



Deliverable D 6.1

Strengthening IPM Policies: Recommendations for the European Commission, Member States, supply chain, advisors and trainers, and farmers

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This deliverable is the deliverable originally named “Recommendations for the European Commission to evaluate Member States’ Plans in achieving SUD objectives”.

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1. Executive Summary

Deliverable D6.1 provides extensive recommendations for implementing IPM in a manner that bridges the gap between the realities of farm-level decision-making (D6.2) and European-level policies.

This deliverable is complementary to Deliverable 6.2. This second deliverable presents on farm guidelines, introducing an action sheet to support the implementation of the guidelines at a farm level. An example is presented, it supports the integration of resistant grapevine varieties to limit dependence on phytosanitary inputs. This case study on resistant varieties, as analysed in Deliverable 4.2, show that the agronomic necessity to promote the use of resistant varieties is limited by constraints from the agricultural chain, such as market preferences from the food processing industry, innovation on new resistant varieties...¹.

Therefore, Deliverable 6.1 explores the political levers to make the agronomical changes feasible, through policy recommendations to all the agricultural ecosystem.

This deliverable, provides targeted policy recommendations aimed at strengthening the implementation of **Integrated Pest Management (IPM)** under the Sustainable Use of Pesticides Directive (SUD). Despite the regulatory obligation to reduce pesticide use and risk, progress in reducing the use of pesticides and the related risks has been limited, and IPM enforcement remains too weak².

The project introduces **Active Prophylaxis** as the core strategy for achieving SUD objectives. Active prophylaxis prioritizes preventive measures and anticipatory interventions across various scales, reinforcing system resilience, reducing pest pressure, and consequently lowering the need for curative intervention.

A critical barrier to widespread IPM adoption is that the **agricultural value chain** is currently **locked-in**.

Achieving the objectives of the Sustainable Use Directive and securing sustainable crop protection is possible. It relies on recognizing that the transition cannot be achieved solely by the farmer. By focusing political effort on regulating **innovation**, improving **training and advice**, and **distributing responsibility and engagement fairly across the agricultural supply chain**, the burden on farmers will decrease, ensuring that IPM, based on the paradigm of Active Prophylaxis, becomes the operational pathway for lasting change

In summary, this deliverable draft recommendations to the EU, the MS, the supply chain, advisors and trainers, and farmers, on three priority topics: innovation, training and advice, and supply chain involvement, in order to unlock the IPM implementation, based on codesigned and realistic³ recommendations. Please find below the overview of all our recommendations:

¹ see Appendices (11) 1. Abstract from deliverable 4.2 *Framework for MSs to support the generation of farm specific guidelines for targeted stakeholders*

² See page 5 and 6 of this document: Report of the Commission on the experience gained by member states on the implementation of national targets established in their National Action Plans and on progress in the implementation of Directive 2009/128/EC on the sustainable use of pesticides, 2020; European Court of Auditors, 2020, Special Report Sustainable use of plant protection products: limited progress in measuring and reducing risks; and Ramboll report, 2021, study supporting the evaluation of directive 2009/128/ec on the sustainable use of pesticides and impact assessment of its possible revision

³ All our recommendations have been debated and amended by a wide panel of stakeholders

GUIDANCE TO THE AGRICULTURAL CHAIN



GUIDANCE TO THE **SUPPLY CHAIN**

INSURANCE SCHEMES

- Cooperatives and farmers could contribute to a common economic fund to cover excessive losses for farmers. (Involving private insurance systems).
- Collectors could manage emergency stocks to ensure supply in the event of a bad year.

LONG TERM CONTRACTS

- Provide long-term IPM-certified contracts (3–5 years) between farmers and retailers (and manufacturers) with premium incentives.
- Provide private certifications supporting the implementation of active prophylaxis.

INNOVATORS

- Contribute to regular updates of Agrowise taxonomy of IPM practices.
- Adapt to the uptake of active prophylaxis practices (see action sheet on D6.2).
- Foster new innovations on IPM, prioritising **active prophylaxis**.
- Focus research on major crop-pest interactions that represent the higher risks within the country.
- Privately conducted research funded with public resources has to be made easily accessible.

GUIDANCE TO ADVISORS AND TRAINERS

FOSTER QUINQUENNIAL STRATEGICAL ADVICE SYSTEM

- Distinguish tactical assistance for real-time decision and strategical assistance (every five years : evaluating past practices, resilience outcomes and necessary adaptations).

PROMOTE **ACTIVE PROPHYLAXIS**

PROMOTE AND PARTICIPATE TO PEER-TO-PEER LEARNING

- Facilitate networking and coordination among neighbouring farmers (landscape management, shared monitoring systems, demo farms...).

GUIDANCE TO FARMERS AND FARMERS' GROUPS

PRIORITISE **ACTIVE PROPHYLAXIS** ACTIONS

- Every crop management decision — management of pest reservoirs, rotation, sowing — must be a conscious contribution to crop protection through reduction of pest pressure.
- To support IPM transition, CAP supports are available: risk management measures, investments equipments.

DEVELOP COLLABORATIVE ACTIONS

- Collaborate with advisors, neighbours (peer-to-peer learning), and local groups to identify joint implementation opportunities for greater impact.
- Utilize tools like AECM for farmers' collectives, Operational Groups under EIP-AGRI and regional support schemes to develop and test innovations.

D6.1 POLITICAL RECOMMENDATIONS

TRAINING

- Update with **active prophylaxis**
- Independent advisors networks
- Generalised strategic advice every five years
- Peer-to-peer learning and demo-farms
- Balance IPM and other subjects listed in Annex I of SUD 2009/128/EC
- Pesticides on prescription

INNOVATION

- Updated "Farmers' toolbox for IPM"
- EU catalogue of innovation
- Focus research on major crop-pest
- Foster new innovations on IPM, prioritising **active prophylaxis**
- Adapt thresholds and decision support tools to non-chemical levers.
- Adapt biocontrol products' risk assessment under regulation 1107/2009 or under a declarative scheme
- Adapt to the uptake of priority practices - **see action sheet on varieties in D6.2**

The implementation of policy recommendations is necessary for the deployment of active prophylaxis practices and therefore IPM.

SUPPLY CHAIN

- Specific obligations related to the implementation of key practices - **see action sheet on varieties in D6.2**
- Control IPM implementation using sale registers
- IPM in agriculture companies' corporate sustainability's strategy
 - Insurance schemes
- Long term contracts with premium incentives
- Private certifications



Deliverable 6.1



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RECOMMENDATIONS TO THE EU

COMMON AGRICULTURAL POLICY

- To explicitly support IPM actions, promote **"Active prophylaxis"** via **conditionality, eco-scheme and AECM**, tailoring financial support based on feasibility, cost and existing deployment levels of the actions (a detailed table describing the type of support per priority agricultural actions is provided in D6.1).

REQUIREMENTS FOR REGULAR IMPROVEMENT OF NATIONAL ACTION PLANS

- Assess the progress made compared to the previous NAP to promote **continuous improvement** of MSs' strategies and their **quality** (must enable the implementation of **active prophylaxis** practices by regulations involving each category of stakeholders and, mobilizing the 3 priority areas : innovation, training, and downstream actions).

TRAINING AND ADVICE

- Update** farmer and advisor **training** to strengthen **active prophylaxis**.
- Improve the balance between IPM and other subjects listed in Annex I of SUD.
- Pesticides on prescription**: certain pesticides, due to their hazardous nature and specialised skills, should require a prescription from advisors certified for their skills to secure long term food sovereignty.
- Creation of a **professionnal community of independant advisors**.
- Generalised strategic advice** every five years.
- Promote the PtoP learning as an efficient method for life-long learning and demo-farms.

RESEARCH AND INNOVATION

UPDATED "FARMERS' TOOLBOX FOR IPM"

- Prevents losses in the innovation process.
- Include effectiveness indicators, such as the "Agronomic service rendered" metric.
- Harmonisation tool for the EU and MS to prompt research in identified blind spots.

ADAPT BIOCONTROL PRODUCTS' RISK ASSESSMENT UNDER REGULATION 1107/2009 OR UNDER A DECLARATIVE SCHEME

EU CATALOGUE OF INNOVATION

- Records all plant protection levers: varieties, machines, biocontrol...
- Highlights innovations across Europe
- Consider that control is possible through sellers, thus decreasing the pressure on the farmer by transferring the responsibility to the sellers.

ENFORCE SUPPLY CHAIN RESPONSABILITY

- Give specific obligations on IPM to stakeholders to unlock guidelines on specific IPM practices. *(see case study on varieties in D6.2).*
- Register the service provided by the innovations to guide policies and fundings. (including, for example VCUS Value for cultivation , use and sustainability *see D6.2*).
- Control IPM implementation through the supply chain. Ex: follow the uptake of practices such as equipments, DSS, biological control, resistant cultivars etc using sale registers.
- Make IPM support in agriculture companies' corporate sustainability's strategy.

RECOMMENDATIONS TO THE MEMBER STATES

IMPROVEMENT OF THE NATIONAL ACTION PLANS

- The NAP must **continually improve**, with each revision setting more ambitious goals and methods, as long as SUD's objective has not been achieved.
- The primary objective is **active prophylaxis**
- Plan long-term policies to support long-term effect practices.
- Target all the agricultural chain + the 3 priority topics (innovation, training, supply chain)
- Define the ambition regarding the prioritization of risks.
- Link IPM principles to practices.**
- Move to Indicators of pesticide reduction per practice (ASR) and their context-dependency; values will be shared with other MS.**

CAP NATIONAL STRATEGIC PLANS AND NATIONAL FUNDS

- To explicitly support IPM actions, promote **"Active prophylaxis"** via dedicated eco-scheme and AECM, and via national funds, tailoring financial support based on feasibility, cost and existing deployment levels of this practice (a detailed table describing the type of CAP support per priority agricultural actions is provided in D6.1).

TRAINING AND ADVICE

- Strengthen **active prophylaxis** in IPM training.
- Mandatory strategic advice every five years.**
- Formal recognition of advisory services, investment in their continuous training, improvement of IPM training.
- Pesticides on prescription: for certain pesticides, in line with the European level.

RESEARCH AND INNOVATION

THRESHOLDS AND DECISION SUPPORT TOOLS

- Adapt national decision support systems to biological **thresholds for non-chemical practices**.

MAJOR CROP-PEST

- Focus research on major crop-pest interactions that represent the higher risks within each country.

NATIONAL SURVEYS TO MONITOR IPM

- Prioritise the practices analysed in the survey on practices (e.g. prophylactic measures), reserving a potentially more in-depth version of the survey for a smaller sample.

ENFORCE SUPPLY CHAIN RESPONSABILITY

- Make IPM support in agriculture companies' corporate sustainability's strategy.
- Give specific obligations on IPM to stakeholders to unlock guidelines on specific IPM practices. *(see case study on varieties in D6.2).*
- Control IPM implementation through the supply chain, in line with the European level.

2. Abbreviations and acronyms

Abbreviation / Acronym	Description
EU	European Union
MS	Member States of the EU
IPM	Integrated Pest Management
CAP	Common Agriculture Policy
AECM	Agri-environment-climate Measure
NAP	National Action Plan
JRC	Joint Research Center
CSRD	Corporate Sustainability Reporting Directive
SUD Directive	Directive 2009/128/EC
ASP	Agronomic Service Provided

3. Background

The SUD directive (Directive 2009/128/EC) sets up an **obligation to reduce the use of pesticides and the risks on environment and human health**.

In EU law, a directive creates an obligation to achieve the result stated in it⁴. The Objective of the SUD directive is to reduce pesticide use and its risks on environment and human health, as settled in article 1 of the SUD Directive. It means that Member States have to choose the forms and methods to achieve this result.

But this obligation to achieve a reduction of pesticide use was not quantified, until the publication of the non-binding **50% reduction target by 2030** in the Green Deal. However, **even if this target is actually largely debated in some stakeholders groups , it is essential for stakes of environment preservation, human health and long-term sustainability of farming activity.**

Report of the Commission on the experience gained by member states on the implementation of national targets established in their National Action Plans and on progress in the implementation of Directive 2009/128/EC on the sustainable use of pesticides, 2020, recognised that IPM is one of the key elements of the directive. Based on a European Citizens Initiative in 2017 to reduce the use of pesticides, this report first assessed the effectiveness of the SUD Directive. The Commission committed to evaluate if sufficient progress had been made in reducing the risks associated with pesticides. If sufficient progress had not been made, the Commission committed to consider setting a European Union-wide mandatory target for the reduction of risk from pesticides. This led to the Green Deal setting two non-binding targets: a 50% reduction in the use and risk of chemical pesticides and a 50% reduction in the use of more hazardous pesticides in 2030.

European Court of Auditors, 2020, Special Report *Sustainable use of plant protection products: limited progress in measuring and reducing risks*, quoted « we found that there is limited progress in measuring and reducing the risks of PPP use. » and « [the] integrated pest management [...] enforcement is weak ».

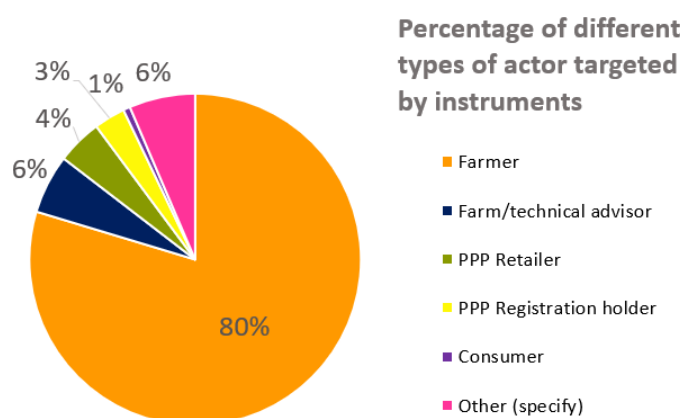
⁴ Article 288 TFUE: “A directive shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods.”

Ramboll report, 2021, study supporting the evaluation of directive 2009/128/EC on the sustainable use of pesticides and impact assessment of its possible revision, reported that « specific provisions lacked implementation such as the quality and level of ambition of NAPs and little control and enforcement of IPM. »

Therefore, there is a **need to improve the means to achieve the pesticide use reduction and its impacts** on environment and human health, both at European and national levels. The SUD directive must be better implemented, **in particular through the National Action Plans and the IPM implementation**. The mission of the Agrowise project was to build recommendations to improve IPM implementation based on scientific agronomical knowledge.

As identified by the experts group⁵, there are **three key ways to implement Active Prophylaxis in the field: through innovation, through training and advising farmers, and finally by unlocking the socio-technic system and a strong commitment of downstream sector**. It is not possible to make farmers the sole targets for policies because the agricultural value chain is presently locked-in⁶, reducing farmers' freedom of action.

Up until now, policies to implement the SUD Directive and IPM have been almost exclusively (84.5%) led by national governments, and almost fully focused on farmers (80%).



⁵ Three main topics identified by the group 5.2 experts.

⁶ Fares M, MagriniMB, Triboulet P, 2012. Transition agroécologique, innovation et effets de verrouillage : le rôle de la structure organisationnelle des filières. Le cas de la filière blé dur française. Cah Agric 21 : 34-45. doi : 10.1684/agr.2012.0539 "Our results show that the low degree of integration of the supply chain can be viewed as a lock-in mechanism. Therefore, the organizational structure of the supply chain itself can play the role of a self-reinforcement mechanism that reduces the incentives to adopt new practices."

Costanza Conti et al., 2024. What does the agri-food systems transformation agenda mean for agricultural research organisations? Exploring organisational prototypes for uncertain futures, Global Food Security 40 (2024) 100733 "They also act as mutually-reinforcing factors of unsustainability (Conti et al., 2021b)". This lock-in is addressed by the authors as "transformation will be a negotiated process between all food system actors and largely driven by policy and regulation (Hebinck et al., 2021)."

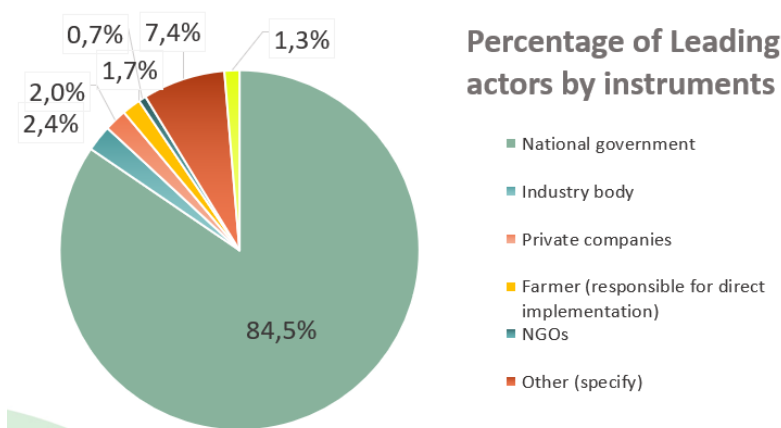


Figure 1: presented in March 2025 in Brussels, based on the policy instruments database produced by the Teagasc and Ricardo consulting.

It is key to involve the supply chain. This priority has been highlighted by the experts at several stages (in the stakeholder map presented in Annex of the deliverable 5.3 created in September 2024, and in the content of deliverable 5.3 created all along the project) and by the consortium (deliverable 4.3).

Although for the past 15 years the IPM approach has been based on national governments targeting farmers, equally through informative, regulatory and economic instruments⁷. There is growing recognition of the importance of training and, more recently, peer-to-peer learning. However, downstream sector involvement remains very limited (only 4% of policy instruments target the supply chain⁸) and faces strong resistance. Moreover, from all the supply chain stakeholders, only pesticide retailers are targeted by policy instruments. This resistance is particularly evident in the reactions of stakeholders (group 5.3) and to a lesser extent experts. Both experts (group 5.2) and stakeholders (group 5.3) highlighted the need for greater involvement of distributors, processing and distribution actors, cooperatives, retailers, consumers, and equipment manufacturers (quote of deliverable 5.3), but when it came to giving specific obligations, they reacted and preferred incentives. The common belief is that making IPM economically viable, practical, and politically supported will naturally align the supply chain.

This overlooks current market conditions shaped by cheap pesticides and hidden environmental and health costs. Allowing the chain to adapt on its own to support the implementation of IPM by farmers seems implausible, as this adaptation has still not been achieved to a sufficient extent and that the farmers cannot support all the financial and social costs of the transition and live with paradoxical messages. It therefore seems necessary to add explicit measures targeting these actors in order to share responsibility and reduce the burden of responsibility on farmers.

This is why **the involvement of the supply chain requires legal constraints and incentives** in order to unlock the situation allowing farmers to apply IPM practices.

Training and advising of professional users, distributors and advisors are already a European and national priority. The SUD Directive states an obligation (article 5 of the SUD directive) to Member states to ensure that all professional users, distributors and advisors have access to appropriate training, both initial and additional, regarding the subjects listed in Annex I of the SUD. Member States shall also establish certification systems providing evidence of this

⁷ Appendice (11) 2. Categories of policy instruments based on the targeted actors (farmers)

⁸ Appendice (11) 2. Categories of policy instruments based on the targeted actors (supply chain)

sufficient knowledge.

However, as confirmed by Eurostat, **most farm managers in the EU only have practical experience**; this was the case for 72.3 % of them in 2020⁹. There is therefore a first need to improve the content of the syllabi for initial training (T5.3 : during the codesign process with experts, many recommendations have been formulated on the content of the syllabi for the initial training) but also on the additional training, also called life-long learning. As 72.3% of the farm managers did not receive a sufficient initial training, it is very important to provide a complete additional training. It cannot be considered as a simple reminder of the initial training content. But the annex I of the SUD directive only confers to IPM one topic out of the 13 topics. Therefore, in average, only 2 hours are dedicated to IPM every 5 years¹⁰.

Moreover, even if training must be made accessible to farmers, it is important to ensure that farmers effectively invest into being trained. This is why the latest direction in Europe is to develop peer learning, such as in Ireland.

Finally, training and advice must be regularly updated based on the most recent scientific knowledge, as many innovations are available but lack visibility. This need for updates was mentioned in the SUD directive but was not acted upon. **Training should not be regarded as an isolated measure, but rather as a central element of a broader systemic transformation that remains in progress.** Accordingly, farmer training must be conducted in close collaboration with the innovation sector.

Currently, innovation is not motivated based on the reduction of pesticides it allows and is hard to access. Out of the 15 000 projects reviewed by the [Fortuna](#)¹¹ project, 16% were identified as containing relevant information on solutions potentially applicable to reducing pesticide use¹². Therefore, many innovations already exist, but cannot be compared with each other on their efficacy to achieve SUD objectives. This is why the **Agrowise project has created a taxonomy of farming practices**¹³ to collect the agricultural practices underlying each of the eight general principles.

This taxonomy shows the high number of possibilities under principle 1. This taxonomy, which will be made directly available on the JRC farmers' toolbox website¹⁴, aims to make visible all the farming practices available to implement IPM and its principles. In parallel, the **Agrowise project has also developed an indicator on the reduction of pesticides allowed by a farming practice: the agronomic service provided**¹⁵.

In conclusion, the EU and the Member States should assess the three priority topics (innovation, training and advice, and the involvement of the supply chain) to decide how to act (inform, regulate, incentive, levy...) in order to achieve a broader IPM implementation through the

¹⁰ See project Vital in France

¹¹ Extract from Fortuna's project website: "The FORTUNA project, a three-year initiative funded by the European Union, started in January 2024. Its main objective is to identify future research challenges within the framework of the European Farm to Fork (F2F) Strategy. This strategy sets forth quantitative targets aiming to decrease the overall use and risk of chemical pesticides by 50%, as well as to reduce the use of more hazardous pesticides by 50% before the year 2030." Link: [Home - Horizon Fortuna](#)

¹² Fortuna poster *Società Italiana di Agronomia, 54° Convegno Nazionale, Torino, 17-19 settembre 2025, Federico Leoni, Paolo Bàrberi*

¹³ <https://agrowise-ipm.softtr.app/>

three aforementioned priority topics, as they are instrumental to achieve this goal. These three domains for policies imply the involvement of many agricultural actors: innovators, trainers and advisors, downstream industry. This **priority to involve all the agricultural value chain**, stated in the T4.2 (see the 3 tiers as presented in the table 1 of D4.2) is also stated as an objective at EU level, (see the European vision for agriculture and food¹⁶).

In order to provide farmers with the necessary tools to effectively apply these IPM principles, it is essential to consider the range of actors who supply protection measures as well as those who support their implementation and those who collect and process the crops. The Agrowise project aims to propose pathways for gradual progress while acknowledging the challenges associated with coordinating multiple actors, each facing different constraints and capacities. This issue is common across environmental transition processes, where expecting all stakeholders to advance synchronously along a common path is often unrealistic. By involving all the actors and sharing responsibility along the chain, the burden for the farmers will decrease, as it is explicitly expected.

4. Objective/Aim

This deliverable focuses on the implementation of the guidelines and the support strategy for Integrated Pest Management (IPM), particularly the promotion of its general principles by the Member States. It addresses the mechanisms and policy instruments through which European Union and Member States can facilitate the practical uptake of IPM across diverse agricultural systems. **The technical foundations that ensure the robustness and consistency of progress towards the objectives are detailed separately in Deliverable 6.2**, which provides the methodological bases for assessing and strengthening IPM implementation within the Agrowise framework.

This document has been prepared to provide agricultural guidance and policy recommendations to the EU and the Member States to enhance the implementation of Integrated Pest Management under the Sustainable Use Directive. The objective of this deliverable is to propose to the European Commission, Member States and stakeholder avenues to implement policies that support the adoption and development of crucial agricultural practices, identified under the active prophylaxis paradigm.

As stated in **Deliverable 6.2** Final Integrated Pest Management (IPM) Guidelines, based on the most recent agronomical knowledge, **active prophylaxis is the key to answer the SUD objective**.

¹⁶ https://agriculture.ec.europa.eu/overview-vision-agriculture-food/vision-agriculture-and-food_en

Active prophylaxis: *it is a series of actions, agronomic practices and cultural combinations that are intentionally implemented in order to reduce the weeds, pests and diseases pressure below the harmfulness threshold. This threshold consider long term pest dynamics and the hidden costs of plant protection. By the way, it is based on the pressure that the crop can withstand without significant consequences on yield and quality and maintaining global economic viability.*

Thus it will be higher if a chemical pesticide is later used to control the weeds, pests or diseases. The thresholds will be intermediate if non-chemical methods are to be used (Principle 4), where the main action modes rely upon biological regulations which need greater anticipation. And the thresholds will be the lowest if no pesticide is to be used.

Moreover, turning the story in the opposite direction, an Active Prophylaxis strategy that makes it possible to achieve low pressures, corresponding to the lowest harmfulness thresholds is leading to a major reduction of pesticide use, and thus pesticide impact. As a consequence, there is likely to be a decrease in short term profitability for the farmer, but considering that the hidden costs will decrease for the whole society, this gap would eligible for support.

This notion is translated into a set of key practices to promote the implementation of all general principles of IPM and to reduce the pest¹⁷ pressure, and then the need for curative intervention. Reducing the need for chemical interventions is the most realistic way to preserve the efficiency of the remaining active substances, as their regular use is inducing the emergence of resistant pest populations that renders the active substance useless. The Active Prophylaxis emphasizes the long-term benefits of practices that, while potentially costly or time-consuming in the short term, are crucial for the sustainable management of pest populations over extended periods. Active Prophylaxis prioritizes preventive measures and anticipatory interventions, at various spatial and time scales, reinforcing system resilience and reducing reliance on chemical controls. By embedding a long-term perspective into routine decision-making, this approach ensures that short-term trade-offs are outweighed by durable reductions in pest and disease pressures. It is also anticipated that such a strategy when improving the environment will in return increase the ecosystem services, including the regulation services.

It is therefore **critical to ensure that the policy framework surrounding the active prophylaxis practices and systems allow their effective implementation**. The need to modify policies to align with current agronomic knowledge, *as detailed in the Deliverable 6.2 guidelines*, may involve changes at the EU, national and supply chain levels.

For example, for Active Prophylaxis practices needing a long period before delivering a measurable effect (confer “triangle in the wind”¹⁸), policies must offer long-term support, ensuring that farmers and stakeholders have the time and resources needed to adapt their systems. Overall, policy measures must always be coherent with the intended outcomes.

To achieve a broad IPM deployment, through the adoption of Active Prophylaxis practices, a redesign is needed on the field and within the agricultural chain. However, transformational changes at an institutional level, even if needed, can lead to institutional inertia or rejection. Therefore, one of the challenges of Agrowise when drafting recommendations, was to limit as much as possible transformative changes, so as not to create institutional inertia. Transformative changes must be restricted to those that are most necessary and effective. **The aim of this**

¹⁸ See Appendice (11) 3. Triangle in the wind

document is therefore to propose a limited number of transformative recommendations that are capable of unlocking the implementation of the IPM, and to support them with incremental recommendations that will boost the current system. By combining transformative and incremental recommendations, Agrowise seeks to offer practical and achievable steps, reducing the administrative and operational burdens typically associated with large-scale systemic transitions. Such an approach enables gradual adoption, ensures stakeholder engagement, and maintains forward momentum toward the overarching objectives of sustainable crop protection.

The objective of this deliverable is to connect the outcomes of Agrowise with targeted recommendations for Member States and policymakers, establishing an actionable framework aligned with deliverable 4.2 steps and the technical guidelines outlined in Deliverable 6.2. In summary, **this deliverable presents a policy framework designed for transferring the « on-farm » guidelines from Deliverable 6.2 into sound policies and contextually relevant actions within each policy levels.**

The recommendations outlined here were formulated through close collaboration with a wide range of agricultural stakeholders and experts, with some recommendations originating directly from these parties. In addition, regular meetings with representatives of DG ENV, DG AGRI and DG SANTE took place to secure the overall orientation and the global ambition, while remaining in a realistic zone. This collaborative approach was adopted to promote broad acceptance of the recommendations, thus enhancing their likelihood of their effective implementation with minimal hurdles.

Accordingly, the Agrowise recommendations are formulated in alignment with the specific audiences they address, recognizing the diversity of roles and responsibilities across the agricultural sociosystem. These target groups include the European Commission, Member States, downstream sectors involved in supply chains, providers of agricultural inputs, and the research and innovation community. They also encompass advisory stakeholders, including farmer groups and extension services, as well as farmers themselves, who are central to the transition. Each recommendation is therefore tailored to the influence, capacity, and mandate of these actors, with a shared focus on the effective implementation of IPM — identified as the cornerstone for achieving the objectives of the SUD. This alignment ensures that collective progress towards reduced pesticide dependency is both coordinated and context-dependant, reinforcing IPM as the operational pathway to sustainable crop protection.

Consequently, **this document is structured in specific recommendations dedicated to each of the involved stakeholders, from a macro to a micro level: the EU, the MS, supply chain, advisors and trainers, and farmers.**

5. Recommendations to the European Commission

Recommendations to the European Commission mainly focus on the CAP tools, training and advice, innovation, stakeholder involvement, and the definition of clear requirements and improvement of the NAPs. These five axes are of importance and must be combined, as they will respectively unlock part of the blockage to the implementation of IPM:

- The CAP primarily applies to farmers, but isn't yet a very effective tool for helping farmers implement IPM in the field through a targeted and conditioned **financial support, as the links between the CAP and IPM aren't defined**;
- Training provides access to **knowledge**, makes visible the available innovations and reduces the risk aversion;
- Research and innovation provide **technical support** by increasing the possibilities and options for implementing IPM;
- **Considering all stakeholders** in the agricultural sociosystem (not only the pesticide users, advisors and pesticide distributors, targeted by the SUD Directive) as relevant targets for public policy instruments.
- NAPs should improve their tools on IPM implementation, as stated in several reports¹⁹. Each new version should present improvements, and this can be facilitated by clear requirements from the EU.

5.1. Explicit support to IPM actions

The recommendations addressed to the European Commission focus on its role in managing the Common Agricultural Policy (CAP) and the alignment between the objectives of the CAP and the Sustainable Use of Pesticides Directive (SUD) implementation. This alignment between the CAP and the SUD objectives on IPM is a need that has been repeatedly expressed by several Member States during Agrowise interviews and workshops. Member States often seek to respond simultaneously to CAP and SUD priorities to simplify the transfer of European requirement.

Recommendation: Support active prophylaxis practices through conditionality, eco-schemes and AECM. The type of support should depend on the ease of implementation of the practice, its implementation cost and the current level of deployment when it is accessible.

Recommendation: the EU should explicitly include IPM as a priority area in the common list of action areas to be adapted by Member States into their CAP Strategic Plans
Support to investments should rely on the list of equipment covered by the IPM taxonomy
Collective approaches to CAP are bottom-up, and examples of approaches involving combinations of Active Prophylaxis practices are easy to construct.

One of the primary objectives of this project mentioned by DG AGRI was **to identify specific connections between our IPM guidelines and support tools provided by the CAP**. Agrowise recommendations are designed to provide insights for the upcoming CAP in the period of 2027-2031, which is presently in the planning phase. Even if CAP already supports some IPM practices belonging to Principle 1 such as crop rotation, the actual financed practices are limited. Therefore,

¹⁹ see page 5 and 6 of this document

the Agrowise project suggests to better support through the CAP the key IPM practices, explicitly targeting IPM practices and in particular the active prophylaxis practices.

The CAP is a major lever to encourage farmers to adopt practices until they are implemented wherever feasible, as well as to pursue ambitious practices that are highly beneficial even if applicable only under specific conditions. However, a major **challenge** in this context lies in the fact that actions which should ideally be generalized across all farms cannot, in practice, be made legally mandatory. Indeed, **once a measure becomes legally compulsory, it can no longer be supported** through public policy instruments, such as CAP payments. This creates a delicate balance: while widespread adoption is critical to achieve ecosystem services at the landscape level, policy incentives must be carefully designed to encourage voluntary uptake without transforming essential practices into obligations that would disqualify them from support mechanisms.

It remains possible to deviate from the general principle of incompatibility between mandatory and fundable practices by applying certain exception. For instance, **when legal requirements are made more stringent, farmers could be provided with compensation during a transitional period**. This approach has been applied previously, such as with greening measures that were mandatory and financed through the CAP, as well as with upcoming GAEC standards in the next CAP framework, which will also be eligible for funding. Such solutions would be optimal for a smooth transition. Stakeholders and experts have expressed concerns that transitions entail costs for farmers, and without appropriate funding, these necessary transitions are unlikely to be undertaken.

If a derogation to support mandatory IPM measures through the CAP during the transition period is feasible, this approach would be the most appropriate. Should such a solution be unavailable, Agrowise has developed an alternative proposal: to limit the implementation of mandatory IPM practices to those essential for the transition, while providing financial support for more comprehensive voluntary measures through AECM and eco-schemes.

The levels of conditionality, Eco-scheme, and AECM represent the level of support most consistent with the action. However, it should be noted that practices associated with ‘conditionality’ could also be positioned in eco-schemes or AECMs. Similarly, practices associated with eco-schemes could be positioned in AECMs. A change in the level of a practice implies a potentially smaller scope (conditionality is the level that will involve the largest number of farmers, followed by eco-schemes and finally AECMs). Thus, moving from conditionality to AECMs, the ambition of the measure can be adjusted and the specific guideline and action sheet (as described in 6.2) can be revised accordingly.

Conditionality²⁰: Conditionality is restricted for practices that are either low-cost, widely deployed, or already mature, for which generalization would also bring benefits over long-term or broad-scale implementation. Placing a practice under conditionality is the most powerful way to ensure its widespread implementation by farmers. However, this approach means that the implementation of the practice would in principle not receive additional support. To determine whether a practice can be placed under conditionality, Agrowise has assessed:

- 1) if the practice is already under conditionality but its requirements should be improved,
- 2) whether the practice is already widely adopted and well-understood by farmers,
- 3) whether the cost of applying the practice is low and

²⁰ In order to receive EU income support, farmers must respect a set of basic rules.

- 4) whether its benefits manifest only at the landscape scale—including mutual protection among neighbouring farms and amplified effects when adoption is widespread—effects that would otherwise remain limited if left solely to individual choice.

Nevertheless, practices that go beyond conditionality require support, which can be provided through CAP instruments, in particular Eco-Schemes and AECM.

Eco-schemes²¹: This level is particularly appropriate for practices that would be beneficial in the long term if widely adopted, but which are still not widely implemented. It denotes a practice for which it is possible to establish an achievable rule accessible to a large number of farmers. At this stage, the deployment of the practice remains limited, and it is not yet realistic to expect all farmers to comply with the rule in the short term. Showing that they can be promoted through Eco-schemes highlights them across Europe in the joint Eco-schemes catalogue. Furthermore, this instrument provides farmers with financial support for the adoption of actions, although the amount of funding remains limited.

Over time, these practices **could progressively move towards conditionality**, ensuring broader adoption, which in turn enhances the effectiveness of the practice at a long-term temporal scale or a landscape-scale spatial level.

Eco-schemes are Pillar I instruments, which means that the financial support is **annual**. For instance, supported measures under Eco-schemes are the maintenance of organic farming, or crop diversification, which are both yearly commitments. **It is possible to support multi-year actions within the framework of Eco-schemes, which are annual commitments, because the general framework of the CAP itself is multi-year.** This makes it easier for farmers to commit to actions where the means are controlled but the results, knowing that they depend on climatic conditions, are not attributed to them. The important thing here is to ensure that these actions are visible in the Eco-schemes catalogue in the long term.

Within the Eco-Scheme mechanism, the EU should establish a common list of eligible actions while Member States keep the flexibility to adapt these schemes into their CAP Strategic Plans according to national environmental and climatic priorities²². Accordingly, **the EU should highlight the Eco-scheme that are coherent with ambitious IPM into this common list** and Member States should then determine which practices to support, facilitating as wide an adoption as possible for all farmers.

Identifying the list of practices that would be eligible to eco-schemes could be done in a process of permanent discussion between Member States and the stakeholders, including the farmers, as it is the case in Belgium. Such a system relies on the principle of continuous improvement.

AECM: This level supposes the **most ambitious and demanding practices implemented by the farmers**, which are supported with **strong financial incentives**. It indicates a highly ambitious measure that can only be applied contextually and with voluntary farmers.

AECMs are Pillar II instruments, which means that the financial support is **multi-annual**. For instance, supported measures under AECMs are the conversion to organic farming, or crop rotation, which are both multi-annual commitments.

²¹ Eco-schemes support farmers in adopting practices that minimise the negative impact of agriculture on the environment and climate, and help them evolve towards more sustainable farming models.

²² European Commission, Eco-scheme, https://agriculture.ec.europa.eu/common-agricultural-policy/income-support/eco-schemes_en “This new mechanism focuses on a common list of action areas defined at EU level and can be used to support practices such as [organic farming](#), agro-ecological practices, precision farming, [agro-forestry](#) or carbon farming, as well as animal welfare improvements.”

Under the next CAP (post 2031), these practices are **planned to transition to the eco-scheme system**.

Agrowise recommendation is **to support in priority Active Prophylaxis practices** through the CAP. The Active Prophylaxis actions are highlighted by the Agrowise project because they represent a system resilience strategy, capable of strengthening the robustness of agricultural systems. **They can be applied across a wide range of crops and against a variety of pests. Furthermore, as outlined in Deliverable 5.2, many of these practices can be fine-tuned to local conditions.** Once adapted, their efficacy tends to be relatively consistent across contexts, and most are considered to have low dependency on specific environmental or agronomic conditions. Practices with higher dependencies may be accompanied by exclusion criteria or conditional modalities for cases where they are less applicable, ensuring both flexibility and efficacy in diverse farming systems.

Level 1 (target)	Level 2 (strategy)	Level 3 (practice)	Conditionality	Eco-Schemes (annual)	AECM (multi-annual)
1.1 Crop selection	1.1.1 Varietal diversity	Use resistant and / or tolerant cultivars	adapts according to the list of varieties considered resistant or tolerant		
		Use resistant tolerant cultivars in mixture		Requires knowledge and technical support	
	1.1.2 Crop species diversity	Crop rotation	Already present in conditionality, can be adapted to Ecoscheme or AECM according to the established guideline		
		Intercropping		Requires knowledge and technical support	
		Species mixtures		Requires knowledge and technical support	
		Crop selection: fallow		Requires knowledge and technical support	
	1.1.4 Planting materials	Use of certified seeds		Would only apply to a proportion of	

				crops	
		Use of certified planting materials		Would only apply to a proportion of crops	
	1.1.5 Seed selection	Non chemical Seed treatment		Still under development	
1.2 Crop establishment	1.2.1 Sowing	Sowing time			Integrates into a system (with seeding density, false seeding, harvesting technology)
		Seed density			Integrates into a system (with seeding time, false seeding, harvesting technology)
	1.2.2 Planting (cuttings/seedlings)	Plant spatial arrangement			x
1.3 Cultivation techniques	1.3.1 Soil cultivation	Plough			Integrates only into a multi-year system
		False seed bed			Integrates into a system (with seeding density, seeding time, harvesting technology)
	1.3.4 Harvest management	Harvest technology			Integrates into a system (with seeding time, seeding density, false seeding)
1.6 Management of ecological infrastructure	1.6.1 Protection and enhancement of beneficial	Creation or restoration of habitat outside the production area		Relevant at the level of a farm (or even at the territorial level)	

	organisms	Creation or restoration of habitat inside the production area		Relevant at the level of a farm (or even at the territorial level)	
	1.6.2 Management of resources to the pest	Removal of non-crop hosts			Integrates only into a multi-year system
1.7 Hygiene measures	1.7.1 Cleaning of machinery and equipment	Cleaning of machinery and equipment	requires only minimal investment and integrates into basic prevention practices		
	1.7.2 Management of resources to the pest	Water/soil sanitation			Integrates only into a multi-year system
		Removal of inoculum sources			Integrates only into a multi-year system
4.2 Biotechnical control	4.2.2 Attractants and repellents	Use of pheromone traps		Requires knowledge and technical support	

Figure 2: CAP regime proposed by Agrowise for each active prophylactic action. Actions requiring technical knowledge and support are preferably positioned in Eco-schemes or AECMs to support access to advice.

For these Active Prophylaxis practices, the Agrowise project proposes to provide more precise guidance on the formulation of guidelines. For detailed methodology and recommendations on drafting these guidelines, reference should be made to Deliverable 6.2, which outlines the technical and strategic framework supporting their implementation across diverse cropping systems.

Please note that some of the practices may be grouped together within the same AECM or Eco-scheme. Levels 1 and 2 of the taxonomy can help to make these gatherings based on farmers' cultural practices.

Case study on supporting mating disruption through the CAP

This case study has been presented during the final Event in collaboration with Dario Ivić representative of the Croatian ministry of agriculture, as it has been identified as the priority for Croatia by Sandra Dujmic (former Croatian representative).

Farmers commit to implementing, for the full duration of the measure, annual practices of mating

disruption, attraction, or repulsion of target organisms using tools that interfere with the olfactory landscape of insects or other targets. The aim of mating disruption is to reduce damage on fruits and vegetables.

Thus, the core practices selected in Deliverable 6.2 should include the foundational measures that form the roots of sustainable IPM implementation.

In practice: disruption tools should be applied across all relevant crops, while ensuring the protection of biodiversity and beneficial species. The number of diffusers to be installed per hectare is linked to the registration of the various references and is a good indicator of the deployment of this technique. In any case, it can be considered that when the recommended number of diffusers is installed and the area of the block is sufficient (at least 4 to 8 hectares depending on the pests), the practice is correctly implemented. This practice is therefore easy to follow in terms of diffuser sales or in terms of the areas where installation is coordinated by a facilitator.

A well-designed guideline on the use of disruption tools could serve as a basis for AECMs. Therefore, a precise and structured guideline could be supported by the CAP as an AECM or eco-scheme. Consideration should also be given to transitioning these practices into conditionality in the next CAP (after 2031).

Note: this, as well as inoculum, is a collective action. So, it is good to highlight it, as the CAP mainly focuses on individual farmers.

Limit: contrary to what was said above about the need to involve a diverse range of stakeholders in the process of implementing the IPM, the CAP mainly focuses on farmers and farmer groups, largely leaving out other key stakeholders in the agricultural ecosystem. **Consequently, releasing plant protection lock-in cannot depend solely on adjustments within the CAP.**

5.2. Improvement of training and advice

A second key lever for a broader IPM implementation concerns training and advisory services for farmers. Several countries have advanced this dimension ambitiously, promoting peer-to-peer learning combined with strong links to research institutions, technical institutes and extension services. Finally, to go beyond the traditional assumption of an information deficit, which has proven insufficient on its own, Agrowise highlights that even well-informed and committed farmers often face practical barriers in accessing uncommon crop seeds, innovative machinery, or less-known biocontrol solutions. This was described by B. Valiorgue in 2020²³ as processes of enclosure (enclosure of diversity, enclosure of knowledge).

Recommendation: Revise syllabus of farmers and advisors training to update the knowledge and foster the implementation of active prophylaxis.

Recommendation: redraft the Annex 1 of SUD or clarify the current text through a guidance document to MS on the content of the mandatory training, in order to give an explicit space to active prophylaxis and to better balance between IPM and other subjects

²³ Valiorgue B, 2020. Refonder l'agriculture à l'heure de l'anthropocène. Ed Le Bord de l'Eau

Recommendation: promote the peer-to-peer learning as an efficient method for life-long learning (e.g: at DemoFarms, where practices are trialled and displayed, allowing farmers to observe results and make informed decisions about experimentation on their own farms)

Recommendation: adequate advisory support must be ensured to all farmers in order to explore the strategic issues related to the protection of their crops, through a systemic approach based on active prophylaxis. This must be based upon a regular strategic advice, provided by advisors who themselves have regular training.

Training and adequate advisory systems have long been described as key elements for the adoption of new efficient practices and systems. B. Arthur in 1994 already described the key role of learning by doing and learning by using as critical for a better adoption. The peer-to-peer learning which is made possible when the farmers are working together in groups was described by Arthur (1994) as being a direct network externality. The peer-to-peer approach increases the confidence of a farmer in the testimony from one of their peers. Indeed, if the farmers receive an adequate and adapted support from recognized and trusted support from fellow farmers, they will more confidently adopt new practices. In fact, it has been observed that individuals who study together or work together facing the same risks tend to develop higher levels of trust. This is due to mutual reinforcement, trust in the practices implemented and validation from peers.

Arthur also described the adapted advisory system as an indirect network externality. When the 3 cornerstones, as seen by Arthur, that are advisors, decision support systems and, shared, reliable and easily accessible knowledge are dedicated to IPM practices, their accessibility and appeal to farmers will improve.

These actions, i.e. training with adequate syllabus, peer-to-peer learning and revisited advisory systems, are recommended.

This section will describe how these actions could be implemented.

5.2.1. Improvement of the training with an improved balance between IPM and other subjects in Annex I of the SUD

The SUD directive recommends the IPM to be included into the initial training of the farmers as well as in the life-long training. This is targeting professional users, distributors and advisors, but could even go beyond, targeting all those who are influencing, directly and indirectly, farmers decisions and practices. As a consequence, it **extends to upstream and downstream sectors, but also to central and local administrations who are dealing with crop protection and pesticide issues and also to policy makers**. It was underlined by V. Trêves, in her PhD thesis done in France that the lack of dedicated training of the members of the administration was one of the elements explaining the difficult implementation of Ecophyto, the French translation of SUD.

The initial training may be disseminated either **in agricultural universities, agricultural colleges and vocational schools** for the future farmers who are following a long and steady cursus. Or, it

can be done during the compulsory courses for the persons entering the farming activity later in their professional life.

The **key point is the content of these trainings**. IPM is compulsorily present but the number of hours dedicated to it is limited, due to the number of topics that have to be taught. However, the content must be adapted to the most recent knowledge, the most recent innovations and the updated paradigm. As a consequence, it is explicitly recommended to:

- Revise all the syllabus so that they include the adapted representation of the various principles of IPM, give a priority to active prophylaxis, explain the benefit of systemic approach and document to decision making based upon biological thresholds
- Ensure the visibility of all practices, including the most recently documented ones, as they are available in the JRC Farmers' Toolbox
- Give an adequate visibility to all innovations, including the most disruptive ones in the domain of non-chemical and physical barriers, based upon the documentation of the agronomic service provided by those innovations

The life-long learning is included into the SUD. Agrowise recommends to modify the annex 1 of the SUD to give more visibility and ambition to the farmers IPM practices. It is indeed necessary to adjust the text to provide greater time and focus for IPM practical training. Currently, IPM accounts for only one of the 13 training topics, although multiple other topics address related issues. Revision or implementation of Annex 1 must lead to a simplified structure along the 4 core topics, one of those being the clear understanding of IPM and of active prophylaxis as the basis of the future sustainable crop protection.

This point was actively supported by the group of experts and by regional seminars (for instance in Croatia and in France). It was indeed shown that very practical issues may be documented during this life-long learning. Among the examples discussed in these regional workshops, it is worth quoting

- Digital issues that are offering new prospects for detection of pests (identification of weeds through RGB cameras or spectrophotometer coupled with AI, measurement of the abundance of spores as offered by digital holography)
- Manipulation of UAV for a more precise application of the authorised crop protection products
- Accountancy for estimation of the actual cost and benefits of the crop protection methods

These examples are not related with any of the 13 items quoted today in the Annex 1, while they are fully relevant for a sustainable crop protection and they were unanimously approved by the participants to the above-mentioned workshops.

The new formulation of **Annex I should be reorganised in 4 priority topics**. First information, on the trainee's knowledge. This informational aspect would include the legislation (1) and the risks of the products on Human health and environment (2). The second aspect should be technical, concerning the cultural practices, focused on the trainee's set of skills. This technical aspect would include the good practices of pesticide use (3), viewed as part of an IPM strategy

(4)²⁴.

These life-long learning sessions would better take place in situ, either in real conditions where crop protection must be ensured or with research and technical institutes and companies where innovations may be demonstrated.

5.2.2 Create a professional community of independent advisors

A **professional community of advisors** should be established to oversee the sector. This community would conduct peer evaluations, maintain up-to-date skills and knowledge of the advisors. The independent advisors have to be trained regularly. The community thus validates the recommendations and practices provided to farmers by the advisors and ensure their legal protection in case an advice proved to be unadapted for unforeseen reasons.

Such a system is existing in Quebec, Canada. It ensures a high-level service to the farmers and proved to be economically efficient in Canadian conditions.

It is recommended to explore the feasibility of such a design in Europe and in Member States. The feasibility must be assessed from a technical and economical point of view, from a legal point of view (what is the responsibility of each advisor?) and from an ethical point of view (how are the existing extension services going to evolve under such a change?).

5.2.3 Improve advice for a mandatory strategic advice every five years

Through the analysis of the crop protection issue and the definition of the taxonomy that proved to be extremely robust, it is clearly documented that the only efficiency or substitution strategies are not sufficient to ensure a sustainable crop protection. It demonstrated that implementation of active prophylaxis measures is economically viable and is the only option that makes it possible on the long term to protect the crops while preserving the environment and human health and to preserve the efficiency of the existing and future chemical pesticides and non-chemical biocontrol options. However, this option requires to adopt redesign approaches, that can only be implemented by farmers thanks to a strategic advice. This strategic advice is also convenient to adapt to the rhythm of innovations.

5.2.4 Peer-to-peer learning

The dynamics which is existing in a peer-community is a main source for getting new competencies and skills and to be ready to implement them. However, the peer-to-peer community for optimum learning must be organised.

Ireland is the country where this system has been taken to the highest level and whose practices and experience in this domain may be adopted by all member states and adapted to their own conditions, especially the structure of the farming community.

The key points of the success, as it is experienced in Ireland are:

²⁴ see Appendice (11) 4. Suggestion of revision of Annex I on training subjects

- The peer-to-peer learning is **taking place in groups and *in situ*, in the farm of a farmer**. Thus, the peer-to-peer learning is embedded in reality, in ground
- The intrinsic quality of the farmer hosting the group is critical. This farmer must be an early adopter, if we use the terminology used by E. Rogers, i.e. someone who is keen in adopting new practices and equipment. Their testimony is a source of confidence for all farmers attending such meetings. This was documented by the work of C. Compagnone who documented the functioning of farmers' groups. Such early adopters may be easily identified in all countries. In France, in the domain of crop protection, the 3000 farmers involved in the Dephy-Ferme designs, since 2010, are undoubtedly very good candidates to host such peer-to-peer learning. We could also highlight the concept of "demo farms," which are established to support the adoption of innovative practices through fostering networking among farmers. These demonstration farms bring together farmers around more experienced peers (ie.: early adopters) to conduct field trials and observe experimental results. Participants receive mentorship from these experienced farmers and, when necessary, guidance from agricultural advisors.
- However, it is not enough. These farmers must be supported in this exercise by additional expertise. This expertise may be provided by the activity of a highly-skilled advisor, who will only provide the additional technical information and/or the link with the most recent pieces of knowledge. In the Irish case study, this support is provided by a technician who is in close relationship with Teagasc, or even is member of staff of Teagasc. Such a situation was illustrated by Declan Kealy during the final conference on the 21st October 2025.

This peer-to-peer learning, because of its apparent complexity could be considered as expensive. However, the possible cost of such a system was estimated in a recent French Parliament report (Potier et al, 2024), and was limited compared to the cost of the existing advisory system. In order to reduce the overall, it is essential that the peer-to-peer learning covers beyond the only crop protection, but also includes other key items, such as crop fertilisation, water management or adaptation to climate change.

5.2.5 Pesticides on prescription

Recommendation: Certain pesticides, due to their hazardous nature and specialised skills, should require a prescription from a highly skilled advisor to secure long term food sovereignty.

A major challenge in the current European pesticide ecosystem is the progressive withdrawal of active substances coupled with the increasing emergences of pest resistance. Maintaining the availability of certain pesticides is essential to ensure food sovereignty while simultaneously trying to meet the SUD objectives of lowering off-target effects.

One proposed solution, discussed in workshops with stakeholders including pesticide sellers, farmers and NGOs, was a « pesticides on prescription » scheme. This suggestion seems acceptable to stakeholders consulted. During the co-design workshops, it has been the subject of calm discussions between PPP sellers, farmers, NGOs, etc. As a consequence, it is considered that

a discussion on how to implement this measure could be held.

Inès Bouchema, in her interview for the special issue of *Le 1 hebdo*²⁵, proposed that **the most hazardous pesticides should require a « prescription », similar to highly regulated medicines that cannot be purchased without medical authorization or training (e.g. chemotherapy products) due to their hazardous nature and specialized skills.**

This approach **would allow the exceptional and case-by-case use of highly potent pesticides to manage major pest outbreaks at a landscape level, such as the early stage of an unknown pest invasion or acute outbreaks resulting from particularly adverse years.**

To ensure controlled use, highly skilled advisors (similar to « phytiatres » in Canada) **would be trained to identify situations that actually justify such interventions** and prescriptions would not be renewable annually for routine chemical treatments in particular to enable use consistent with ecosystem restoration.

This proposal addresses a critical challenge: the lack of new pesticides entering the market, declining protection levels as resistance emerges, higher dosages to compensate this resistance, increased off-target impacts and the potential need to rely on more toxic products, still permitted under the current regulations. To secure long term food sovereignty, a “pesticide on prescription” scheme could be considered. By involving pesticide sellers and manufacturers directly, the systems leverage the supply chain’s knowledge and expertise to encourage responsible and controlled use of pesticides. Under such a scheme, these products would be reserved as a last-resort, highly targeted intervention, akin to a « tactical treatment », applied only when IPM practices are insufficient to control pest or fungal infestations.

Some recommendations were formulated by the experts and the stakeholder group, but not further documented by the Agrowise consortium. They can represent options to improve the training, this is why they remain at your disposal:

– European IPM learning platform:

Note: The suggestion to develop a European platform for learning resources (S2.3) presents significant challenges. This concept pertains to a shared resource initially established over a decade ago by the European project Endure, which subsequently became inactive due to the cessation of financial support. An alternative approach could involve utilizing the existing European resource, known as EU FarmBook to organize and disseminate IPM learning materials. This would necessitate the development of an appropriate ontology.

The previous section clearly documented the essential role of training and a focus was made on the training of farmers and advisors.

In order to ensure that the training is always based upon the most advanced knowledge, it is necessary to ensure a link between research and innovation and their associated policies and the

²⁵ <https://eng-agrowise.hub.inrae.fr/news/le1hebdo-agrowise-newspaper-release>

people and organisations involved in training.

Three possibilities may be explored:

- Involving the researchers into the definition of the syllabus
- Increasing the availability of hand-on results by increasing the availability of research results from national and European projects where the agronomic services provided should be clearly documented. These results should be fed into the Farmers' Toolbox, as a compulsory element of all publicly funded projects.
- Updating and validating the values of agronomic services and better documenting the context-dependency of practices. This would be achieved through the use of data collected on farms thanks to their close connection with advisors. The recent breakthroughs in digital technologies make it possible to collect numerous real-time data, without any hurdle and extra burden for farmers.

5.3 Research and innovation

Agrowise recommends that **the European Commission facilitates access to innovative solutions by actively involving actors from the innovation, supply of inputs, collectors, and processing sectors into IPM deployment**. This can be achieved through existing instruments (funding mechanisms or calls for projects), as well as regulatory innovations and targeted engagement of these stakeholders in forthcoming policy discussions on these issues.

5.3.1 Ongoing merging of *Agrowise taxonomy of IPM practices* with the *JRC Farmer's toolbox for IPM*²⁶: continuous enrichment of the list of innovative practices gathered at EU level

Agrowise has created a taxonomy of IPM practices, it can be enriched and adapted, while ensuring that its interoperability is maintained so that it remains a common language for IPM in Europe.

Recommendation: Provide information on how effective the toolbox practices are at reducing pesticide use by adding an appropriate indicator to the taxonomy, such as the "Agronomic service provided" metric.

Recommendation: Empower the toolbox by adding a collaborative animation mode on two scales: a national scale in the national language and a European scale in English, which can reinforce each other.

Recommendation: Update regularly the toolbox, through the designation of a responsible body or through a decentralised updating system based on contributions from the scientific and technical community ("wiki")

Recommendation: Use it as a harmonisation tool to classify and to provide scientific references

²⁶ The "European Toolbox for IPM practices" or "JRC Toolbox" is a platform developed by the JRC to facilitate access to IPM practices and guidelines across the E.U. It enables farmers, advisors and, potentially, M.S to search for relevant practices and guidances based on crop type and country, supporting efforts to minimize pesticide use. The primary objective is to promote the dissemination of sustainable and practical solutions for European agricultural practices.

Link: [Farmer's Toolbox for Integrated Pest Management](#)

and technical publications/innovations on plant protection practices
Recommendation: Use it as a tool to support Member States when revising their NAPs or the EU when reviewing these NAPs.

The goal is to **minimise losses in the innovation process for the highest levels of the TRL scale** (from prototypes to widespread deployment). Although experts, stakeholders, and national authorities often view pesticide alternatives as scarce^{27[1]}, the Agrowise project has identified and organised 387 practices within the Agrowise IPM taxonomy, notably 160 under Principle 1 alone (spanning layers 1 to 4 of the taxonomy). **While solutions exist, greater visibility and accessibility are needed for agricultural stakeholders to adopt them**, and more confidence should be given thanks to consolidated data on the efficacy of those solutions.

Experts are in favour of such a toolbox. They see several advantages, all of which are linked to recommendations for maintaining this tool:

- the toolbox must be easily accessible, which indicates the need for versions in national languages, probably using localised information to make the tool appealing to farmers.
- The toolbox must be up to date, which requires a regular update mechanism.
- It must enable users to keep abreast of innovations as widely as possible, which argues for updates on a European scale.
- It must also serve a variety of audiences who are not looking for the same information, which argues for a database that can be viewed differently by the various stakeholders.

This recommendation has been formulated and approved by the experts and stakeholder groups, and is being carried out by the Agrowise project. To achieve this objective, Agrowise is currently working on the visibility of the **Agrowise taxonomy on the JRC website for data visualisation by integrating it into the database of best practices of the “Farmers’ toolbox for IPM”**.

The two databases are interoperable, and the Agrowise team will provide:

- a table that can be attached to the JRC toolbox table extending the one from the Farmers’ toolbox for IPM hosted by the JRC, allowing the Agrowise taxonomy to be displayed as a new sorting key for existing practices,
- and new lines in this table corresponding to the practices discovered in the national and European projects on IPM that have been documented in Deliverable 2.3, in order to extend the register of best practices of the current toolbox.

Experts and stakeholders also recommended better documenting the Agronomic Services Provided (ASP). Because, there are currently no indicators for measuring the implementation of IPM actions. This is why the Agrowise project developed the “Agronomic Service Provided indicator”, presented in D2.2²⁸. This indicator has been applied to three case studies: the case of codling moth in apples, the case of powdery mildew in vineyards, and the case of weed control in arable crops. The methodology involved assessing each farming practices listed in the taxonomy able to fight the pest in the specific crop and evaluating the reduction in pesticide use induced by each practice. **In total, 90 assessments²⁹ were conducted for a specific triplet: practice-crop-pest,**

^{27[1]}According to the poll conducted on September 24th, 2024 in Brussels during the first Agrowise workshop

²⁸ <https://eng-agrowise.hub.inrae.fr/results/standardised-metric-s-pesticide-reduction-quantification-d2.2>

²⁹ <https://agrowise-ipm.softfr.app/our-case-studies>

evaluating the effectiveness of a practice in addressing a specific pest attack on a specific crop, while reducing pesticide use and impact. This methodology could be generalised, by searching new case studies of major crop-pest threats and the practices that could answer these threats. **The agronomic service provided could be directly linked to the taxonomy.**

Finally, it could be envisaged to **designate a scientific organisation/extension service responsible for updating the toolbox, or a consortium of experts.** Each member state could designate a department within a scientific institute/extension service that is recognized for its expertise in IPM and preferably keen in active prophylaxis. This department would be responsible for recording and updating new practices identified at national and European level. This European toolbox for IPM practices is intended to be as exhaustive as possible to describe IPM cultivation practices. In order to achieve a comprehensive inventory of all pest control methods, it must be updated regularly with new knowledge or innovations, by this responsible service.

A decentralised updating system could also be envisaged: researchers or scientific or technical officers from national research or technical institutes could propose additions or modifications to the taxonomy. These proposals would be examined, either by such a responsible service or experts' consortium as proposed above, either discussed and validated by peers in the country via a "wiki" system linked to the taxonomy. The proposition of new practices could be motivated by the improvement of visibility of these innovative practices. Contributions can be validated for integration (first at national level, then at European level) by the community, if it is sufficiently developed, or by a collegial coordination team that will ensure the relevance and consistency of the proposals.

The European IPM toolbox for farming practices could be used as a **harmonisation tool to classify and provide scientific and technical publications/innovations** dealing with practices that fall under IPM principles. All scientific publications, EU and national projects, innovations etc could use the same nomenclature when mentioning a practice by referring to the appropriate item of the IPM taxonomy. Doing so, it would improve the access to the most recent scientific and technical knowledge, on a given agricultural practice. For researchers/innovators, this could take the form of tags/keywords using the controlled vocabulary defined by the taxonomy.

Finally, this toolbox could **support Member States when revising their NAPs or the EU when reviewing these NAPs.** Designed to be exhaustive in order to represent the state of knowledge in terms of cultural practices falling within the scope of IPM, such a taxonomy, with its different levels of granularity, could enable MS or the EU to verify that no major aspect of the IPM has been overlooked, as well as to better visualise the farming practices behind each principle.

5.3.2 European registration of innovations

Recommendation: Build a documented European catalogue of innovations intended to identify plant protection levers that are not listed in other registers or catalogues. Agrowise would suggest that the European Food Safety Authority (EFSA) or Eurostat could manage this catalogue. EFSA would ensure that the catalogue comprehensively covers phytosanitary products alongside every other plant protection solutions.

Recommendation: Share the available innovations over Europe

Recommendation: register the service provided by the innovations to guide innovation policies and funding

Recommendation: Control is possible through this catalogue, linking the innovation to the sale declaration. It will decrease the pressure on the farmer, transferring the responsibility to the seller.

Recommendation: Possibility to base it on a declarative system, excluding biocontrol products from Regulation 1107/2009

The experts and stakeholders recommended that the equipment manufacturers should be included in the discussions for fostering alternative crop protection techniques. They also recommended to involve more generally the distributors, processing actors, cooperatives, and retailers. However, they could not agree on how to do so. Agrowise's suggestion is to build a European catalogue of innovations. The innovations that could be collected are: **machines, biocontrol solutions, varieties, physical control, pest/crop monitoring dynamic models**. This catalogue of innovations could be **maintained by EFSA and/or Eurostat**.

The European catalogue of innovations should contain the following information:

- Name of the Member State(s) where the innovation is available
- Acknowledge the existence of the innovation (name of the reference)
- The type of Agronomic Service Provided: the catalogue should specify the function of the innovation in relation to IPM. For example, for crop varieties, the catalogue should indicate which pests or diseases the varieties are resistant to. Regarding machinery, it should describe how the machine supports IPM practices (e.g.: allowing sowing at different depths to plant a cover crop alongside the main crop or enabling intercropping by separating seeds so that all crops can be harvested simultaneously and sorted mechanically).

Recording and centralizing the type of services provided by the innovations would make it possible to identify the strengths and weaknesses of innovations in order to **guide innovation policies and funding**.

Providing the information of the Member States where the innovation is available is essential, as many Member States have expressed concerns that certain innovations are not accessible within their country, often due to small market size or geographic isolation, while being available elsewhere. **Since many countries shared this concern, this issue likely reflects a lack of visibility regarding where innovations are actually available.** By clearly indicating countries in which innovations are accessible, **Member States could leverage mutual recognition to introduce innovations in their own markets, if legally needed.**

It could also be considered the possibility for biocontrol operators and sellers, to create a requirement to market and sell (access to innovation, its delivery, installation, and maintenance) throughout the EU.

This European registration **could be linked to a broader system registering innovation, inspired by the CEPP system**. Once a biocontrol producer has declared their innovation, they can increase its visibility by registering it on a list similar to the French CEPP register.

Case study on pesticide saving certificates (CEPP) in France³⁰

Such tool of EU catalogue for innovation already exists in some countries, and can be combined with other mechanisms aimed at stakeholders.

For example, in France, such EU catalogue for innovation take the form of CEPP action sheets made available by the government. But this publication is strengthened by a whole mechanism involving many stakeholders to ensure innovation uptake by the farmers. Many stakeholders are involved in the scheme: PPPs retailers, targeted by the obligation, seed and agro-equipment companies, to have their commercial references included in the standardised actions; advisors, who have to promote the standardised actions during advice; research and technical institutes to propose standardised actions on plant protection methods; and farmers, who will ultimately chose to implement the standardised actions.

First of all, the CEPP certificate allows **innovators** to register their innovation into a certified list. Any stakeholder (private companies, industry bodies, distributors, farmers) can propose a practice to evaluated by the CEPP Commission and possibly validated into a standardised action.

*The CEPP Commission is responsible for the qualification of the effective impact of new practices and tools on reducing the use of PPPs. The **Ministry of Agriculture** is responsible for **publishing the list of officially approved standardised actions**.*

Then, an obligation on **PPP retailers** makes possible the uptake of innovations possible on the field, as PPP retailers must achieve a certain number of CEPP each year, ensuring to sell to farmers innovations. The “obligated” parties (PPP retailers) must promote to professional users or implement themselves actions that reduce the use, risks and impact of these products, without imposing additional taxes on farmers. The PPP retailers have a target number of CEPPs to be obtained, calculated on the basis of sales or purchases of products in previous years. Biocontrol products, low-risks products and products used exclusively as part of compulsory control programmes are not taken into account when calculating obligations.

This CEPP certificate is therefore a solution to link innovation (upstream) directly to its uptake on the farm through a requirement on PPP retailers (downstream). The approach of the scheme is to stimulate the diffusion and uptake of integrated pest management practices in the agricultural sectors where technical solutions exist.

Creating a EU catalogue of innovation can then be beneficial on its own by making visible innovations on IPM, but can also be the starting point to a strategy on innovation deployment.

Possibility of monitoring: It is possible to **relate each innovation listed in the European catalogue of innovations to its corresponding sales declaration**. This would allow the adoption and dissemination of innovations to be monitored effectively. This would shift the focus of monitoring IPM agricultural practices from farmers to sellers, providing an easy mechanism to track the uptake of the practice by the supply chain.

³⁰ See Appendice (11) 5. Pesticide saving certificates (CEPP° France: see detailed explanation on CEPP done by the consultant Ricardo

5.3.3 Adapt biocontrol products' risk assessment under regulation 1107/2009/EC or under a declarative scheme:

Experts have requested a **simplified procedure for biocontrol**³¹, different from the current one under Regulation 1107/2009. This request has been discussed with stakeholders, the discussion on this subject is therefore open within the agricultural chain, but no solution has been identified. Agrowise proposes two options: removing biocontrol products from the scope of Regulation 1107/2009/EC, creating a specific declarative scheme dedicated to such products, or to adapt the current risk assessment process under the same regulation 1107/2009/EC into a streamlined risk assessment procedure.

It is based upon the fact that most **biocontrol products**, even if used in substitution to the chemical pesticides, **are not based at all on the same modes of actions**. With the exception of a few compounds such as sulphur or copper sulphate, most biocontrol solutions are not real biocides. They contribute to keeping the pest populations below the damage thresholds through biological regulation, such as mating disruption and induced egg sterility, reduction of the feeding and feed deterrence, competition for the access to resources, antibiosis at fungi community level. This explains why, under high pest pressures, the biocontrol proved to be less efficient, and show much lower undesirable side effects. As a consequence, the underlying assumptions, both in terms of efficacy, and in terms of toxicity, ecotoxicity and genotoxicity, that defined the process of Regulation 1107/2009/EC is not valid for most biocontrol products. Biocontrol products are not always suited to the current testing framework. Moreover, while a limited number of chemical pesticides covers the whole range of crops and pests, there is a need of many more biocontrol options, because of their highly targeted actions. This implies that the economic models of the biocontrol products do not correspond to those of chemical pesticides, as the markets will be narrower.

Currently, all solutions integrated under the name “biosolutions” are classified as crop protection products, as the definition of these products is very broad. All products intended to protect plants are subject to registration as described in 1107/2009/EC.

A streamlined risk assessment under 1107/2009/EC or a separate declarative scheme for new biocontrol products, would make it faster, cheaper and more efficient.

One possibility would be to draw inspiration from other systems already in place in the agricultural sector. Once ‘biocontrol solutions’ have been defined, it may be possible to develop a reporting system:

³¹ Recommendations of the experts and stakeholder:

- An EU standardized testing accompanied by an EU guidance document
- Harmonized certification for PPP alternatives
- Modification of Regulation 1107/2009 is needed for more innovation while protecting human health and environment

1. Streamlined risk assessment process under Regulation 1107/2009/EC, adapting the current risk assessment procedure

The current risk assessment process needs to be simplified, to allow faster entry to the market to biocontrol products, and to adapt it to its modes of action.

Currently biocontrol products and pesticides go under the same risk assessment, it is a major lock-in for innovation, many times highlighted by stakeholders, as it is difficult to access, time-consuming and expensive.

It would imply **defining “biocontrol solutions” at the European level**. Such a definition already exists in some MS, such as in France. But a harmonised definition should be created, differentiating them from pesticides, with clear and strict red lines regarding impact on biodiversity and human health. Otherwise, without clear definition, it could open a way for pesticides to avoid the strict registration process of Regulation 1107/2009/EC.

The delimitation should target practices that are not fully aligned with the testing framework of Regulation 1107/2009, which primarily assesses products based on their ability to kill pests. Many biocontrol methods do not act through direct pest elimination; rather, they function by stimulating plant defences, modifying plant behaviour (e.g.: attractants or repellents), influencing predation dynamics or population regulation, or through competitive interactions (e.g.: introducing a harmless fungus to occupy space against more harmful species). Given their modes of action, these products could therefore benefit from a dedicated risk assessment.

2. Remove biocontrol products from the scope of Regulation 1107/2009/EC, and create a specific declarative scheme
 - a. Exclude biocontrol products from Regulation 1107/2009

To exclude biocontrol products from Regulation 1107/2009/EC, it is also necessary to clearly define biocontrol products, such as suggested in the previous paragraph. Such exclusion of products from the Regulation 1107/2009 has already been conducted for bio-stimulant products.

- b. Create declarative schemes for biocontrol products

A declarative scheme would shift responsibility: currently, the authorisation authority is accountable for assessing the risks that a product may pose to human health and the environment rather than the seller. Under this proposed system, if a biocontrol product is found to have harmful effects, the seller would be held liable.

Biocontrol products, once excluded from the scope of Regulation 1107/2009, should be subject to a declaration scheme (putting the risk management responsibility on the sellers), and adapted to the volume of the actual market.

This declaration scheme will work as follows:

1. Declaration:
2. Registration
3. Authorisation

The relevant authority could deny the declaration/registration/authorisation based on environmental or human health endangerment considerations, taking into account the red lines previously mentioned.

A key to determining the level of registration between registration, declaration and approval could add to the documentation on the **dangers to human health and the environment, the deployment of the product** (based on the crop areas concerned and the number of annual applications) **and the type of mode of action and scientific knowledge about these**. The responsibility of marketers should be precisely defined to correspond to the risks to human health and the environment of the solutions. The products entering large markets would require approval with an adequate procedure, that in all cases would be much lighter than the one envisaged for pesticides in the regulation 1107/2009.

The limits between the three levels would be established at the EU level and would be calculated on the basis of a deployed area (crop coverage in ha * number of applications that is recommended by the sellers).

This declaration scheme should also include monitoring of unintended effects, with random audits of a predefined percentage of products. Such a system would be open to mutual recognition, when there is a limited discrepancy of crops, management and pest pressure.

The declaration scheme is widely deployed in other areas than pesticides, and is usually the system selected. This can be comparable to the existing system in USA.

To go even further, it would also be necessary to accordingly review the standardised sanitary criteria for food products of the EU, in order to make them consistent with the IPM. Indeed, they currently limit the deployment of certain IPM practices by introducing calibration criteria, visual criteria, which are not related to the objective of food security, food safety and human health ...

5.4 Enforcing supply chain responsibility and engagement

Recommendation: Ensure the integration of IPM support within the CSRD of agricultural Stakeholders

Recommendation: give specific obligations on IPM to stakeholders to unlock guidelines on specific IPM practices

5.4.1 The need to involve the supply chain

For the past decade and a half, regulatory efforts have focused on the policy maker–farmer relationship. It is now essential to broaden the policy scope to include all stakeholders across the supply chain.

Even if farmers were fully trained, this alone would not resolve the challenges of IPM implementation, as entrenched supply chain dynamics limit the full adoption of these practices. An evaluation of the implementation of Ecophyto by Boiffin and Potier in 2014 already pointed out the need to ensure that the whole value chain was committed, and especially the downstream sector. Effective solutions must therefore address these systemic constraints directly. Cf deliverable 5.1:

“However, based on the study by Jauréguiberry (2012)³², [the information deficit theory] alone cannot explain by itself the weakness of IPM implementation. The other reasons of not fully applying it could be a chosen non-use or an imposed non-use. To address the chosen non-use of IPM, Member State could create obligations, with adequate level of controls. To address the imposed non-use, we have to think about how to allow farmer to implement IPM, unlocking its situation regarding the upstream and downstream industry.”

- **If the reason of non-applying the practices is a chosen non-use:** it means that the solution isn't attractive enough

We can use the law to make mandatory its uptake. However, based on discussions undertaken in the French framework of CEPP with downstream sector of cooperatives and agri-food processing industries, the main reason of their opposition is because the solution offered to them is either not satisfactory enough, difficult to implement or requires new skills.

However, under charta, it is possible to define practices that are ambitious suitable for the farmers and adequate to ensure that the harvested farm products are suitable to the processing chains. To illustrate this issue, we share the case study of the Lu Harmony charta, which became the Harmony charta.

Case Study: Lu (Mondelez Food Manufacturer) and its actions to support farmers

Farmers initially received information from their cooperatives indicating that they would fully benefit from using companion plants (frost sensitive annual forage legumes) in rapeseed cultivation. Despite this, they were reluctant to adopt the practice. However, when Lu began promoting rapeseed contracts that specifically incentivized the use of companion plants, farmers adopted the practice.

The initial reluctance can be explained by farmers' risk aversion, as they feared potential yield or revenue losses associated with implementing the new practices.

This can be explained because, according to people working daily with farmers, “you can't say “people don't like change” because if you offer them their dream home, they'll take it. So, you have to look for the conditions for agriculture if there are reasons why the farmer cannot apply the new practice”.

It means that there is need to act on / from the chain, as demonstrated in the Lu case study. This was further developed with the Harmony charta through the development of regenerative agriculture through 7 European countries for grain sourcing. Regenerative agriculture, whole main principles rely on agroecology gives a large space to crop protection, reduction of pesticides and calls for more prophylaxis achieved thanks to more functional biodiversity (Principle 1, management targets 1.1, 1.2 and 1.6)

5.4.2 Control IPM deployment through the supply chain

Recommendation: control IPM deployment through the supply chain (ex: sales registers) instead of on the farms

³² Retour sur les théories du non-usage des technologies de communication, Francis Jauréguiberry, 2012 https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://shs.hal.science/halshs-00688565v1/document&ved=2ahUKEwjY6Kb_y6WPAxXmRaQEHX0WGpsQFnoECB8QAAQ&usq=AOvVaw3CDHAIzagSGEHqvL3fcVzu

It would be better to control the IPM implementation relying on information gathering from the chain rather than from the farmers. Indeed,

- It is difficult to follow IPM implementation based on farmers due to the number of farms to be controlled,
- High administrative burdens for them
- In the SUD Directive, Article 5, it is not explicitly written that control should be done on farmers only³³

So, we should explore the possibilities to control IPM deployment through the value chain.

Controlling the IPM implementation thanks to on information gathered from the value chain rather than from the farmers would have multiple benefits:

- It is difficult to follow IPM implementation based on farmers as it requires IPM-adapted control grids, and large human investment; it can represent a high administrative burden for farmers,
- Less actors are responsible for agricultural inputs sales, outputs collection, food processing and retail than farmers: they constitute aggregators of information for many farms,
- We would not have access to the effective agricultural practices in the field but, as it is done for pesticides use, evaluation based on the sold amounts of active substances, it could be done the same for other agricultural inputs/outputs,
- May allow to follow the uptake of a large variety of practices such as spraying techniques, innovative machines, decision support systems, biological control, resistant cultivars,
- Farmers are coherent in their practices and systems. So, it is only necessary to target the indicators that will reveal the practice that is at the core of the agricultural system.

5.4.3 Ensure the integration of IPM support within the CSRD of agricultural Stakeholders

Let's go even one step further, by exploring the benefits for the supply chain and downstream sector to be more involved and fully committed into this major transition.

In the CSRD design, the industry sector has to document how they meet the social and environmental performances, in their internal processes (scopes 1 and 2) as well as from their suppliers (scope 3), which makes it possible for the industries to choose their supplier on the basis of the reported performances. The peculiarity of the agri-food sector and of the food processing industries is that the scope 3 is massive, for the greenhouse gas emissions, the impact on water use and quality and the impact on biodiversity. For water quality impact and biodiversity impact, the crop protection is first.

Accounting for crop protection could be based upon the use and impact of pesticides. However, the European indicator HRI-1 is not applicable and the various indicators developed Europe-wide, such as pesticide load (PL in Denmark) or NODU in France show a poor applicability for a scope 3

³³ Article 5: Member States shall ensure that all professional users, distributors and advisors have access to appropriate training by bodies designated by the competent authorities. This shall consist of both initial and additional training to acquire and update knowledge as appropriate. The training shall be designed to ensure that such users, distributors and advisors acquire sufficient knowledge regarding the subjects listed in Annex I, taking account of their different roles and responsibilities.

accountability. The limitation found by Agrowise in these metrics is that neither consumption nor description or modelling of impacts are good proxy to follow promotion and implementation of IPM principles. In fact, indicators on consumption fails to promote the transformation of systems necessary for the integration of IPM methods, giving precedence to principle number 1. Furthermore, the changes in practices associated with one principle cannot be separated from changes in practices associated with another only by looking at the changes in consumption nor impact indicators³⁴.

A simple contrasting mechanism could be developed exclusively based upon the management targets and levers listed for prophylaxis (principle 1 and prophylaxis-oriented biocontrol in principle 4). Indeed, as the granularity of all items identified in the taxonomy is very similar, a simple proxy can be developed, at least counting the number of prophylactic actions implemented by a provider. This indicator can then be reported on an acreage basis or on a tonnage basis.

So, the CSRD mechanism, recently discussed at the European Parliament with a noticeable progress on October 9th, 2025, could offer a unique opportunity for downstream industry engagement in sustainable crop protection based upon the new paradigm.

5.4.4 IPM obligations towards stakeholders to unlock guidelines for key practices

Case study on designing policy instruments to increase the uptake to disease tolerant varieties of vine and reduce the dependency on pesticides

[Abstract from Deliverable 4.2 *Farm-specific policy instrument recommendations framework for mitigating pesticide impacts while ensuring sustainable agriculture*]

Step 4: Identify the role of each stakeholder to implement active prophylaxis and IPM practices

Policy makers identified the roles of each stakeholder in relation to the IPM practice: “1.1.4 Seed/Planting Materials”:

- **Farmers:** choose and plant vine varieties that are genetically resistant or tolerant to specific pests, diseases, or environmental stresses.
- **Rootstock suppliers/ nurseries:** (i) develop new varieties, ii) develop and maintain a transparent list of varieties along with the services they provide for crop protection, (iii) establish correlations between the resistance ratings of varieties (recorded at the time of their registration in the EU Plant Variety Catalogue) and the actual reduction in pesticide dependence they deliver.
- **Advisory services:** provide independent recommendations on varieties and suitability for specific farmers and prioritise the disease tolerant traits in the varieties they recommend.
- **Protected designation of origin corporations:** include resistant and tolerant varieties in the list of approved varieties; provide training and information to advisory services and directly to farmers.

³⁴ See Deliverable 2.2, section 2. Advantages and limits

- **Wine processors and wine sellers:** include resistant and tolerant varieties in the list of preferred varieties for the procurement contracts or product specifications
- **Research organisations:** (i) develop new varieties, (ii) develop and maintain a transparent list of varieties along with the services they provide for crop protection, (iii) establish correlations between the resistance ratings of varieties (recorded at the time of their registration in the EU Plant Variety Catalogue) and the actual reduction in pesticide dependence they deliver.

Step 6: identify the type of policy instrument best suited to enhance the role of each stakeholder

- **Farmers:** economic (e.g. incentives through funding via CAP or national instrument for planting renewal with disease resistant varieties); informative (credible, independent information on varieties and performance in relation to market requirements); regulatory (mandatory use of disease resistant varieties presenting included in an official list).
- **Rootstock suppliers:** regulatory (binding requirement), economic (either incentive to prioritise disease resistant traits in their programmes, or financial penalty for those who do not), saving certificates mechanisms such as the CEPP in France, etc.
- **Advisory services:** economic (funding for 1-to-1 or 1-to-many advice on vine varieties), regulatory, informative (guidelines, information documents on the correlation between varieties and the actual reduction in pesticide dependence they deliver), knowledge transfer facilities such as demo farms.
- **Protected designation of origin corporations:** research funding for partnering with research organisations, targeting variety research which meets commercial / product needs) informative (e.g. certification or labels, training for local farm advisors)
- **Wine processors and wine sellers:** informative – training and awareness programmes to educate on disease risks and benefits of new varieties
- **Research organisations:** economic (e.g. funding for variety development and testing – specifically targeted to market requirements and local growing conditions)

5.5 Define clear European requirements and regular improvement of the NAPs

When receiving the quinquennial revision of the NAP from each Member State in accordance with Article 4 from the SUD, the European Commission should assess the progress made compared with the previous plan, in order to promote the continuous improvement of Member States' strategies.

For NAP to be sufficiently ambitious, they must be capable of reducing pesticide use and the risks they pose to the environment and human health. The methodology proposed by Agrowise consists of enabling the implementation of priority active prevention practices by unlocking all stakeholders (through regulations specific to each category of stakeholder) and mobilizing the three priority areas: innovation, training, and downstream action. It thus appears fairly simply to document whether the updated national action plans have endorsed the new approach, where the focus is put on the prophylaxis rather than a measurement of the use and impact of pesticides. Please refer to deliverable 6.2 for extended explanation on the priority practices from active prophylaxis, and on the IPM general principles. See our recommendations on NAPs below.

To assess the improvement, the EU must examine whether the targets set by the Member

States are sufficiently ambitious for the directive (confer the special report of the European Court of Auditors in 2020) whether the indicators have made it possible to see progress towards these targets, and whether the measures have made it possible to achieve them. However, this means that all indicators used up to now by all Member States have to be thoroughly revised, as the prophylaxis-based paradigm is totally different from the previous paradigm. Thus, while the approach is simple, the definition of indicators (which is always a tricky issue) may require some times, but may be a useful time for explaining the new paradigm to all stakeholders.

Having specified the criteria that Agrowise considers relevant for assessing the conformity of the NAP with the SUD, the corresponding obligation for the E.U is to communicate its expectations to the M.S in a clear manner, thereby enabling them to proceed in accordance with the prescribed directions, while avoiding discrepancies among member states, that would later be considered by farmers as affecting their own competitiveness.

One major challenge in implementing the SUD has been the lack of clear links and relationships between the general IPM principles and the on-farm realities limiting the implementation of such principles. This led to ongoing discussions about the precise definition of these principles and their applicability. The most recent framework, proposed by IPM WORKS, offers a holistic vision³⁵ that aligns with the current agronomic knowledge and aims of Agrowise, as outlined in its recommendations. Agrowise suggests maintaining Annex III of the SUD Directive, in its current state as there are already several avenues to improve IPM implementation by MS, even within the present wording of the annex.

The emphasis, therefore, should rather be on empowering MS to take ownership and actively implement these measures (see Deliverable 6.2). If the SUD were to be revised or a new regulation introduced, it would be important to base the revision of Annex III on scientific evidence (e.g.: March 2025 IPM Policy brief³⁶, regarding holistic IPM).

³⁵IPM WORKS: [LEAF](#)

³⁶ IPM WORKS: [Policy Recommendations for Scaling IPM adoption](#)

6 Recommendations to the Member States

6.1 Improvement of NAP and of their objectives

Recommendation: continuous improvement of NAP

Recommendation: the primary objective is active prophylaxis

Recommendation: indicators on the reduction of pesticides achievable thanks to every practice (ASR) and the context-dependency. The values of these indicators will be shared with other MS

Recommendation: plan long-term policies to support long-term effect practices

Recommendation: target all the agricultural chains in your NAP

Recommendation: define your ambition on the hierarchy of risk

NAPs are a powerful tool for linking the practices carried out by farmers with the involvement and engagement of other stakeholders or groups of stakeholders.

Member States are given a great deal of freedom in terms of the means and resources to be used to achieve the objectives of the SUD Directive. However, their NAPs must still contain objectives, targets, measures, timetables and reduction of risks. These criteria are not explained in any greater detail in SUD.

Please find below the Agrowise analysis, alongside the responses provided by the project team

« Article 4 SUD : NAP

1. Member States shall adopt National Action Plans to set up their quantitative objectives, targets, measures and timetables to reduce risks and impacts of pesticide use”

- **Objective:** The overarching objective is to implement the concept of « active prophylaxis » in the IPM framework but several obstacles are still in place. We base our approach on agronomic reality: active prophylaxis must be the common core, as identified in deliverable 6.2. The challenge for NAPs must be to enable the implementation of these priority cultural practices. To achieve this, as presented in Article 4 of the SUD Directive or in deliverable 4.2 guideline framework, we must begin by defining our objective.
Active prophylaxis is an achievable objective on the major issue of crop protection, and pesticides use and associated risks. It is believed and demonstrated that by implementing the active prophylaxis practices, pest pressure is reduced and the other IPM general principles are unlocked.
- When defining **targets**, it is crucial to involve not only farmers but the entire agricultural supply chain. **One of the key objectives of such an approach is to alleviate the mental load and operational pressure on farmers**, who were often expected to be the only ones implementing changes. By sharing responsibility across other stakeholders (such as policymakers, retailers, and processors) who often have greater access to transformative levers and decision-making power, this chain-wide engagement ensures that the burden of systemic change does not rest solely on the farmer and increases the likelihood of long-term improvements across the sector.

- Measures: Currently, the agronomic **indicators** associated with crop protection predominantly focus on pesticide utilization (such as application dosages and the number of active substances) as well as biodiversity risk. Presently, there are no indicators in place to monitor the deployment of innovative systems or to assess the efficacy of alternative crop protection methods. **Moreover, no information is available regarding the pest pressure under which the pesticides or any other practice were used to ensure crop protection.**
 - These do not make it possible to monitor the implementation or results of IPM.
 - Agrowise proposes to introduce two indicators that would monitor such data:
 - Economic impacts of IPM (see Deliverable 3.2)
 - Agronomic Service Provided (see Deliverable 2.2)
 - Agrowise would also recommend to rapidly explore, through research results in biology and in digital technologies to implement tools to get a real-time information on the actual pest pressure (Principle 2). This would be very useful for the farmers, for both assessing the efficacy of the implemented prophylactic measures and for choosing the adequate use of chemical pesticides or biocontrol measures using updated decision support systems (Principle 3)
- Implementation and actions **timelines** should be adjusted to align with the « triangle in the wind » of IPM principles: long-term support is crucial for principles and related practices that take time to become effective. The CAP framework would be particularly suitable for such implementation and support.
- Risk reduction: the SUD Directive covers **many different risks**. So Member States must ensure that NAPs are consistent with other regulations and directive (on water quality (water framework directive, nitrogen directive, soil, human health, biodiversity (habitat directive, which fits particularly well with the management target 1.6), etc.).

Hierarchy of the ambitions: it is also important to address the means to answer the objectives: either by improving the current system (efficacy and substitution) or b redesigning it (redesign).

6.2 Adapt the National Strategic Plan of CAP and national funds to support IPM

Strategies were discussed to facilitate the implementation of IPM at the E.U level, with a particular emphasis on deploying active prophylaxis measures through the CAP, and related measures. However, it is important to recognise that the CAP should not serve as the only source of funding. M.S and the private sector are also essential contributors to the investment required for successful IPM implementation and should, therefore, allocate some financial resources to this. **The EU only give general objectives to Member states. Then, the Member states decide by their own what they want to support through AECM and eco-scheme**

Depending on practices, a level of collective or territorial support is necessary, particularly in the case of mating disruption. The Agrowise project proposed a level of support via the CAP on page 16 of this document. The level and type of support can be discussed when the guideline is defined

and recorded on the associated action sheet (see D6.2 for the drafting method).

6.3 Improve training and advice

It is up to the MS to implement training. This is an explicit requirement of the SUD. They are responsible of the quality of the syllabus.

Training should be regularly updated based on the latest scientific knowledge. MS should support a mandatory strategic advisory advice, possibly every five years, based upon the principle 8 and to redesign the farmer's cropping system if needed.

Agrowise recommendations identified throughout the project:

- Quinquennial mandatory renewal of strategic advice, possibly in a certification framework.
- Integration of active prophylaxis—which should be regularly updated with the latest scientific knowledge—into both initial training and certification renewal. To update syllabus, MS could give this explicit mission to either research organisations, universities or technical institutes with a recognized competency and the ability to tap knowledge in the most recent scientific publications.
- Certification renewal should include an evaluation of the user's active prophylaxis strategy.
 - 🔗 This process could also serve as an opportunity to collect relevant data on agricultural and IPM practices implemented by the farmer. It would also be the source of information for the scope 3 accounting system of associated downstream industries.
- Careful attention should be given to the training of trainers and advisors with an adapted recognition system.
- The scope of certification should be broadened to include the groups foreseen under the SUD, as well as organic farmers, farm owners, and managers. Financial incentives could be offered initially to encourage these new stakeholders to undertake IPM training.

Recommendations of experts and stakeholders, not explored by the Agrowise consortium, but at the disposal of MS:

- IPM certification for farmers
- public agricultural extension services, instead of a private system of independent advisors

6.3.1 Pesticides on prescription

Experts and Inès Bouchema, in her interview for *Le 1*, proposed a system in which certain pesticides would require a prescription, similar to highly regulated medicines that cannot be purchased without medical authorization due to their hazardous nature and the need for specialized training.

This proposal addresses a critical challenge: the lack of new pesticides coming on the market, protection levels are declining as pest resistance emerges, leading to higher dosages, increased off-target impacts and eventually necessitates the use of increasingly toxic products still permitted under current regulations. By involving pesticide sellers directly, the system relies on the supply chain's awareness and expertise to promote responsible and controlled use. Under such a "pesticide on prescription" scheme, these products would be reserved as a last-resort, highly

targeted intervention, similar to a “tactical treatment,” only applied if IPM practices have been implemented and when these practices proved insufficient to control pest or fungal infestations.

This recommendation could either be applied at an EU level (refer to 5.2.3) or at a national level.

6.4 Research and innovation

6.4.1 Set the scene: crop-pest systems

Recommendation: Focus research on major crop-pest interactions that represent the higher risks within the country.

Recommendation: Privately conducted research funded with public resources should be made accessible to everyone.

Differences in pedoclimatic conditions, in main farm orientations, and other local specificities are making the most problematic pest-crop risks dependant on the country, even if solutions may be similar among countries. This has to be taken into account and Member States should identify regularly the riskiest crop-pest issues with no appropriate means of control. In this regard, it could be useful to carry out a mapping exercise across all EU Member States to ascertain the extent of infestation and the specific characteristics of diseases and pests. This mapping exercise would be updated periodically and considered in the application of IPM and the measures taken under European legislation.

This could allow to **target research and experimentations on the control of these major risks** and maximise impacts of research. Such a prioritization approach has been implemented in the French PARSADA program which aims at anticipating the withdrawal of active substances. It was done in close connexion with all relevant stakeholders through task-forces dedicated to 9 main groups of crops.

Ideally, each Member State should be able to model the most important pest-crop interactions on its territory, and thus should have access to all the ones developed and assessed by stakeholders on its territory. Innovation efforts should therefore prioritise high-risk pest-crop systems for which no monitoring/predictive model currently exists or where existing models are insufficient.

In line with the previous idea, a discovery or **an innovation publicly funded should benefit to the public research community**, for example for it to be able to build upon it.

Some recommendations were formulated by the experts group, but not further documented by the Agrowise consortium.

- focus on innovative alternatives to substitute pesticides (R1.9)
- encourage private innovation through financial incentives (R1.7). Many policies exist among MS with diverse incentivization systems
- strengthen collaboration between public and private research (R1.8).
- on demonstration farms and experimental hubs: caution need of long-term financing, but good for training

6.4.2 Find a solution: adapt the national thresholds and decision support tools

Recommendation: Share risks monitoring models across EU.

Recommendation: Adapt national decision support systems to integrate biological thresholds adapted to non-chemical practices also.

As explained in 6.2, the thresholds must be adapted to allow the adequate use of Principle 4. Currently, they focus on the use of pesticides.

National monitoring systems must incorporate thresholds for all principles. E.g.:

- What is the best day for mechanical weeding?
- When to use biocontrol and is the pest pressure coherent with the efficacy of the biocontrol option?
- At the end of the season, evaluate your IPM strategy for the year.

Advantage: through mimicry, the private sector will fall into line.

According to deliverable 6.2, in order to correctly implement principle 2, it is necessary to share models and monitoring tools (dynamic population changes over the year) throughout the EU (see IPM decision draft).

This data must be combined with an interface easy to use by farmers and advisors and who know how to use it. The creation of the models (principle 2) must be made usable by producers through an interface (principle 3).

It is by combining them that we obtain an adequate decision-support tool.

6.4.3 IPM monitoring through national surveys

The definition of IPM in the SUD being relatively loose, it does not allow a direct evaluation of an IPM situation, conversely to existing labels with specifications of a limited number of practices and limitations such as organic farming.

To overcome this difficulty, we could expect to monitor the agricultural practices that are likely to illustrate an IPM strategy.

Some of these agricultural practices are reported in the Annex III of the SUD directive, and Member States can define more sets of practices as part of their guidelines to help farmers having an IPM strategy.

Agrowise gathered a large variety of “best agricultural practices” coming from the “Farmers’ Toolbox for IPM”, EU Horizon research projects, EIP-Agri projects and national research projects from the 8 countries of our consortium in order to connect hierarchically the IPM principles to identifiable agricultural practices, to consolidate the practical understanding of Integrated pest management (see Agrowise deliverable D2.1). All were inserted in a robust taxonomy. Furthermore, through its definition of “Active prophylaxis”, Agrowise shed light on specific practices that could constitute the core of an efficient prophylactic management (see Agrowise deliverable D5.1).

Thus, it is recommended that IPM monitoring can be done by monitoring the use of a set of agricultural practices defined in the IPM taxonomy (such as the ones recognised as part of “Active prophylaxis”).

To this end, large scale surveys on agricultural practices in the field with the farmer provide key elements to monitor practices linked to IPM (as illustrated in the document presenting the use of the French survey to this end³⁷) and have precise insights on the management strategy developed by farmers.

This provides a very valuable view on the current status of management practices, and we recommend their use on national scales, avoiding controlling every farmer thanks to the representative sampling, and providing an unequalled monitoring of the status of the national agricultural practices.

However, such a survey is very costly : in France, tens of thousands fields must be analysed for a single farm orientation with each time the visit of an inspector on the farm conducting the interview with the farmer which could take more than 1 hour. The time needed to gather process and publish the data can be up to 2 years, and replications on the same crop orientation is thus conducted not yearly but every 5 years.

We understand this cost as a potential brake for the adoption by countries or EU of such a strategy to monitor agricultural practices actually done.

Thus, we propose for cost reduction and simplification to adopt such surveys but with a limited extent of management practices of interest (e.g. active prophylaxis measures) on a broad basis of farms and possibly the more complete version on a smaller sample.

³⁷ <https://nextcloud.inrae.fr/f/171255502>

7 Guidance to the supply chain

Both experts and stakeholder highlighted the need for greater involvement of distributors, processing industries, cooperatives, retailers, consumers, and equipment manufacturers (quote of deliverable 5.3).

The ideal would be to define what is IPM for the supply chain:

- What is the baseline
- and what are the top ups (which are necessary so the supply chain can still find ways to differ from the others, and then to keep their competitiveness)

Agricultural productivity is at risk because the active substances available are finite and limited, and resistance is increasing. Without supply, the supply chain is also threatened. Therefore, the role of the supply chain is to get involved in the deployment of IPM, making it possible for producers.

7.1 Insurance scheme

Insurance systems to cover excessive losses for farmers are currently being developed, and some have already been tested. This system would allow risk to be shared with the farmer when IPM is implemented, or in the event of a poor harvest.

These insurance systems could also be implemented by actors other than insurance companies, such as cooperatives and primary processors. Example: a cooperative that contributes financially to an insurance fund for farmers.

At a minimum, the agricultural chain could participate in an economic fund that would compensate farmers when they have a poor harvest, thereby sharing the risk. This should be the minimum requirement.

Insurance mechanisms exist in various European countries for protecting against climatic hazards (drought, hail, frost). However, they are poorly adopted for several reasons, including the level of non-covered damages.

The effectiveness of this system largely relies on insurance providers maintaining stable premium levels or implementing moderate increases, even in the aftermath of calamitous events such as described above. Presently, this consistency is not observed: farmers who adopt innovative practices and participate in insurance programs aimed at mitigating revenue loss, may face premium adjustments following challenging years. Consequently, some farmers might opt to discontinue such insurance coverage and revert to more traditional practices that depends more heavily on pesticides and other conventional inputs.

Regarding crop protection, a few studies were performed, including the ARRUPVICO project on insurance of vineyards and oil crops against losses due to pest damages. Similarly to what has been shown by WTW in the UK, **these works evidenced that from the view point of farmers, an excessive use of pesticides (as well as fertilizers), is perceived as an insurance mechanism. As long as the hidden costs on environment and health are not considered, farmers**

are right. When these costs are taken into consideration, it would be beneficial to set an insurance scheme for covering the risks, if the farmers implemented all the most advanced IPM practices and especially the active prophylaxis, and if they have the right level of training and benefited from the adequate strategic advice.

It could be recommended to explore such a possibility in some MS.

7.2 Private specifications and financial rewards

Long term contracts with premium incentives amongst manufacturers, retailers and farmers adopting innovative practices

To go beyond this level 0 of protection, some actors have already set up financial reward systems in exchange for specifications.

1. Long-term contracts

Long-term contracts (3–5 years, corresponding to crop rotation cycles) between farmers and retailers, based on IPM certification, can encourage adoption of IPM practices among farmers not yet engaged, by showing that implementation is financially rewarded.

It is a way for downstream industry to recognize the effort made by farmers for implementing active prophylaxis.

This recommendation has been formulated and approved by the experts and stakeholder, as it is an incentive for the farmer to implement innovations. However, they highlight the risk that such contracts may risk excluding smaller-scale farmers who do not meet retailer prerequisites in terms of production volume or acreage. Therefore, contracts should be designed with sufficient flexibility to accommodate varying farm sizes and production capacities, which can differ between and within Member States.

Private initiatives, where stakeholder provide funding for IPM-grown crops and establish a framework that Member States can monitor (e.g., HVE in France, Integrated Production in Poland), are extremely valuable. However, their impact is limited, as they often cover only a small fraction of production (e.g., SQNMPI in Italy represents 1%). To ensure full adoption by farmers and support the broader development of these practices, downstream actors should be expected to accept and process these products, thus ensuring wider uptake across the agricultural sector.

To further implement long-term contracts, they must be established on the basis of an environmental accounting process. The process of accounting based upon implementation of active prophylaxis and proposed for the development of a scope 3 mechanism could similarly be used for long-term contract.

2. Private specification

The cost of the certification does have to be necessarily supported by the consumer, as described with Vegaplan (see below), the financial charges linked to such premium standards can be supported by the supply chain, and/or by the MSs.

Case study on Vegaplan Standard

The Vegaplan Standard brings together sectoral guidelines and legal requirements for crop

producers. In the Flemish region of Belgium, certification under Vegaplan is mandatory for farmers; they must be certified to access the market and comply with legal obligations surrounding food safety and IPM. This certification is generally recognized by buyers as a prerequisite for business. Additionally, the government partially supports certified farmers by providing a financial bonus from the federal food agency, which helps offset the costs of certification audits—effectively making compliance both compulsory and partly economically incentivized.

7.3 Sectors with R&D public tax credits must promote active prophylaxis

Most MS developed mechanisms for supporting research and innovation, including mechanisms through tax credits. For all research and innovation projects related to crop protection, it must be made explicit that these projects must be IPM oriented, and have to include the active prophylaxis in the scope or in the context of their research. This will on the long run enrich the wealth of options of Principle 1 available for the farmers. And for the projects that would address other components of IPM, they would be created in a framework where prophylaxis is first.

7.4 Living laboratories

Living laboratories should be used as tool to enhance farmers' skill and innovation. This collaborative environment would foster interaction amongst farmers and other stakeholders to co-create, tests and refine innovations under real-life conditions and ensure access to the latest knowledge available.

Unlike traditional approaches where farmers act only as end-users, living laboratories would engage them as active contributors throughout the innovation process. This model will promote mutual learning and help guarantee that new tools and practices are both relevant and widely applicable.

8 Guidance to the advisors

The role of an advisor is to address case-by-case farmers' problem. However, the aim is to shift this focus towards more peer-to-peer guidance and collective action in pest management. **It is essential to develop such local expertise and practices amongst farmers so that they can work together to address shared challenges effectively.**

When a farmer adopts new techniques, they assume certain risks and appropriate support mechanisms are feasible:

- Insurance schemes to cover potential losses in production and income (see above)
- Financial support by downstream industries based on the actions mentioned in the specifications, consistent with the risk reduction and usage reduction objectives mentioned in the SUD directive
- Advisory support (see the “phytiales” example above) with their own professional body to ensure their competence, up-to-date knowledge and the ability to evaluate each other's work

8.1 Introduction

From the perspective of the group of experts in Agrowise project based on outcome of other European projects, **the effective implementation of Integrated Pest Management (IPM) depends strongly on the quality and proximity of farmer support.** Advisors play a central role in facilitating dialogue among farmers, animating collective discussions, and identifying reliable sources of technical and scientific information on pest management. Beyond providing knowledge, they help farmers coordinate actions, develop joint projects, and identify locally accessible opportunities — such as markets, processing facilities, or innovative inputs — that can support the management of pest populations.

The Agrowise project encourages advisors to place particular emphasis on Active Prophylaxis practices, which form the foundation of preventive crop protection. Many of these practices can be implemented under a wide range of conditions, provided they are adapted to local agronomic and environmental contexts. Advisors thus play a crucial role in translating general principles into context-specific strategies that fit the needs and constraints of each farming system.

It is important to note, as highlighted in Deliverable 5.1, that weak IPM implementation is partially attributable to an information deficit: farmers may not always be aware of available alternatives or how to implement them. However, this should not be interpreted as the sole reason for incomplete adoption. Even well-informed and motivated farmers may face practical constraints, such as limited access to innovative protective measures or insufficient market opportunities for diversified crops.

A key recommendation is to **integrate preventive measures into routine agronomic practices, including sowing and harvesting dates, seed choices, and crop rotations.** When these routine decisions are guided by a systematic crop protection strategy, the resilience of the system is strengthened, reducing the need for frequent curative interventions. Conversely, if preventive strategies are not embedded in these day-to-day practices, the system's vulnerability increases, and curative measures become necessary more often.

Finally, many Active Prophylaxis measures are more effective when implemented collectively. In these cases, **advisors can facilitate networking and coordination among neighboring farmers,** ensuring that joint actions — such as landscape-level pest management or shared monitoring systems — are coherent and mutually reinforcing. In this capacity, the advisor functions not only as a technical expert, but also as a facilitator of cooperation and a bridge between local actors,

contributing to the emergence of collective resilience and shared learning within farming communities.

8.2. Introduction of quinquennial strategical advices

To implement Principle 8, which has both strategic and tactical dimensions, it is highly pertinent that advisory services support farmers not only in real-time decision-making but also in periodic reflection. This would mean creating a pause outside of the growing season — a “cooling-off” moment — during which farmers, together with advisors, take stock of what has worked and what has not, what practices produced the desired resilience, and what might need adaptation. Such reflective practice is familiar in many domains, where it is considered beneficial to allocate a portion (for example, 10 %) of budgets to preventive maintenance rather than only corrective actions. In industry, for example, companies that adopt preventive maintenance strategies consistently report reduced downtimes (by 25-30 %) and lower long-term costs compared with purely reactive repair regimes.

Similarly, in the healthcare sector, evidence shows that preventive care (screening, vaccinations, lifestyle modifications) often offers high cost-effectiveness, reducing incidence and severity of disease, thus lessening the need for more expensive curative interventions³⁸.

Such structured moments of exchange would provide a practical framework for planning preventive actions according to the specific conditions and constraints of each farming system. This approach would contribute to a systematic and consistent implementation of IPM principles among all farmers, reinforcing preventive strategies as an integral part of crop management planning at the national and regional levels.

8.3. Other recommendations

Based on the conclusions of the expert and stakeholder groups consulted during the Agrowise project, several key recommendations have emerged regarding the reinforcement of agricultural advisory and training systems:

1. *Reinforce public agricultural extension services.*

Public advisory systems remain a cornerstone for achieving large-scale and equitable dissemination of Integrated Pest Management (IPM) practices. Their long-term stability and accessibility make them particularly suited to support all farmers, including those with limited access to private consultancy services.

2. *Strengthen the scientific and technical foundation of training.*

Training programs for advisors and farmers should be firmly grounded in up-to-date scientific and technological knowledge. Continuous professional development must ensure that advisors are able to integrate new IPM insights, innovations, and regulatory evolutions into their guidance.

³⁸ Stenström, C., Norrbin, P., Parida, A., & Kumar, U. (2016). Preventive and corrective maintenance – cost comparison and cost-benefit analysis. *Structure and Infrastructure Engineering*, 12, 603 - 617. <https://doi.org/10.1080/15732479.2015.1032983>.

Thomas, D., & Weiss, B. (2021). Maintenance Costs and Advanced Maintenance Techniques in Manufacturing Machinery: Survey and Analysis. *International journal of prognostics and health management*, 12. <https://doi.org/10.36001/ijphm.2021.v12i1.2883>.

3. *Promote peer learning and farmer-to-farmer knowledge exchange.*

Peer learning mechanisms are widely recognized as powerful tools to accelerate behavioral change. Initiatives such as the voluntary certification of “IPM Ambassador Farmers” (cf. measure S2.4) could help formalise this approach, fostering a community of practice and trust among farmers.

4. *Establish regional IPM demonstration hubs.*

Regional hubs should serve as living laboratories for testing, demonstrating, and communicating IPM practices adapted to local conditions. They would connect farmers, advisors, researchers, and the innovation sector, ensuring that knowledge is both scientifically sound and field-relevant.

5. *Ensure close collaboration with the innovation sector.*

The advisory and training systems must be closely linked with the innovation ecosystem — including research institutes, start-ups, and input providers — to facilitate rapid dissemination and feedback on innovative solutions contributing to IPM.

6. *Strengthen advisory services’ institutional recognition and local presence.*

Formal recognition of advisory services, investment in their continuous training, and maintaining a strong local presence are critical success factors. Advisors must receive dedicated IPM training to ensure consistent and technically sound support to farmers.

7. *Develop networks and tools for continuous improvements.*

8. Efforts should focus on:

- a. Regularly updating IPM guidelines, reflecting new knowledge, technologies, and feedback from practice;
- b. Using official and recognised dissemination channels for good practices, ensuring credibility, traceability, and wide reach;
- c. Facilitating coordination among actors through digital platforms and shared databases.

9 Guidance to the farmers and groups of farmers

Recommendations directed at farmers and farmer groups are presented in this final section of the deliverable, reflecting their crucial role in the practical application of IPM. However, their capacity to act is inherently dependent on the measures targeting other agricultural actors (see above).

Accordingly, it is crucial to enhance farmers’ operational autonomy by implementing these recommendations progressively, starting with broader stakeholders and culminating at the farm level. This division of responsibilities from the largest scales to the most local implications ensures that proximity to the farmer does not lead to disproportionate obligations or pressure. By doing so, responsibilities are distributed more equitably across the supply chain, thus reducing the burdens placed on farmers.

From the farmers’ point of view, the main operational framework for implementing Integrated Pest Management (IPM) is that all uses of plant protection products must comply with IPM principles. The guidelines thus serve as a crucial interface — helping to clarify what it concretely means to “apply a principle.” They provide a shared foundation for mutual understanding between authorities and farmers, enabling realistic alignment between regulatory expectations and what

can actually be achieved in the field to meet the risk-reduction objectives of the Sustainable Use of Pesticides Directive (SUD). The methodology and formulation of these guidelines are detailed in Deliverable 6.2.

However, from the same farmer's perspective, certain implicit paradoxes can hinder the full implementation of IPM. On the one hand, society and public authorities expect agricultural products to be produced under IPM principles; on the other, market demand often fails to support diversified cropping systems that are essential to achieving IPM's preventive aims. According to Principle 1, crop rotation is one of the primary means to prevent pest infestations. Agronomically, rotations only play a protective role when they disrupt pest development cycles — which requires significant variation in crop species, sowing dates, cover types, growth dynamics, and even plant-pest olfactory interactions. Such diversity cannot be achieved when rotations are limited to only two or three crops sharing similar growing periods.

The national transpositions of the Sustainable Use of Pesticides Directive (2009/128/EC) were completed before 2014. According to the poll conducted in September 2024 among the expert group and Member State representatives³⁹, it appears that the regulatory frameworks governing pesticide use have become highly precise with respect to the prevention of point-source pollution. This includes the establishment of clear operational limits concerning wind speed during spraying, rainfall thresholds, buffer distances from watercourses, cleaning procedures for application equipment, and management of tank residues.

In this context, Agrowise emphasize a key operational message for farmers: the importance of implementing, whenever possible, **Active Prophylaxis practices**. These preventive actions aim to **reduce pest pressure through all available agronomic means**, including the **reduction of pest reservoirs**, the **limitation of pest mobility and encounters**, and the **enhancement of crop resilience**. Such actions are considered “no-regret” strategies, as they contribute to more stable and sustainable production systems regardless of pest pressure levels or the control methods available.

Other actors mentioned in previous sections — including advisory services, research institutions, and policymakers — are encouraged to **acknowledge and support these proactive efforts**. Many of these practices gain effectiveness when implemented **collectively**, across farms and landscapes. Farmers are therefore encouraged to seek collaboration and to engage with their **advisors, neighbors, or local working groups** to identify opportunities for joint implementation.

Notably, several instruments under the **Common Agricultural Policy (CAP)** can facilitate such cooperation. In particular, **AECM for farmers' collectives**, **Operational Groups funded under the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI)**, as well as other **collective or regional support schemes**, offer financial and technical frameworks for groups of farmers wishing to develop and test innovative approaches that align with **CAP and IPM objectives**.

—>AECM for groups

https://ec.europa.eu/enrd/sites/default/files/w12_aecm_factsheet_collective-approaches.pdf

³⁹ See Appendice (11) 6. Poll on IPM _ participants: experts, SUD, DGs, consortium

10 Conclusions

This Deliverable D6.1 of the AGROWISE Project provides targeted policy recommendations to strengthen the implementation of **IPM** under the 2009/128/EC SUD. The core element is that **Active Prophylaxis**—the idea of prioritizing preventive measures to reduce pest pressure and reinforce system resilience—is the key to achieving the SUD objectives and ensuring long-term sustainable crop protection.

Historically, policies aimed at implementing IPM have been almost entirely focused on requirements imposed on farmers who supported about 80% of efforts. However, the project stresses that it is not possible to limit policies to making active prophylaxis mandatory for farmers because the agricultural value chain is presently **locked-in**, severely reducing farmers' freedom of action and capacity to adopt new practices and systems. The value chain remains locked-in, necessitating a policy shift.

Consequently, the project recommends that both the EU and Member States implement policies that regulate and support three priority domains to achieve broader IPM implementation.

Innovation and Research is a first domain of priority. This will be achieved by ensuring more availability of new options, more visibility and accessibility of existing and new solutions, notably through an empowered **European Toolbox for IPM practices**, and by accelerating the European registration of innovations.

Training and Advice are at the very core of the transformation. This will be achieved by revising Annex I of the SUD Directive to give explicit priority to IPM and the new paradigm of Active Prophylaxis, and by ensuring adequate advisory support, potentially through a mandatory **strategic advice every five years**, and by promoting effective peer-to-peer learning.

For unlocking the sociosystems, **Enforcing supply chain responsibility and engagement** is the third priority of the recommended public policies. This could be achieved by moving beyond voluntary incentives and establishing **legal constraints and incentives** to involve the downstream sector (distributors, processors, retailers). The commitment of the entire supply chain is compulsory to reduce the burden on farmers.

Achieving the objectives of the SUD and securing sustainable crop protection is possible and a lot has already been achieved. A better implementation is required to reduce the use and impact of pesticides, to slow down the emergence of resistances to pesticides and to ensure a real and efficient crop protection even if active substances are to be withdrawn. Achieving a full implementation of SUD requires acknowledging that the transition cannot rest solely on the farmer. By involving all actors—innovators, advisors, and the downstream industry—and sharing responsibility across the entire agricultural sociosystem, the burden on farmers will decrease. This comprehensive and coordinated approach, centered on embedding Active Prophylaxis practices, is the operational pathway necessary for the effective deployment of IPM for a sustainable production of food and for the economic performance of the European agricultural sector.

11 Appendices

11.1 Abstract from deliverable 4.2 Framework for Member States to support the generation of Farm-Specific Guidelines For Targeted Stakeholders

See page 19 :

Policy makers assessed challenges for vineyards nationally:

- **The state of resistance / pest pressure** (e.g. disease types, most affected varieties and locations, future prognosis): around half vineyards are at risk of losses from pesticide resistance pests.
- **The surface of vineyard to be renewed in the next 3 to 5 years:** 10%
- **The economic situation of these vineyards:** profitability is threatened due to high pesticide costs; vineyards are 40% of national agricultural economy.
- **The tolerant varieties available, current adoption levels and drivers of adoption** (or barriers to adoption e.g. knowledge gaps or low cost of PPP): several varieties suitable for the climate regions, but not all are suited to current market preferences.
- **The timeframe:** The vines are renewed on average every 25 years. This duration implies a very slow renewal of varieties and also indicates an opportunity for long-term planning.
- **Future varieties becoming available:** limited spontaneous developments are planned.
- Any other information relevant to the national vineyard context.

11.2. Categories of the policy instruments based on the targeted actors

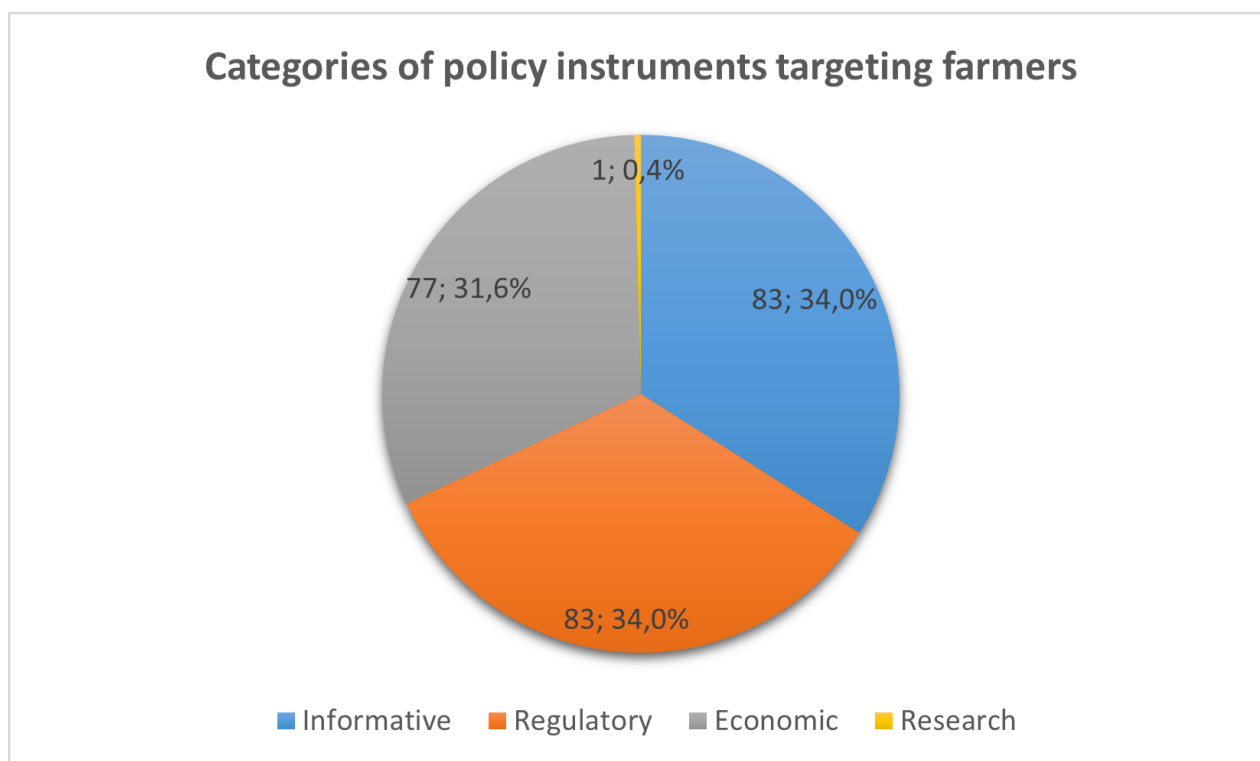


Figure 1: Category of policy instruments targeting farmers, showing the number of policy instruments and the percentage they represent out of the total of policy instruments targeting farmers.

Categories of policy instruments targeting advisors

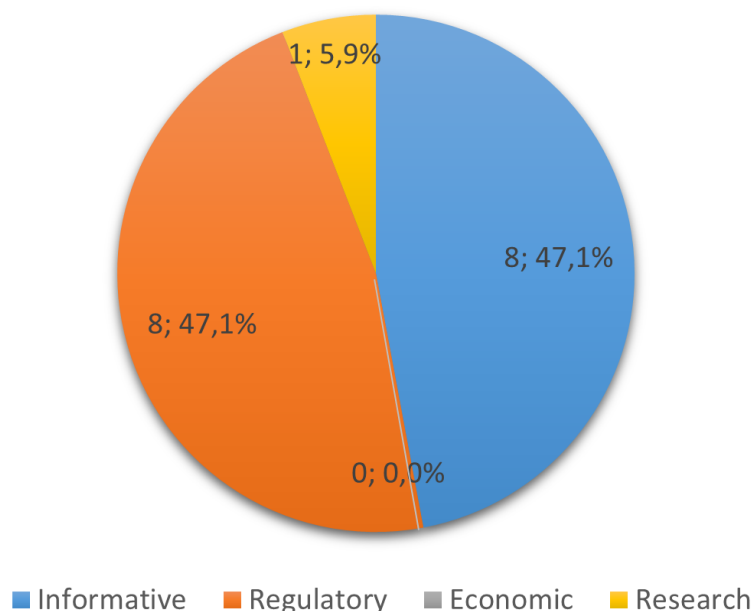


Figure 2: Category of policy instruments targeting advisors, showing the number of policy instruments and the percentage they represent out of the total of policy instruments targeting advisors.

Categories of policy instruments targeting the supply chain

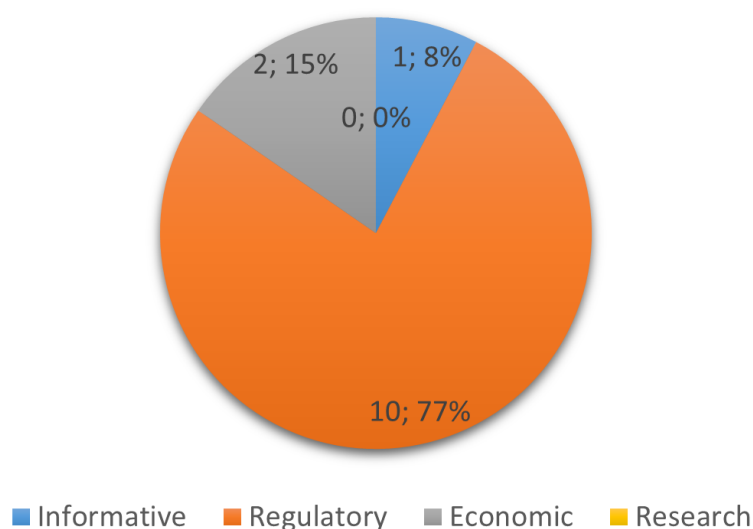


Figure 3: Category of policy instruments targeting the supply chain, showing the number of policy instruments and the percentage they represent out of the total of policy instruments targeting the supply chain.

To be noted: the supply chain stakeholders targeted by the policy instruments are exclusively pesticide sellers. Moreover, out of the 10 regulatory instruments, only 3 aren't training certificates

(mandatory based on SUD, article 5).

11.3. Triangle in the wind :

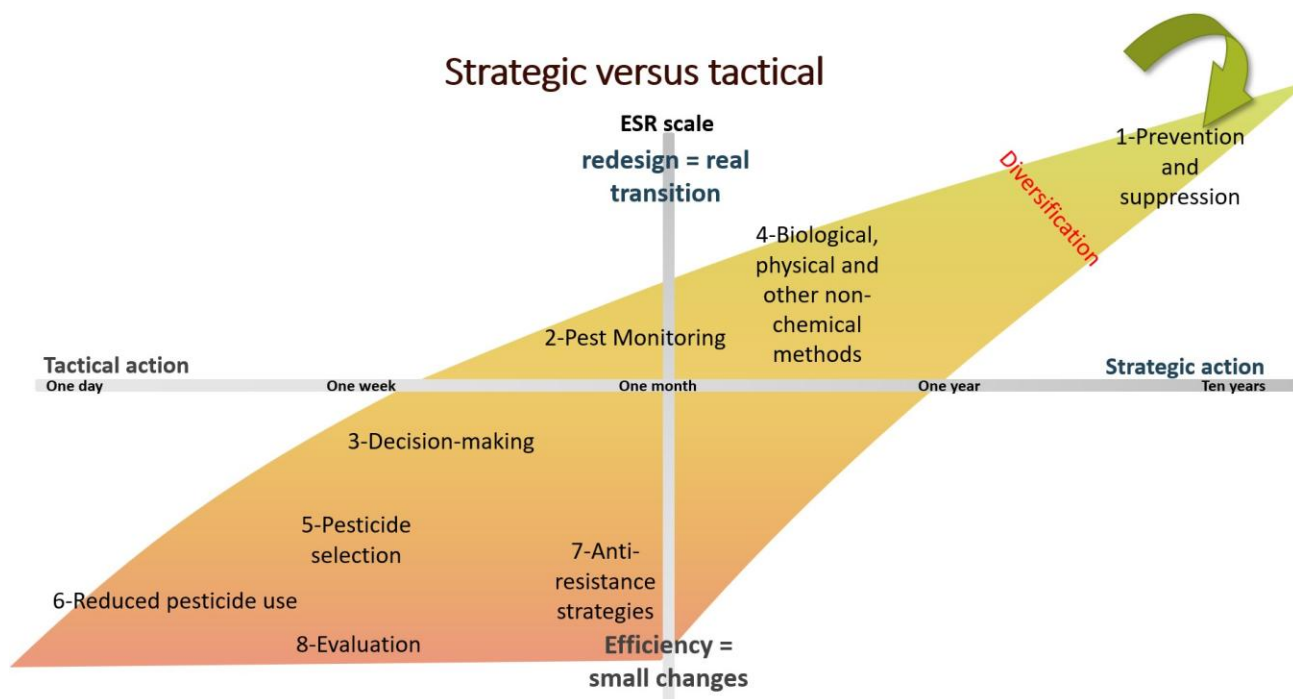


Figure 1: IPM principles, Timing vs. Effectiveness

11.4. Suggestion of revision of Annex I on training subjects

The new formulation of Annex I should be reorganised in 4 priority. First information, on the trainee's knowledge. This informational aspect would include the legislation (1) and the risks of the products on Human health and environment (2). The second aspect should be technical, concerning the cultural practices, focused on the trainee's set of skills. This technical aspect would include the good practices of pesticide use (3), viewed as part of an IPM strategy (4).

In case of the revision of the SUD into a SUD+, this redraft should be included in the new text. In case the current Annex is maintained, therefore the minimal Agrowise recommendation would be for the EU to clarify the current text through a guidance document to MS on the content of the mandatory training, in order to give an explicit space to active prophylaxis and to better balance between IPM and other subjects.

ANNEX I

Training subjects referred to in Article 5

Informational aspects: trainee's knowledge

1. Legislation

(Former 1.) All relevant legislation regarding pesticides and their use.

2. Risks of the pesticides on Human health and environment

(Former 2.) The existence and risks of illegal (counterfeit) plant protection products, and the methods to identify such products.

(Former 3.) The hazards and risks associated with pesticides, and how to identify and control them, in particular:

- (a) risks to humans (operators, residents, bystanders, people entering treated areas and those handling or eating treated items) and how factors such as smoking exacerbate these risks;
- (b) symptoms of pesticide poisoning and first aid measures;
- (c) risks to non-target plants, beneficial insects, wildlife, biodiversity and the environment in general.

Technical aspects on cultural practices: trainee's set of skills

3. good practices of pesticide use

(Former 5.) Initiation to comparative assessment at user level to help professional users make the most appropriate choices on pesticides with the least side effects on human health, non-target organisms and the environment among all authorised products for a given pest problem, in a given situation.

(Former 8.) Procedures for preparing pesticide application equipment for work, including its calibration, and for its operation with minimum risks to the user, other humans, non-target animal and plant species, biodiversity and the environment, including water resources.

(Former 9.) Use of pesticide application equipment and its maintenance, and specific spraying techniques (e.g. low-volume spraying and low-drift nozzles), as well as the objectives of the technical check of sprayers in use and ways to improve spray quality. Specific risks linked to use of handheld pesticide application equipment or knapsack sprayers and the relevant risk management measures.

(Former 10.) Emergency action to protect human health, the environment including water resources in case of accidental spillage and contamination and extreme weather events that would result in pesticide leaching risks.

(Former 11.) Special care in protection areas established under Articles 6 and 7 of Directive 2000/60/EC.

(Former 12.) Health monitoring and access facilities to report on any incidents or suspected incidents.

(Former 13.) Record keeping of any use of pesticides, in accordance with the relevant legislation.

4. IPM strategy

(Former 4.) Notions on integrated pest management strategies and techniques, integrated crop management strategies and techniques, organic farming principles, biological pest control methods, information on the general principles and crop or sector-specific guidelines for integrated pest management, **and active prophylaxis.**

(Former 6.) Measures to minimise risks to humans, non-target organisms and the environment: safe working practices for storing, handling and mixing pesticides, and disposing of empty packaging, other contaminated materials and surplus pesticides (including tank mixes), whether in concentrate or dilute form; recommended way to control operator exposure (personal protection equipment).

(Former 7.) Risk-based approaches which take into account the local water extraction variables such as climate, soil and crop types, and relieves.

This proposal of redrafting demonstrates how imbalanced the current redaction of the 4 main subjects is.

By balancing the 13 existing subjects, IPM will be given more visibility and time during the mandatory training.

11.5. Pesticides saving certificates (CEPP): France

This case study has been produced by Ricardo consultant.

1. Description of the instrument

Inspired by energy saving certificates, the Pesticides saving certificates (*Certificat d'économie de produits phytopharmaceutiques* - CEPP) scheme is an innovative mechanism designed to encourage farmers to adopt IPM practices known to reduce the use and/or the risks associated with plant protection products (PPP), while ensuring the economic performance of their farms⁴⁰. The distributors, who sell PPP to farmers, can get CEPPs when farmers apply one or several approved actions reducing the use and the risks of the PPP. Each action is associated with a specific number of CEPPs, set based the expected pesticide “savings” achieved when implemented. Each distributor has an annual CEPP target to meet, based on its pesticide sales record. For the period 2024-2025, this target is set at 5% of the sales reference or purchasing reference for seed treatment products and 15% of the sales reference or purchasing reference for other PPPs⁴¹. If distributors do not reach at least 10% of their target, they face some financial penalties⁴². Initially launched on an experimental basis in 2016⁴³, this scheme has been made permanent in 2019⁴⁴.

2. Objectives of the policy instrument

The aim of the Pesticides saving certificates (CEPP) is to encourage the “obligated” parties (PPP retailers) to promote to professional users or implement themselves actions that reduce the use, risks and impact of these products, without imposing additional taxes on farmers.

The approach of the scheme is to stimulate the diffusion and uptake of integrated pest

⁴⁰ [CEPP \(agriculture.gouv.fr\)](https://agriculture.gouv.fr/cepp)

⁴¹ [Section 4 : Certificats d'économie de produits phytopharmaceutiques \(Articles R254-31 à R254-37\) - Légifrance \(legifrance.gouv.fr\)](#)

⁴² [Article R254-42 - Code rural et de la pêche maritime - Légifrance \(legifrance.gouv.fr\)](#)

⁴³ [LOI n° 2014-1170 du 13 octobre 2014 d'avenir pour l'agriculture, l'alimentation et la forêt \(1\) - Légifrance \(legifrance.gouv.fr\)](#)

⁴⁴ [Ordonnance n° 2019-361 du 24 avril 2019 relative à l'indépendance des activités de conseil à l'utilisation des produits phytopharmaceutiques et au dispositif de certificats d'économie de produits phytopharmaceutiques - Légifrance \(legifrance.gouv.fr\)](#)

management practices in the agricultural sectors where technical solutions exist.

3. *Decision rules for quantifying actions contributing to integrated pest management*

Any stakeholder (private companies, industry bodies, distributors, farmers) can propose a practice to be evaluated by the CEPP Commission and possibly validated into a standardised action. The CEPP Commission evaluates proposals based on at least 3 years of Good Experimental Practices (GEP) trial results which justify the potential of reduction of use and/or impacts of PPPs, and the potential of dissemination of the practice.

Practices from all the IPM principles can be turned into a standardised action. The actions are listed under 5 categories:

- New agronomic practices (e.g. combining crops)
- Use of disease-resistant or disease-tolerant varieties
- Subscription to decision-support tools
- Use of alternative methods (biocontrol products in particular)
- Measures to reduce the quantities of PPPs used (high-performance equipment, adjuvants, etc.)

When implemented, the scheme was criticised for focusing on the reduction in pesticide use, rather than the reduction in the impact of the pesticide use and thus, the risk related to PPPs use. The first standardised action focusing on the reduction of risks without reduction of PPPs use were formalised at the end of 2021⁴⁵.

4. *Actors involved*

Three main actors are involved in this scheme:

Obligated parties

The 'obligated parties' under the CEPP scheme are the distributors of PPPs for agricultural use, but also the seed treatment service providers, the distributors of treated seeds and the farmers who have purchased PPPs abroad⁴⁶.

Each obligated party has a target number of CEPPs to be obtained, calculated on the basis of sales or purchases of products in previous years. Biocontrol products, low-risks products and products used exclusively as part of compulsory control programmes are not taken into account when calculating obligations.

CEPP Commission

The CEPP Commission is an independent, multi-disciplinary body bringing together the full spectrum of expertise in the agricultural research-innovation ecosystem across a wide range of sectors. This Commission is responsible for the qualification of the effective impact of new practices and tools on reducing the use of PPPs in the form of an index (Treatment Frequency Index) or impact measurement.

These practices and tools are proposed by all the players in the farming profession in the form of standardised actions, examined by the CEPP Commission and then validated and published by the Ministry of Agriculture.

Ministry of Agriculture

The Ministry of Agriculture is responsible for publishing the list of officially approved standardised

⁴⁵ [Utiliser un système de transfert sécurisé du bidon vers le pulvérisateur afin de limiter l'exposition aux produits de l'opérateur et de l'environnement | Ecophytopic](#)

⁴⁶ [CEPP \(agriculture.gouv.fr\)](#)

actions. These actions are defined by the following⁴⁷:

- the nature of the action
- the documents justifying the implementation of the action to be submitted with the CEPP application,
- the documents to be archived and made available to the officials responsible for inspections,
- the annual number of CEPPs / sell unit
- the number of years during which the action entitles the holder to CEPPs.

The Ministry of Agriculture is also responsible for the platform used by obligated parties to declare their CEPPs⁴⁸, and for the control of the implementation of the scheme.

5. Results since implementation

Standardised actions

In 2022, 119 standardised actions-sheets had been validated, containing 3 231 commercial references⁴⁹ (See Table 3).

Table 4: Breakdown of standardised actions per category in 2022

Category	Proportion of standardised actions in 2022
New agronomic practices (e.g. combining crops)	15%
Use of disease-resistant or disease-tolerant varieties	8%
Subscription to decision-support tools	8%
Use of alternative methods (biocontrol products in particular)	56%
Measures to reduce the quantities of PPPs used (high-performance equipment, adjuvants, etc.).	12%

It is important to note that on the 119 standardised actions available for the 2022 campaign, only 95 were taken up by the obliged parties, enabling them to obtain 8.3 million CEPPs.

6 standardised actions represented 70% of the total number of CEPPs obtained in 2022 (see Table 5).

Table 5: Standardised actions generating the most CEPPs in 2022

Standardised action	Proportion of CEPPs obtained in 2022
Reducing the use of PPPs by diversifying crops in annual production systems (2022-120)	28%
Controlling various pests and diseases using a biocontrol sulphur-based product (2021-008)	16%
Combating turnip yellows virus (TuYV) in oilseed rape by choosing a fairly resistant variety (2018-047)	10%
Reducing the number of treatments by using wheat varieties that	7%

⁴⁷ [Le dispositif CEPP en détails | Ecophytopic](#)

⁴⁸ [CEPP \(agriculture.gouv.fr\)](#)

⁴⁹ [Bilan 2022 de la mise en œuvre du dispositif de certificats d'économie de produits phytopharmaceutiques | Ministère de l'Agriculture, de la Souveraineté alimentaire et de la Forêt](#)

are sufficiently resistant to pests and lodging	
Replacing metaldehyde-based slug control products with natural molluscicide products	6%

Implementation by the obligated parties

For the period 2022-2023, 2,014 companies were listed as obligated parties for the CEPP scheme, for a total of 33.7 million of certificates to be obtained through the implementation of standardised actions. This includes 900 which are currently approved to distribute PPPs to professionals or to apply PPPs as seed treatments.

78% of the companies approved to distribute PPPs to professionals or to apply PPPs as seed treatments declared at least 1 action in 2022.

The ratio between the number of certificates obtained and the total number of obligations for all the obligated parties was 49%⁵⁰.

6. Enablers and success factors

This specific policy instrument has only been implemented in France so far. Several enablers have been identified to have contributed successfully to its implementation.

The involvement of all the actors of the agricultural chain

A collaborative approach was taken in the process of developing proposals on the specific design of the CEPPs. This approach engaged the support of research institutions which contributed to a sound evidence base the government could rely on to promote the scheme⁵¹.

Although the obligated parties are burdened to obtain CEPPs, all the stakeholders are involved in the scheme: PPPs registration holders, seed and agro-equipment companies, to have their commercial references included in the standardised actions: advisors, who have to promote the standardised actions during strategic advice mandatory delivery to farmers; research and technical institutes to propose standardised actions on other alternative methods; and farmers, who will ultimately chose to implement the standardised actions.

An alternative policy option compared to a direct tax or regulation.

The agricultural sector manifested a strong opposition to new regulations and increased or new taxes on pesticides. The farming organisations expressed a preference for a system where the initiative and the choice of means that they can take ownership of was left to the players, rather than restrictions or additional taxes⁵².

A robust scientific validation of the standardised action

The creation of a multi-disciplinary and independent CEPP Commission, which develop a scientifically sound list of standardised actions for the CEPPs, ensures a robust link between the standardised actions and actual reductions in pesticide use. This provides legitimacy and is essential for the confidence of the all the actors in the scheme, and therefore its success⁵³.

The multiplicity and variety of the standardised action

The large number of standardised actions (138 at 30 april 2025) and commercial references is a

⁵⁰ Bilan 2022 de la mise en œuvre du dispositif de certificats d'économie de produits phytopharmaceutiques | Ministère de l'Agriculture, de la Souveraineté alimentaire et de la Forêt

⁵¹ <https://www.oecd-ilibrary.org/docserver/9789264269545-7-en.pdf?expires=1727175753&id=id&accname=guest&checksum=D70CF586CEC359E4BD675D8DFA5291E9>

⁵² Préfiguration de la mise en oeuvre des CEPP en agriculture (developpement-durable.gouv.fr)

⁵³ [9789264269545-7-en.pdf \(oecd-ilibrary.org\)](https://www.oecd-ilibrary.org/docserver/9789264269545-7-en.pdf)

key factor for the successful uptake of the CEPP scheme, to make the objective achievable for all the obligated parties with different size, capacities, targeting different crop and geographic sectors.

7. Barriers to the implementation of the scheme

Three barriers have been identified as having slowed down the uptake of the scheme or limited its reach.

The distributors' range of products does not cover all the standardised actions.

The distributor plays a key central role in this scheme. They historically directly sell a range of products to farmers, including plant protection products, fertilisers, or seeds. However, agricultural equipment such as mechanical weeding material are not in their remit. Therefore, they don't receive CEPP certificates related to agricultural equipment directly when a farmer invests in it, as they need the proof of purchase to be able to claim certificates. This aspect is an important obstacle to the roll-out of the scheme.

The apparent complexity of the scheme slowed down the rallying of actors

The complexity of this innovative mechanism faced criticism from agricultural professional organisation and other agricultural stakeholders⁵⁴, who used legislative tools, including appeals to the Council of State to withdraw this mechanism.

Moreover, the CEPP scheme was initially launched on an experimental basis and was made permanent in April 2019⁵⁵. There was no legal obligation to achieve the targets during the experimental phase. This, combined with a period of legal uncertainty delayed the adoption and promotion of the scheme by the stakeholders.

The transition from an obligation of results to an obligation of means

The French law N° 2018-938 voted in 2018 introduced the mandatory capitalistic separation of PPPs advice and sales activities. Several stakeholders considered that this change weakened the implementation of the CEPP scheme, as companies distributing PPPs, which are obligated parties, are limited in their abilities to advise farmers on some alternatives such as biocontrol products or agricultural decision support tools. They argue that their scope for action has been reduced, as that they no longer have a legal role to play in providing advice on PPPs to farmers⁵⁶.

The financial penalty associated with the failure to obtain the assigned number of certificates was also considerably amended, from 5€ per missing certificate in the 2016 experiment scheme⁵⁷ to a financial penalty if obligated parties do not reach at least 10% of their target as well as the risk of losing their sales authorisation in the event of major non-compliance with the biennial audit of their activity.⁵⁸

11.6. Poll on IPM - participants : experts, SUD, DG, consortium

IPM Poll (September 2024)

⁵⁴ [Préfiguration de la mise en oeuvre des CEPP en agriculture \(developpement-durable.gouv.fr\)](https://developpement-durable.gouv.fr/)

⁵⁵ [Le dispositif CEPP en détails | Ecophytopic](#)

⁵⁶ [Groupe de travail sur le bilan de la séparation de la vente et du conseil en matière de produits phytopharmaceutiques - Assemblée nationale \(assemblee-nationale.fr\)](#)

⁵⁷ [Décret n° 2016-1166 du 26 août 2016 relatif à la mise en œuvre du dispositif expérimental de certificats d'économie de produits phytopharmaceutiques - Légifrance \(legifrance.gouv.fr\)](#)

⁵⁸ [Article R254-42 - Code rural et de la pêche maritime - Légifrance \(legifrance.gouv.fr\)](#)

