivate farmers.	Peer-to-peer learning	26-27		Support hub coaches operation and their capacity building Support international network & exchange	26 29	*"The role of the hub coach in building trust among members cannot be overstated, as it is crucial for open exchange and collaboration."* *"The training sessions and workshops provided for us as hub coaches have significantly enhanced our ability to guide and support our members."*
D1.3	5. Foster Connectivity with Other Initiatives: Create opportunities for hub members to connect with other initiatives and projects, enhancing the learning experience	Peer-to-peer learning	18		- Support international network of hubs/hub coaches & exchange - Support the collaboration of researchers, policy-makers, etc. in IPM demo hubs	18	*"Engaging with local research institutions has enriched our understanding and application of IPM practices, bridging the gap between theory and practice."*

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

	and introducing new perspectives and practices into the hub.		18	- Engaging with Policy Makers: Direct interactions with MEPs and participation in policy forums enable hub members to influence policy decisions and gain insights into regulatory perspectives on IPM.	Engage with hub coaches on IPM practices		
Booklet AUA, Greece, viticulture	hands-on experience has helped farmers understand the benefits and practical application of these tools	Holistic IPM		cf. D1.4: importance of hands-on-experience			*As one of the farmers in our hub, I can say we're all pretty proud of how we've taken on IPM. We've cut down on pesticide use, which feels right for our land and our conscience.*
Booklet AUA, Greece, viticulture	Need 3: securing ongoing support and resources for the hub to maintain and advance our IPM strategies is crucial.	2. Holistic IPM					
Booklet FEUGA, Gallicia, Spain	The farmers express reluctance to experiment with less-tested approaches due to concerns about potential losses.	2. Holistic IPM		Risk aversion! This cautious approach reflects their need for reliable and proven strategies to navigate the complex environmental conditions while minimizing risks to their agricultural endeavors.	Support experimentation in real-life conditions peer-to-peer demonstration		
Booklet FEUGA, Gallicia, Spain	The primary hurdle inhibiting winegrowers from adopting IPM is the absence of viable solutions to combat diseases	2. Holistic IPM			Support research into integrated disease management		
Booklet FEUGA, Gallicia, Spain	The development of better DSSs is essential for empowering farmers to use pesticides [fungicides] only when absolutely necessary. Further exploration and refinement of these tools are crucial for the continued progress of IPM practices.	2. Holistic IPM		farmers express hesitancy in fully trusting these models, emphasizing the difficulty of not adopting preventive measures when mildew, with irreversible effects on plants, poses a constant threat.	Continue to support DSS development + showcase their effectiveness in real-life conditions		

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

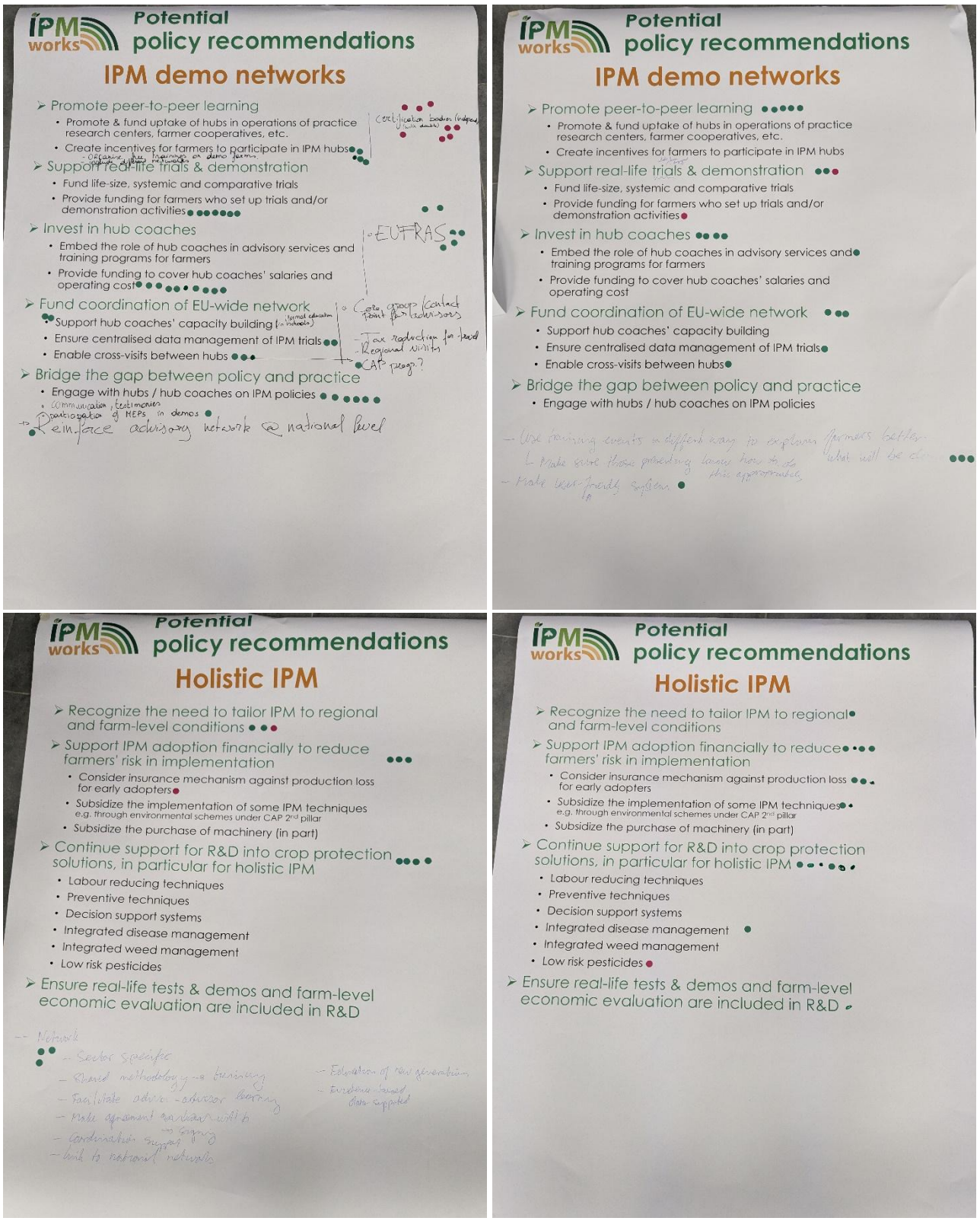


Figure 5 Results from the voting exercise during the "policy recommendations" workshop at the annual partner meeting in Minikowo, Poland, Thursday 12 September 2024

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

Table 2. Summarised results from the voting exercise on "IPM demo networks" during the "Policy recommendations" workshop at the annual partner meeting in Minikowo, Poland, 12 September 2024 (blue text = amendments made during the workshop, green shading = votes in favour, red shading = vetos)

IPM demo networks	favour	veto
Promote peer-to-peer learning	8	
Promote & fund uptake of hubs in operations of practice research centers, farmer cooperatives, etc.		
Create incentives for farmers to participate in IPM hubs	5	
Organise free trainings for farmers at demo farms		
Include multiple networks		
Independent certification bodies could play a potential role in bringing together the farmers (but there might be trust issues)		8
Support real-life trials (whole farm engagement) & demonstration	2	1
Fund life-size, systemic and comparative trials		
Provide funding for farmers who set up trials and/or demonstration activities	7	1
Invest in hub coaches	4	
Embed the role of hub coaches in advisory services and training programs for farmers	1	
Provide funding to cover hub coaches' salaries and operating cost	10	
EUFRAS could play a role in this	6	
Fund coordination of EU-wide network	3	
Support hub coaches' capacity building (also in formal education)	2	
Ensure centralised data management of IPM trials	3	
Enable cross-visits between hubs	4	
Incentives for farmers to participate (tax reduction, as part of educational schemes)		
Core group/contact point for advisors		
Regional support through CAP programme?	1	
Bridge the gap between policy and practice		
Engage with hubs / hub coaches on IPM policies	6	
Communication, testimonies		
Participation of MEPs in demos	1	
Reinforce the advisory network at national level (not well developed in all countries)	1	
Use training events in a different way to explain farmers better what will be done	3	
Make sure those presenting know how to do this appropriately		
Make user-friendly system	1	

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

Table 3. Summarised results from the voting exercise on "Holistic IPM" during the "Policy recommendations" workshop at the annual partner meeting in Minikowo, Poland, 12 September 2024 (blue text = amendments made during the workshop, green shading = votes in favour, red shading = vetos)

Holistic IPM	favour	veto
Recognize the need to tailor IPM to regional and farm-level conditions	3	1
Support IPM adoption financially to reduce farmers' risk in implementation	7	
Consider insurance mechanism against production loss for early adopters	3	1
Subsidize the implementation of some IPM techniques e.g. through environmental schemes under CAP 2nd pillar	2	
Subsidize the purchase of machinery (in part)		
Continue support for R&D into crop protection solutions, in particular for holistic IPM	10	
Labour reducing techniques		
Preventive techniques		
Decision support systems		
Integrated disease management	1	
Integrated weed management		
Low risk pesticides		1
Ensure real-life tests & demos and farm-level economic evaluation are included in R&D	1	
Network	Integrated with peer-to-peer learning	

3.1. Policy briefs

Based on all previous input, two policy briefs were developed, one with recommendations on IPM demo hubs and one on holistic IPM. Only the potential policy recommendations that received most votes during the policy recommendations workshop were included in the policy briefs. Potential recommendations that were vetoed against or that received less than 2 votes were omitted. In this way, the policy briefs could be reduced to simple four-page leaflets, which are assumed to be easily readable by policymakers.

The draft policy briefs were sent to all project partners for review. Based on the partners' comments, some amendments and refinements were made to the text, but they did not suggest any new recommendations. The final policy briefs could thus be developed.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

4. Resulting recommendations

The process described above resulted in policy recommendations arising from the project findings and that are supported by the IPM*WORKS* partners. They include:

- Five main and ten sub-recommendations to support scaling of IPM adoption through IPM demo networks;
- Four main and eleven sub-recommendations to support the development of holistic IPM

These IPM*WORKS* policy recommendations are bundled in a two policy briefs, which follow below and can be downloaded on the project Web site: https://ipmworks.net/category/policy-briefs/.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

Policy recommendations
for scaling IPM adoption

IPM demo networks

CONTEXT

Pesticide use remains high in Europe. Integrated Pest Management (IPM) has been shown to effectively contribute to reducing pesticide use. However, decades after it was introduced and 15 years after the Sustainable Use Directive (2009/128/EC) came into force, IPM adoption still remains limited. Reasons can be found in the **challenges farmers still encounter to move from IPM in theory to IPM in practice**, including:

- Farmers tend to cherry-pick IPM practices to solve acute problems, without embracing IPM as an integrated systems approach to crop health.
- Preventive options at the cropping and landscape level are often undervalued.
- IPM implementation is context-specific. The integrated system of principles and practices differs by region, crop, and individual farm features, making it hard for farmers to find the appropriate approach specific to their farm.
- IPM is often perceived to be complex.
- Advisory support, opportunities for farmers to network, farmer-to-farmer knowledge exchange and learning activities related to IPM, are still underdeveloped in many regions.

IPMWORKS addressed these challenges by (1) promoting a holistic approach to IPM, and (2) setting up an EU-wide network of farmer demo hubs, in which farmers both take their own steps in IPM practice and demonstrate to others that **holistic IPM indeed WORKS**. This brief presents policy recommendations on promoting IPM adoption through demo networks.

DEMO HUB APPROACH

Demo hubs are groups of farmers, coordinated by 'hub coaches', with specific activities to share knowledge, exchange experiences and demonstrate innovative practices. The IPMWORKS project and previously existing networks, such as Déphy (FR), PestiRed (CH) or LEAF (UK), showed the effectiveness of demo hubs to foster collaboration and scale IPM practice on farms.

In demo hubs IPM practices are tested, adapted, and demonstrated in real-life settings, thereby enhancing their credibility and uptake among farmers. The hubs provide practical, hands-on demonstrations and foster peer-to-peer learning among farmers.

The approach involves four key elements:

1. Groups of 10-15 **motivated farmers**, who test IPM practices and share their experiences, pesticide use data and alternative methods;
2. **Hub coache**s, advisors who facilitate the hubs and help farmers 'think holistically';
3. **Demonstration events** for other farmers;
4. **An EU wide network of demo hubs**, allowing peer-to-peer learning between advisors.

Leveraging the demo hub model, is an opportunity to bridge the gap between IPM theory and practice.

RECOMMENDATIONS

.1

PEER-TO-PEER LEARNING IN IPM DEMO HUBS WORKS

Learning is an essential process within the transition to holistic IPM. Moreover, IPM is not a one-shot change, but requires constant adaptations and innovations. It thus requires constant farmer learning. Farmers are willing to make changes to reduce their pesticide use, but often lack knowledge and support to do so.

IPM demo hubs are an **effective way for farmers to find the actionable and locally adapted knowledge** and the **peer support** they need to enable transitions in their crop protection. The hubs help them to create interpretations of IPM that are local, applied, adapted to their farming context, and more meaningful to their lifeworlds. Moreover, demo hubs build farmers' confidence and **empower** them to debate in group, to dare to experiment, to open up to their peers about the results of those experiments and to spread the message themselves to others.

→ Promote and create opportunities for peer-to-peer learning and fund demo hubs

- Use the possibilities already foreseen by the CAP for funding training and on-farm demonstrations, to fund IPM demo hubs (Regulation 2021/2115 CAP, Art.15, Art.78).
- Create incentives for farmers to actively take part in IPM hubs. e.g. by making active participation valid as part of the required mandatory training activities to maintain the training certificate (for pesticides).

RECOMMENDATIONS

2.

HUB COACHES MAKE DEMO HUBS WORK

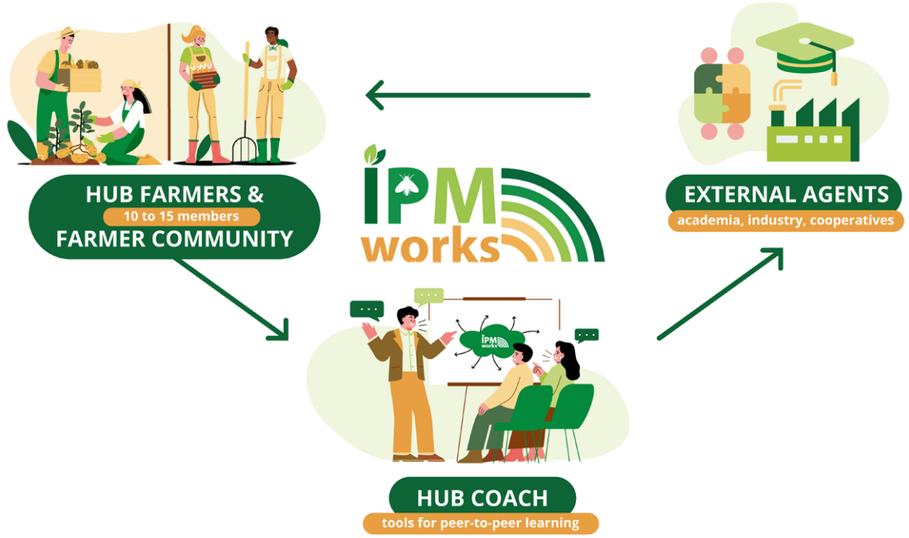
Hub coaches are knowledge brokers within the hubs. Their role is fivefold:

1. Provide individual advice, tailored to the hub members' farms;
2. Provide collective advice to the hub and facilitate dialogue within the hub to enable learning;
3. Organise demo events, to disseminate knowledge to the wider farming community;
4. Collect and process data on the hub's IPM experiments;
5. Engage with (inter)national stakeholders and in advisor-to-advisor learning.

The hub coach is critical for the successful operation of the hub, responsible for identifying key actors, analysing the group's needs, facilitating actions and exchanges within the hub, and ensuring farmers' engagement and motivation. A hub coach must possess both technical knowledge on holistic IPM and soft skills, such as communication abilities and group management capabilities.

→ Invest in hub coaches

- Provide funding mechanisms that cover hub coaches' salaries and operating cost.
- Support hub coaches' capacity building, in formal education and beyond. Provide them with continuous training and resources, both in technical IPM knowledge and in social, organisational and facilitation skills; and with opportunities for mutual networking.



.3 SEEING HOW IPM WORKS IN A REAL-LIFE SETTING WORKS

Practical demonstrations, in settings that they can relate to, enhance farmers' learning. New experiences and comparing options foster different modes of thinking in experiential learning. Experimental stations with systemic comparisons between trials and innovative farmers who experiment with new practices on their own fields are pivotal in the network.

Field demonstrations and on-farm events that show real-world applications of IPM practices, facilitate easier understanding and stimulate positive choices by farmers. Farm visits and demonstrations are the essential platforms to share experiential knowledge among farmers.

→ Support real-life experimenting and demonstration

Provide rewarding mechanisms to support farmers who set up on-farm experiments and demonstration activities with different crop protection practices and share their results with others, covering their time investment and potential loss.

4. INTERNATIONAL EXCHANGE ON IPM WORKS

EU-level exchange is crucial, both for a common understanding of / approach to holistic IPM and hub management, and for an accelerated cross-country spread of knowledge about IPM practices.

- Cross-country events (cross-visits) have been found to be highly enriching for farmers and coaches, as it facilitates knowledge exchange between countries/regions. They help to collect more visions on how to solve common problems and adapt practices to the hub's own case.
- An EU-wide, coordinated network also is crucial for hub coaches' capacity building, offering train-the-trainer programs and advisor-to-advisor learning. The AdvisoryNetPEST project creates opportunities for advisors' networking. However, to include farmers' networking, the IPMWORKS network should be continued and expanded after the end of the H2020 project. EUFRAS, the European Forum for Agricultural and Rural Advisory Services, could play an important role in maintaining such a network.
- Finally, an EU-wide network is the ideal way to collect uniform crop protection data from local hubs, data that can demonstrate that IPM effectively WORKS.

→ Fund the coordination of national and EU-wide networks of IPM demo hubs

- Enable cross-visits between hubs for hub coaches and farmers.
- Support hub coaches' capacity building.
- Ensure centralised data management of IPM success stories.

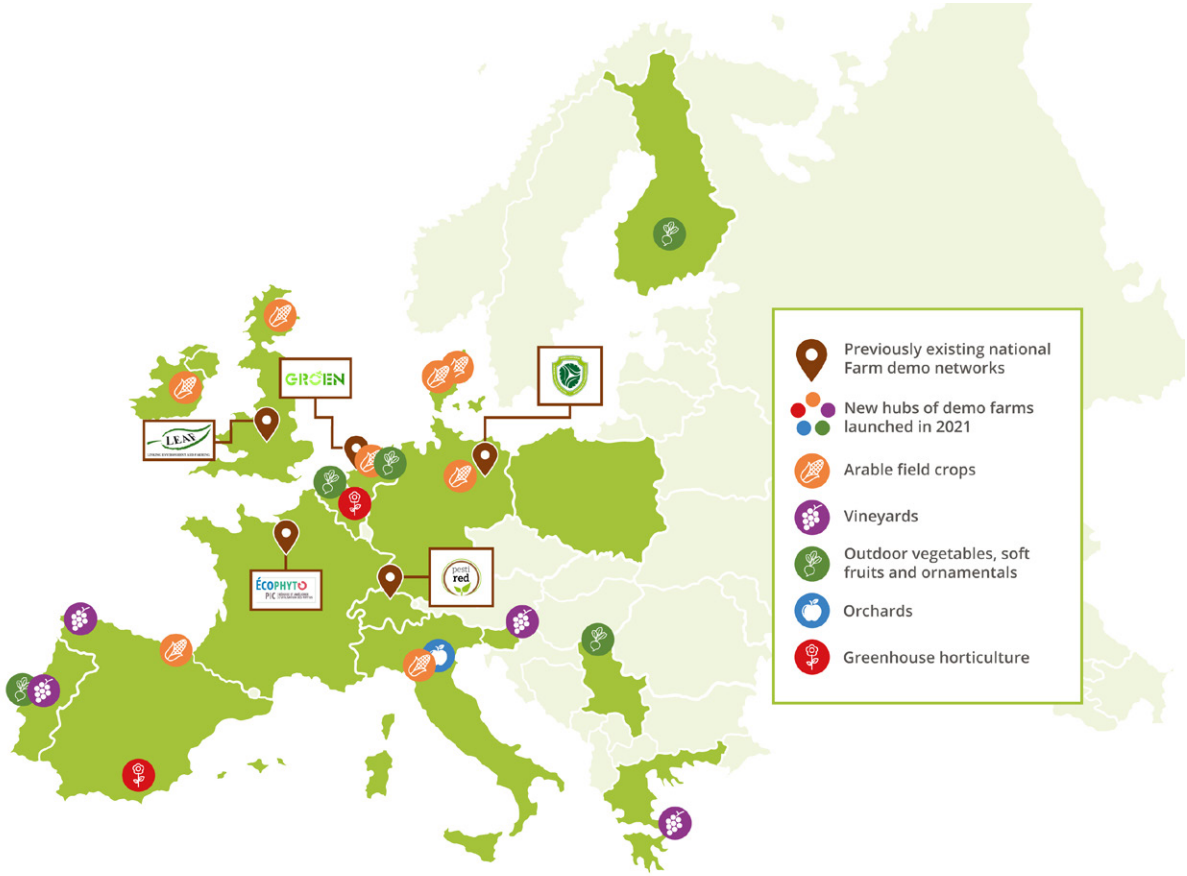
.5 IPM DEMO HUBS CAN MAKE POLICY WORK

IPM demo hubs and their coaches make ideal partners for policy makers who want to find out about new developments in crop protection or what new policy measures would mean for farming practice.

→ Create more opportunities for practice-informed policy making

- Actively engage with hubs and/or hub coaches in IPM policy development.
- Participate in IPM demo events, thus bridging the gap between policy and practice.

AN EU-WIDE FARM NETWORK DEMONSTRATING AND PROMOTING COST-EFFECTIVE IPM STRATEGIES



ADDITIONAL RESOURCES

ipmworks.net | IPMWORKS resources toolbox

IPMWORKS D1.4* | IPMWORKS D1.5* | IPMWORKS D3.7* | IPMWORKS D7.3*

ecophytopic.fr/dephy | pestired.ch | leaf.eco | advisorynetpest.eu | eufras.eu

* **IMPWORKS D1.4** Educational material for social skills in IPM demo hubs. / **IPMWORKS D1.5** Recommendations for successful exploitation of IPM networks to scale IPM adoption. / **IPMWORKS D3.7** Report on the implementation of in field comparisons of IPM strategies. / **IPMWORKS D7.3** A network self-sustainability strategy and other deliverables from IPMWORKS.

THIS PROJECT HAS RECEIVED FUNDING FROM THE **EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME** UNDER GRANT AGREEMENT N. 101000339

Policy recommendations
for scaling IPM adoption

Holistic IPM

CONTEXT

Pesticide use and its negative effects on the environment and human health remain high in Europe. Integrated Pest Management (IPM) has been shown to effectively contribute to reducing pesticide use. However, decades after it was introduced and 15 years after the Sustainable Use Directive (2009/128/EC) came into force, IPM adoption still remains limited. Reasons can be found in the **challenges farmers still encounter to move from IPM in theory to IPM in practice**, including:

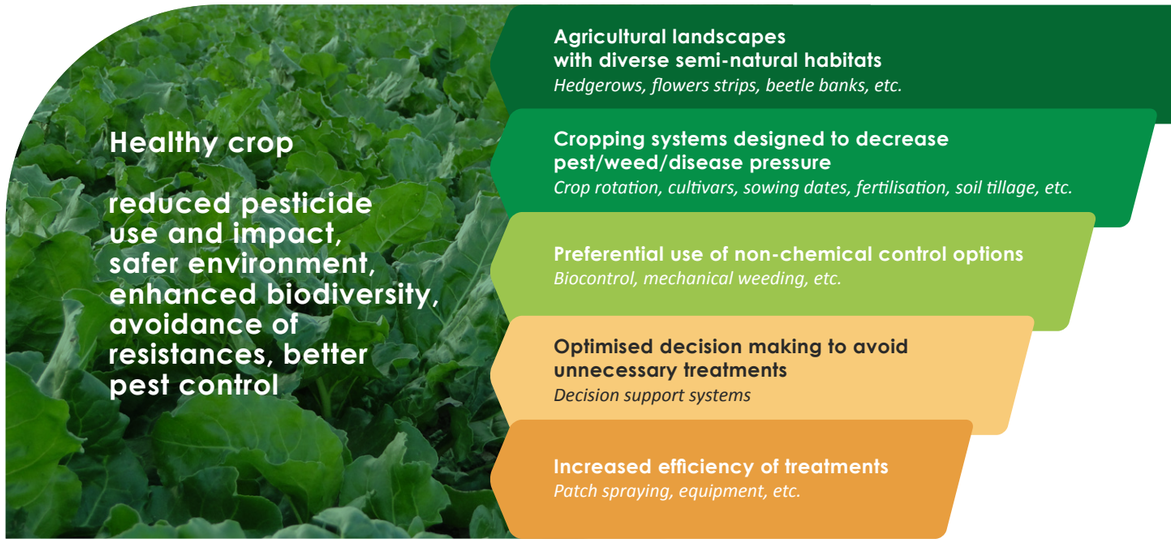
- Farmers tend to cherry-pick IPM practices to solve acute problems, without embracing IPM as an integrated systems approach to crop health
- Preventive options at the cropping and landscape level are often undervalued.
- IPM implementation is context-specific. The integrated system of principles and practices differs by region, crop, and individual farm features. Farmers thus cannot simply follow a standard, but need to find farm specific approaches.
- IPM is often perceived to be complex.
- Advisory support, opportunities for farmers to network and exchange experiences, and related learning, are underdeveloped in many regions.

The **IPMWORKS** project addressed these challenges by (1) promoting a holistic approach to IPM, and (2) setting up an EU-wide network of farmer demo hubs, in which farmers both take their own steps in IPM practice and demonstrate to others that **holistic IPM indeed WORKS**. This brief presents policy recommendations concerning holistic IPM.

HOLISTIC IPM

The IPMWORKS **vision for the future** is one in which agricultural landscapes and cropping systems in Europe are effectively designed to manage pests, diseases and weeds; where decision making on all farms is optimised to ensure effective pest management and avoid unnecessary treatments; where non-chemical pest control options are preferred by all, where efficiency of pesticide treatments is optimised, and where crop production (still) is economically profitable.

Holistic IPM includes redesigning cropping systems within the broader landscape, through the adoption of diversified management strategies, including a broad range of preventive and curative practices.



HOLISTIC IPM

The IPMWORKS consortium agreed on a shared vision of **holistic IPM**, connecting with practical on-farm implementation, and helping to effectively reduce reliance on pesticides. At the **farm level** it focusses on:

- **Healthy crops produced with limited chemical pesticide use**, providing a safer environment with enhanced biodiversity and avoiding resistance build-up in pest populations, while maintaining the farm's economic profitability;
- Strategies **tailored** to the specific needs and context of the region, crop and farm;
- Implementation at the field level considering each of the **five pillars of holistic IPM**, whenever relevant. As defined by IPMWORKS, these are:

1. Arrangement and management of agricultural landscapes, with diverse semi-natural habitats, hedgerows, isolated trees, flowers strips, beetle banks, etc. to attract beneficial organisms that have the potential to regulate crop pests and decrease pest pressure.

2. Designing cropping systems by combining preventive measures to decrease local pest, weed and pathogen pressure, through crop rotations including functional diversity, resistant cultivars, adapted sowing dates and densities, adapted fertilization and soil tillage, adapted pruning, etc.

3. Preferential use of non-chemical control options, when available and applicable, such as biocontrol solutions, mechanical weeding or robotics, protective nets, etc.

4. Optimising decision making to avoid unnecessary treatments, by making use of Decision Support Systems (DSS) and precise monitoring of local pest pressure.

5. Maximizing treatment efficiency, when they are deemed necessary, through precision agriculture, such as patch spraying, or adapting dosage to crop and pest specificities, without compromising treatment efficiency in order to avoid resistance.

RECOMMENDATIONS

Although IPM theory and practice are well documented, new research and innovations are continuously called for. Farmers continuously need to adapt to a decreasing availability of chemical pesticides and an increasing influx of non-endogenous pests and diseases due to climate change and international trade.

Moreover, knowledge gaps exist regarding preventive measures at landscape and cropping system level, tools for monitoring and decision support, non-chemical control options, and machinery to raise the effectiveness of some unavoidable chemical treatments.

1. HOLISTIC IPM NEEDS CONTINUOUS INNOVATION

→ **Continue to support research for and development of crop protection solutions, in particular for holistic IPM, on the following topics**

- The preventive capacity of semi-natural habitats – that can provide food, feed and shelter for predators – for pests in diverse types of crops;
- The capacity of diverse cropping systems to decrease pest, weed or disease pressure;
- Tools for monitoring and decision support: on this topic, IPMWORKS is promoting the IPM-Decisions platform, that provides easy access to a range of Decision Support Systems. IPMWORKS and IPM Decisions jointly call to support R&D of novel IPM DSS;
- Non-chemical control tools, both mechanical and biological tools, to combat the wide range of pests, diseases and weeds;
- Precision agriculture.

→ **Support farmers' access to independent sources of this knowledge**

.2 HOLISTIC IPM NEEDS MITIGATING FARMERS' RISK AVERSION

Farmers' margins from growing crops are small, due to strong international competition in the market for their produce and increased prices for inputs such as fuel or fertilizers. As a result, farmers fear yield loss, if they were to change their crop protection practices. Also as a result of the small margins, many farms have little room for investment.

Moreover, almost all farmers work very long days and fear spending more time on new methods. IPMWORKS research suggests these major barriers could be alleviated by following policies:

→ Support IPM adoption financially to reduce farmers' risk in implementation

- Consider an insurance mechanism against production loss for early adopters.
- Subsidize the implementation of IPM techniques (such as semi-natural habitats, non-chemical prevention/control, automated monitoring, digital DSS infrastructure, machinery reducing pesticide use, etc.), e.g. through environmental schemes under the CAP 2nd pillar.
- Engage consumers and agri-food chains, e.g. through labelling based on traceability.

→ Support real-life testing and demonstration of novel holistic IPM techniques and make sure farm-level economic evaluations are included

As shown a.o. by the IPMWORKS hubs, holistic IPM does not need to pose risks to crop yield or farm profits. This needs to be experienced by farmers and demonstrated peer-to-peer.

3. IPM NEEDS TAILORING TO LOCAL CONDITIONS AND TO CROPPING SYSTEMS

Holistic IPM is highly site-, sector-, crop- and context-specific. The integrated system of principles and practices, differs by region, crop, and individual farm features, necessitating farmers to tailor their endeavours in holistic IPM to their specific (different) contexts.

→ Recognize the need to tailor IPM to regional and farm-level conditions

Do not consider holistic IPM as a 'one-size-fits-all' recipe.

Holistic IPM first and foremost focusses on pest/disease/weed prevention. Crop diversification within arable cropping systems has proven to be important for prevention. Including, for example, working with diverse taxonomic families, diverse sowing/planting times (winter/spring/summer crops), diverse soil tillage strategies, or other agro-ecological practices, may reduce pest or weed pressure. All these options, however, need to be designed at the whole farm level, not at the single crop level.

→ Define IPM rules at the level of the whole farm cropping system

Do not only define rules at the single crop level.

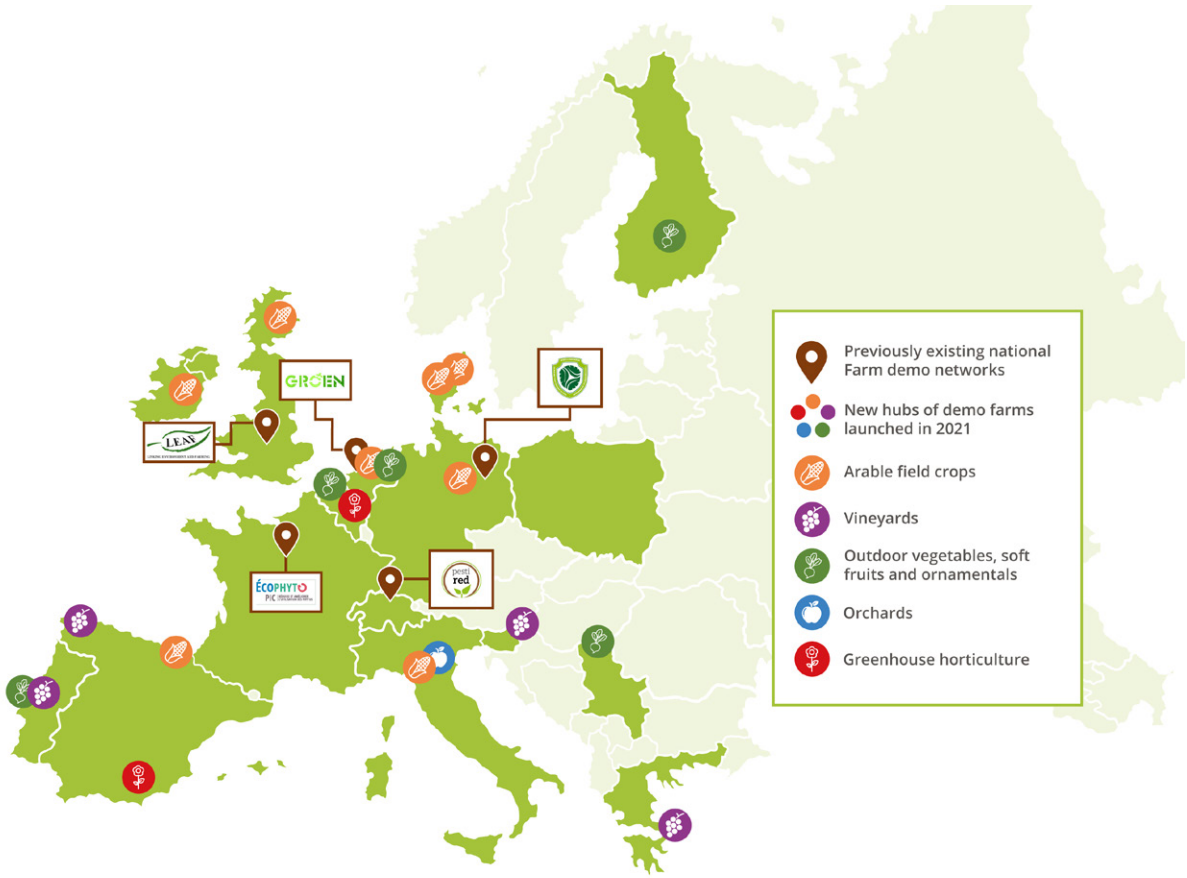
.4 HOLISTIC IPM NEEDS NETWORKING

IPMWORKS demonstrated how holistic IPM can develop and spread through networking and peer-to-peer demonstration and learning. Networking on IPM thus indeed WORKS, both for farmers and for advisors.

→ Support IPM demo networks

- Refer to the IPMWORKS policy brief on IPM demo networks for more details.

AN EU-WIDE FARM NETWORK DEMONSTRATING AND PROMOTING COST-EFFECTIVE IPM STRATEGIES



ADDITIONAL RESOURCES

ipmworks.net | IPMWORKS resources toolbox *

IPMWORKS D3.7 ** | platform.ipmdecisions.net | ipmdecisions.net

* **IPMWORKS resources toolbox** especially (1) booklets describing IPMWORKS farmers' individual strategies to implement holistic IPM; (2) booklets presenting survey results in IPMWORKS farms, providing evidences that IPM indeed reduces chemical pesticides and is cost-effective; (3) IPMWORKS e-learning modules presenting examples of holistic IPM strategies in five agricultural sectors.

** **IPMWORKS D3.7** Report on the implementation of in field comparisons of IPM strategies; and other deliverables from IPMWORKS.

IPM works

THIS PROJECT HAS RECEIVED FUNDING FROM THE **EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME** UNDER GRANT AGREEMENT N. 101000339

5. Dissemination of policy recommendations

The recommendations will be disseminated both on the European, national and regional level, as their implementation may concern each of these policy levels.

Dissemination channels include:

- The IPM*WORKS* website, toolbox and newsletter[11];
- Participants to the IPM*WORKS* final webinar on March 12th, 2025;
- The European Network of Policy Makers established during the project[12];
- The project partners' national and regional networks.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339

References

[1] Eurostat (2024) Agri-environmental indicator - consumption of pesticides. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agri-environmental_indicator_-_consumption_of_pesticides.

[2] European Environment Agency (2023) How pesticides impact human health and ecosystems in Europe. https://www.eea.europa.eu/publications/how-pesticides-impact-human-health/how-pesticides-impact-human-health.

[3] Stern V.M., Smith R.F., van den Bosch R., Hagen, K.S. (1959) The integration of chemical and biological control of the spotted alfalfa aphid: The integrated control concept. Hilgardia 29 (2): 81-101, https://doi.org/10.3733/hilg.v29n02p081.

[4] The IOBC-WPRS Working Group "Integrated Protection of Fruit Crops" exists since 1959, as documented in: Boller E.F., van Lenteren J.C., Delucchi V. (eds.) (2006) International Organization for Biological Control of Noxious Animals and Plants (IOBC). History of the first 50 Years (1956 – 2006): 189, https://www.iobc-global.org/download/IOBC_History_Book_1956-2006.pdf.

[5] Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides. Off. J. Eur. Union L309:71–86 (2009), https://eur-lex.europa.eu/eli/dir/2009/128/oj.

[6] Wustenberghs H., Fevery D., Lauwers L., Marchand F., Spanoghe P. (2018) Minimising farm crop protection pressure supported by the multiple functionalities of the DISCUSS indicator set. Science of The Total nvironment 618: 1184-1198, https://doi.org/10.1016/j.scitotenv.2017.09.211.

[7] Lechenet M., Dessaint F., Py G., Makowski D., Munier-Jolain N (2017) Reducing pesticide use while preserving crop productivity and profitability on arable farms. Nature Plants 3, 17008. https://doi.org/10.1038/nplants.2017.8.

[8] Ramsden M. et al. (2025) IPM*WORKS* D3.7 Report on the implementation of in field comparisons of IPM strategies; and other deliverables from IPM*WORKS.*

[9] IPM resources toolbox, especially (1) booklets describing IPM*WORKS* farmers' individual strategies to implement holistic IPM; (2) booklets presenting survey results in IPM*WORKS* farms, providing evidences that IPM indeed reduces chemical pesticides and is cost-effective; (3) IPM*WORKS* e-learning modules presenting examples of holistic IPM strategies in five agricultural sectors.

[10] Díez R., Muñiz A. (2024) Recommendations for successful exploitation of IPM networks to scale IPM adoption. Deliverable 1.5 of the Horizon 2020 project IPM*WORKS* (GA number 101000339), https://ipmworks.net/deliverables-milestones/.

[11] IPMWORKS website, toolbox and newletter: https://ipmworks.net/.

[12] Jones A., Balduque J. (2023) A European Network of Policy Makers established. Deliverable D7.1 of the Horizon 2020 project IMPWORKS (GA number 101000339), https://ipmworks.net/deliverables-milestones/.

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION' HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 101000339