AdvisoryNetPEST

Deliverable 3.1

Methodology to identify, select, analyse, adapt and scale-up the NAs

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List of acronyms

Acronym	Full Form
AKIS	Agricultural Knowledge and Innovation Systems
EU	European Union
EUSL	European Union Sector Leader
IPM	Integrated Pest Management
NA	Novel Approach
NN	National Network
NNL	National Network Leader
NSL	National Sector Leader
RURP	Reduction of Use and Risks of Pesticides
STWG	Scientific and Technical Working Group
TRL	Technology Readiness Level
WA	Working Area
WP	Work Package

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Executive Summary

Deliverable D3.1 of the AdvisoryNetPEST project outlines a structured methodology for identifying, selecting, analyzing, adapting, and scaling up Novel Approaches (NAs) to reduce pesticide use and risks across Europe. This initiative aligns with the European Union's Farm to Fork Strategy. The document details a three-phase approach:

1. **Identification and Selection of Novel Approaches (NAs)**
    - A survey is deployed across 14 partner countries to identify 93 NAs annually over three cycles.
    - Each NA is evaluated end selected based on technical, economic, social, and environmental criteria, culminating in the selection of 31 NAs per cycle for detailed case studies.
2. **Systemic Feasibility Analysis**
    - Comprehensive analyses compare the selected NAs
    - Technical, environmental, social, and economic dimensions are assessed, and the findings enrich the case studies.
3. **Adaptation and Adoption of NAs**
    - Cross-visits among countries and sectors facilitate knowledge exchange, identify adoption barriers, and contextualize the NAs to maximize their impact.
    - Insights gathered during these exchanges, along with supplementary surveys, feed into the case studies designed for advisors and farmers.

The document emphasizes the importance of close collaboration with the development of the network and monitoring tools, the presence of expert committees and a collaborative framework to ensure project success. The robust methodology aims to foster sustainable and innovative approaches tailored to local contexts, contributing to the reduction of pesticide use and risks. The iterative dimension of the project allows the methodological framework to constantly improve itself and learn from the field.

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1. Introduction

1.1 The deliverable within the overall objectives of the project

The AdvisoryNetPEST project aims to establish and enhance a comprehensive network of advisory services across the European Union. This initiative is designed to increase knowledge sharing and promote the adoption of innovative solutions to reduce the use and risks of pesticides, aligning with the objectives of the EU's Farm to Fork Strategy. This will be achieved by: 1) Developing an EU network of advisors to reduce the use and risks of pesticides (RURP), built on existing advisory networks and the national AKIS in all MSs, 2) Identifying, selecting, and shaping novel approaches (NAs) to be adapted and replicated across the EU, 3) Exchanging knowledge and training advisors to promote the adoption of the NAs by farmers, and 4) Scaling up the NAs, fostering the adoption of innovative solutions by farmers.

The methodological framework detailed in this deliverable is part of the second goal of the project corresponding to Working Area 2 (WA2). The objective of WA2 is to identify, select, and analyze 93 Novel Approaches (NAs) across four crop sectors and four EU regional clusters. Additionally, WA2 aims to foster the adoption of these NAs by adapting them to various contexts. The WA2 responsibilities and deadlines are detailed in annexes 6.1. The achievements for WA2 are related to tasks 3 to 4 and expected as follow:

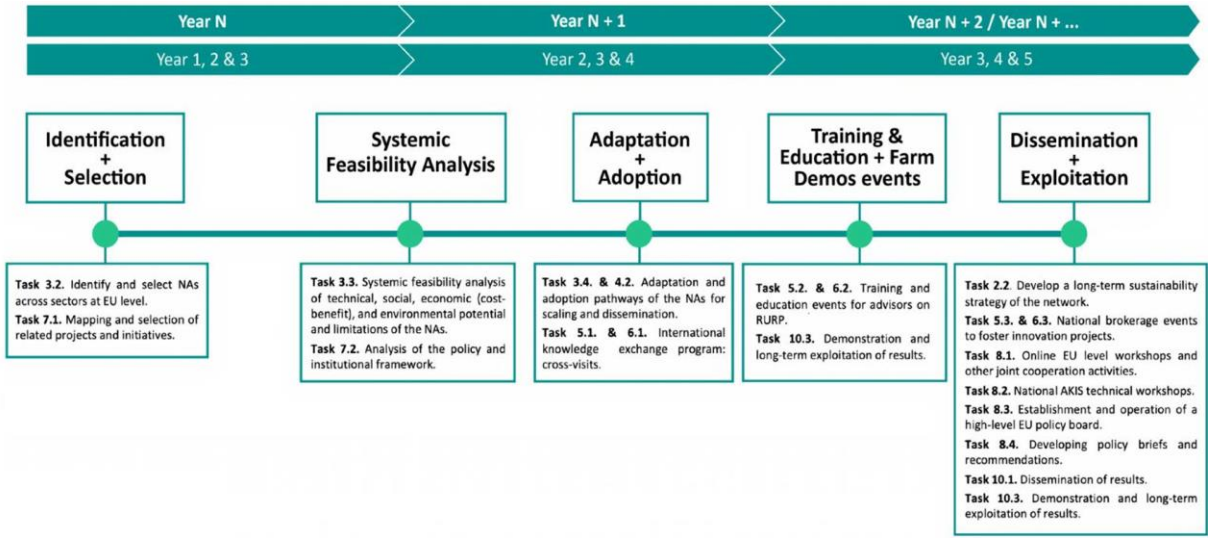

Figure 1 Overview of the WA2 objectives and tasks in the project timeline

1.2 Main focus of the methodological framework

The establishment of the methodology is the first task to be achieved in WA2. It aims to support the entire process of identifying, selecting, and scaling up the Novel Approaches (NAs). The creation of procedures and suitable methods will focus on the following three processes:

- **Identify and Select the Novel Approaches**: Over three years, each country partner must identify three NAs per crop sector per yearly cycle within their field of expertise. This results in 93 NAs identified per cycle (three cycles in total). Subsequently, for each country and associated crop sector, one NA out of the three identified must be selected for further analysis and the adoption process. Information is gathered in case studies, making a total of 31 case studies per cycle.

- **Systemic Feasibility Analysis of the Novel Approaches**: The most promising NAs (31 per cycle, 93 in total) will undergo a systemic analysis covering technical relevance, agronomic aspects, social and economic components, and environmental parameters. This analysis will be made by the STWG, the output will be used to complement the cases studies, resulting. These improved case studies will then be used in cross-visits for further adaptation.
- **Adapt and Adopt the Novel Approaches:** The improved case studies, which contain the results of the identification/selection and analysis, the NAs will be presented to advisors, farmers, and value chain actors during cross-visits. These visits will provide concrete feedback, comments, contextualization, and fine-tuning of the NAs to complete the case studies and enhance their relevance. Based on the output of the cross visits, barriers to adoption will be examined to evaluate the replicability of the NAs, considering value chain and territorial aspects, as well as the policy context.

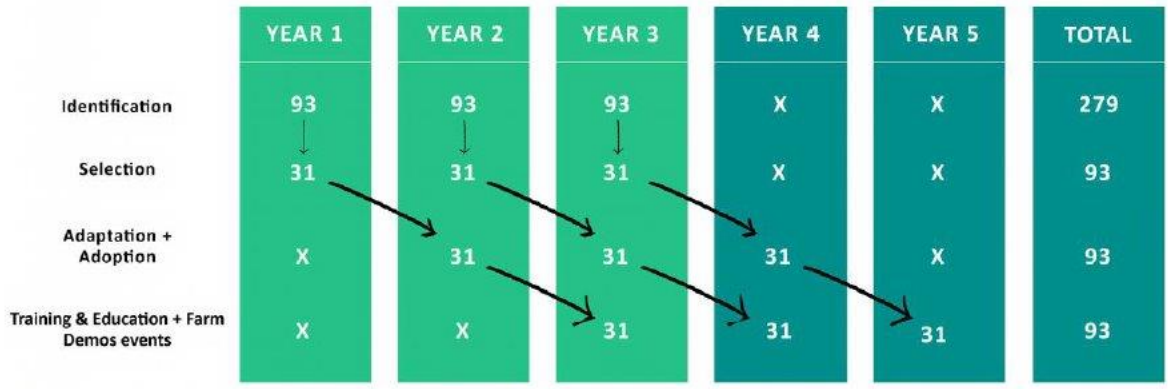

Figure 2 Overview of the iterative process of the project

The procedures and methodology supporting these three steps are further described in the following report.

2. Methodology to identify and select the NAs

2.1 Objectives and agenda

Context and objectives:

Over three years, each country partner must identify three NAs per crop sector per year within their field of expertise. They must then select the most promising NA out of the three identified. To provide methodological support for this process, the identification and selection of NAs have been divided into the following sub-tasks:

- Frame the definition of a “Novel Approach” and provide guidance to NNLs and NSLs for their identification.
- Establish the Scientific and Technical Working Group (STWG) members who will be involved in the process and offer their technical expertise on the NAs.
- Choose the relevant indicators and necessary information to collect for the selection

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and analysis of the NAs.

- Create a support tool to be used by NSLs and advisors for collecting NAs.
- Provide guidelines in coordination with WA1 partners and develop networking strategies to reach advisors and assist them in identifying the NAs.
- Develop an internal monitoring tool to manage all 93 NAs identified and selected over the three cycles.
- Develop a strategy to select the 31 NAs back-to-back with the NSLs/NNLs and the STWG.

Importance of the STWG committee:

The STWG (Scientific and Technical Working Group) is a special committee created to support the entire methodological process. It is composed of several experts: the 4 EU SL and a panel of technical, economic, and environmental experts. The members and composition of the committee are detailed in annexes 6.2.

The role of the STWG is transversal as it will intervene in the different tasks of the work package: from the construction of the methodology to the adaptation of the NAs. One of the biggest missions of this committee is to provide analysis of the 31 NAs each cycle, leading to the creation of short technical case studies. The STWG members will also help in the NAs selection process by giving their feedback back-to-back with the NSLs during specific crop commissions.

Overview of the meetings and timeline:

The following elements report on the time frame necessary to set the methodological work, following regular meetings and deadlines to finish constructing the framework by the end of December.

- **February 2024**: The AdvisoryNetPEST project was launched during the kick-off meeting in Lisbon. As many of the partners involved were present, it was an opportunity to step into the methodological framework. First discussions aimed at defining what is considered a novel approach and defining criteria to identify them.
- **April 2024:** The list of NSLs and STWG members was set. This enabled the first WP3 partner's meeting in May 2024, during which the tasks and roles of each partner were clarified. A first draft of the methodology was presented, and partners commonly validated the creation of a Microsoft Form to identify the NAs and a first selection of indicators to use.
- **July 2024:** Based on the previous WP3 meeting, further work on the methodology was done during June and July: precisions on indicators to choose; creation of the Microsoft Form to collect NAs; guidelines to explain the methodology. During the summer, the questionnaire on MS Form was tested by different partners of the project and by advisors not involved in AdvisoryNetPEST. This process ensured its robustness: fitting different crop expectations, formulation of the questions, etc., before it was sent to all

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the NSLs and advisors.

- **September 2024**: The methodology was presented in the NNL-NSL meeting organized on the 3rd of September by WA1 partners. The identification process of NAs was then launched, and the Microsoft Form disseminated to collect all the NAs by the end of December.
- **October 2024:** A WP3 meeting took place to check out the NAs already identified and discuss if the methodology of identification and selection needs to be adapted. The second part of the methodology was then constructed: adaptation, adoption, and scaling up the NAs.
- **November 2024:** A WP3 meeting took place to work on the second part of the methodology: adapting the NAs through demonstrations in cross visits and adopting and scaling up the NAs by gathering more data on the policy context, social aspects, and value chain. Furthermore, an NNL and NSL meeting was held to present examples of identified NAs and discuss any difficulties encountered by partners in the identification process.
- **December 2024:** December marks the end of the identification process for NAs in the first cycle of the project. A total of 93 NAs were identified, and the database is updated accordingly. A review is sent to each NSL/NNL regarding the NAs identified for their country and crop sector. They provide feedback on the most promising NA to select out of the three.
- **January 2025**: Four expert commissions will take place, categorized by crop sector: arable field crops, vineyards, orchards and horticulture, soft fruits and ornamental. Each commission will gather NSLs and STWG members who are experts in one or more crop sectors to evaluate and select the NAs.

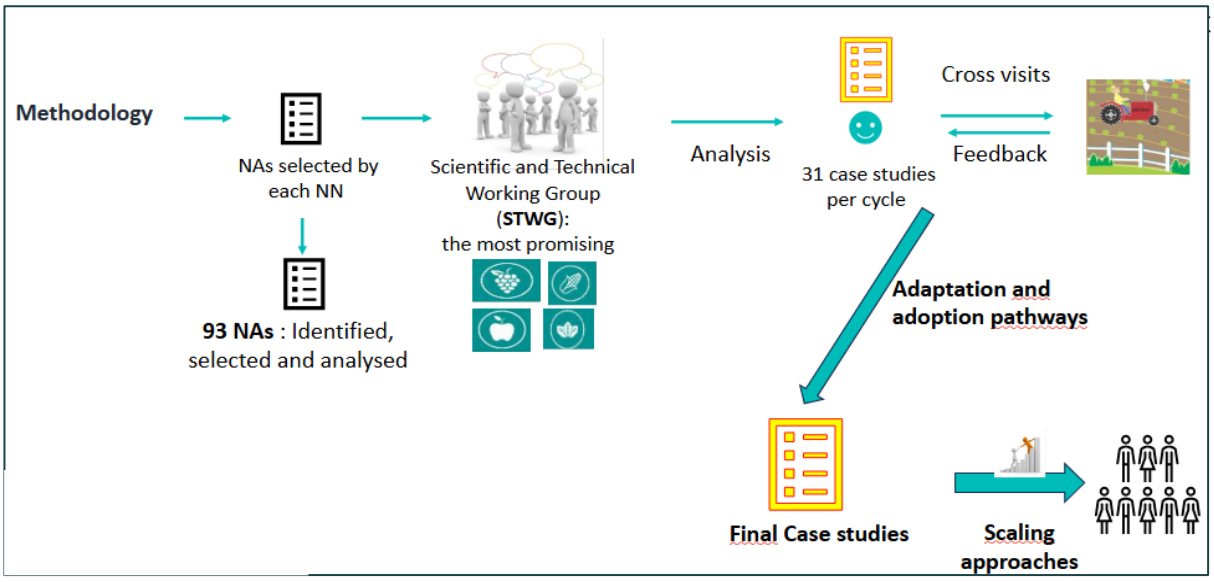

Figure 3 Diagram of the methodological process for identifying, selecting, and scaling up the NAs

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Defining a Novel Approach:

One of the first challenges of the AdvisoryNetPEST project was to commonly validate the definition of a Novel Approach (NA), what is expected as a type of NA, and the criteria needed to reach the project's goals.

A workshop during the kick-off meeting of the project in Lisbon enabled the comparison of different partners' visions of a NA. As a result of this brainstorming, it was decided to keep a broad meaning to collect various types of NAs, such as specific approaches to crop rotation or biological control strategies, landscape structures that create habitats to benefit species, holistic approaches, approaches focused on farm organization, or precision farming. In a more general sense, the types of Novel Approaches can fit the following key components of the Integrated Pest Management (IPM) definition:

Preventive measures:

- Crop Rotation: Changing the types of crops grown in a particular area each season to disrupt pest life cycles.
- Resistant Varieties: Using plant varieties that are naturally resistant to certain pests.
- Sanitation: Removing plant debris and other materials that can harbour pests.

Monitoring actions:

- Regular Inspections: Frequently checking crops for signs of pests.
- Pheromone Traps: Using traps that attract pests to monitor their presence and population levels.
- Threshold Levels: Establishing levels at which pest populations become economically damaging, prompting control measures.
- Mapping of weeds by scouting fields, by drones or autonomous robots...

Control:

- Biological Control: Introducing natural predators or parasites of the pests.
- Cultural Control: Implementing farming practices that reduce pest establishment, reproduction, and survival (e.g., proper irrigation practices, balanced fertilization, choice of sowing date, etc.).
- Mechanical Control: Using physical methods like traps, barriers, or manual removal.
- Chemical Control: Applying pesticides, but only as a last resort and in a targeted manner to minimize environmental impact.

The definition of what is "novel" or "innovative" can be widely discussed and have different meanings depending on the context. The AdvisoryNetPEST project focuses on a definition that fits the global objectives of contributing to RURP (Reduction of the Use and the risks of Pesticides). Even though the definition of a Novel Approach is kept deliberately broad, a necessary criterion for a Novel Approach is that it should contribute to:

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- **Reduced use of pesticides AND/OR a lower risk of crop protection for the environment, the consumer, and the user.**
- **Approaches that are not completely experimental nor widely used yet but can be demonstrated and have a high technology readiness level (TRL).**

First lessons of identification and selection of NAs during year 1, should enable us to adjust the definition of a NA and restrict it if necessary. In addition to the previous criteria required to identify a NA, special attention will be given to the following parameters:

- **Replicability:** approaches that have the potential to be applied in other regions / climatic clusters / countries; or others that can be applied in more than one crop sector.
- **Effectiveness:** approaches that have accountable impact on the RURP, so that it provides enough data for the feasibility analysis and scaling up events.
- **Sustainability:** approaches that are sustainable considering economic and social parameters, in addition to environmental benefits.

The selection process will evaluate these parameters for each NA and encourage strategies with a safe balance between replicability and effectiveness, promoting Novel Approaches that are the most sustainable, rather straightforward and easy to understand.

Questionnaire to support the identification process

To ensure the security of the data collected, it has been decided to use Microsoft Forms (MS Forms) to create and disseminate the survey. After several meetings with partners and sharing insights from other existing projects, a list of indicators has been established to collect data on the NA from the advisors. The indicators are divided into four parts:

1- **Description and technical information on the NA:** This section gathers the contact information of the advisor answering the MS Form, a short description of the NA, its effectiveness, and the related crop sector. It also aims to collect qualitative data and the advisor's opinion on the success factors for implementing the NA on the farm, obstacles to its replication, and any literature or website links that provide more information. An important indicator is to ask the advisor to provide a location where a demonstration of the NA could be conducted, in anticipation of organizing cross visits during the project.

2- **Environmental Impacts of the NA:** In this section, the advisor is asked to explain how the NA impacts the use and/or the risks associated with pesticides and to rate the degree of effectiveness of the approach. Impacts on soil, biodiversity, and water are also requested. Although some NAs might not be concerned with all parameters, it is possible to skip questions that are not applicable. For a better understanding of the approach, it is also asked to notify if the NA is effective on a short, medium or long term.

3- **Social impact of the NA:** This section provides qualitative data on human health impacts such as exposure to pesticides, mental load (level of stress, multiple tasks...), musculoskeletal disorders (heavy lifting, repetitive movements...). The degree of

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training needed is also ranked from no training required (1) to high training required (4).

4- **Economic impact of the NA:** The indicators for evaluating the NA include the level of investments needed to set it up, ranging from no investments (1) to high investments (4). The impact on costs, such as crop auxiliary and energy costs, is also assessed on a similar scale from no costs (1) to high costs (4). Additionally, the indicators measure the impact of the NA on yields, crop quality, and working time, providing a comprehensive overview of its economic and operational effects.

As explained previously, a scoring method was established to complement the qualitative information provided in the questionnaire. This method will enable the comparison of different NAs within the same crop sector, which will help to select one NA out of the three identified per crop sector and country. For some indicators, the advisors will rank the approach on a scale from 1 to 4, based on their knowledge and experience in the crop sector.

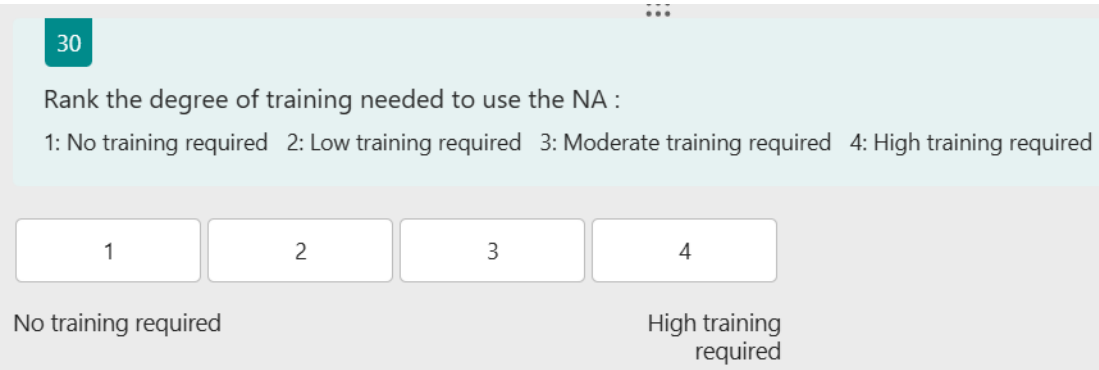

Figure 4 Example of ranking for the "Training degree" indicator

The sum of the scores will give a final rating for the NA, which can then be compared. Since the lowest degree corresponds to the most favorable situation, as in the example above: 'no training'; the lower the score of the NA, the more interesting it appears. The scoring method cannot stand alone as it contains evaluation biases that will be described in more detail in the 'Systemic Evaluation' section of this report. Therefore, this method will always be used in conjunction with an individual evaluation of each NA based on various selected criteria.

The exhaustive list of indicators and questions is to be consulted in annex 6.5 of this report. One of the challenges of the survey is to collect not only data on the Novel Approach, which can also be found in the literature or linked to existent projects but also gather feedback and knowledge of the advisor on it. These pieces of information are particularly interesting and represent the essence of this project.

The questionnaire and the chosen indicators are therefore a balance between precise technical data, qualitative explanations of the technique, and the advisor's feedback through questions and the scoring method.

Furthermore, it was important for the questionnaire to be attractive: short enough to complete, with uniformly and simply formulated questions, and an introductory paragraph to understand the project's stakes.

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2.3 Process of identification and selection

Identification of NA through network mobilization:

The identification of NA in each sector and country engaged in the project relies on the work of NNLs and NSLs within the project. As entry points within each country and as national experts within the sectors, they have a key role in initiating and activating their National Networks (NN) from which NA are collected. NNLs and NSLs have a pivotal role to explain the aim of the project, how the NN can function, and what network members can gain in participating within project activities, NA collection being the first ANP network activity.

NNL and NSL meetings are organised by WP1 along the project, to support them in initiating and developing their NN, as well as supporting them in organising the project activities. This close collaboration with WP1 is essential as the collection of NAs can be viewed as the first activity of the ANP network.

In close collaboration with task 1.1 and task 7.1, a common document has been drafted by NNLs and NSLs to list all actors, projects and initiatives linked to RURP. This basis can be used by NNLs and NSLs to determine:

- The actors which might contribute NAs as organisations engaged in advisory activities with farmers (grassroot)
- Existing projects and initiatives that could be a source of existing identified NAs

In collaboration with WP1, the methodology and tools developed to collect NA within the project have been presented to NNLs and NSLs. More than presenting the NA collection, it was necessary to discuss with NNLs and NSLs the motivation and gains to present a NA within the project. Examples of NAs are presented during NNL and NSL exchanges to explain and inspire NA collection.

Tools developed to support NA identification:

Following the tools developed within the project, WP3 has developed in coordination with WP1 a **SharePoint page** gathering all the useful information regarding the NA identification and selection. This page is part of the pages dedicated to NNLs and NSLs within the project, supporting them in the project activities. The page gathers:

- An overview of the NA identification and selection process
- A folder gathering all documents regarding NA identification and selection
- Information and links towards the NA collection tools (see below)
- An updated excel file gathering all collected NAs (annex 6.3) and a review of the number of NAs collected by crop sector and country (annex 6.4)

The NA identification, selection and case study process, as previously explained, requires that several information be collected to understand and select the most promising NA. To collect this information, two different **tools** are proposed to NNLs and NSLs to support NA collection, depending on the way the NA is collected:

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- A form containing questions to collect the information on all NA aspects. The procedure to automatically translate the form questions has also been disseminated to help actors when needed
- An excel template gathering all the questions of the forms to collect the NA information. This template can be directly filled, without having to fill the forms and is recommended when NNLs/NSLs organise nationally or centralise the NAs (to be translated or during a specific meeting for example)

The project will further be developing tools to support NNLs and NSLs for the coming NA selection.

In year 2 of the project, WP3 will work in collaboration with WP1 in order to create a cycle of **webinars** dedicated to NNLs and NSLs to share in more depth their difficulties and success in building their NN, as well as the identification of NA within this network. Each webinar will enable 2 countries to present the strategy they have developed in their country, sharing with other NNLs and NSLs their challenges and successes, in order to stir discussion and exchanges and to inspire other countries.

A **newsletter** to share experience between NNLs and NSLs will also be launched in year 2, coordinated by WP1 with all project contribution. This will allow WP3 to highlight NNL and NSL experience in NA identification, present the NA identification and selection process to NNLs and NSLs, and remind project partners of the timeline and deadlines.

Guidelines and methodology for NA identification:

The cooperation between WP1 and WP3 also resulted in guidelines for the NSLs to identify the three NAs for their crop sector. Several methods for identifying NAs were proposed to the NSLs. It was decided to remain flexible in the first year, allowing each country and network to find the approach that suits them best. The proposed methods for identifying NAs are as follows:

Figure 5 Guidelines for NSLs to identify the NAs

The guidelines provided five different methods to identify NAs, ensuring flexibility so that NSLs can use the most efficient method in their context. Although we recommended using method No. 4, “Meet with targeted actors,” as it seemed the most efficient way to identify NAs with advisors related to RURP and directly fill out the questionnaire with them, method No. 1, “Wide distribution” of the questionnaire, appears to be the least efficient. This is because it does not involve specific advisors, who might not feel concerned when receiving the questionnaire. While the wide distribution of the questionnaire is useful for involving new actors in the AKIS and reaching lesser-known NAs, it is recommended to distribute it to specific relevant actors

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or target relevant events (methods No. 2 and No. 3).

The “top-down” approach, which involves collecting NAs from existing projects and literature, is also an important consideration in the project. The NSL can also fill out the questionnaire directly from projects or different information sources (method No. 5).

Given these different possibilities, it is possible that the questionnaire is filled out without the NSL knowing exactly which NAs have been identified. NSLs’ expertise will then be solicited to take note of the identified NAs and provide feedback to help the STWG select one NA out of the three identified. This process is further explained in the following section.

Methodology to select the Novel Approaches:

The process of identifying NAs mainly consisted of creating the questionnaire and relying on the mobilization of the network of advisors by WA1 for its distribution. Following the launch of the questionnaire, the NSLs have 4 months to ensure that at least 3 NAs per culture have been identified.

At the end of the 4 months (December for the first year), the process of identifying NAs closes to allow for selection. Initially, a summary of the identified NAs is sent to the NSL for the crop sectors relevant to their country. Indeed, depending on how the form was filled out, the NSL may not be informed of the NAs that have been reported. Their evaluation is therefore essential to anticipate the selection of approaches. The NSL must give a valuation on the NAs by indicating a degree of relevance:

- “**Highly relevant”:** For the NSL, the approach is promising, very technically relevant and deserves to be selected in view of the project.
- **“Moderately relevant”**: The NA deserves to be discussed among experts before validation (for example, regarding its effectiveness, its replicability).
- **“Slightly relevant”:** This NA, although interesting, will be the least relevant of the three in view of the project.

Table 1 Excel table extraction to monitor the process of selection and feedback of experts

Selection process for the NAs identified				
Information on the NAs identified for a country and a crop sector (provided by the MS Form)	Score of the NA from the MS Form (The lower the grade, the more interesting the NA is supposed)	NSL feedback (choose between these 3 propositions)	NSL comment to explain if necessary	STWG decision to select 1 NA over the 3 identified
[…]	X	Highly relevant	[…]	Selected
[…]	X	Moderately relevant	[…]	To keep in case of need
[…]	X	Less relevant	[…]	Not selected

The partner NSLs send their evaluation by email, accompanied by the above notifications, and have the opportunity to leave a comment on the approach. Subsequently, commissions by

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crop sectors have been scheduled to bring together experts and NSLs in this field to validate or not the selection of NAs. This commission will allow the members of the STWG to rely on the pre-established evaluation of the NSL and begin to analyse the NAs that have been selected. In the database of collected NAs, at the end of the commissions, each NA will be notified with one of the three mentions:

- **"Selected"**: The NA is definitively selected based on the opinion of the STWG.
- **"To keep in case of need"**: The NA is not the most promising of the three identified but remains relevant and interesting for the project. It is kept aside to be potentially used for the next cycles.
- **"Not selected"**: The NA is not retained by mutual agreement between the NSLs and the expert members of the STWG.

The figure below summarizes the identification/selection process used in the first year of the project and which will be adapted for the next two cycles.

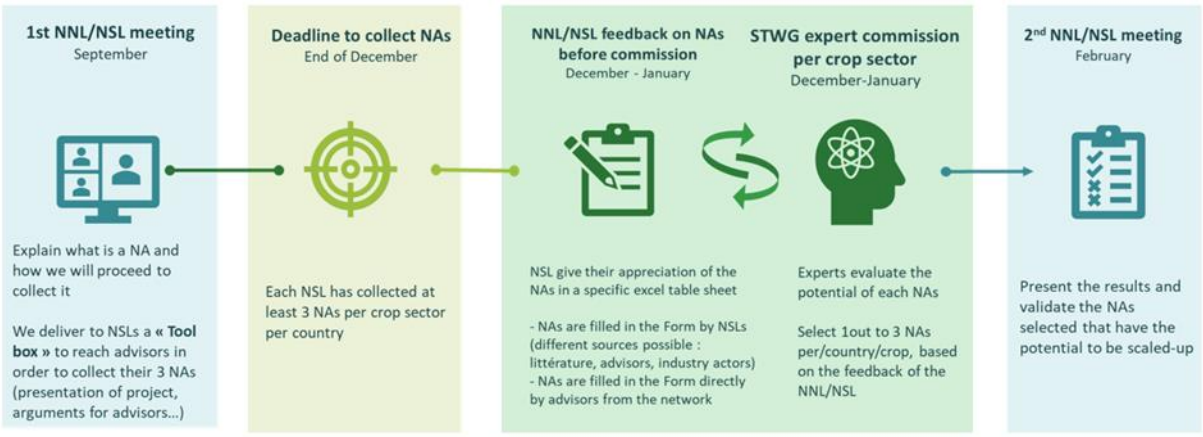

Figure 6 Process of identification and selection of NAs year 1

All the collected data are tracked in an Excel file composed of several tabs: a "database" table where the raw data collected by the MS Form questionnaire is recorded; a tracking table of the number of NAs identified for each country and each culture to monitor the progress of each partner within the given deadlines; and a tab for analysing the NAs and generating charts.

Discussion and improvements

During the creation of the methodology, it was decided that the commissions to evaluate the selected NAs should take place once a month progressively and simultaneously with the collection of NAs, to gradually evaluate the 93 identified NAs. Two issues then arose:

- Few NAs were collected in the first few months. The first commission had only 5 NAs to evaluate, making the process inefficient.
- The organized commissions were labelled "all cultures" combined and were initially supposed to take place simultaneously with the collection of novel approaches. However, during the first organized commission, some experts on specific cultures were missing, making it difficult to evaluate NAs on these cultures.

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As initial lessons from the constructed methodology, the decision was to organize commissions by type of crop, once all novel approaches have been selected, which is the subject of the method explained previously.

Furthermore, since some NSLs are not comfortable with English, it was also agreed that the NNLs would participate in the commission and act as an intermediary for any technical questions to be asked. Additionally, the NNLs will also be involved in translating some NAs that have been reported in the advisor's native language.

The first year of the project will serve as a testing period for the criteria and methodology for identifying and selecting novel approaches. Therefore, the criteria and methods can be changed in the next year based on the results and feedback obtained.

2.4 Creation of the case studies

Case studies will be created for each selected NA. These technical sheets are a major support for the project, aggregating three levels of information at different stages:

1. **General information** from the initial questionnaire on MS Forms, allowing the identification of the NAs. This information will help quickly understand what the new approach is, how it works, and the associated RURP objectives.
2. **Information from cross visits:** Field data will be collected during farm visits. This information will help understand how to adapt the NA to farming systems and the factors that favour its adoption.
3. **Information from systemic analysis:** This data will delve deeply into the techno-economic, social, and environmental aspects concerning the NA by seeking additional information (from NSLs and literature).

The writing of these technical sheets will be a collaborative effort, with each source of information provided by a different partner responsible for a specific task. The table below details the working method for filling out the sheets.

Table 2 Management of case study implementation

Management of case study implementation		
Information to be implemented on the case study:	**Task responsibility**	**Deadline to complete the case study**
Data initially collected in the identification process of the NAs	T 3.2 - CRAO	Before cross visit, or before the reporting of the NAs that don't go through cross visit

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Data from the systemic feasibility analysis of the NAs	T3.3 - ILVO	Before cross visit, or before the reporting of the NAs that don't go through cross visit
Data from cross-visits for adaptation parameters of the NA	T 3.4 - ASTREDHOR	Before the end of year that follows the selection of the NA. After the cross-visit process or reporting process
Data from the context to be considered for adoption (value chain, policy...) collected in cross visits, reporting or through literature	T 3.4- ASTREDHOR	Before the end of year that follows the selection of the NA. After the cross-visit process or reporting process

These three levels of data will be summarized in the case studies in a short but sufficiently complete format of 4 to 5 pages. These technical sheets aim to be disseminated to a technical and field audience: advisors and producers. Therefore, they will be written in an attractive format, with photos, concise but precise explanations, and small chapters with clear titles. A case study format is under construction, and a first draft is proposed in annex 6.6 of this document. The table below details the chapters and data on each page of the case study.

Table 3 Case study content

CASE STUDY TEMPLATE				
Page number	**Page 1**	**Page 2**	**Page 3**	**Page 4**
Type of information on the page	**Context and general information**	**Technical details to set the NA**	**Feedback and appreciation of the NA**	**Synthetized, analysed infos**
Detailed information on the page	Tittle of the case study: Name of the Novel Approach	Expectations regarding RURP	Advice from the advisor and contact info	Explanation of impact on parameters concerned: impact on water quality / soil health / biodiversity / human exposure to chemical pesticides / human health / society / surroundings / costs / yields / crop quality / labor

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CASE STUDY TEMPLATE				
Page number	**Page 1**	**Page 2**	**Page 3**	**Page 4**
Type of information on the page	**Context and general information**	**Technical details to set the NA**	**Feedback and appreciation of the NA**	**Synthetized, analysed infos**
	The technique: Demonstration level [1-2-3-4, from experimental to widely used], short description, crop sector concerned, objective of the NA/targeted pest and diseases	Method/strategy of application in the farm	Farmer's testimony	Level of performance/satisfaction on RURP
	AdvisoryNetPEST project. Short description and objectives	Key success factors / Precautions or difficulties	Benefits	Level of performance/satisfaction on required investment
	Farm demonstration: farmer contact information -region -small description of the farm context	Improvements of the NA: modifications to make on the NA or crop system.	Boundaries	Level of performance/satisfaction on health at work
	Relevant links projects, networks, websites related	Pictures of the NA	Policies and regulatory support to implement the NA in the Farm	Level of performance/satisfaction on required training level
		Resources and skills needed to adopt the NA. **Equipment**, training support, advice ...	Social and cultural acceptance: if any reluctances among local community	To go further on the NA replication: Feedback of advisor's participant to the cross visit on the adoption drivers and barriers in other countries

3. Methodology to evaluate the NAs through a systemic feasibility analysis

3.1 Objectives and agenda

The systemic feasibility assessment is the third consecutive step in the process, preceded by the collection (first step) and the selection (second step) of the NAs, both described in detail

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in the previous parts of this document. The objective of the assessment is to provide a qualitative as well as a quantitative evaluation of the case studies presented, which will result in **improved case studies**. These improved case studies will be presented to advisors, farmers, and other actors of the value chain during cross-visits and provide the foundation for the evaluation of the potential for adoption and the replicability of the NAs.

3.2 Systemic feasibility analysis

The systemic feasibility analysis will be used to further define the relevance and sustainability of the selected NAs (31 per round) by integrating technical, environmental, social and economic aspects. The results of this analysis will be evaluated in comparison to a selected Common Approach (CA).

The Common Approach

In order to evaluate the outcomes of the analysis, it is important to identify a representative, well-established approach that reduces the use of the risks of pesticides, the so-called 'Common' Approach to compare the results of the NA with. With the cross-visits and more specifically, the farmer's testimony in mind, this will facilitate the investigation whether the NA at hand may be considered as a worthy alternative.

There are several arguments to add a 'comparative feasibility analysis':

- **contextualization**: comparing the NA to a well-established approach provides valuable context, which may highlight the NA's advantages and disadvantages relative to a CA, making its potential impact clearer than through a standalone analysis.
- **benchmarking**: a comparative analysis allows for benchmarking the NA against an existing approach, to quantify the potential improvements (or drawbacks) of adopting the NA.
- **adoption barriers**: by comparing the two approaches, one may identify the key barriers (technical, environmental, social, and economic) to adopting the NA.
- **incremental improvements**: if the NA represents incremental improvements over an established approach, a comparative analysis demonstrates the incremental value and makes the case for adoption more persuasive.

Even when an NA will not be discussed during a cross-visit, the comparison with a well-known CA may contribute significantly to the systemic feasibility assessment. In order to have a sound comparison, following requirements should be taken into account:

- clear definition of the common practice used for comparison,
- clear criteria and metrics for comparing the two approaches,
- identification of potential biases in the comparison (e.g., differences in data collection methods, geographical variations),
- clear and concise way of highlighting the relative strengths and weaknesses of each approach

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Data collection

A two-step data collection will be used for the systemic feasibility analysis:

(i) During the 'identification and selection', basic information was collected on social, environmental and economic impact together with technical information as described in '2.2 Elaborate a questionnaire to collect NAs'

(ii) In a second data collection round, NSLs will collect additional data on social, economic, environmental and technical aspects both for the selected NAs and their corresponding CA. These data will be collected by completing an excel template provided by the task leaders of T3.3 by the NSLs, based on information gathered from expert consultations, literature study, internet research, data from monitoring or field experiments performed back-to-back with other research projects etc.

Depending on the data availability on the NA and CA, indicators will be selected to include in the improved case studies as a basis for further discussion on the potential of adoption and replicability.

In addition, the remaining relevant knowledge gaps can feed into topics to be discussed during the cross-visits. More specifically, the so-called 'Knowledge Exchange Phase' is expected to provide a final and very practical-oriented source of information, which strongly relies on the gathered experience of all participating experts.

By using different data sources in different stages, to evaluate distinct aspects, the systemic feasibility analysis becomes a robust multi-criteria method that mirrors the multifaceted nature of approaches that reduce the use and risk of pesticides.

Systemic indicators

As outlined above, the feasibility assessment is systemic, which means that it aspires to cover all relevant aspects of the NAs, which may roughly be divided into four categories: technical, environmental, social, and economic. The questions in both the MS Form, used for collecting the NAs, and the second data collection file are/will be grouped according to the same four dimensions.

The **technical feasibility** assesses the efficacy of the NAs in controlling target pests and diseases, considering application methods, compatibility with existing practices, and potential for pest resistance:

- effectiveness (target specificity, mode of action),
- potential for the development of pest resistance to the NA,
- compatibility with other agricultural practices (e.g., crop rotation),
- application methods (spraying, seed treatment, etc.),
- monitoring and surveillance,
- demonstration level,
- replicability

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The **environmental** feasibility evaluates the environmental impacts of the NAs, using specific indicators, such as:

- toxicity to non-target organisms (pollinators, beneficial insects, birds, mammals, aquatic life, soil organisms, etc.),
- level of pesticide reduction (related to the previously mentioned technical 'effectiveness'),
- effect on water quality (pesticide residues in water bodies, leaching, etc),
- effect on air quality,
- greenhouse gas emissions (direct and indirect),
- effect on biodiversity (genetic diversity, population trends, ecosystem diversity),
- soil health (soil organic carbon, acidity, microbial activity, soil contamination),
- soil structure (infiltration, aggregate stability, etc.)

The **social aspect** deals with social factors, including farmers' attitudes and perceptions, training requirements, potential barriers to adoption, and the social acceptance of the NAs:

- farmer willingness to adopt the NA,
- public opinion on novel approaches and technologies (GMOs, biopesticides, etc.),
- knowledge and training requirements,
- health impacts on farmers and workers (acute and chronic exposure),
- consumer concerns and perceptions,
- potential risks

Finally, the **economic** feasibility of an NA is estimated by assessing its cost-effectiveness:

- required investments,
- labour requirements,
- energy-related costs,
- yield increases/losses associated with the NA,
- crop quality increases/losses associated with the NA,
- effects on the farmers' business model (cost-benefit: subtraction of additional costs from envisioned revenue change resulting from the NA),
- impact on downstream actors (processors, retailers, consumers)

STWG commissions

The STWG commissions have two important responsibilities in function of this task:

(i) It was already noted that the possibility to score an indicator will partly rely on the

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nature (prevention, monitoring, or control) and the TRL-level of the NA, and on the availability of trustworthy data. Consequently, the STWG needs to select NAs with sufficient potential for in-depth analysis, without crucial information gaps and with potential to be discussed in cross-visits.

(ii) In close consultation with the STWGs, indicators will be selected that are suited to have a profound, clear discussion on the sustainability and feasibility of the NAs at the cross visits. Next to a selection of 'core indicators', used for all NAs and CAs, specific indicators will be selected for each NA separately. For this, a workshop will be organised during the second General Assembly (February 2025) and if needed, follow-up meetings will be organised during the analysis-process.

3.4 Creation of improved case studies

To substantially increase the outreach of the selected NAs, the case studies need to be improved, and therefore, completed with information from the systemic feasibility analysis.

Each indicator and its score will be mentioned in the improved case studies in a clear and concise manner. To that extent, the following rating system will be presented during the General Assembly (GA), in February 2025, indicating the level of performance / satisfaction assigned to the NA by its assessors (STWG members, farmer hosting the cross-visit...):

- '--' (double minus): the worst possible score, meaning that the effect of the NA on this specific indicator is very negative. For example, this is the score that would be given to the topic 'required investment' if the NA may only be deployed upon large investments (in comparison to similar approaches, either novel or established*)
- '-' (single minus): the perception is rather negative than positive, but it's not significantly obstructive for the deployment of the NA
- '0' (zero): no effect, neutral, or average (in comparison to similar approaches, either novel or established)
- '+' (single plus): similar to the single minus ('-') rating, but now on the positive side
- '++' (double plus): similar to the double minus ('--') rating, but now on the positive side. For example, when the required investment is perceived as very low, compared to similar approaches, either novel or established

3.5 Concluding remarks

Firstly, it should be underlined that the methodology at hand is flexible by design and will be adjusted whenever required throughout the project, ensuring the quality and consistency of the analysis and hence, the case studies, in a coordinated way, in accordance with the requirements outlined in the Grant Agreement.

Secondly, a systemic feasibility analysis is not only about scoring indicators, but also about designating the appropriate weight factor to the different aspects and dimensions of the NAs. More than any other aspect of the evaluation, attributing the weight factors is subject to the discretion of the NSLs. However, the following guidelines may filter out unsuitable practices

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and help to maintain focus on approaches that are viable across multiple dimensions, reflecting the AdvisoryNetPEST priorities.

Rule out / exclude methods or practices that:

- require technology beyond the current capabilities or financial reach of typical users
- have not been proven to reliably decrease pest populations in multiple, varied field trials
- have documented detrimental effects on the aquatic environment or other critical habitats
- do not contribute to biodiversity conservation or potentially harm beneficial organisms
- significantly increase production costs without providing a proportional increase in yield or quality
- demonstrate a high investment risk or demand significant subsidies to be sustainable
- have faced strong opposition from key stakeholders, including farmers and local communities
- require significantly more labour or specialized skills without accompanying training programs
- do not comply with existing environmental, health, and safety regulations
- do not align with regional or national goals for reducing pesticide use or enhancing environmental sustainability

The GA presents itself as an excellent occasion to receive feedback on the proposed methodology and the proposed list of indicators through workshops, discussions in small groups etc. (content yet to be determined).

4.Methodology to adapt the NAs and foster their adoption

4.1 International knowledge exchange program

The NAs will be demonstrated with advisors, farmers, and value chain actors during international knowledge exchanges: cross-visits. These visits will provide specific feedback, comments, contextualization, and adjustments to the NAs to improve the relevance of the case studies. Additionally, barriers to adoption will be assessed to determine the replicability of the NAs, considering value chain and territorial aspects, as well as the policy context. Based on the work of WA3 partners and the guidelines provided, in the second, third, and fourth years of the project, each national network (NN) from the 14 participating countries will organize one cross-visit annually, totalling 42 cross-visits over the project duration. The cross-visits have two main objectives:

- To exchange knowledge on NAs between countries with similar growing conditions.
- To provide critical feedback on these approaches, which will inform the case studies for further use in the AdvisoryNetPEST project.

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The process of identifying and selecting NAs allows for the selection of 31 NAs per cycle, which will result in detailed and contextualized technical sheets, case studies, for each NA. Once the selection of NAs is finalized, WP5 will assign a sector to each NN based on the overall planning of cross-visits and publish the preliminary NA topics for the 14 cross-visits on SharePoint. NNs will have two weeks to review the planning and validate that the NAs concerned can be demonstrated in cross visits.

Based on the guideline developed by WA3 partners in WP5, the cross-visit consists of approximately 2 days and 6 steps: Kick-off, field visit and reflections on the field, social activity, knowledge exchanges and a wrap-up session.

The cross-visit process begins with a kick-off where hosts and participants establish contact, discuss focus areas, and the host presents the novel approach (NA) and an overview of the region's agricultural sector. Participants are reminded of the cross-visit's purpose and updated on the AdvisoryNetPEST project, and observation cards are distributed for the knowledge exchange exercise.

During the field visit, hosts introduce the purpose and explain the demonstration, encouraging participants to focus on key aspects noted on their observation cards. In the reflection stage, participants review their observation cards and ask any remaining questions. A social activity follows, organized by the host to foster informal and enjoyable interactions.

The knowledge exchange exercise involves using a topic canvas to guide discussions, with participants adding key points from their observation cards and facilitating discussions on their assigned topics. Finally, the wrap-up includes a discussion led by the host on the conditions required to implement the NA in different regions, with participants contributing relevant information from their own regions. This discussion is carefully documented for reporting purposes, covering general information, details on the novel approach, the knowledge exchange exercise, and general feedback.

4.2 Adaptation and contextualisation of the NAs

In the exchanges and note-taking during these cross visits, a certain amount of information must be collected to complete the information on the NAs, which will then be included in the case studies. An initial set of questions will allow for noting the context and the agronomic and technical understanding of the NA. Participants will need to understand the adaptations that were needed to implement the NA in the farm, as well as its benefits and impacts. The questions that need to be asked are as follows:

Farm Context:

1. Can you describe the main characteristics of your farm (size, type of crops, climatic conditions, soil, etc.)?
2. What were the main challenges you faced before adopting this practice?
3. Can you describe the method or strategy of application of the NA i the farm?

Adaptation and Implementation:

4. What resources (technical, human, equipment) were necessary to adopt this practice?

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5. Did you encounter any difficulties during implementation? If so, how did you overcome them?
6. What modifications did you have to make to your cropping system to integrate this practice?

Impacts and experience sharing:

7. What have been the main benefits observed since adopting this practice (yield, crop quality, sustainability)?
8. Have you noticed any negative impacts or persistent challenges?
9. What advice would you give to other farmers interested in this practice?
10. Are there aspects of the practice that you plan to improve or modify in the future?

4.3 Foster adoption and scaling up the NAs

In the AdvisoryNetPEST project, the adoption of NAs is encouraged by considering the AKIS in which they evolve, and the actors involved: farmers, researchers, agricultural advisors, businesses, educational institutions, policymakers. As many of these actors as possible will be invited to the cross visits to get their feedback and more finely evaluate the NAs. The following questions will be asked to the actors present during the cross visits: actors from the country hosting the visit and advisors from other countries participant:

Resources and skills:

1. In your country, are there specific resource limitations (water, labour, equipment) that could affect the implementation of this practice?
2. Are there infrastructures (specific markets, advisory services…) to support this practice?
3. What types of training or support would be necessary for farmers to adopt this practice?

Policies and social acceptance:

4. Are there any policies or regulations that can support the adoption of this practice?
5. What roles do local or national governments play in promoting this practice?
6. Is this practice compatible with local traditions and cultural practices?
7. Are there any resistances or reluctances among farmers or the local community?

These questions can be asked during the field visit and will be discussed again during the knowledge exchange (step 5). After the cross visit, the reporting will allow us to record the answers to these questions and the discussions they will have generated.

This second part of the questions will enable the participants from other countries to share their insights regarding the adoption of the NA. They will discuss the drivers and barriers inherent to their countries and own value chains. These elements will be recorded and preserved to be resumed in the case study of the NA.

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4.4 Specific case regarding NAs without cross visits

The AdvisoryNetPEST project has been designed to organize a total of 42 cross visits over years 2, 3, and 4, accounting for 14 cross visits per year. Thus, the total number of organized cross visits will not fully cover the number of selected Novel Approaches (NAs): 93 NAs over the 3 years. Each year, out of the 31 selected NAs, only 14 can be demonstrated in cross visits, allowing for a more detailed analysis of their context and adoption factors, and the creation of the previously mentioned case studies.

However, like the NAs that will be demonstrated in cross visits, the remaining 17 selected NAs must also allow for the creation of case studies. In terms of methodology, it was decided to use the questions developed in sections 4.2 and 4.3, which will be included in the form provided for cross visit reporting. This form will also be sent to the NSLs concerned with the 17 selected NAs that do not need to organize cross visits.

With this questionnaire, the NSLs can reach out to the farmer targeted by the NA and the AKIS actors by their chosen means, as an alternative to the cross visit:

- Through individual telephone interviews with the farmer and the concerned actors
- By organizing an online workshop inviting the farmer and the AKIS actors

Furthermore, countries from the concerned regional cluster, instead of participating to a cross visit, will receive the relevant questions regarding adoption pathways of the NA in their country. This will enable partners to complete the case studies with their feedback.

This method will ensure the collection of information on the NAs regarding their adaptation and adoption on the farm.

To have a codified follow-up of the NAs and to avoid confusion among the selected ones, a traceability system has been put in place and will be used in the NA monitoring table as well as by WP5:

Identification of the NA: Crop_CountryCode_Iteration_Process

- **Crop:** A (Arable), H (Horticulture), O (Orchards), V (Vineyards)
- **Country Code**: Official country code
- **Iteration:** 1, 2, 3 (Cycle of NA selection)
- **Process of adaptation of NA:** CV (cross visit), R (report)

Following the example of France organizing a first cross visit on cycle 1 on vineyard, the identification code would be the following:

V_Fr_1_CV

Arable crops and Horticulture crop sectors this year, for France, would have to go directly through the reporting questionnaire. Their identification code would be the following:

H_Fr_1_R

A_Fr_1_R

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5. Conclusions

The AdvisoryNetPEST Deliverable D3.1 introduces a robust and comprehensive methodology to identify, evaluate, and scale up Novel Approaches (NAs) aimed at reducing pesticide use and associated risks across Europe. By addressing technical, environmental, social, and economic dimensions, the methodology ensures that the proposed solutions are innovative, practical, and adaptable to diverse agricultural contexts.

A defining feature of this methodology is its iterative nature. Over the project's three annual cycles, feedback from stakeholders, results from cross-visits, and data gathered through systemic feasibility analyses will be systematically incorporated to refine and enhance the process. This continuous improvement ensures that the methodology remains relevant, robust, and responsive to new challenges and opportunities, ultimately maximizing its impact and scalability. This flexibility enables adjustments based on evolving project needs, ensuring the consistency and quality of the analyses and resulting case studies.

By fostering collaboration among advisors, farmers, policymakers, and other key stakeholders both at national and international levels, AdvisoryNetPEST creates a dynamic knowledge exchange network. This network not only strengthens the methodology but also ensures the effective adoption and adaptation of NAs in real-world applications, addressing barriers and contextualizing solutions to meet regional needs.

The project delivers a scalable and evolving framework that enhances agricultural resilience while reducing environmental and health risks, addressing the dual challenge of productivity and sustainability in modern agriculture.

Annex I - Project Outputs

WP3 detail of tasks and deadlines

WP3 : Leading : ASTREDHOR ; Co-leading : EVILVO	TASK 3.1 : Establishing a methodology			Task 3.2 : Identify and select NAs	Task 3.3 : Systemic feasibility analysis of NAs	Task 3.4 : Adaptation and adoption of Nas for scaling and dissemination
Who is leading the task	LEADING : ASTREDHOR PARTNERS : CRAO, EVILVO, AKI, SLs and NNLs			LEADING : CRAO PARTNERS : ASTREDHOR, AKI, SLs and NNLs	LEADING :EVILVO PARTNERS : ASTREDHOR , AKI, SLs and NNLs	LEADING : ASTREDHOR PARTNERS : EVILVO, AKI, SLs and NNLs
Task mission	Develop common methodology that enable : **Step 1 :** Identify and selec bottom up and top down NAs. **Step 2 :** systemic feasibility analysis of the selected NAs **Step 3 :** NAs analysed will be presented during cross visits, it validates them and provide feedback for adaptation			- NNL and NSL use the template to collect and identify NAs - They select the most promising (1 out of 3/sector/year) - This results in 31 case studies per year	STWG performs a systemic analysis on each NAs selected	With feedback of cross visits, adaptation and adoption of NAs for scaling and dissemination
Detail role of STWG inside the task	**Step 1 :** STWG provides template to collect NAs and methodology to select them	**Step 2 :** STWG provides methodology to analyse the NAs on tecnical, economic, social, environmental components	**Step 3 :** STWG provides methodology for the adaptation, adoption and scaling up the NAs	STWG provides back up to adjust methodology if necessary STWG verify the relevance of NAs selected STWG provides case studies template and collect it	STWG study the potential and limitations of each NA selected To improve case studies that will be used in cross visits	STWG with NNLs and NSLs implement case studies with contextualisation for adaptation.
Deliverable	D3.1 Report with global methodology to identify, select, analyse, adapt and scale-up the NAs			D3.2 Report with NAs evaluated, adapted and ready t o scale up (1st and 2nd cycle)	Report with NAs evaluated, adapted and ready t o scale up (1st and 2nd cycle)	Connecting with D 4.1 Report with Nas evaluated, adapted and ready for scaling up (3rd cycle)
Due date of deliverable	M12 = before end of december 2024 (year 1)			M36 = before end of december 2026 (Year 3)	/	Connecting with D 4.1 before june 2028 (Year 5)

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Composition of the STWG

Organisatic	Country	Contact name	E-mail	Crop Sector
SEGES	Denmark	Jens Erik Jensen	jnj@seges.dk	Arable Crops
INTIA	Spain	Marcos Apesteguia	mapesteguia@intiasa.es	Arable Crops
ASTREDHOR	France	Marie Baelen	marie.baelen@astredhor.fr	Horticulture, soft fruits and ornamental
ZLTO	Netherlands	Yaite Cuesta Arenas	yaite.cuesta.arenas@zlto.nl	Horticulture, soft fruits and ornamental
INAGRO	Belgium	Ellen Pauwelyn	ellen.pauwelyn@inagro.be	Horticulture, soft fruits and ornamental
CRAO/CA34	France	Marine Pithon	pithon@herault.chambagri.fr	Vineyards
LKO	Austria	Sonja Stockmann	sonja.stockmann@lk-stmk.at	Orchards
AKI	Hungary	Gergő Kolesza	kolesza.gergo@aki.gov.hu	Arable Crops
EV ILVO	Belgium	Charlotte Lybaert	Charlotte.Lybaert@ilvo.vlaanderen.be	
ADAS	United Kingdom	Mark Ramsden	mark.ramsden@adas.co.uk	Arable Crops
ADAS	United Kingdom	Jude Bennison	jude.bennison@adas.co.uk	Horticulture, soft fruits and ornamental

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Extracts of the Excel monitoring table for NA identification

	Name	Ema	Phon	Name of organiza	Coun	Provide a name of the Nove Approach you have chosen	Describe the NA is a few wor	What crop sector is NA used in ?	What pests/dis does the NA ta	Explain how effective you believe the NA is in reducing the and risk of pesticides ?	Has the NA been demonstrated farms ? (1: Ne 4:Widely)	Specify a place where you think we could visit a f that uses this approach (council, district, region...)	In your opinion, what are the success factors to set up the the farm ?	Is the NA easily replicable from farm to another (s crop procution) ?	Why is it easy replicate ?	If difficult to replicate what are the ma obstacles ?	Is the NA part of a project or a spec network ?
1	BAELEN Marie	.baelen@astrec	+33752064045	ASTREDHOR EST	FRANCE	o control thrips, aphids and sciarids,	The predatory larva consumes the	emental horticul	bs. But has also an im	s (Aphidius, Amblyse	2	ance, Bourgogne regi	ight and high temperatures in summer: insulate the bucket,	Yes	Work of auxiliaries at	lcock in summer (becaus	Yes
2	Marcos Apesteguia	esteguia@intia:	675029713	INTIA	Spain	tolerance of wheat varieties to Tape	pp. are used with success in arable cro	rable field crop	Tapesia spp.	ide application in whe	3	lavarra region in Spai	mprovement of yield and other characteristics of varieties includ	Yes	to change the variety used in a farm.		No
3	Noelia Telletxea	lletxea@intiasa	696617997	INTIA	Spain	disruption for Gortyna xanthenes (ar	enes in artichoke are not effective en	etables product	yna xanthenes (artich	trol of the pest and re	2	Navarra (Spain)	onitoring during the season (traps and observations)- Good desi	Yes	the pheromone in each plot but the technique is		Yes
4	Francisco Javier Abad Zamora	abad@intiasa.e	+34629114166	INTIA	Spain	Controlled or rational fertilization	of diseases.It is applicable to the gen	Vineyards;	diseases, but especia	ss or can avoid having	3	Otazu wineries, Nava	the variety, soil, and water availability; and it would be very inte	Yes	se the doses must be adjusted to more specific conditions per area.		
5	Francisco Javier Abad Zamora	abad@intiasa.e	+34629114166	INTIA	Spain	Use of cover crop to control vigor	ch improves the aeration of the vineya	chards;Vineyar	mainly powdery mild	nd good ventilation o	3	area, although privat	as being able to enter after a rain. Furthermore, now some CAI	Yes	of covers and it is adapta	on and adequately adapt	No
6	Francisco Javier Abad Zamora	abad@intiasa.e	+34629114166	INTIA	Spain	Use of cover crop to control coniza sp	s, provoking strong competition with	neyards;Orchar	Weed Coniza sp.	ore than 90% due to c	3	de Azagra, Bodegas C	elps the crop in other aspects and greatly simplifies this problen	Yes	with the seed to germin	ieve sufficient cover den	No
7	Ronald Driessen	essen@rijkzwaa	+31653500102	zwaan breeding	Netherlands	False sowing bed spinach	y them just after germination, to avoi	etables product	Weeds	fective, can avoid the	2	The Netherlands	Good machinery, good weather forecast	Yes	Just do it	-	No
8	Harrie Pijnenburg	nenburg@delph	031 6 5342750	Delphy	Netherlands	ted soil and plant treatment to powe	on the machine, exactly at the right pl	t fruits producti	ium, Phytophthora a	smorf in several crops	3	ch station ISFC Delph	Less chemicals. Better growing. Stronger plant against diseases	Yes	ops recently in Holland a	rect afterwards.Interesti	No
9	Agnieszka Synowiec	a.synowiec@ur	48505284032	of Agriculture	Poland	rbicidal emulsions based on caraway	type of botanical herbicide to be used	corn	echinochloa crus-galli	0,2	1	none	reduction of herbicides	N/A	N/A	N/A	No
10	Mark Ramsden	ramsden@adas.co.uk			UK	Holsitic IPM Planning Tool	measures that are relevant to the crop	rops;Vegetable	l supports a holistic a	measures and targete	2	rkshire, Nottinghams	ngagement between the advisor and farmer, and takes time to	Yes	. The tool is designed for	complete the online tool	Yes
11	Christy van Beek	vanbeek@bay	+31627830508	Bayer	Netherlands	Decision Support System	systems can help farmers to optimize t	rable field crop	al DSSs; we used a ph	he reduction was 20%	3	ForwardFarm in Abb	Please see attached document.	Yes			Yes
12	Mariya Hristozova	ya_valerieva@al	+35989956138	owing Institute -	Bulgaria	Biological control	ical insecticides, predatory insects and	Orchards;	cts (aphids, psyllids,	rop protection system	2			Yes			I don't know
13	Harm Vogels	rm.vogels@zlto	+31 650528486	ZLTO	Netherlands	Integrated Crop Management (ICM)	t is a multi-tool strategy focusing on sc	rops;Vegetable	diseases and pests in	pared to chemical cro	2	south of The Netherl	Providing new crop protection technologies to farmers.	Yes	crops but sometimes with changes necessary with		I don't know
14	Dirand van Wijk	wijk@compas-a	0616614647	Compas Agro	Netherlands			Ornamental horticul	schimmels en mijten	eer dan we nu laten zi	3	nds Campus Greenpo	Nodig voor de toekomst met kleine kapitaalsintensiever teelten	Yes	ruik gelijke uitgangssitua	rscheidenheid in gewass	Yes
15	Rik Peters	ik.peters@wur.r	+316 39267197	earch | Busines	Netherlands	Integrated Crop Managment (ICM)	diversity in time and space, 2. Cultivar	rops;Vegetable	urrent level of knowld	ICM is always a com	2	trial with ICM in the S	ers and advisors, and fall-back options. What we see as such opt	No	ame soil, same water management, same soil-bor		Yes
16	Tristan	an.franken@zlt	0621232587	ZLTO	Netherlands	ed weeding through image processin	weeds and then removes these. It's n	chards;Vineyar	Weeds	icides have to be used	3	rtelsgraaf 1, 5688MJ	e layout of the farm, economical viability, convincing the farmer	Yes	ction in which it can move, identifies the trees its		No
17	Arno Engels	no@ltobomen.	031-65198080	iste planten en	Netherlands	ated Soil Management hardy nurser	oil quality and resilience, so trees and	mental horticul	plants (like mildew) a	plants, so Integrated S	3	ital tree growing area	ith organic matter (cover crops), organic manure, level-controlle	Yes	of trees and plants nurse	Soil structure	I don't know
18	Willem Hendriks	m.hendriks@zl	0629606143	ZLTO	Netherlands	Functionele bloemstroken	ier te beheersen. Deze methode kan w	rable field crop	lten toe te passen ma	igsmiddelen kan verm	2	t FABulous Farmers in	in bloemenmengsel3. Bloemstroken kunnen een goede invulling	Yes	grariers beschikken over	et andere jaar. Ook varie	Yes
19	Peter van den Bosch	n.den.bosch@s	06 20 50 44 92	Sensus (Cosun)	Netherlands	?	toeslag om minder afhankelijk te word	rable field crop	weeds	effective	3	?	Interesting for the farmers	Yes	simple concept		No

Do you have any comments you wish to add on the contex description regarding this NA ?	How does the NA impact the use of chemical pesti (choose all that apply) ?	Evaluate how much the NA reduces the use of pesticides (1: No redu 2: Low reduction, Moderate reduction, 4: High reduction)	Provide an explanation for how the NA impacts th of chemical pesticides :	If relevant, explain how the NA impacts global soil health (- soil microbial activity; - soil structu (infiltration, aggregate stability); - soil organic carbon; - soil pH)	If relevant, explain how the NA impacts biodiversity (- ge diversity; - ecosy diversity; - population trends)	If relevant, explain how the NA impacts natural wate contaminatio toxicity on organisms; - water quality)	Are the impacts of the NA effective i short, medium o term ? please explain	If relevant, explain how the NA reduces hu exposure chemical pesticides	Can you think of any positive or neg impacts to hu health ?	Rank the degree of training needed to use the NA (1: No training required 2: L training require Moderate training required 4: High training required)	Do you have details or explanation to s on the social im of the NA ?	What is the level of investments needed to set up the NA ? (1: No investment Low investmen Moderate investments, 4: High investments)	What is the impact of the NA on costs (e.g. cost of crop auxiliary, c energy...)(1 costs, 2: Low costs, 3: Moderate costs, 4: High costs)	What is the impact of th on yields ?	What is the imp crop quality	What is the impact of the NA on w time ?	Any comments on the economic impacts of the You can sha quantitative data if you have it.	I consent to the processing of my personal data solely fo the purpose of AdvisoryNetPES related activities, in accordance with AdvisoryNetPEST's Privacy Policy.
is mainly used. (2) Ma	titutes the use of chemical p	2	For crops at risk, it will nevertheless be necessary to use other auxiliaries (Amblyseius Ca				n be effective in a short	cing the use of pestid	for this practice.Sig	2	ent and for the well-l	2	2	lo impacts on yielc	No impacts on quality	ncreases working tim	duction of auxiliary co	Yes
	NA substitutes the use of chemical p	3	use of afungicide application in wheat.				Short	f application of fungicide in many hectares		2		1	1	lo impacts on yielc	No impacts on quality	Reduces working time		Yes
-biologico	NA improves efficiency of the use of chem	3	st. With the technique the nu	mber of treatments which	are very negative for	ucing the treatments, v	Long term	r of treatments and the time of exposure		3	oke which is a very imp	3	3	Increases yields	Increases crop quality	impacts on working time		Yes
	NA improves efficiency of the use of chem	2	es and an improvement in the effectiveness of preventive fungicides	The condition is short-term since fertilization has its direct impact in the same year of application.						3	No	2	2	lo impacts on yielc	Increases crop quality	impacts on working ti	gh if the decisions are	Yes
	NA improves efficiency of the use of chem	2	cides or improve the effectiv	to soil quality, in additi	lthough that of plant	ces in the soil in additic	iversity in the short term, on aspects of soil quality in the mediun			3	ncreases when seeing t	3	3	Reduces yields	Increases crop quality	Reduces working time	available to countera	Yes
	NA substitutes the use of chemical p	3	the use of herbicides for co	effect on all soil quali	proves the biodiversit	tration and prevents l	een in the year following the implementation of the cover.			2		2	2	Reduces yields	Increases crop quality	impacts on working ti	ways occur, loss of yie	Yes
-	titutes the use of chemical p	3	ing herbicides just at or afte	Positive for the soil	itive effect on biodiver	Positive, no impact	rt, medium and long te	Positive	No	3	-	2	2	lo impacts on yielc	No impacts on quality	ncreases working tim	-	Yes
no	titutes the use of chemical p	3	lso some effect on leaf-disea	microbial activity arour	ecosystem	no effect	short term	the soil. Low drift p	none	2		3		Increases yields	Increases crop quality	impacts on working time		Yes
N/A	post-emergence herbicide us	3	spray time of foliar post-em	note, but that was not	duces occurence of we	N/A	N/A	s herbicide use in cc	N/A	3	N/A	3	3	N/A	Could affect leaves	no effect	N/A	YES
rt of the promotional la	s the use of an integrated ap	2	rrent or next season based o	art of wider strategy on	rt of wider strategy on farm.		As part of wider strategy on	or applications, and	s are that the tool guid	2	Not at this time.	1	1	lo impacts on yielc	No impacts on quality	impacts on working ti	s payment of £1,000 f	Yes
	NA improves efficiency of the use of chem	3																Yes
	NA substitutes the use of chemical pe	2	cides will reduce the use of c	lly than synthetic pestic	ce the negative impact	ts are naturally and qui	minimum applicationre	uantities and often c	ding to many scientists	2		3	3	Increases yields	Increases crop quality	impacts on working time		Yes
	NA substitutes the use of chemical p	3	offers an alternative treatme	any situations soil imp	sity. And so does repla	strategy focuses on di	biocontrol products in	mical pesticides so less exposure.		3		4	3	Reduces yields	Increases crop quality	ncreases working time		Yes
nee	efficiency of the use of chem	3	gebruik meer biostomulanter	soil structure	ecosystem	water quality	long term	ebruik minder chem	blootstelling is meer g	3	nee	2	3	Increases yields	Increases crop quality	ncreases working time		Yes
to the way the framewor	chemical pesticide;NA uses	3	e onset of epidemics as long	ICM strategy. But also,	icides as much as possi	hat means ICM-strateg	rs will not have a clear	precise, well-timed	ways been done, becai	4	y can use specific meas	3	3	lo impacts on yielc	No impacts on quality	impacts on working ti	s. The outcome is he	Yes
	NA substitutes the use of chemical p	3	eds above 50cm/waist heigh	mechanism that plows	[illegible]	[illegible]	use of herbicides if weed	See earlier answers	amount of pesticides h	2		3	2	lo impacts on yielc	Increases crop quality	Reduces working time	ething else instead o	Yes
es efficiency of the use of chemical pesticide;NA subst		3	More microbial activity, better structure with more air spaces			When you don't have to spray or use less pesticides: you are not exposed t				3		3	3	Increases yields	Increases crop quality	ncreases working time		Yes

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Excel monitoring table to review the number of NAs identified

YEAR 1		Minimum of NAs to identify per country/crop :	3			

Country	NNL name	NSL organisation	NSL name	If relevant, NSL specialization	Crop sector	Number of NAs identified
Portugal	Beatriz CARDOSO	CONSULAI	Leonor Cabral	to specify	vegetables, soft fruits and ornamental horticulture	1
		CONSULAI	Bárbara Castro		vineyard	1
Spain	Marcos APESTEGUIA	INTIA	Marcos Apesteguia	to specify	vegetables, soft fruits and ornamental horticulture	1
		INTIA	Marcos Apesteguia		vineyard	3
		INTIA	Marcos Apesteguia		arable field crop	1
France	Calyspo PICAUD & Myriam GASPARD	CRAO	Marine Pithon		vineyard	0
		CRAO	Calypso Picaud		arable field crop	1
		ASTREDHOR	Marie Baelen	ornamental horticulture	vegetables, soft fruits and ornamental horticulture	1
Belgium	Ellen PAUWELYN	INAGRO	Kürt Demeulemeester		arable field crop	0
		INAGRO	Sabien Pollet	to specify	vegetables, soft fruits and ornamental horticulture	0
The Netherlands	Yaite CUESTA ARENAS	ZLTO	Yaite Cuesta Arenas		arable field crop	8
		ZLTO	Frans Geijs	vegetables production	vegetables, soft fruits and ornamental horticulture	8
United Kingtdom	Ellie DEARLOVE	ADAS	Ellie Dearlove		arable field crop	13
		ADAS	Ben Barnes	to specify	vegetables, soft fruits and ornamental horticulture	5
Croatia	Domagoj GORUP	SEASN	Domagoj GORUP		arable field crop	0
		SEASN	Domagoj GORUP		vineyard	0
Greece	Ioanna KALIVA	GAIA	Ioanna Kaliva	to specify	vegetables, soft fruits and ornamental horticulture	0
		GAIA	Ioanna Kaliva		vineyard	1
Bulgaria	Ivanka TODOROVA (NAAS)	Agriculture university of Plovdiv	Vili Harizanova	to specify	vegetables, soft fruits and ornamental horticulture	0
		Bulgarian Agriculture Academy	Mariya Hristozova		orchards	2
Hungary	[illegible] (Gergo should be added to	AKI	Gergő Kolesza		arable field crop	0
		AKI	Gergő Kolesza		orchards	0
Austria	Sonja Stockmann & Dora Miron	LKO	Sonja Stockmann		arable field crop	0
		LKO	Sonja Stockmann		orchards	3
Poland	Anna GOLDYS	CDR	Piotr Bucki	to specify	vegetables, soft fruits and ornamental horticulture	5
		CDR	Ewa Rhein		orchards	0
		CDR	Eugeniusz Tadel		arable field crop	0
Latvia	Lelde SILAVA	LLKC	Edgars Dzelme		orchards	0
		LLKC	Gunārs Bušēvics		arable field crop	0
Denmark	Jens Erik JENSEN	SEGES	Jens Erik Jensen	to specify	vegetables, soft fruits and ornamental horticulture	0
		SEGES	Jens Erik Jensen		arable field crop	0
TOTAL						54

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Questionnaire Microsoft Form

AdvisoryNetPEST

Participate in the European network of knowledge between advisors.

The main objective of AdvisoryNetPEST is to establish and upgrade a network of advisory services across the EU, increasing the knowledge-sharing between advisors and the adoption of innovative solutions to reduce the use and risks of pesticides by farmers.
Find more information on our website : https://advisorynetpest.eu/

Questionnaire objectives:
This questionnaire aims to gather farming practices (Novel Approaches) from 14 different countries, across various crop sectors. We are interested in advisors' expertise on the environmental, social, and economic impacts of the Novel Approach.
Why participate in AdvisoryNetPEST?

- **Disseminate your innovations to reduce the use and risk of pesticides**
- **Get inspired by others' innovations**
- **Receive technical case studies with data and feedback**
- **Learn from farm demos and training events**

What is a Novel Approach (NA) in the project?
A farming practice is considered a novel approach if:

- **It contributes to the reduction of the use and risks of pesticides (quantity of pesticides or risks to the environment and health)**
- **It is not widely used yet but has been tested on a few farms at least**

Estimated time to answer the questionnaire: 15 minutes Thank you for your

collaboration!

*** Mandatory**

Fill in the following information about yourself

1

Name

2

Email

3

Phone

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4

Name of your organization

5

Country

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Context and description of the Novel Approach (NA)

6

Provide a name of the Novel Approach you have chosen:

7

Describe the NA in a few words including:

- What kind of NA is it? (e.g. process, product, precision farming...) - How is it used in the farm?
- Does it concern a specific crop?
- Where is the NA used (specific location or region?)

8

What crop sector is the NA used in?

- [ ] Arable field crops
- [ ] Vegetables production
- [ ] Soft fruits production
- [ ] Ornamental horticulture
- [ ] Orchards
- [ ] Vineyards
- [ ] Other

9

What pests/diseases does the NA target?

10

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Explain how effective you believe the NA is in reducing the use and risk of pesticides?

11

Has the NA been demonstrated in farms?

1: Never tested in farms 2: Tested on a few farms 3: Used on many farms 4: Widely used in farms

1	2	3	4

Never tested in farms **Widely used in farms**

12

Specify a place where you think we could visit a farm that uses this novel approach (council, district, region...)

13

In your opinion, what are the success factors to set up the NA in the farm?

14

Is the NA easily replicable from one farm to another (same crop production)?

- ◯ **Yes**
- ◯ **No**

15

Why is it easy to replicate?

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16

If difficult to replicate, what are the main obstacles?

17

Is the NA part of a project or a specific network?

- ◯ **Yes**
- ◯ **No**
- ◯ **I don't know**

18

If yes, provide the name or website related to the project:

19

Other literature references that can give information on the NA:

20

Do you have any comments you wish to add on the context and description regarding this NA?

Environmental impacts of the Novel Approach

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21

How does the NA impact the use of chemical pesticides (choose all that apply)?

- [ ] NA improves efficiency of the use of chemical pesticide
- [ ] NA substitutes the use of chemical pesticide
- [ ] NA uses less hazardous chemical pesticides
- [ ] Other

22

Evaluate how much the NA reduces the use of pesticides

1: No reduction, 2: Low reduction, 3: Moderate reduction, 4: High reduction

1	2	3	4

No reduction of the use of chemical pesticides — High reduction of the use of chemical pesticides

23

Provide an explanation for how the NA impacts the use of chemical pesticides:

24

If relevant, explain how the NA impacts global soil health

- soil microbial activity
- soil structure (infiltration, aggregate stability)
- soil organic carbon
- soil pH

25

If relevant, explain how the NA impacts biodiversity

- genetic diversity
- ecosystem diversity
- population trends

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26

If relevant, explain how the NA impacts natural water contamination

- **toxicity on organisms**
- **water quality**

27

Are the impacts of the NA effective in a short, medium or long term? please explain

Social impacts of the Novel Approach

28

If relevant, how does the NA reduce human exposure to chemical pesticides?

29

Can you think of any positive or negative impacts to human health?

Musculoskeletal disorders: repetitive movements, heavy lifting, vibration, uncomfortable postures Mental load :

Manage multiple tasks, constantly making decisions, level of stress

30

Rank the degree of training needed to use the NA:

1: No training required 2: Low training required 3: Moderate training required 4: High training required

1	2	3	4

No training required **High training required**

31

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Do you have details or explanation to share on the social impacts of the NA?

Economic impacts of the Novel Approach

32

What is the level of investments needed to set up the NA?

1: No investments, 2: Low investments, 3: Moderate investments, 4: High investments

1	2	3	4

No investments **High investments**

33

What is the impact of the NA on costs (e.g. cost of crop auxiliary, cost of energy...)

1: No costs, 2: Low costs, 3: Moderate costs, 4: High costs

1	2	3	4

No costs **High costs**

34

What is the impact of the NA on yields?

- ◯ **Reduces yields**
- ◯ **No impacts on yields**
- ◯ **Increases yields**

35

What is the impact of the NA on crop quality?

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- ◯ Depreciates crop quality
- ◯ No impacts on quality
- ◯ Increases crop quality

36

What is the impact of the NA on working time?

- ◯ Reduces working time
- ◯ No impacts on working time
- ◯ Increases working time

37

Any comments on the economic impacts of the NA? You can share quantitative data if you have it.

38

I consent to the processing of my personal data solely for the purpose of AdvisoryNetPEST related activities, in accordance with AdvsioryNetPEST's Privacy Policy. *

- ◯ Yes
- ◯ No

You have finished! Thank you for your time and answers

AdvisoryNetPEST

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Case studies first draft, document in construction (page 1)

AdvisoryNetPEST

REDUCE THE USE AND RISKS OF PESTICIDES

CONTEXT

Farmer's name
POURREY Pascal

Name of the farm
POURREY Pascal

Region
Burgundy Franche-Comté

Description of the context of implementation of the remarkable practice:

This practice was proposed and debated by the DEPHY FERME Bourgogne-Franche-Comté group. More than half of the horticulturists have decided to test this auxiliary (Atheta).

This practice was also proposed to horticulturists from the 30,000 Seine Normandie (Yonne) group.

This practice was therefore implemented by six Dephy Ferme horticulturists and three 30,000 horticulturists.

Issues:
- Commercial deviations of crops affected by thrips;
- Spread of certain viruses:
- Significant cost of occasional contributions from auxiliaries

We tried to improve the design of breeding buckets, culture substrate, type of food and optimal conditions for breeding auxiliaries depending on temperatures and seasons.

Origin of the practice and the farmer's journey

During the DEPHY FERME group meetings, the use of athetas (Dalotia Atheta coriaria) was discussed, suppliers of auxiliaries were contacted and exchanges of practices were carried out.

The prospect of a thorough fight against the main pest, thrips, appealed to the the horticulturist. The implementation of this technique seemed accessible to this company, it wanted technical support from its advisor / Network Engineer.

THE TECHNIQUE

Objective:

Reduce the use of insecticides to control a major crop pest, thrips (damage to leaves and flowers.

To complete the work done by Amblyseius in the cultures.

Description:

The adult predatory beetle Atheta measures 3 to 4 mm, is dark brown to shiny black and covered with hairs. Atheta has three larval stages during which the larvae change from white to orange-brown: the narrow body, antennae, elytra and legs are reddish, the rest is black; the elytra are very short, but the hind wings of normal size are folded underneath, measuring from a few millimeters to 3cm. The body is elongated and flattened. The upper wings, hardened into elytra, are short and cover only part of the abdomen, which is never terminated by pincers. The predatory larva consumes the eggs, larvae and pupae of the pest. The female, also predatory, lays about 8 eggs per day during the first 2 weeks of her life, which will last 21 days (at 25°C).

We are trying to raise it in buckets which will be placed in the crops

Implementation start date:
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