Analysis report of the hub self-assessments

Deliverable D1.3

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Analysis report of the hub self-assessments

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Abstract

This deliverable reports on self-assessments performed by IPMWORKS demonstration hubs between 2022 and 2024. The analysis of these self-assessments yielded a range of important insights. They pertain to critical areas to be taken into account to effectively contribute to wider application of Integrated Pest Management (IPM) through farmer hubs, demonstrations, and interactions both within the hub and between the hub and external groups and organisations. This includes the need for enhanced engagement strategies to better advise and motivate farmers, the development of resources and tools tailored to the specific challenges and opportunities of IPM, and the creation of more effective communication and networking platforms to facilitate knowledge sharing. Additionally, addressing policy and regulatory barriers, improving access to technology, and demonstrating the economic viability of IPM practices are crucial steps. These efforts should be coupled with strategies to overcome cultural and behavioral resistance, fostering a more collaborative and supportive environment for the choice for sustainable agricultural practices.

Based on the detailed insights, here are key messages framed as recommendations for effective IPM implementation and hub coach support:

1. **Enhance Learning through Practical Demonstrations:** Organize field demonstrations and on-farm events to show real-world applications of IPM practices, facilitating easier understanding and positive choices by farmers.

2. **Promote Peer-to-Peer Learning:** Encourage knowledge exchange among farmers through community meetings and digital platforms, leveraging the power of peer experiences and successes to motivate wider choices for IPM.

3. **Address Barriers with Tailored Communication:** Develop communication strategies that specifically address common barriers to choosing for IPM, such as hesitancy/skepticism (e.g. because of perceived risks involved), financial constraints, and regulatory challenges, to foster a more conducive environment for change.

4. **Support Hub Coaches with Continuous Training:** Provide hub coaches with ongoing training and resources in both technical IPM knowledge and facilitation skills, ensuring they are well-equipped to support and motivate farmers.

5. **Foster Connectivity with Other Initiatives:** Create opportunities for hub members to connect with other initiatives and projects, enhancing the learning experience and introducing new perspectives and practices into the hub.

6. **Adopt a Holistic Approach to IPM:** Encourage the integration of diverse IPM strategies that consider the entire agricultural ecosystem, promoting sustainable and effective pest management options.

7. **Utilize Cross-Visits for Broadened Learning:** Organize cross-visits among farmers to different farms or regions, allowing for the sharing of experiences and practices, and fostering a collaborative learning environment.

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8. **Tailor Strategies to Local Conditions:** Recognize and adapt IPM strategies to the specific cultural, economic, and environmental conditions of each farming community, ensuring relevance and effectiveness.

9. **Leverage Facilitation Tools for Engagement:** Utilize methods that foster interactive learning, which may include digital communication tools and social media to engage farmers, share knowledge, and build community around IPM practices.

10. **Recognize and Address Cultural and Economic Factors:** External factors such as market dynamics, EU subsidies, and policy changes significantly affect the choice for IPM practices. Financial incentives, regulatory requirements, and the availability of context-specific guides and support play crucial roles in motivating farmers towards IPM. Hence the importance of understanding the impact of cultural attitudes and economic realities on choices in relation to IPM, tailoring approaches to address these challenges and support farmers effectively.

These recommendations aim to provide a comprehensive framework for enhancing positive choices for IPM through practical learning experiences, community engagement, continuous support for hub coaches, and a deep understanding of local contexts.

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1. Introduction

This deliverable reports on the self-assessments conducted by IPMWORKS hubs (see Annex 1 for a list) in relation to activities in 2022 and 2023. Here, we present an analysis of information and insights provided through those self-assessments. This analysis sheds light on the IPMWORKS approach to demonstration hubs in terms of processes and social interactions that it involves. Though it contains reference to IPM practices, the focus is not on the content of IPM (demonstrations) but on interactive processes and on hub (coach) capacities.

1.1. Background and purpose

A demonstration hub involves a group of farmers who team up with an advisor (called hub coach, and sometimes there is more than one) for a number of years for the purpose of interactively learning about what IPM options are available, which ones are suitable for their own environments, what challenges may be addressed in what way, etc. The IPMWORKS understanding of a demonstration hub means that the hub coach is co-expert with the participating farmers and that the hub coach has a key role in creating conditions in which learning about IPM flourishes. This often includes (but is not exclusively about) bringing in knowledge and experience (also by bringing in experts on specific topics).

The IPMWORKS hub approach builds on experience and insights from earlier projects, notably EU H2020 NEFERTITI. However, IPMWORKS hubs focus specifically on the context of learning about IPM theory and practice. Some of the insights shared in this report will come across as more general insights on farmer hub/network functioning, and some are more specific for the IPM context. More elaborate suggestions regarding methods for facilitating interactive learning along the lines of the IPMWORKS demonstration hub approach can be found in Deliverable D1.4 and D1.5.

This deliverable is meant to be useful for IPMWORKS hub coaches, for advisors on IPM, for future demonstration hubs on IPM, for researchers who study social interactions in demonstration hubs, and for policy makers who design support projects to advance IPM practice in specific countries as well as across Europe.

1.2. Methods

The self-assessments of IPMWORKS demonstration hubs were conducted in 2022 and 2023. In 2021, the hubs were still starting up, for which reason no self-assessment was conducted at that time.

The self-assessments were conducted in different ways by different hubs. Some involved more and others less elaborate interactions with hub members. A guidance document (not part of IPMWORKS deliverables) was provided to hub coaches to suggest options for facilitating interactive processes related to the self-assessment (see Annex 4). However, it was up to the hub coach to decide how exactly the self-assessment would be prepared.

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In terms of harvesting insights, the original idea was to get everything through the notes that hub coaches would fill out in the IPMWORKS hub journal which contains a worksheet on the self-assessment (see Annex 2). However, it was decided that this would limit the richness of insights that could be gathered. Therefore, there have been three points in time at which insights were gathered from self-assessments where the first was only based on hub coaches' own reflections:

1. First interviews with hub coaches separately in Summer 2022, based on their early reflections on hub functioning.
2. Hub journal (Annex 2) entries performed at the end of 2022/early 2023.
3. Long interviews with each of the hub coaches separately at the end of 2023/early 2024, conducted by five different interviewers who are part of the IPMWORKS WP1 team.

In the long interviews, we stretched the self-assessments by including a longer list of questions (see Annex 3) so as to lead not only insights that pertain to the internal affairs of the hub, but also to insights on how to make the most and get the best out of the IPMWORKS hub approach. Thus, we could capture valuable insights that can inform other work streams in IPMWORKS, notably related to task 1.5 (scaling IPM application through demo hubs) and task 7.4 (making policies work for farmers choosing IPM).

In April 2022 and in March 2023, a summary of the analysis of that year was presented to hub coaches in an online meeting so they could also get an idea of what other insights had been shared by their hub coach colleagues, followed by further discussion.

In terms of structuring the analysis, since there is a lot to share, we decided to use numbered (and bullet point) short descriptions as kind of micro narratives. We hope this helps in making the wealth of insights more accessible.

1.3. Navigating this deliverable

In order to also give a bit of a feel for the evolution of insights from the hub life of IPMWORKS demonstration hubs, we first provide some key insights as they emerged at an early stage through the interviews conducted in Summer 2022. These can be found in **chapter two**.

In **chapter three**, for the same reason, we provide some highlights from the self-assessments performed at the end of 2022/early 2023. These insights were somewhat limited due to the format of the hub journal and the user interface. The idea is that chapters two and three also give a bit of a feel for how gradually experiences of hubs got richer, leading to really elaborate insights as presented in chapter four.

Then, in **chapter four**, we provide an integrated overview of insights which are informed especially by the late 2023/early 2024 self-assessments (long interviews), but also by insights from the earlier self-assessments. There is some overlap between sub-sections because some topics relate to the same themes.

Finally, in **chapter five** we highlight a number of additional themes that we did not ask hub coaches specifically about, but which emerged from the long conversations. We think this provides useful complementary insights.

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We close with some general reflections in **chapter six**. Altogether, this deliverable provides a comprehensive view on a variety of topics related to making IPMWORKS demonstration hubs contribute to farmers choosing to apply IPM.

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2. Initial insights from the early phase of hubs

This short chapter gives an impression of insights that emerged at an early stage of the hubs. It summarizes the varied experiences and challenges faced by hub coaches within the IPMWORKS network, as gathered from discussions conducted between June and August 2022. Here's an elaboration on the key insights at that time:

1. Variability in Experiences: The feedback from hub coaches illustrates significant diversity in experiences and perceptions regarding the effectiveness of IPMWORKS structures and activities. This variability is influenced by multiple factors such as the coaches' previous experiences, the dynamics within their respective hubs, and external pressures such as work demands and support systems. Some coaches have benefitted from pre-existing relationships and networks, easing their facilitation roles, while others, especially newcomers, face challenges in catching up and aligning with the project's objectives.

2. Challenges in Hub Start-up and Management: Initiating and managing hubs has been a common challenge because of the COVID situation at the time the project started, and particularly so where there was no continuation from previous projects. The initial phase involves substantial effort in engagement and administrative tasks, which can be daunting without clear guidelines or existing relationships. Additionally, adapting to the specific interests and needs of farmers to make the activities relevant and valuable has been time-consuming for many coaches.

3. Facilitation and Interaction Dynamics: Hub management varies widely, with some coaches struggling to balance between facilitating group interactions and providing individual agronomic advice. The nature of farmer engagement, the suitability of communication platforms (like WhatsApp), and the organization of meetings and events are highlighted as areas with diverse outcomes and challenges. Some coaches have found success in creating a more interactive and participative environment, while others note difficulties in motivating farmers to host demonstrations or attend meetings regularly.

4. Documentation and Compliance: Keeping detailed records, such as updating the hub journal, has been challenging for many coaches due to time constraints and frequent changes in plans. The usefulness of these documents varies, with some finding them helpful for organizing and reflecting, while others view them as additional burdens. Similarly, exit polls and other evaluative tools have seen mixed success, with some coaches finding them beneficial for feedback and others struggling with their implementation and relevance.

5. Training and Resource Utilization: The MyGreenTrainingBox online course and other resources provided by IPMWORKS have been met with mixed reviews. While some coaches found them beneficial, particularly for enhancing their understanding of IPM and facilitation techniques, others

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considered them too basic. This reflects the varying levels of experience among hub coaches. The importance of cross-visits and sector meetings is acknowledged, with coaches appreciating the opportunities for learning and community building they offer, though there is room for improvement in structure and relevance.

6. Survey Feedback and Additional Support Needs: The comprehensive surveys designed to collect detailed information from farmers were often viewed as overly detailed and time-consuming, highlighting a gap between the project's information needs and the practicalities of data collection at the farm level. Coaches expressed a need for additional support in areas such as video production, technical training, and effective field activity execution to enhance their roles and the impact of the hubs.

7. Adoption of Technological and Strategic Approaches: The application of Decision Support Systems (DSS) and the execution of in-field comparisons show variation across hubs, with some coaches actively integrating these approaches while others have not found them applicable or feasible. Sharing and learning from the diverse strategies and practices adopted across different hubs could foster better understanding and application of IPM principles.

Conclusion: The insights emphasize the complexity of managing IPM hubs, highlighting the need for tailored support, clear guidance, and flexible approaches to address the diverse challenges faced by hub coaches. Building a supportive community among coaches and facilitating the exchange of experiences and strategies can enhance the overall effectiveness of the IPMWORKS initiative.

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3. Highlights from the 2022 self-assessments

The following highlights a summary of key insights based on the self-assessment analysis that was done in early 2023.

Hub Connectivity:

- Hub coaches often emphasized the need for hubs to understand and leverage the existing experiences, projects, and networks of the participating farmers. This can be achieved by getting to know the farmers and connecting the hubs to other support structures and opportunities, which may continue to exist post-project.
- It suggests building stronger connections with regional actors, such as cooperatives, advisory services, and other networks, to enhance the impact of IPM practices.
- The importance of sharing relevant new IPM information from outside the IPMWORKS initiative with hub members is highlighted to demonstrate the benefits of membership and encourage active participation.

Engaging Farmers:

- Keeping farmers interested and engaged requires frequent communication, such as through WhatsApp groups, and approaches that make activities practical and relevant to their needs.
- The report highlights the importance of personal communication with farmers, acknowledging their reluctance to share practices they perceive as "bad". Building a participative atmosphere where members can contribute ideas and initiatives is crucial.
- Encouraging cross-visits among farmers and creating comparisons between different IPM practices can stimulate group dynamics, build trust, and foster meaningful interactions.

Useful Demonstrations:

- Demonstrations should be well-planned, considering seasonal conditions and involving experts so that the burden does not fall solely on the hub coach.
- Exit polls and evaluations should be managed effectively, possibly with assistance, to gather meaningful feedback. The analysis notes the varying perceptions of exit polls and suggests complementing them with real-time oral feedback during events.

IPM as a System Approach:

- Demonstrating IPM as a holistic approach rather than isolated practices is challenging but essential. The analysis suggests using facilitation tools during demo events to frame practices within a broader IPM context. This concerns e.g. using poster discussions to identify how specific options that are demonstrated connect to a broader IPM perspective such as presented in e.g. the IPM pyramid.

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- There is a noted need for a holistic application of IPM, considering all variables affecting crops. Farmers experienced in organic farming may be more inclined towards a holistic IPM approach.

IPM at Hub Members' Farms:

- Riskier trials should be conducted on experimental farms, with farmers only trying what they feel comfortable with, to avoid potential losses.
- The hub coaches underscore the need for more practical results and experiences to convince farmers of the benefits of IPM, as well as the importance of peer-to-peer learning.
- Addressing the lack of information and various barriers to IPM implementation, such as cost efficiency and fear of production loss, is crucial for encouraging wider adoption.

The Wider Hub Context:

- The differences in IPM conditions between hubs across Europe are acknowledged, along with the external political, economic, and social factors that influence IPM choices.
- Several hub coaches mention the impact of climate conditions, policy changes, and inflation on the implementation of IPM practices, suggesting the need for discussions on how to maintain motivation and address these challenges.

Overall, the analysis offers a set of insights and questions aimed at fostering discussion and improving the implementation and effectiveness of IPM practices across the IPMWORKS hubs.

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4. Integrated overview of all insights

This is the most elaborate chapter, presenting key insights based on all self-assessments performed by hubs/hub coaches. Most of the subsections start with a quote from a hub coach that comes from one of the interviews that were done late 2023/early 2024.

4.1. IPM in theory and practice

4.1.1. Experiences in holistic IPM

"There is a shared commitment among hub members to pursue sustainability in their agricultural practices."

The analysis of the provided reporting notes on holistic Integrated Pest Management (IPM) across different regions and contexts reveals several key themes and insights:

Common Themes Across Regions

1. **Novelty and Educational Gap**: In several areas, such as Serbia, the basic principles of IPM are relatively new, indicating a significant opportunity for the role of advisory services and potential growth in pest management practices.
2. **Comprehensive Approach**: The notion of holistic IPM extends beyond individual pest management actions, encompassing a range of practices and strategies that consider the overall farming system and environmental sustainability.
3. **Farmer-Centric and Adaptive Strategies**: Tailoring IPM strategies to each farmer's specific circumstances, including the entire scope of farm operations, is emphasized as crucial for effective pest management.
4. **Integration of Techniques**: A common strategy across regions is the integration of various cultural, biological, and, as a last resort, chemical techniques to manage pests effectively.
5. **Advisory Focus and Simplification**: Efforts to simplify the concept of holistic IPM and make it more accessible to farmers are mentioned as important, aiming to foster system-wide thinking and application.

Notable Differences in Experience or Knowledge between hubs and regions

1. **Adoption Levels and Implementation Challenges**: The extent of embracing IPM and the specific challenges faced (such as weather conditions in some areas or the specific focus on crop rotation) vary significantly between regions.

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2. **Success in Specific Agricultural Sectors**: Successes in implementing holistic IPM are noted in specific sectors, such as olive orchards in Greece, indicating that the choice for and effectiveness of IPM practices can vary significantly between different types of agriculture (sectors).
3. **Diversity of Needs and Approaches**: The necessity for a holistic approach is underscored differently across regions, with some areas requiring broader, more integrated strategies due to the diversity of farmer needs, while others may focus on more specific options.
4. **Challenges in Conveying Holistic IPM Concepts**: The difficulty of effectively communicating the complex and broad concept of holistic IPM during short events or demonstrations can be a challenge, suggesting the need for ongoing advisory services and engagement. This also depends on the way in which such events/demonstrations are planned in terms of allowing for wider discussions or not.
5. **Perspective on the use of chemical inputs** : While there's a general push towards minimizing the use of chemical inputs, the perspectives on and strategies for achieving this vary, with some regions emphasizing the pragmatic use of chemicals as a last resort and others focusing on systemic changes to reduce reliance on pesticides.

Overarching Insights

- **Importance of Progressive Examples**: Highlighting farms that experiment with or partially implement holistic IPM can serve as a model for broader adoption, encouraging other farmers to consider more integrated and sustainable pest management strategies.
- **Encouraging Beyond Basic Applications**: There's a consensus on the need to think beyond basic IPM applications (i.e. isolated application of e.g. weeding options), promoting more comprehensive, environmentally friendly strategies.
- **Challenges with Practical Application**: Translating the concept of holistic IPM into practical activities remains a challenge, indicating a need for continued innovation and adaptation in pest management practices.
- **Role of Advisory and Collaborative Efforts**: Advisory services, simplification of concepts, and fostering collaboration among farmers are key strategies for promoting the understanding and choice for holistic IPM.
- **Need for Adaptation to Individual and Regional Contexts**: Adapting IPM strategies to the specific needs and conditions of individual farmers and regions is critical for the successful implementation of holistic IPM.

These insights reflect a broad recognition of the value of holistic IPM while also highlighting the challenges and varying degrees of implementation across different contexts. The emphasis on advisory services, adaptation to local regional and farm contexts, and collaboration suggests pathways for enhancing the choice for and effectiveness of IPM practices as a whole.

4.1.2. Hub members' experiences with own application of IPM

"Seeing the tangible benefits of reduced pesticide use on my farm has been a real eye-opener, not just for me but for my peers as well."

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The key insights from the diverse experiences of hub members with Integrated Pest Management (IPM) across various regions and contexts highlight both common themes and notable differences in their approach to pest management. These insights underscore the dynamic nature of IPM application, influenced by regional conditions, economic factors, and the level of experience and innovation among the farming communities.

Common Themes Across Regions

1. **Experimental and Learning Approach**: Farmers in the hubs are actively experimenting with IPM strategies and are in a continuous learning process. This includes trials with wheat variety mixtures, the use of microorganisms, and exploring the effectiveness of biodiversity-enhancing practices.
2. **Economic Considerations**: A significant driver for adopting IPM practices is the economic aspect, with farmers looking to reduce costs associated with conventional pesticides and increase their farming sustainability.
3. **Peer Learning and Community**: There is a strong emphasis on learning from peers and sharing experiences within the community. Successful implementation of IPM by some farmers serves as a practical example and motivates others to explore IPM strategies.
4. **Challenges and Barriers**: Farmers face various challenges, including skepticism about new methods, difficulty in phasing out chemicals, regulatory changes, and the complexity of implementing certain IPM strategies effectively due to context-specific factors.
5. **Interest in Sustainable and Environmentally Friendly Practices**: There is a growing interest in practices that enhance sustainability and reduce environmental impact, including the use of alternative pest control methods and enhancing biodiversity within crop fields.

Notable Differences in Experience

1. **Advanced vs. Initial Stages of IPM Application**: Some regions, like Navarra and Almería, are at an advanced stage of IPM application with a long history of successful implementation, while others are still in the initial stages, exploring and gradually adopting IPM strategies.
2. **Approach to Innovation and Experimentation**: The extent and nature of experimentation with IPM strategies vary, from trials with microorganisms and biodiversity enhancements to innovative use of technology like Decision Support Systems (DSS) and weeding robots.
3. **Economic and Regulatory Environment**: The impact of economic factors and regulatory changes significantly influences the choice for IPM practices, with some regions facing more significant barriers due to market constraints and the absence of supportive policies.
4. **Community Dynamics and Learning Environment**: The dynamics within the farming communities, including the level of engagement, openness to peer learning, and the presence of a collaborative learning environment, vary across regions. In some areas, the community is more cohesive and collaborative, while in others, tensions (e.g., competition between farms) and resistance to change pose challenges.
5. **Specific Challenges and Options**: Certain regions face unique challenges, such as the need for market normalization in traditional olive growing or addressing the specific pest issues with context-appropriate options like rock dust repellents.

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In summary, these insights reflect the multifaceted and region-specific nature of choices for IPM among farming communities. They highlight the importance of continuous learning, economic viability, community support, and adaptability to local conditions in the successful application of IPM strategies.

4.2. Navigating the relevant context for IPM

4.2.1. What helps and hinders farmers to choose IPM

"The support and guidance from the hub coach have been instrumental in helping us navigate the complexities of adopting IPM strategies effectively."

From the various reports on the application of Integrated Pest Management (IPM) across different contexts, several key insights emerge, highlighting both common facilitators and barriers among farmers to choosing IPM, as well as the unique challenges and opportunities presented by specific regional conditions or agricultural practices.

Common Facilitators of IPM Application

1. **Demonstrations and Practical Examples**: Across multiple contexts, the effectiveness of demonstrations and seeing IPM success stories firsthand significantly encourages farmers to adopt IPM practices. Practical demonstrations are preferred over theoretical discussions.
2. **Economic Incentives and Cost-Effectiveness**: The potential for cost savings and economic benefits from IPM practices, including reduced pesticide use and potential subsidies (e.g., from CAP schemes), acts as a strong motivator for farmers.
3. **Peer Influence and Role Models**: Observing peers successfully implement IPM and sharing experiences within a community or hub fosters a conducive environment for adopting new practices.
4. **Training and Advisory services**: Advisory services on IPM practices, including alternative technical tools and the biology of pests and crops, is crucial for facilitating the choice for IPM.

Common Barriers to IPM Application

Barriers for choosing IPM applications include limited awareness, skepticism/hesitancy towards new practices, logistical challenges, and financial constraints. Overcoming these barriers requires tailored approaches, including advisory services, support for innovation, and addressing language barriers. More specifically:

1. **Economic Challenges and Labor Intensiveness**: Concerns about the labor demands of IPM strategies and the economic viability, especially under current inflationary pressures, deter farmers from adopting IPM.
2. **Lack of Knowledge and Experience**: Limited experience with non-chemical pest control methods and unfamiliarity with new technologies, such as weeding robots, create uncertainty and hinder choosing for IPM.

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3. **Regulatory and Policy Challenges**: Weak government regulations or perceived complexity and ineffectiveness of policies (including CAP ecoschemes) can limit motivation for transitioning to IPM.
4. **Social Perceptions and Consumer Demand**: Social pressures and the need for consumer support for IPM products influence farmers' decisions to adopt IPM practices.

Specific Insights and Recommendations

- **Innovation choices**: Interest in new technologies like weeding robots shows a willingness to invest in IPM if the return on investment is clear, even if initial yields might be lower. However, the lack of knowledge and practical experience with such technologies is a significant barrier.
- **Collective Purchasing and Networking**: Facilitating collective purchasing to reduce costs and enhance networking among farmers for knowledge exchange are practical steps that can support choices for IPM.
- **Advisory Support**: Strengthening advisory services to provide current, unbiased guidance on IPM and creating connections with research can help bridge the knowledge gap and promote innovative practices.

Overall Summary

The transition to the implementation of Integrated Pest Management is influenced by a combination of economic considerations, advisory opportunities, peer influence, and practical demonstrations of effectiveness. While farmers show interest in adopting more sustainable practices, challenges such as economic viability, technical risks, and the need for more supportive regulatory frameworks persist. Addressing these challenges through targeted support, including financial incentives, training, and the development of a strong advisory system, can enhance the choice for and effectiveness of IPM strategies across various agricultural contexts.

4.2.2. IPM in relevant context

"Climate change is always present in discussions. Farmers say it is the reason for new pests or old pests coming up again."

The insights across various reporting notes on context conditions' effects on farmer hubs and Integrated Pest Management (IPM) practices show a complex landscape shaped by climate, policy, market dynamics, and societal pressures. Here's a synthesis of the key themes:

Common Themes Across Regions

1. **Climate Change Impact**: Unpredictable weather patterns, including droughts and floods, have a profound impact on IPM effectiveness, agricultural productivity, and crop yield across various regions. These conditions necessitate adaptive and flexible IPM strategies to cope with new or intensified pest challenges.
2. **Policy and Regulatory Challenges**: Policy decisions, such as the extension or restriction of certain pesticides (e.g., glyphosate) and Sustainable Use Regulation (SUR) proposals,

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significantly influence farmers' IPM practices. However, there's a shared concern about the lack of governmental support or safety nets for farmers implementing IPM strategies that might fail due to factors beyond their control.

3. **Market Dynamics and International Trade**: The influx of cheap fruit, vegetable and grain imports and the competition from countries with less stringent pesticide regulations undermine local farmers' efforts in IPM and sustainable agriculture, affecting their economic viability and motivation.
4. **Societal Pressures and External Perceptions**: Societal expectations and the image of agriculture within the community prompt farmer hubs to engage in outreach and advisory services, such as inviting schools and creating materials to showcase their efforts in sustainable farming and IPM.

Notable Differences in Experience

- **Adaptation and Innovation**: Some regions exhibit a strong entrepreneurial culture among farmers, who are willing to take risks and innovate in response to challenges. This contrasts with areas where farmers feel demotivated due to unfair market competition or policy constraints.
- **Engagement and Motivation**: The level of farmer engagement and motivation varies, with some hubs maintaining active participation despite challenges, while others struggle to keep up morale in the face of adverse weather conditions and economic pressures.
- **Impact of Specific Policies:** The effects of policies like the SUR and decisions on pesticide use differ across regions, with some farmers feeling directly impacted and others focusing more on the broader challenges of **climate change and market dynamics.**

Overarching Insights

- **Need for Context-Specific Approaches**: The effectiveness of IPM and the functioning of farmer hubs are heavily influenced by local context conditions, including climatic variability, soil types, and specific crop challenges. Tailored strategies that consider these unique factors are crucial.
- **Importance of Flexibility and Resilience**: Farmers' ability to adapt to changing conditions, whether environmental, economic, or regulatory, is key to sustaining IPM practices. Resilience, both in terms of agricultural practices and economic viability, is a recurring theme.
- **Collaboration and Learning**: Despite challenges, there's a strong emphasis on the value of learning—both from within specific regions and through cross-visit exchanges. Sharing experiences and strategies across different contexts fosters innovation and adaptation.
- **Role of External Support and Recognition**: The support from advisory services, governmental policies that align with sustainable practices, and recognition of farmers' efforts in navigating these complex conditions are essential for the continued success and motivation of farmer hubs in implementing IPM.

These insights highlight the multifaceted nature of implementing IPM across different contexts, underscoring the importance of adaptive management, policy support, market fairness, and community engagement in fostering sustainable agricultural practices.

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4.2.3. Cultural appropriateness

"The approach of IPMWORKS to hub interactions and facilitation differs from the prevailing culture of learning in our area, presenting unique challenges. In our region, farmers are accustomed to following the guidance of advisors from their cooperatives, relying on proven and validated practices endorsed by cooperative services."

The insights across various reporting notes on facilitation and the culture of learning in different countries regarding the IPMWORKS hub approach reveal both commonalities and distinct regional characteristics.

Common Insights Across Different Regions

1. **Adaptability to Local Contexts:** Across various regions, there's a clear need for the hub approach to adapt to local agricultural practices, organisations, cultural norms, and learning preferences. This includes tailoring methods of implementation, communication strategies, and the format of learning activities to fit the specific needs and characteristics of each area so as to form a context-adapted hub approach.
2. **Preference for Practical Learning:** There is a universal preference for hands-on, practical learning experiences, such as on-site field demonstrations and participatory methods. This approach is favored over traditional classroom-based training, indicating a general appreciation for learning through direct observation and involvement.
3. **Importance of Building Trust:** Building trust over time is crucial in all regions. Whether due to initial skepticism towards new methods or the stoic nature of participants, fostering trust and openness, sharing both successes and failures, is essential for the successful choice for IPM practices.
4. **Utilization of Digital Platforms:** Increased openness to change and innovation, partly facilitated by social media, indicates that digital platforms could be effectively used for knowledge dissemination and engagement, despite regional variations in the extent of their use.
5. **Challenges with Engagement and Attendance:** Challenges related to engaging participants and ensuring attendance at events are common, influenced by factors such as geographical distances, the perceived value of events, and logistical issues like travel.

Notable Differences in Experience

- **Cultural Norms and Communication Preferences:** There are notable differences in communication preferences and cultural norms. For instance, some regions show a preference for verbal communication and face-to-face interactions, while others emphasize the efficiency of digital communication and the importance of creating welcoming and pressure-free learning environments.
- **Cooperative Guidance:** In some areas, there is a strong reliance on advice and (fixed) practices validated by, e.g., cooperatives, where it may present a challenge for introducing new methods like those advocated by IPMWORKS. However, in other regions, cooperatives actively experiment and encourage innovation.

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- **Impact of Farm Size on Information Sharing:** The trend towards larger farm sizes affecting the sharing of information and resources is observed in specific regions. Representatives of bigger farms may be more hesitant to share information because of corporate interests. This trend necessitates different strategies for fostering collaboration and knowledge exchange among farmers.
- **Advisory Services and Role Shifts:** The transition from traditional advisory services to more interactive and facilitatory roles varies by region. In some areas, this shift aligns with established traditions of advisory services, while in others, it represents a more significant change in the culture of learning and information exchange.
- **Sector-Specific Cultures:** The culture of openness and the willingness to share knowledge and experiences can be more pronounced in specific sectors, depending on factors like the crop's importance, the level of innovation in the sector, and competitive dynamics among farmers. E.g. in a particular country, there is a more competitive attitude between farmers in vegetable production than those in perennial crops.

In summary, while there are universal themes in the choice for the hub approach, such as the preference for practical learning and the necessity of building trust, the successful implementation of this approach must consider regional differences in communication preferences, cultural norms, and the existing agricultural advisory landscape. Tailoring the approach to address these regional specificities is key to fostering an effective learning environment and promoting the widespread choice for IPM practices.

4.3. Supporting outward connectivity of hubs

4.3.1. Connectivity to support hub activities

"Engaging with local research institutions has enriched our understanding and application of IPM practices, bridging the gap between theory and practice."

The insights from various reports regarding the efforts to connect hub members with other initiatives and activities related to Integrated Pest Management (IPM) highlight several key strategies, challenges, and opportunities for enhancing positive choices for IPM and knowledge sharing:

Strategies for Enhancing Connections

- **Broadening Networks**: Many hubs have successfully established connections with a range of organizations, from research institutions to industry groups, enhancing the learning and application of IPM practices.
- **Organizing Inclusive Events**: Workshops, seminars, and field days open to wider audiences facilitate the exchange of ideas and best practices, not just among hub members but also with the broader agricultural community.
- **Leveraging Collaborations**: Joint events with other EU projects, universities, and national networks offer rich platforms for sharing IPM insights, innovations, and strategies across different agricultural contexts.
- **Engaging with Policy Makers**: Direct interactions with members of the European Parliament (MEPs) and participation in policy forums enable hub members to influence policy decisions

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and gain insights into regulatory perspectives on IPM.

- **Utilizing Technology and DSS**: Connections with initiatives focusing on digital tools and decision-support systems underscore the importance of technology in advancing IPM practices.
- **Exploring Cross-Visits and Exchanges**: Cross-visits between hubs and with external entities like other farms and research stations provide practical learning opportunities and foster community among farmers facing similar challenges.

Challenges in Establishing Connections

- **Finding Common Ground**: Identifying topics of universal relevance within diverse farming practices and crops can be challenging, highlighting the need for having groups of farmers that have sufficiently common interests.
- **Distance and Engagement**: Geographic and operational distances between hubs and farmers can limit interaction frequency, underscoring the importance of local engagement and support.
- **Resource Allocation and Equity**: Ensuring equitable access to resources and opportunities within IPM initiatives is crucial to avoid discontent and foster a sense of community and fairness among all participants. E.g. in providing particular inputs from external parties (such as task cards) or advice to specific members as part of demonstrations.
- **Balancing Technical and Facilitative Roles**: The need for both technical IPM expertise and facilitative skills in hub coaches points to the importance of diverse competencies in effectively supporting farmers, including in terms of fostering connectivity.

Opportunities for Growth and Collaboration

- **Integrating with Broader Agricultural Concerns**: Connecting IPM practices with broader issues like soil health, climate change, and biodiversity management can enrich the hub's focus and impact.
- **Enhancing Visibility and Credibility**: Collaborations with well-regarded institutions and participation in significant agricultural events raise the profile of IPM efforts and attract broader interest and support.
- **Cultivating a Supportive Community**: Efforts to involve a wide range of participants, from students to policy makers, in hub activities, foster a supportive ecosystem conducive to knowledge exchange and mutual learning.
- **Adapting to Farmers' Needs**: Recognizing the value of bringing expertise directly to farmers and accommodating their preferences for receiving advice and support ensures that IPM strategies are grounded in practical realities and farmer experiences.

In summary, these insights reveal a dynamic landscape of initiatives aimed at promoting IPM practices through diverse strategies of connection, collaboration, and engagement. Despite challenges in finding common topics of interest among diverse agricultural practices and ensuring equitable participation, there are significant opportunities for hubs to enhance the choice for IPM by leveraging technology, engaging with policy makers, and fostering a supportive community of practice.

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4.3.2. Connectivity to support wider implementation of IPM

The insights from the reporting notes provide a comprehensive understanding of how hub coaches can engage with farmers and industry stakeholders effectively, with several key themes emerging across different contexts:

Common Strategies for Engagement

1. **Showcasing Practical Benefits of IPM:** Across different regions, the effectiveness of demonstrating the practical benefits and successes of IPM practices through field trials, case studies, and demonstration events is consistently highlighted. These practical demonstrations help in breaking down resistance and stimulating interest among farmers and stakeholders outside the hubs.
2. **Leveraging Relationships and Credibility:** The importance of leveraging existing relationships with farmers, industry stakeholders, and agronomists is emphasized, with a particular focus on the credibility and relatability of speakers or advocates for IPM. Engaging well-connected hub coaches who can bridge the gap between practical farming, industry, and policy-making can significantly amplify the impact.
3. **Collaboration with Industry and Extension Services:** Collaboration with the industry, private sector, and agricultural extension services is seen as a key strategy to broaden the reach and support for IPM initiatives. This includes partnering with companies that have aligned interests, as well as leveraging the established networks and credibility of extension services.
4. **Utilizing Technology and Innovative Communication Strategies:** The use of digital platforms, social media, and visual tools for outreach and engagement is recognized as a valuable approach to extend the reach and effectiveness of IPM messages.
5. **Organizational Support for Knowledge Dissemination:** Organizing events, demonstrations, and agricultural exhibitions with organizational support is crucial for facilitating knowledge sharing among farmers and stakeholders. This helps in ensuring that valuable insights and experiences are effectively disseminated.

Notable Differences in Experience

- **Adaptation to Local Contexts:** While some regions highlight the openness of farmers to innovation and new practices, others emphasize the challenge of engaging farmers in larger hubs or areas with low interest in innovation. Tailored strategies that consider local contexts and specific needs of farmers are necessary.
- **Engagement with Policymakers:** The level of interaction with policymakers varies, with some hub coaches having strong connections that facilitate broader discussions on agricultural policies, while others focus more on direct engagement with farmers and the industry.
- **Specialized Groups and Cross-Group Collaboration:** The approach to organizing farmers and stakeholders into specialized groups for focused discussions on specific projects, as well as encouraging cross-group collaboration for a more holistic understanding of IPM, shows variation in engagement strategies.
- **Integration of Wildlife Conservation and Agroecology:** Some insights suggest integrating wildlife conservation and agroecology into IPM discussions, indicating a broader, more holistic

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approach to agricultural sustainability that may not be as prominent in other regions.

- **Incentives and Certification:** The potential use of IPM certification or labels as incentives for choosing IPM shows varying levels of interest, with some regions considering it a valuable tool for distinguishing and promoting IPM practices, while others see it as overlapping with organic certifications.

In summary, effective engagement with farmers and industry stakeholders involves a combination of showcasing practical benefits, leveraging credible relationships, collaborative efforts with the industry and extension services, innovative communication, and organizational support. Tailoring these strategies to local contexts, considering broader sustainability goals, and navigating the unique challenges of engaging with policymakers are essential for maximizing the impact of choices for IPM and practices.

4.4. Good practice ideas for hubs and hub coaches

4.4.1. Reflecting on hub activities

"The hub fosters an environment where innovative ideas are shared, leading to collective growth and improvement in practices."

Analyzing the provided reporting notes from various locations and contexts reveals a broad spectrum of insights into the application and challenges of Integrated Pest Management (IPM) across different agricultural communities. These key insights, considering both frequent mentioning and notable differences, include:

Common Themes Across Regions

1. **Peer-to-Peer Learning and Community Engagement**: A consistent theme is the importance of peer-to-peer learning, with farmers valuing the exchange of knowledge and experiences within their communities. This is facilitated through regular meetings, demonstration events, and the use of digital communication platforms like WhatsApp.
2. **Interest in Sustainable Practices**: There's a growing interest in sustainable agricultural practices, including IPM and organic farming. This interest is driven by a desire to reduce chemical inputs, financial motivations, and environmental considerations.
3. **Challenges with Chemical Use and Regulation**: Many communities face challenges related to the use and regulation of chemicals, prompting a search for alternative pest management strategies. This includes dealing with black markets for pesticides, chemical restrictions, and the desire for non-chemical IPM options.
4. **Importance of Practical Demonstrations**: Demonstrations and field visits are highly valued across different locations, indicating the significance of seeing IPM practices in action. These events help farmers understand how to apply these strategies in their own contexts.
5. **Communication and Information Sharing**: Effective communication and information sharing are crucial, whether through messaging apps, facilitated meetings, or cross-visits. These interactions help build strong networks and foster a collaborative learning environment.

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Notable Differences in Experiences

1. **Diverse Agricultural Contexts**: The agricultural context varies significantly across locations, from olive growing on steep slopes in Italy to mixed cropping in diverse climates. These differences impact the specific IPM strategies that are applicable and effective.
2. **Level of IPM Practice and Awareness**: There's a wide range in the level of IPM practice and awareness, from locations where IPM is a new and emerging concept to communities with advanced IPM practices using digital decision support systems (DSS) and robotics.
3. **Cultural and Regulatory Factors**: The influence of cultural attitudes towards farming practices, trust in external advice, and the presence or absence of supportive policies like the Common Agricultural Policy (CAP) in Serbia (absent) plays a significant role in shaping the choice for IPM.
4. **Economic and Market Considerations**: Economic factors, including the impact of market demands are significant in some areas. These factors influence the feasibility and motivation for adopting IPM and sustainable practices.

Conclusion

These insights underscore the complexity of implementing IPM across diverse agricultural settings. They highlight the need for a multifaceted approach that includes fostering community and peer networks, addressing economic and logistical challenges, leveraging practical demonstrations and advisory services, and adapting strategies to local contexts and needs. The varying levels of engagement and the array of challenges and motivations across these locations reflect the dynamic nature of agricultural practices and the ongoing evolution towards more sustainable and integrated pest management strategies.

4.4.2. Reflecting on cross-visits

"Cross visits are very important to farmers. They like to see inspiring places. This was for many an important point of attraction to join the hub."

The insights regarding the usefulness of cross-visits in agricultural contexts highlight their value for learning, inspiration, and practical application, with some variations in experiences and challenges faced by participants. Here's a synthesis considering frequency of mentions and notable differences:

Commonly Mentioned Insights

1. **Learning and Inspirational Value**: Cross-visits are highly valued for the learning opportunities they provide and serve as a source of inspiration for farmers to join agricultural hubs or participate in such programs.
2. **Peer-to-Peer Learning and Sharing**: These visits facilitate effective peer-to-peer learning, allowing for the exchange of successes, failures, and a broad spectrum of farming practices and options/opportunities.

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3. **Addressing Specific Agricultural Challenges**: They offer platforms for discussing and learning about specific agricultural problems, including pest management, soil improvement, and adaptation to climate change.
4. **Importance of Relevant and Targeted Learning**: Ensuring the relevance of the visiting location to the farmers' specific agricultural practices and challenges enhances the practicality and applicability of the knowledge shared.

Notable Differences in Experience

1. **Organizational Challenges and Engagement**: Initial organization and engaging farmers for the first visit can be challenging due to unfamiliarity among participants. However, subsequent visits tend to be smoother, indicating that early engagement and clear communication of benefits are crucial.
2. **Language Barriers and Communication**: Language differences pose significant challenges, affecting the depth of discussions and learning. Effective translation and choosing locations with minimal language barriers can enhance outcomes.
3. **Practical vs. Research-Focused Learning**: There's a clear preference for visiting other farms rather than research stations, suggesting that practical, on-site learning is more valued than theoretical knowledge.
4. **Cultural and Climatic Relevance**: The effectiveness of cross-visits can be influenced by the similarity in climate and agricultural issues between the host and visiting regions. Visits to climatically or culturally similar regions are deemed more beneficial.
5. **Financial Considerations**: Financing the visits is a concern, with suggestions for participants to initially cover costs to reduce last-minute cancellations, highlighting the need for careful financial planning and potential funding sources.

Overarching Recommendations

- **Early and Effective Organization**: Start planning early with a flexible structure to accommodate changes and ensure engagement from participants.
- **Focus on Practical, On-Site Learning**: Prioritize visits to farms with similar agricultural practices or facing similar challenges to ensure the relevance and applicability of the learning experience.
- **Address Communication Challenges**: Implement efficient bilingual communication strategies or choose locations with minimal language barriers to facilitate deeper learning.
- **Ensure Cultural and Climatic Relevance**: Select destinations that are climatically and culturally relevant to the participants' farming context to maximize the usefulness of the visit.
- **Financial Strategy and Commitment**: Consider financial strategies that ensure commitment from participants and explore funding options to facilitate participation.

These insights underscore the complex yet rewarding nature of cross-visits in the agricultural sector, highlighting the potential for significant learning and inspiration when these visits are well-planned, targeted, and relevant to the participants' needs and contexts.

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4.4.3. Preparing for effective demonstrations

"The most crucial aspect is to collaborate closely with hub members to agree on the content of the demo event."

The insights from various reports on preparing successful demonstration events in agricultural settings emphasize the importance of topic relevance, participant engagement, practical demonstrations, and effective communication. Here's a synthesis of the key insights:

1. **Relevance and Practicality**: Choosing universally appealing and relevant topics that directly impact farmers' practices is crucial. Demonstrations should connect to practical concerns, such as cost-effectiveness and addressing common problems, to draw the interest of a broad audience including farmers from outside the hub.
2. **Leverage Peer Experiences**: Making farmers present or facilitate discussions enhances trust and relatability. Peer-to-peer learning models, where farmers share their experiences, challenges, and successes, are highly effective in fostering engagement and confidence among participants.
3. **Comprehensive Preparation**: Thorough planning and preparation, including the early arrangement of programs, detailed programming, and preparation of informative materials, are fundamental for the smooth execution of demonstration events. This includes planning for unpredictable factors like weather.
4. **Inclusivity and Community Building**: Creating a family-friendly environment and including social elements such as meals or gatherings helps in building a community spirit. Encouraging participation from a wide range of attendees, including families, enhances the social value of these events.
5. **Engagement Strategies**: Adapting to the participants' availability and ensuring the comfort of both hosts and speakers are important. Demonstrations that include hands-on experiences or practical trials are particularly valued for their engagement and educational value.
6. **Communication and Promotion**: Effective promotion through diverse channels is essential for attracting a broader audience. This can include personal invitations, use of social media, and engaging with local media to increase event visibility.
7. **Feedback and Flexibility**: Gathering feedback during and after the events helps in assessing their impact and areas for improvement. Being flexible in scheduling and content delivery, based on participants' feedback and circumstances, is crucial for maintaining interest and attendance.
8. **Expert Involvement**: While farmer-led sessions are preferred for their practical insights, involving external experts or advisors can introduce new perspectives and knowledge, enriching the learning experience.
9. **Diverse Content and Innovative Methods**: Incorporating varied content and innovative methods, such as the use of technology or new farming techniques, keeps the demonstrations dynamic and engaging. Showcasing real-world applications and comparisons enhances the educational value of the events.
10. **Building on Existing Networks**: Utilizing the existing connections within the hub and engaging with broader networks and initiatives can extend the reach and impact of demonstration

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events. This collaborative approach can bring in additional resources, expertise, and participants.

In summary, the success of demonstration events in agricultural settings hinges on careful planning, relevance to participants' interests and needs, engaging and practical demonstrations, inclusive and community-building activities, effective communication and promotion, and leveraging the collective knowledge and experience within the hub and wider networks.

4.4.4. The role and use of exit polls

"We did for the first couple of years but struggled. The issue is that you can direct the flow of the conversation and get answers back that you want, depending on how exit questions are framed, instead of honest, organic answers. Farmers want to tick boxes – not write sentences."

Exit polls are about getting feedback from farmers and other visitors by asking some questions about the demo event, such as what they liked in particular, how they think about the way it is organized, etc. IPMWORKS had developed a format for this which some hub coaches adapted (if only in terms of language) while other hub coaches were hesitant to use this format.

The insights regarding the use or non-use of exit polls at demonstration events reveal varied experiences and perspectives across different contexts. Here's a synthesis of the key insights:

1. **Selective and Strategic Use**: Exit polls are selectively used based on the size and scope of the event. Larger events might see an attempt to implement exit polls to gather comprehensive feedback, whereas smaller gatherings might not use them.
2. **Challenges in Participation and Quality**: Across various settings, there is a noted challenge in achieving high participation rates in exit polls and obtaining quality feedback. Participants might show reluctance or provide repetitive responses, limiting the diversity and depth of insights collected.
3. **Alternative Feedback Methods**: Instead of structured exit polls, some organizers prefer direct communication, observing participants' behaviors, or engaging in informal discussions post-event. These methods are valued for their ability to elicit honest and detailed feedback, reflecting a preference for more personal and direct forms of feedback collection.
4. **Adaptation and Innovation**: There is openness to exploring new methods, such as short video feedback or simplified forms combined with incentives like café breaks, indicating a willingness to adapt and innovate in feedback collection methods to improve participation and quality of responses.
5. **Impact of Local Culture and Expectations**: The effectiveness and acceptance of exit polls can be influenced by local culture, with some communities expressing nervousness or hesitation towards filling out forms. This highlights the importance of considering cultural and local expectations in designing feedback mechanisms.
6. **Value of Detailed Analysis**: For those who have used exit polls, there is recognition of their value in providing lessons learned and insights for future event planning. The process of

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reviewing exit polls, despite being time-consuming, is considered beneficial for refining and improving future demonstration events.

7. **Opportunity for Future Implementation**: Some organizers express interest in potentially using exit polls in future events, suggesting an ongoing evaluation of their utility and effectiveness. There's also consideration for innovative approaches like video feedback to engage participants differently.
8. **Feedback Mechanism as Part of Event Experience**: The integration of feedback collection into the event experience, such as conducting exit polls during a café break, suggests an approach that seeks to minimize disruption and encourage participation by making the process as seamless and engaging as possible.

In summary, the insights reveal a nuanced view of exit polls, balancing between the challenges of implementation and the potential benefits they offer. There is a clear trend towards seeking effective, engaging, and culturally sensitive methods to gather feedback, with a focus on enhancing the quality and utility of the insights collected for future event planning.

The key concerns regarding exit polls and reasons for not using them, based on the provided insights, include:

1. **Low Participation Rates**: Participants may not always complete exit polls, leading to low response rates and potentially skewed feedback.
2. **Quality of Feedback**: The feedback obtained through exit polls can vary significantly in quality, with some responses being too brief or vague to be useful.
3. **Participant Reluctance**: Participants may view exit polls as burdensome or time-consuming, particularly after a long event.
4. **Influence on Responses**: The phrasing of exit poll questions might inadvertently lead responses, resulting in feedback that aligns more with what organizers want to hear rather than honest opinions.
5. **Preference for Simplicity**: Participants may prefer simpler feedback methods, such as ticking boxes, over writing detailed responses.
6. **Challenges in Specific Settings**: Conducting exit polls in field settings or at events without suitable conditions for filling out forms can be impractical.
7. **Alternative Feedback Methods Preferred**: Direct, face-to-face conversations or informal discussions are often preferred for gathering feedback, as they can provide more nuanced and honest insights.
8. **Effort vs. Benefit**: The effort required to prepare, distribute, collect, and analyze exit polls may not always seem justified by the benefits, especially if feedback is perceived as underutilized.
9. **Cultural and Local Expectations**: Local norms and the social dynamics of the participant group can affect the willingness to engage with exit polls.
10. **Implementation Difficulties**: Organizers face practical challenges in distributing and collecting exit polls, especially in larger or more informal gatherings.
11. **Future Consideration**: Some organizers are open to the idea of using exit polls in the future but have not found a compelling reason or effective method to implement them yet.

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These concerns highlight the complexities involved in using exit polls effectively and the importance of considering alternative methods that might be more aligned with participants' preferences and the specific context of the event. However, it was also clear that using exit polls takes an effort on the part of the hub coach and some consider this to be too cumbersome (considering the effort in relation to what it would yield) whereas those who did make the effort are generally positive about the quality of feedback they received through exit polls.

4.5. Learning about and improving hub coach capabilities

4.5.1. The role of the hub coach

"The role of the hub coach in building trust among members cannot be overstated, as it is crucial for open exchange and collaboration."

The insights across various reports on the role of hub coaches in facilitating the application of Integrated Pest Management (IPM) among farmers highlight a range of effective strategies, common challenges, and unique approaches tailored to local contexts. These insights underline the multifaceted nature of the hub coach's role in promoting IPM practices and fostering a collaborative and engaged farming community.

Common Strategies and Effective Practices

- **Dual Role and Regular Interaction**: Hub coaches often serve in dual capacities, combining their roles as private consultants with their responsibilities within the hub, ensuring frequent and meaningful interaction with farmers.
- **Peer Influence and Demonstrations**: Hub Coaches can support the facilitation of demonstrations by fellow farmers and peer-to-peer learning, which are pivotal in encouraging the choice for IPM, by showcasing the practical benefits and real-world applications of these practices.
- **Economic Incentives and Understanding**: Hub coaches should pay particular attention to questions regarding the cost-effectiveness of IPM practices as understanding the economic benefits plays a crucial role in motivating farmers to choose these strategies.
- **Training and Advisory services**: Hub coaches can provide training on alternative technical tools, biology insights, and the importance of biodiversity is essential for broadening farmers' understanding and acceptance of IPM.
- **Personal Commitment and Relationship Building**: The personal commitment of hub coaches to their role, characterized by empathy, active listening, and direct interaction with farmers, is key to building trust and facilitating change.

Common Challenges

- **Economic Challenges and Labor Intensiveness**: Concerns about the economic viability and labor demands of IPM strategies deter farmers from adopting these practices, which makes the job of the hub coach more difficult.
- **Knowledge and Experience Gaps**: Limited experience with non-chemical pest control methods and unfamiliar technologies can create uncertainty and hinder the choice for IPM, which is

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where the role of the hub coach comes in.

- **Frequent Changes and Coordination Difficulties**: Frequent changes in hub coaches and challenges in coordinating meetings and demonstrations can impact the continuity and effectiveness of hub activities.
- **Balancing Individual and Community Needs**: Tailoring support to individual farmers while fostering a communal spirit and collaborative learning environment presents a dual challenge for hub coaches.

Unique Approaches and Insights

- **Adapting to Local Contexts**: Strategies such as organizing cross-visits, leveraging social media for awareness, and introducing new topics at meetings are tailored by the hub coach to specific local needs and interests.
- **Facilitator Role Recognition**: In some regions, the transition from being primarily a technical advisor to acting as a facilitator highlights the evolving nature of the hub coach's role, emphasizing the importance of mutual professional growth (being co-learners in the process) of farmers, external experts, and coaches.
- **Personal Touch and Engagement Strategies**: Employing practical strategies like offering meals at meetings or utilizing humor to create a comfortable and engaging atmosphere has proven effective in ensuring participation and fostering a sense of community.

Recommendations for Hub Coaches

- **Enhance Flexibility and Adaptability**: Developing strategies to address the unique situations and diverse perspectives of hub members is crucial for the effective application of IPM.
- **Focus on Building and Strengthening Group Bonds**: Cultivating a supportive and inclusive environment that promotes active participation and knowledge sharing among members is fundamental to the success of the hub.
- **Stay Informed and Foster Continuous Learning**: Keeping abreast of the latest developments in IPM and related fields enables hub coaches to offer relevant and up-to-date advice and support.

In conclusion, the role of the hub coach is instrumental in bridging the gap between IPM theory and practice. By facilitating connections, demonstrating practical options, and addressing the unique challenges and opportunities within each farming community, hub coaches play a critical role in advancing IPM.

4.5.2. Hub coach to hub coach advice

"It is essential to look for avant-garde farmers who are an example for others."

The insights across different reporting notes reveal a multifaceted approach applied by the hub coaches regarding facilitate interactive learning, supporting the choice for Integrated Pest Management (IPM) strategies, and the importance of contextual conditions in the effectiveness of these processes. Here, we provide an overview of what hub coaches shared as advice to fellow hub coaches, based on their own experience:

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Facilitation approaches of hub coaches for interactive Learning

1. **Peer Influence and Role of Pioneers**: The significance of pioneers and active members within the farmer hub in spreading trust and knowledge underscores the importance of peer influence in the choice for IPM practices. Their experiences serve as a testimony to the feasibility and benefits of IPM, motivating others to follow.
2. **Utilizing Digital and Hands-On Tools**: A blend of digital tools (e.g., Mentimeter for interactive feedback) and traditional methods (e.g., direct discussions, hands-on demonstrations) caters to varying preferences and skill levels among farmers. This combination ensures that learning is accessible, engaging, and effective for all participants.
3. **Importance of Practical, Hands-On Learning**: Emphasis on demonstrations, field visits, and practical examples during hub meetings highlights a universal preference for learning through direct experience. This approach not only makes the learning process more engaging but also ensures the practical applicability of the knowledge shared.
4. **Challenges in Outdoor Settings**: Conducting events in outdoor settings, such as vineyards, presents unique challenges like poor visibility on tablets or difficulty with paper materials. This calls for innovative instruments to facilitate effective learning in these environments. E.g. using poster printed on canvas rather than on paper.

Approaches for supporting the choice of IPM strategies

1. **Gradual Implementation and Support**: The choice for IPM practices benefits from a gradual, step-by-step implementation approach, supported by educational resources, case studies, and direct engagement with farmers. This method builds confidence and ensures a smoother transition to new practices.
2. **Collaboration and Co-Design with Farmers**: Active involvement of farmers in the planning and execution of IPM strategies ensures that the practices are relevant and tailored to their specific needs. Collaborative efforts, particularly in conducting field trials, are essential for practical learning and adaptation.
3. **Market Dynamics and Policy Influences**: External factors such as market dynamics, EU subsidies, and policy changes significantly affect the choice for IPM practices. Financial incentives, regulatory requirements, and the availability of localized guides and support play crucial roles in motivating farmers towards IPM.
4. **Learning from Success Stories and Mistakes**: Sharing success stories and learning from mistakes are vital for demonstrating the effectiveness of IPM and encouraging a culture of experimentation and innovation among farmers.

Impact of Contextual Conditions on hub coach approaches

1. **Environmental and Climatic Challenges**: The impact of climate change and specific environmental conditions on farming practices necessitates adaptive and flexible IPM strategies. Awareness of regional challenges and the potential for broader topics to unify diverse farming groups are important for effective adaptation.

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2. **Influence of Social Dynamics**: The natural dissemination of information through farmer networks and the role of social dynamics in the implementation of IPM highlight the importance of community engagement and the influence of peer-to-peer learning.
3. **Valuing Farmers' Efforts**: Recognizing and appreciating farmers' commitment to quality and environmental stewardship is crucial in fostering a supportive environment for the choice for sustainable practices like IPM.
4. **Paying Attention to Sector and Locality Specifics:** Connecting to the realities that farmers involved in a demo hub face is critical, and it is important to understand that this will be different for different sectors, different types of farm enterprise (small, large, etc.), possible membership of cooperative, differences in landownership, and more.

Overall, these insights underscore the complexity of facilitating interactive learning and the adoption of IPM practices within agricultural communities. The success of these efforts depends on a combination of effective learning methods, collaborative planning, awareness of external influences, and an appreciation of the farmers' role in producing high-quality, environmentally sustainable food.

4.5.3. Methods for interactive learning

"The satisfaction lies in the effectiveness of engaging farmers through interactive elements, such as tangible items that can be touched and passed around."

"Facilitation skills. I am getting better at it although I still need to learn."

"Farmers like to share their opinions and interact, it is a cultural feature in our country, they prefer to talk and not to write on post its."

The insights from various reporting notes on facilitating interactive learning within the farmer hub indicate a multifaceted approach, blending traditional methods with innovative tools to cater to the diverse needs and preferences of the farming community. Here's a synthesis highlighting common themes, notable differences, and the impact of context conditions:

Common Themes Across Regions

- **Interactive Learning Preferences**: Across different hubs, there's a clear preference for interactive learning experiences, such as practical demonstrations, farm walks, and hands-on activities. These methods are favored for their direct applicability and for fostering a tangible understanding of practices and concepts.
- **Use of Technology and Digital Tools**: Tools like Mentimeter and exit poll apps are frequently mentioned as effective for facilitating engagement and gathering feedback. These digital tools offer a way to involve participants actively and to collect insights in real-time, making discussions more dynamic.
- **Importance of Open Discussions**: Open discussions emerge as a core method for interactive learning, providing a platform for sharing experiences, challenges, and opportunities/options. This approach is valued for its ability to encourage peer-to-peer learning and for the richness of perspectives it brings to the table.
- **Adaptation to Audience Needs**: Tailoring content and facilitation methods to meet the specific needs and contexts of the audience is a recurring theme. Whether through selecting relevant

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topics or adapting the complexity of information, the importance of staying close to the farmers' realities is emphasized.

Notable Differences in Experience

- **Diverse Facilitation Strategies**: While some hubs rely more on traditional methods like direct questioning, others use visual aids such as posters and stickers, and yet others incorporate modern digital tools to enhance interaction and feedback. This variation reflects different levels of choosing for particular technologies and preferences among farming communities.
- **Cultural and Contextual Influences**: The facilitation approaches are influenced by cultural and contextual factors, such as the farmers' openness to digital tools, the preference for verbal over written communication, and the specific challenges posed by outdoor settings like vineyards.
- **Engagement with External Experts**: The involvement of external experts and experienced farmers varies across hubs. Some hubs actively incorporate insights from specialists and successful practitioners to enrich the learning experience, while others focus more on internal group dynamics and peer-led discussions.

Impact of Context Conditions

- **Environmental and Climatic Challenges**: The effectiveness of interactive learning is sometimes affected by environmental conditions, such as poor visibility on tablets in bright outdoor environments or the challenge of handling materials in field settings. These conditions necessitate adjustments in facilitation methods to ensure effective learning.
- **Societal and Policy Influences**: Discussions and learning activities are not only shaped by immediate agricultural concerns but also by broader societal pressures and policy changes. For instance, debates around pesticide use and sustainable practices reflect the interplay between farming practices and regulatory environments.
- **Economic Pressures**: Economic factors, such as market dynamics and the financial viability of certain crops, influence the topics of interest and the urgency of adopting new practices. This economic backdrop shapes the discussions and priorities within the hubs.

Conclusion

The synthesis of reporting notes underscores the significance of adopting flexible, context-sensitive approaches to facilitating interactive learning in farmer hubs. While there's a foundational preference for practical, hands-on learning experiences, when it comes to the integration of digital tools or the consideration of cultural, environmental, and economic conditions more tailored facilitation methods are needed to meet the diverse needs of the farming community. This blend of strategies, coupled with an emphasis on open discussions and peer-to-peer learning, fosters a dynamic and responsive learning environment that supports the choice for and implementation of innovative agricultural practices, including Integrated Pest Management (IPM).

4.5.4. Appropriate resources and support for hub coaches

"The training sessions and workshops provided for us as hub coaches have significantly enhanced our ability to guide and support our members."

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The insights gathered from the various reporting notes on resources and support for hub coaches in facilitating IPM demo hubs present a multifaceted view of the needs, challenges, and opportunities experienced across different regions and contexts. Here's a summary highlighting the most frequently mentioned aspects and noting notable differences:

Common Insights Across Different Regions

1. **E-Learning and On-Site Training:** Both e-learning platforms (such as the IPMWORKS e-learning modules] and on-site training are highlighted as valuable resources for hub coaches, with a particular emphasis on the effectiveness of face-to-face interactions seen in the training in Toulouse [this was about a three-day capacity building event organized by IPMWORKS] and the demonstration in Almería [as part of the IPMWORKS annual meeting in 2023]. However, there's a contrast in preferences, as some insights suggest limitations in e-learning's engagement level.
2. **Importance of Exposure to a Variety of IPM Options and Global Perspectives:** Learning from international experiences through cross-visits and understanding diverse agricultural practices in general are consistently mentioned as crucial for enriching hub coaches' approaches to IPM.
3. **Regular Training and Mentorship Programs:** The necessity of continuous learning through regular training programs covering the latest IPM developments and the establishment of mentorship programs within the hub coach community to facilitate knowledge transfer and skill development.
4. **Challenges with Time Management and Resource Constraints:** Time and resource limitations are recurrent themes, with suggestions for employing additional staff or utilizing external resources like master's students to alleviate pressures.

Notable Differences in Experience

- **Language Barriers:** Some regions emphasize overcoming language barriers through visual and non-verbal communication methods during international visits.
- **Communication Methods:** Some stress the importance of improving communication skills, including video making and social media use, to engage younger farmers and disseminate information more effectively.
- **Financial Aspects and Incentives:** The insights reveal variations in financial support and incentive structures, from the need for someone to help find funding opportunities and diversified funding sources to suggestions for financial compensation for farmers' efforts and increased budgets for more events.
- **Methodological Approaches:** Some insights suggest enforcing specific methodologies in hub activities (i.e. a more 'fixed approach') to ensure deeper learning and application of IPM practices, while others highlight the need for a more holistic and flexible approach to address the dynamic nature of agricultural challenges.
- **Data Collection and Focus Areas:** There are concerns regarding the efficiency and focus of data collection efforts, with some regions advocating for simplifying goals to track pesticide reduction more effectively, contrasting with the broader focus on capacity building over data collection in others. These ideas were often strongly informed by the IPMWORKS use of detailed surveys, which means that this point is not about data collection and its usefulness for hubs in general.

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- **Supportive Resources and International Exchanges:** The need for a comprehensive set of resources, including educational materials and successful international exchanges, is mentioned alongside the challenges of a preferred more elaborate support from sector leaders in some cases[1].

These insights collectively underscore the complexity of supporting hub coaches in their role of fostering choices for IPM application, emphasizing the need for a balanced approach that incorporates both digital and traditional training methods, fosters global learning exchanges, addresses resource and time constraints, and tailors communication and methodological approaches to meet diverse regional needs and preferences.

4.5.5. Appropriate training support for hub coaches

"We must keep exchanging with another country. Would have loved more exchange in between workshop sessions rather than just participant interviews/surveys."

The provided reporting notes from various regions and contexts offer a rich perspective on the training and capacity-building needs for hub coaches, especially in the promotion of Integrated Pest Management (IPM). Here are the synthesized insights, highlighting common themes and notable differences:

Common Insights Across Different Places

1. **Emphasis on Effective Communication and Facilitation Skills:** Regardless of the region, there's a consistent emphasis on the need for hub coaches to possess strong communication skills. This includes not only the ability to convey the principles of IPM effectively but also to facilitate discussions, manage events, and engage with both farmers and other stakeholders.
2. **Technical Knowledge and Continuous Learning:** The importance of having a solid technical foundation in IPM practices is universally acknowledged. This includes understanding the latest developments in pest management, adapting strategies to local contexts, and the ability to apply knowledge practically. Continuous learning and staying updated with the latest research and techniques are emphasized.
3. **Soft Skills and Relationship Building:** Across the board, training programs highlight the necessity of soft skills, such as trust-building, empathy, and the ability to relate to farmers' experiences. These skills are crucial for establishing credibility and fostering a receptive environment for IPM practices.
4. **Leveraging Existing Resources and Networks:** Many regions stress the importance of utilizing existing infrastructure, such as training centers or e-learning platforms, to enhance the capacity of hub coaches. The sharing of experiences and knowledge through networks, whether local or international, is also seen as beneficial.

[1] For those not familiar with IPMWORKS; besides being part of the 22 hubs under IPMWORKS, the hubs were also grouped as sectors (e.g. arable farming, vineyards, etc.) and some of those sector groups met more frequently than others.

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Notable Differences in Experience

- **Approach to Risk Willingness and Adoption Challenges:** There's variability in how regions address the willingness of farmers to adopt new practices, with some areas focusing on understanding and influencing farmers' risk perceptions, while others concentrate on showcasing the practical benefits and necessity of IPM.
- **Integration of External Expertise:** Some regions advocate for bringing in external expertise for specific topics, emphasizing the value of specialized knowledge that hub coaches might not possess. Others focus more on the all-round development of hub coaches to ensure they can handle a wide range of issues independently.
- **Digital Communication and Media Usage:** The emphasis on digital communication skills, including video production and social media engagement, varies. Some regions identify this as a key area for development to reach broader audiences, while others might not highlight it as prominently.
- **Role Shift from Advisor to Facilitator:** The transition from being an advisor to acting more as a facilitator is explicitly discussed in some contexts, requiring a shift in training focus towards facilitation and coordination skills. This reflects a changing role of hub coaches in the IPM promotion process.
- **Training Content and Duration:** There's variation in the perceived need for expanding the duration and scope of training programs. While some regions call for more in-depth and comprehensive training sessions, others may find the current frameworks sufficient but seek updates or additional modules on specific topics.
- **Utilization of Practical and Interactive Learning Methods:** The preference for hands-on, practical learning experiences, as opposed to purely theoretical training, shows differences in training methodologies across regions. The importance of interactive and engaging learning experiences is highlighted to different extents.

These insights reflect a comprehensive understanding of the training and capacity-building needs for hub coaches engaged in promoting IPM. They underscore the importance of a balanced approach that combines technical knowledge with soft skills, effective communication, continuous learning, and the ability to adapt strategies to local needs and contexts. Additionally, the differences in experience point to the need for customizable training programs that can address the unique challenges and opportunities within each region or context.

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5. Selected insights on cross-cutting topics

In the following sections we zoom in on a number of particular topics. These topics were not phrased in this way in the questions guiding the self-assessment, and are more cross-cutting themes.

5.1. Hub governance, organisation, and communications

Hub coaches provided the following key insights related to hub governance, organisation, and communications:

1. **Hub governance**: Hub coaches generally indicate that effective governance involves clear leadership roles, decision-making processes, and accountability mechanisms (to whom the hub coach is accountable). This includes establishing a leadership structure that is both inclusive and representative of the hub members, ensuring that decisions are made transparently and reflect the collective interests of the community.
2. **Hub organization**: On organization, the insights highlight the importance of structured yet flexible organizational frameworks that can adapt to changing circumstances and member needs. This involves creating roles and responsibilities within the hubs (from a perspective of shared ownership by hub coach and farmers) that facilitate efficient management, coordination of activities, and distribution of resources. The organization structure supports the implementation of sustainable farming practices by promoting collaboration and sharing of best practices among members.
3. **Hub communications**: Communication insights reveal the critical role of maintaining open, effective (done in ways that align with farmer preferences), and continuous communication channels among hub members. This includes leveraging technology for digital communication, facilitating regular meetings and workshops for face-to-face interactions, and employing diverse methods to cater to different communication preferences and literacy levels. Effective communication is seen as key to fostering a sense of community, facilitating knowledge exchange, and encouraging the choice for innovative farming practices.

These detailed insights suggest that the success of farmer hubs in implementing Integrated Pest Management, hinges on well-defined governance structures, flexible organizational setups, and robust communication strategies. These elements work together to ensure that hubs can effectively manage resources, share knowledge, and address challenges collectively, leading to improved agricultural outcomes and sustainability.

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5.2. The role of pioneering/leading/organic farmers for hubs

Several hub coaches point to the vital role of pioneering, leading, innovating, and organic farmers in the choice for and dissemination of Integrated Pest Management (IPM) practices. These farmers are crucial for demonstrating effective IPM strategies, serving as practical examples for their communities. They often experiment with innovative approaches to pest management, soil health, and biodiversity, thereby contributing to the broader choice for sustainable agricultural practices. In other words, IPM demo hubs not only foster a choice of farmers for IPM, but in many cases also fosters a rethinking of their farming system along the lines of sustainable agricultural practice in general. Their experiences and success stories are instrumental in convincing other farmers of the viability and benefits of IPM, playing a key role in the transition towards more sustainable agriculture.

Key insights in more detail include:

1. **Pioneering Practices:** These farmers are at the forefront of experimenting with and adopting innovative agricultural techniques, including IPM, that contribute to sustainability, reduced pesticide use, and enhanced ecosystem health.
2. **Knowledge Sharing and Influence:** Their success and leadership serve as a model for other farmers, encouraging the choice for sustainable practices through demonstration, advisory services, and direct influence within their communities.
3. **Organic Farming and Biodiversity:** Organic farmers, in particular, play a crucial role in promoting biodiversity, soil health, and ecological balance, demonstrating viable alternatives to conventional chemical-intensive farming.
4. **Challenges and Opportunities:** The analysis outlines the challenges these farmers face, including economic barriers and the need for more supportive policies, while also highlighting the opportunities for innovation and the positive impact on the agricultural community.
5. **Community Engagement:** Leading farmers often engage more actively in community and network activities, contributing to the spread of knowledge and fostering a supportive environment for IPM.

These insights emphasize the significant role of innovative farmers in driving the transition towards more sustainable and environmentally friendly agricultural systems, showcasing the benefits and challenges of such practices.

5.3. Key challenges that hub coaches face

In general, we can say that key challenges for hub coaches relate to various aspects of promoting IPM. These include the difficulty of changing farmer behaviors and practices due to traditional methods and cultural norms, constraints related to resources such as funding and access to modern tools, and the challenge of demonstrating the immediate economic benefits of adopting new practices like Integrated Pest Management (IPM). Additionally, choices for particular IPM technologies is hampered by a lack of familiarity and infrastructure, while environmental and policy-related challenges require navigation through complex regulatory landscapes and advocacy for biodiversity and ecological health.

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Effective collaboration among stakeholders and data-driven decision-making are also highlighted as areas needing improvement to overcome these hurdles.

The following provides a more structured overview of challenges with some more explanation:

1. **Engagement and Advisory services:** Coaches find it challenging to motivate farmers towards adopting new practices, necessitating creative and impactful educational/facilitation approaches.
2. **Resource Limitations:** A significant challenge is the available time and support to provide appropriate guidance towards implementing and sustaining proposed agricultural practices effectively.
3. **Cultural and Behavioral Barriers:** Changing long-standing farming practices and cultural norms is a complex process, requiring sensitive and tailored intervention strategies.
4. **Economic Constraints:** Demonstrating the short-term and long-term economic benefits of sustainable practices to farmers is crucial yet challenging, as many are wary of the potential risks and upfront costs.
5. **Choices for particular technologies:** Introducing new technologies into traditional farming practices involves overcoming skepticism and logistical barriers, including training and support.
6. **Policy and Regulation:** Navigating agricultural policies and regulations to support sustainable practices can be daunting, with coaches often needing to advocate for changes that support sustainable practices.
7. **Environmental Concerns:** Promoting practices that address environmental impacts and enhance biodiversity requires coaches to integrate broader ecological considerations into their guidance.
8. **Collaboration and Networking:** Establishing and maintaining effective collaborations among farmers, researchers, and other stakeholders is essential but challenging due to diverse interests and communication gaps.
9. **Data Management:** Effective collection, analysis, and use of data to inform decisions and practices is a complex challenge, requiring skills in data management and analysis.

These explanations provide a deeper understanding of the complexities involved in promoting and implementing IPM through the lens of hub coaches' experiences.

5.4. Making policies more supportive to IPM practice

Several key insights were shared on how policy can significantly impact the application of Integrated Pest Management (IPM):

1. **Policy Support for Education and Training:** Policies that fund and promote advisory services and training programs for farmers on IPM practices can enhance understanding and adoption rates.

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2. **Financial Incentives:** Subsidies and financial incentives for farmers adopting IPM can lower the economic barriers to transitioning from conventional to sustainable practices.
3. **Research and Development:** Government and institutional support for R&D in IPM technologies and methods can lead to more effective and accessible options. Key in this is that they are tested on-farm (not just experimental farm locations) so as to test their readiness for (wider) application.
4. **Regulatory Frameworks:** Implementing regulations that limit the use of harmful pesticides and encourage the use of IPM practices can drive a shift towards more sustainable agriculture.
5. **Market Access and Labels:** Policies that facilitate market access for products grown with IPM practices and establish certification schemes can create economic incentives for farmers.
6. **Public Awareness Campaigns:** Government-led initiatives to raise public awareness about the benefits of IPM can increase consumer demand for sustainably produced food.

These points suggest that comprehensive policy frameworks that support advisory services, provide financial incentives, promote research, enforce sustainable regulations, and enhance market access are crucial for the widespread choices for and success of IPM strategies.

5.5. Heterogeneity in hubs

There is clearly some complexity and variability in agricultural practices across different regions, emphasizing the importance of considering farm size, farmer education levels, and crop types when implementing Integrated Pest Management (IPM). Key insights include:

- **Farm Size Variability:** The effectiveness and choice for IPM can vary significantly based on farm size, affecting the resources available for implementation and the scalability of practices.
- **Diverse Education Levels:** Farmer education levels influence the choice for and understanding of IPM practices, where those with higher education levels often already have been more exposed to ideas related to IPM.
- **Variety in Crops:** The specific crops grown can dictate the IPM strategies used, as different crops have unique pest management needs and challenges.
- **Adaptation to Local Conditions:** Successful IPM implementation requires adaptation to local conditions, including climate, soil type, and pest pressures, underscoring the need for localized knowledge and strategies.

These insights underscore the need for flexible, context-specific approaches to IPM that consider the heterogeneity of agricultural systems, suggesting that one-size-fits-all approaches are unlikely to be effective.

5.6. IPM in relation to wider sustainability challenges

The hub coaches provided detailed insights into how Integrated Pest Management (IPM) is interconnected with various aspects of agriculture and landscapes, focusing on soil health, cover crops,

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biodiversity, and other related topics. It covers experiences from multiple regions, emphasizing the importance of adopting IPM practices to enhance agricultural sustainability. Key insights include:

1. **Soil Health and Cover Crops:** IPM practices are closely tied to improving soil health and the utilization of cover crops. Hub coaches discuss the role of cover crops in pest management strategies and their benefits for soil health, illustrating a holistic approach to agricultural sustainability.
2. **Biodiversity:** The integration of biodiversity into IPM practices is highlighted, showcasing how diversifying agricultural landscapes can contribute to pest control and ecosystem health. This involves strategies such as creating habitats for beneficial organisms and implementing crop rotations.
3. **Agricultural and Landscape Sustainability:** Hub coaches underscore the broader implications of IPM on landscape sustainability, indicating that IPM practices contribute to the long-term health and viability of agricultural ecosystems. This is achieved through reduced reliance on chemical pesticides, enhanced biodiversity, and the choice for practices that support ecological balance.
4. **Challenges and Innovations:** Feedback from hub coaches points to challenges faced in implementing IPM, including economic considerations, farmer advice, and the adaptation of practices to local conditions. The experience of IPM demo hub points to how innovative approaches to IPM and the role of technology and community engagement can help overcome these challenges.
5. **Policy and Community Engagement:** The importance of supportive policies and active community engagement in promoting IPM practices as part of wider policies on sustainable agriculture, is also mentioned. This includes the role of governmental and non-governmental organizations in providing resources, advisory services, and incentives for farmers to make steps to make their farming system more ready for the future.

The analysis serves as a comprehensive overview of how IPM practices are interwoven with broader agricultural and environmental objectives, emphasizing the need for integrated approaches to pest management that are sustainable, economically viable, and beneficial for ecosystem health.

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6. Discussion and conclusion

"IPMWORKS helped hub coaches do what they did not have experience with before"

The analysis of IPMWORKS hub self-assessments provides comprehensive insights into the multifaceted approach required for the effective implementation and widespread adoption of Integrated Pest Management (IPM) within the agricultural community (IPMWORKS Deliverable D1.4 expands more on this). This synthesis revolves around enhancing learning experiences, fostering community engagement, supporting hub coaches comprehensively, and understanding the complex dynamics within different agricultural contexts.

Box 1: Further reflections of Hub Coaches

The following are selected "reflections" that were shared by hub coaches at the time the analysis results were presented to them in March 2024. They partly overlap with insights shared in the earlier chapters, but perhaps bring out a number of things of particular importance:

- It takes time for a group of farmers to grow into a cohesive group characterized by mutual trust, not being afraid to share about something that failed. This is important to take into account when starting up new demonstration hubs in the future. That is why efforts to continue the current IPMWORKS hubs as much as possible is very important.
- Farmers are often involved in different projects and may be confusing for them when approaches do not align. This is important to keep in mind as hub coach.
- An inclusive hub approach, engaging external stakeholders meaningfully (not just keeping things to hub members) is advocated.
- "IPM" as topic may not interest them as much as specific challenges that actually may have everything to do with IPM. So this means you need to choose the entry point appropriately.
- The idea is that farmers learn during the life of the hub, and it adds value if such learning processes are documented and shared with participating farmers so they get more insight into their own learning process.
- There are different experiences with involving other-than-conventional (pioneer) farmers, such as organic farmers. In some places very much appreciated as a kind of avant garde, and in other places they may be considered 'weirdos'.
- The current (mid-March 2024) farmer protests illustrate the sensitive environment in which hub coaches somehow need to navigate hub activities that often do connect to such sensitivities (notably restrictions on pesticide use).
- Holistic IPM is an important frame of reference, not as something restrictive, but something empowering. For this, it needs to be translated and tailored to particular contexts and conditions.

Discussion

The analysis derived from diverse agricultural hubs across regions provides deep insights into the nuanced and multifaceted approach necessary for fostering and scaling Integrated Pest Management (IPM) practices through IPM demo hubs. This approach is underscored by a series of interconnected themes including peer-to-peer learning, the role of hub coaches, and the integration of digital tools, all within the context of local agricultural conditions and cultural practices.

Firstly, the significance of community engagement and peer-to-peer learning in the adoption of IPM practices cannot be overstated. Farmers learn best from their peers, indicating a cultural and practical preference for hands-on, experiential learning over theoretical instruction. This form of learning fosters trust and relatability, essential elements in changing long-standing agricultural practices. However, the diversity

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in farming contexts—from soil types and climate conditions to pest issues—requires these learning experiences to be highly adaptable and locally relevant, presenting a challenge for hub coaches to curate universally applicable yet customizable content.

Furthermore, the role of hub coaches emerges as pivotal in the successful implementation of IPM strategies in IPM demo hubs. They act as facilitators, educators, and connectors—bridging the gap between scientific research and practical application, while also fostering a supportive community among farmers. However, the effectiveness of hub coaches is contingent on their access to ongoing training, resources, and support networks. Challenges such as resource constraints, varying levels of digital literacy among farmers, and the logistical difficulties of coordinating hub activities highlight the need for a structured yet flexible support system for these key individuals. Not only that, their effectiveness also depends on the extent to which markets and society as a whole support transitions to (holistic) IPM (Box 2).

Box 2: IPM Recognition and Awareness in the supply and value chains

Supply chains: There is a common concern that the use of IPM has not resulted in a competitive or supply chain advantage, unlike the often successful positioning of organic production. Specifically, consumers are not aware of IPM. If consumers don´t have information on IPM, they don´t have knowledge that can help them to make choices. For this reason, several questions were raised: Is IPM farmer/product recognition possible along the supply chain? Is a label or Pesti-score useful/desirable? (The argument being that it could be supported by consumers, much like organic labelling which gets more support.)

Value chains: An increased societal awareness of biodiversity, letting natural vegetation grow, regenerative agriculture, and traditional practices that count as IPM but are not identified as such, were noted in the sessions. Increasing recognition of these values is related to the awareness of the importance of IPM amongst a broad range of stakeholders, not just society members in their role as consumers. This awareness can be supported by other institutional actors such as associations, producer organisations, etc. so that there is **also a more holistic view of the value creation of IPM.**

Conclusion

The insights from various agricultural hubs illuminate the complex, context-dependent nature of implementing and scaling IPM practices. Success in this arena requires more than just the dissemination of information; it demands a holistic approach that considers the cultural, economic, and environmental facets of each unique farming community.

The key to fostering widespread adoption of IPM lies in empowering farmers through education, practical demonstrations, and peer-to-peer learning opportunities. However, these efforts must be supported by a robust framework that addresses the multifaceted challenges faced by hub coaches and farmers alike. This includes providing ongoing education and resources, leveraging technology appropriately, and ensuring the adaptability of IPM strategies to local contexts.

Moreover, the journey towards widespread IPM adoption extends beyond individual hubs and farmers—it involves the collective effort of the agricultural community, policymakers, industry stakeholders, and educational institutions. Collaborative efforts and partnerships are essential in creating an enabling environment that supports sustainable practices, addresses policy and market challenges, and recognizes the efforts of farmers and hub coaches.

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Building on previous experiences, IPMWORKS set and tested a shared methodology to promote IPM and help farmers reduce their reliance on chemical pesticides. This methodology was widely adopted by IPMWORKS Hub Coaches, who adhered to the approach, with some flexibility to account for regional specificities (culture, structure of advisory services, habits of collaborative activities, access to digital resources). IPMWORKS was able to create a community of hub coaches and farmers that generated many opportunities for learning and support to capacity building of both hub coaches and farmers and exchange of experiences between groups that would otherwise not have met. IPMWORKS as project was able to directly connect hub coaches and farmers from different hubs to policy makers at both national and EU level. The feedback from Hub Coaches after some years of experience is invaluable for providing a comprehensive vision of their role in the process, and for formulating advices to optimize the efficiency of Hub facilitation.

In conclusion, advancing IPM practices requires a concerted, collaborative approach that bridges the gap between science and practice, addresses systemic challenges, and cultivates an environment conducive to learning, adaptation, and innovation. By focusing on the needs and realities of farmers, supporting the pivotal role of hub coaches, and fostering collaboration across the agricultural actors, there is a significant opportunity to enhance the sustainability, productivity, and environmental stewardship of farming communities As noted earlier, IPM demo hubs were found to not only foster a choice of farmers for IPM, but in many cases also foster a rethinking of their farming system along the lines of sustainable agricultural practice in general. So these conclusions support the relevance of proposals for continuing or rather expanding support to (holistic) IPM demo hub initiatives across Europe.

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Annex 1. List of IPMWORKS hubs

Hub #	Country	Sector	Institute supporting the hub
1	Netherlands	Outdoor vegetables and arable	DELPHY
2	Netherlands	Arable field crops	WR
3	Belgium	Outdoor vegetables and ornamentals	INAGRO
4	Belgium	Greenhouse horticulture	INAGRO
5	Poland	Arable field crops	KPODR
6	UK	Arable field crops	JHI
7	Portugal	Vineyards	CONSULAI
8	Portugal	Outdoor vegetables	CONSULAI
9	Italy	Arable field crops	SSSA
10	Italy	Orchards	SSSA
11	Denmark	Arable field crops	DL
12	Denmark	Arable field crops	VELAS
13	Serbia	Outdoor vegetables and ornamentals	BIOSENSE
14	Spain	Vineyards	FEUGA
15	Spain	Arable field crops	INTIA
16	Spain	Greenhouse horticulture	COEXPHAL
17	Germany	Arable field crops	JKI
18	Germany	Arable field crops	GLZ
19	Slovenia	Arable field crops, Vineyards, Orchards	KGZS MB
20	Finland	Outdoor vegetables and ornamentals	ProAgria
21	Greece	Vineyards	AUA
22	Ireland	Arable field crops	TEAGASC

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Annex 2. Setup of the self-assessment sheet in the hub journal

The following is a screenshot from the IPMWORKS hub journal in which hub coaches record key information about the hub, such as related to the demonstration activities, and also the self-assessment. Answers to these questions were provided by hub coaches in the worksheet in 2022/2023 on the basis of the hub self-assessment.

Main lessons and findings from this year:

Topics	Key questions
The hub as a group	1. The way the hub meetings/ interactions functioned (notably also how peer-to-peer learning worked out)
Your own role as hub coach	2. The way you reflect on your role as hub coach
Hub connectivity	3. The way in which the hub connected to other initiatives/ groups
Hub members' own application of IPM	4. What was shared by hub members regarding their own application of IPM practices in this past year?
On barriers for applying IPM	5. Key insights that emerged over the year in terms of barriers for starting to/expanding application of IPM and how they may be addressed
On holistic IPM	6. Key insights that emerged over the year in terms of applying IPM in a holistic way, including the way it was addressed over this past year in the hub events.
Cross-visits	7. How the cross-visit(s) worked out
Demo event preps	8. How did preparations for demo events (setting objectives, making the programme, organisational aspects, working with partners, promotion, M&E) work out
Demo event implementation	9. How demo events worked out: effective in facilitating learning? In what way inspiring? In what way helping to foster change of
Post demo event	10. What helped to support critical reflection and learning from the demo event
Exit polls	11. How did exit polls help to get feedback from visitors?
Wider context conditions	12. What context conditions such as policy changes, extreme weather conditions, etc. influenced hub performance and/or hub member reflections on IPM this past year, and how?
	Any relevant other reflections/lessons learnt not related to the above

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Annex 3. Interview questions used

The following presents the list of interview questions used in the interviews with hub coaches in 2023/2024:

In relation to the reflection with hub members

1. What are the main insights you got from the reflection with hub members on the past year's meetings, demonstration events, etc.

2. What are the main insights you got from the hub members regarding their own application of IPM and related lessons learnt.

3. What are the main insights you got from hub members regarding what helps and hinders in starting/expanding IPM application as farmer? And how did/does the hub play a role in relation to this according to them?

General reflections on the past year

4. How do you reflect on your own role as hub coach? What have been challenges and where do you feel that you have learnt some new things? Based on this, what would you recommend to new hub coaches?

5. Have you been able to connect the hub (members) to other initiatives/activities related to IPM and if so, how was this appreciated by hub members, and how did it help the hub dynamics (e.g. new insights/learning or forming new relationships) in general?

6. What are your main lessons learnt regarding how to prepare well for effective demonstration events? (if time is tight, you may skip this one)

7. Did you use exit polls at the end of demonstration events? If so, how did that work out?

8. Is it clear to you what IPMWORKS understands by 'holistic IPM', and if so, how did you as hub try to express this in activities? What would be your main message in relation to this regarding how this can be a focus of the hub?

9. Did you do a cross visit? If so, how did that work out and how did it help the hub members? Based on this experience, what would be your main advice regarding organising cross visits?

10. What context conditions such as policy changes, extreme weather conditions, etc. influenced hub performance and/or hub member reflections on IPM this past year, and how? What did you learn in terms of how to still keep motivations and interest up in the hub?

In relation to facilitation methods and tools

11. What have been the main ways (methods) in which you facilitated discussion and exchange of ideas in relation to demonstrations and/or during meetings? How do you reflect on this: satisfied about this, or would you like to do this (sometimes) in a bit different way in the future?

12. Do you have one or two facilitation methods/tools that you found to be particularly useful in relation to facilitating exchange and learning on (specific) IPM topics? Also if it is something relatively simple. Please share some details.

In relation to making IPM hubs/networks work in support of wider application of (holistic) IPM across Europe

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13. What are good practices or success stories from HUB coaches that can serve as models for others looking to scale IPM adoption?

14. What resources and support can be provided to HUB coaches to enhance their role as key drivers in the successful exploitation of IPM networks?

15. In what ways can HUB coaches better engage with farmers and industry stakeholders to ensure the scalability of IPM adoption beyond the project's scope?

16. What types of training or capacity-building programs can be implemented to empower HUB coaches with the necessary skills and knowledge for promoting IPM measures/facilitating interactive learning effectively?

17. (this may have come up enough in the earlier conversation) Has the approach of IPMWORKS to hub interactions and their facilitation been different from the culture of learning in your area? If so, what in it do you find particularly challenging in your area?

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Annex 4. Suggested self-assessment guidance for hub coaches

Guidance for Hub Coaches: Collecting reflections on the past year of hub activities
Version 22 September 2023

1. Reasons for and purpose of this guidance

All hub coaches need to perform a self-assessment of their hub's activity, as part of what we promised in the DoA. The one performed in relation to 2022 did not work as intended. Realising that hub coaches are very busy, WP1 redesigned the self-assessment methodology for the following reasons:

- Reduce the pressure on hub coaches.
- Get richer input for the self-assessment analysis + other IPMWORKS related tasks.

In summary:

- It is not needed to fill out the hub journal.
- Rather get related content through interviews instead.
- By integrating questions in the interviews from other IPMWORKS tasks, we will be more time efficient. Reducing many separate interactions.

The resulting methodology means the self-assessment will have the following two parts:

a) Facilitated **reflection** (by hub coach) **with hub members** in **November** 2023. This is about questions/topics that really require interaction with the hub members.
b) Facilitated reflection (by WP1) with **hub coaches** through **interviews** in the first two weeks of **December** (1.5 hrs). This is about questions/topics that relate directly to the hub coach's own experience and insights. Please find a **tentative** list of **questions** for the interview in annex 1.

Why use facilitation methods?

- To make the reflection time with hub members more attractive.
- To enable all hub members to participate (not just one or two talking).
- To get a bit deeper into discussions than when it is done through just open questions and discussion.

This guidance document is first of all meant to provide some ideas for hub coaches on how they may facilitate that interaction with hub members in November 2023 (point 'a' above).

Earlier this year, we shared the experience of the Belgian greenhouse hub and how Jolien Claerbout facilitated the self-assessment there. We build on that example in the following.

2. Key topics/questions to be covered in the interaction with hub coaches

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Not all questions in the hub journal related to the self-assessment, require the hub coach to provide her/his thoughts after specific reflection sessions with hub members. Those questions will come up in the interviews in December. Some questions, however, do require taking some time with hub members to reflect on answers.

The following are the topics from the self-assessment that require such interactive reflection with hub members:

- Reflecting on how meetings/interactions as hub were appreciated;
- Reflecting on how the demonstrations and similar events were appreciated;
- Reflecting on hub members' experience with IPM application on own farm;
- Reflecting on what hinders and what helps starting to/expanding IPM application (based on this year's experience) and the way in which hub meetings/demonstrations were helpful in relation to this.

Do add your own specific questions as well that you would like to get discuss with hub members at the end of the year. E.g., more related to technical contents. Don't feel limited by the above list, and organise the interactive reflection on questions that matter for your hub.

It is good practice if such reflection session is **combined** with other things that the hub needs to talk about around the of November. For example, it will be a good time to look forward and exchange ideas on the kind of things you want to do as hub next year.

3. A good plan is half the work

There are a number of steps involved in the self-assessment at the end of 2023. They are summarised in Figure 1.

Figure 1: Overview of key steps in the self-assessment process at the end of 2023

There are three main things that require **timely planning for**:

- **Hub coaches to make appointments with hub members as soon as possible** for a meeting later in November. Provide plenty of time for arranging plans and securing availability. It is up to you how you will do this.
- Hub coaches and WP1 representatives to make **appointments** as soon as possible **for the interviews** in December to prevent that agendas have already filled up. WP1 provides an online (IPMWORKS Sharepoint) planning document in which **hub coaches can book a timeslot** at a convenient time for them here: https://nextcloud.inrae.fr/s/NsA8m7a7AH835oB
- Hub coaches to **plan and prepare** the way in which they will facilitate that **reflective interaction** with hub members in advance, so they can make it a meaningful and enjoyable interaction.

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4. Suggested facilitation methods

-> Facilitation methods and tools are meant to provide a **starting point** for further conversation.

-> Good facilitation starts with good preparation.

-> Use your own best judgement regarding which methods to use in what way.

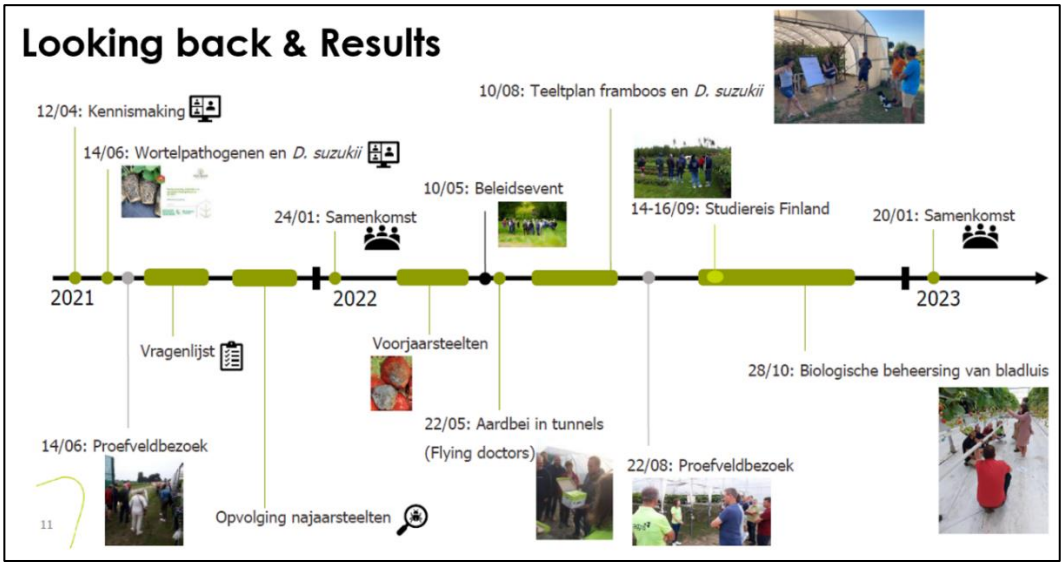
The following pages contain suggested facilitation methods, each separately on one or two pages. It is up to the hub coach which of these methods she/he decides to use as long as they get good feedback on at least the four main reflection questions indicated in part 2 of this document.

Facilitation method 1: Creating and reflecting on a timeline about the life of the hub in 2023

Purpose: Help hub members remember what was done and create a nice 'canvas' on which they can indicate what they thought about it.

Process:

1. Create the timeline before the meeting on a large sheet of paper (e.g. A0 size). Jolien provided an excellent example of how to make it attractive!



2. Put the poster on a wall and briefly explain what is on it.
3. Provide stickers with small, coloured dots in green, yellow, and red to all hub members and ask them to indicate what they thought about the events/meetings that they attended. Red=did not like/yellow=it was so-so or adequate/ green=I like it. Easy to buy online or in an office equipment shop.
4. Give them time to put their stickers on the poster. If too difficult to do, you may skip the stickers and just have a conversation as you go systematically through the items on the poster.
5. Make sure you also get feedback on practicalities regarding **how** demonstrations were organised, and on the contents of meetings. This can help to improve on this next year.

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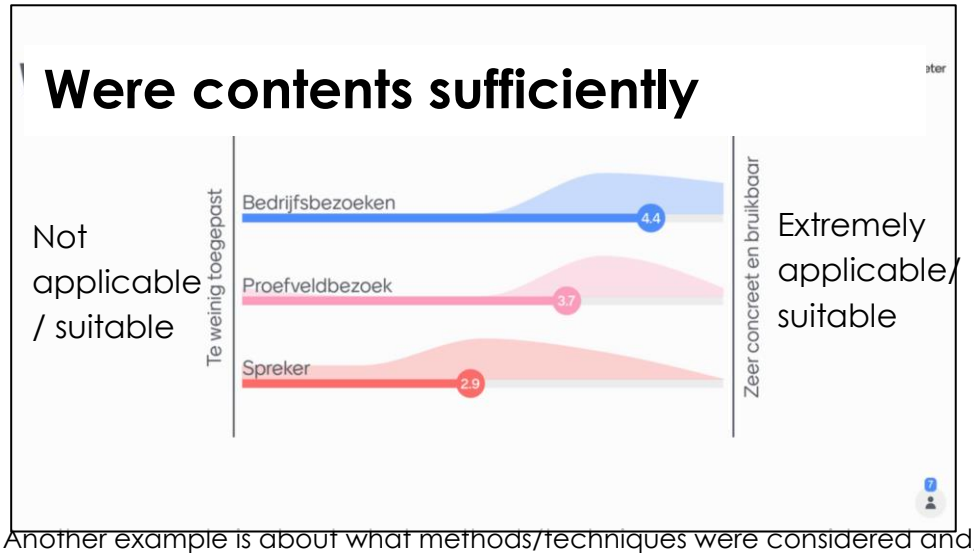
Facilitation method 2: Mentimeter/slido survey

Purpose: Engage everyone anonymously in, for example, expressing their appreciation for specific activities of the hub in the past year. When discussing it, it may not stay completely anonymous, but we would hope that everyone at least feels free to express their ideas when responding to the survey.

Below is an example used in Belgium (©Jolien Claerbout) in relation to how hub coaches appreciated farm visits, demonstration visits, and lectures/presentations.



Another example is about what methods/techniques were considered and/or applied after demonstrations.

Process:

1. Decide what specific topics you would like to receive input on.
2. Set up the Mentimeter (or Slido or any similar online tool). You can use it without subscription too, but then it is limited to two questions. Ask a colleague to help if you are not familiar with it. It is not difficult to do.
3. Make sure you have a computer with beamer (computer projector) available.
4. Open the Mentimeter on your computer and use beamer to present the results when it's time
5. Provide the link to hub members and ask to respond to the questions.
6. When all results are in, discuss the scores. If there is a (on average) rather low score, ask about why, and when there is a rather high score, ask what was appreciated.

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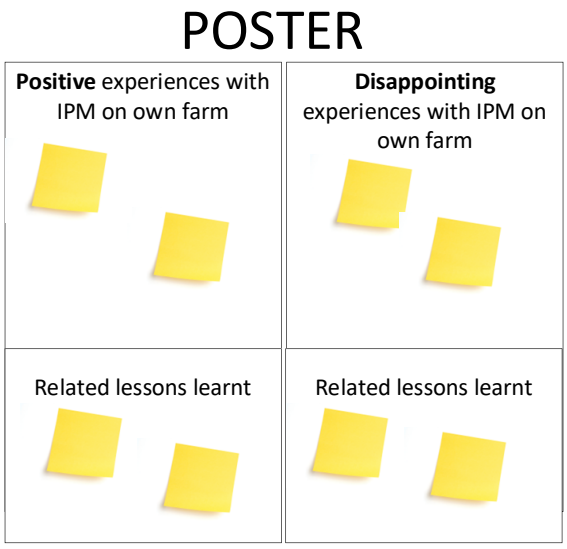
Facilitation method 3: Harvest insight through short contribution post-its

Purpose: Again, create an opportunity for everyone to participate. Reflect in two steps: first, everyone can share her/his own thoughts, and then there is room for open discussion.

Process:

1. Get posters (e.g. flipchart paper size) ready with questions on it. Suggested topics shown below.
2. Provide cards or post-its (not too small) with pens to hub members.
3. Ask hub members to first write their 1, 2, or 3 responses in key words and ask them to put it on the poster.
4. Specific approach per poster:
    a. It may work best to first ask for the positive and disappointing experiences, and then together discuss related lessons learnt and write this up as thoughts are shared.
    b. It may work best to first ask for what helps and what hinders, and then together discuss how useful hub interactions have been in relation to this.



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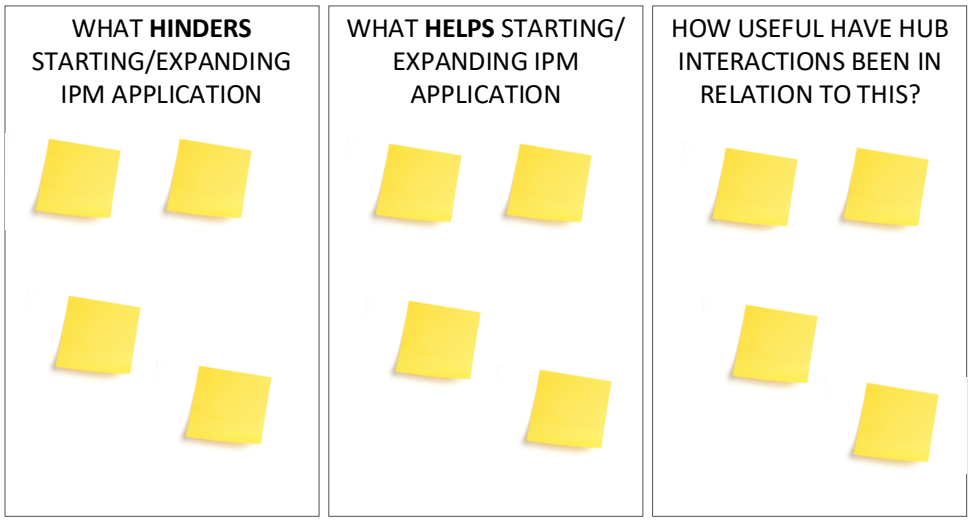
POSTERS



Facilitation method 4: Create an integrated overview of appreciations through a spider diagram

Purpose: Engage all hub members in creating an overall perspective on the main things that the hub has done over the past year. By presenting it as a spider diagram, it creates a nice overview to serve as a basis for general discussions about the efficacy of the hub. This method may be used together with the timeline method if found useful/feasible.

Process:

1. Decide on questions you want to ask. Below are some suggested questions, feel free to edit/change.
2. Make slips of paper that you can handout and that everyone can fill in and then hand back to you. So they can score between 1 and 5. If you let them score before e.g. the coffee break, it gives you time to put the scores into the computer.
3. Use a spreadsheet to list the questions and activate the function that automatically generates the averages and the diagram.
4. **Alternatively**, to keep it easier, create an empty spider diagram on a poster beforehand. Provide tiny dot stickers or simply markers and ask everyone to put a sticker or dot on the poster for each of the questions to indicate their scores.

Example of the piece of paper you may use to hand out to hub members to provide their scores on.

My score:

Questions relate to this year (2023)

1. Were interactions within hub relevant and effective?
2. Were interactions within hub enjoyable?
3. Were interactions within hub efficient?
4. How satisfied are you about application of IPM on your own farm (does it work)?
5. Were the demo events well organised?
6. Were the demo events convincing for visitors?
7. Were/was the cross-visit(s) useful?
8. Have (changing) conditions outside the hub influenced your ideas on IPM?

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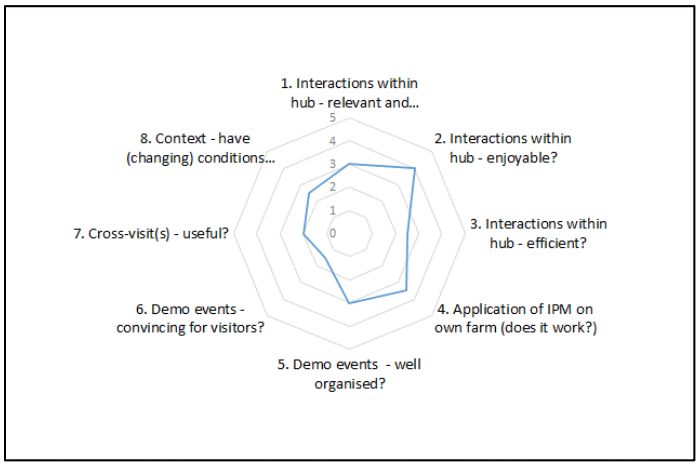
1=not at all ; 2=not really ; 3=partly, partly not ; 4=yes ; 5=very much so

See below an axample of the spider diagram that Excel can automatically generate for you. **But**, again, you can do this on just paper (a poster) as well, thus skipping the work with Excel. You then also don't need to handout those slips of paper. That may actually be advisable. But then you need to prepare the outline of it in advance.



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