# Key Competence Map

## for Small & Family Farmers

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# 01

## Overview

# 01  Overview

The **SMART4FOOD Key Competence Map for Small and Family Farmers** has been developed through extensive qualitative research across six European countries: **Croatia, Cyprus, Ireland, Italy, Turkey and Slovakia**.

These countries reflect a diversity of agricultural systems - from small-scale Mediterranean growers and mountainous vineyards, to central European family farms experimenting with innovation and agri-tourism.

Over the course of the project, **in-depth interviews were conducted** with a broad range of stakeholders to better understand **competence gaps from multiple perspectives.** These included:

## 01  Smallholders and family farmers:

Working in different production systems (e.g. olives, cereals, beekeeping, dairy, wine, vegetables)

*18 interviews  73 Survey Responses*

## 02. Vocational educators and training bodies:

Including adult learning centres, agricultural universities, and rural development agencies

*12 interviews  37 Survey Responses*

## 03. Policy and institutional stakeholders:

Such as a trade association, a regional authority, and a development agency

*6 interviews  20 Survey Responses*

*Note: 17 Surveys were also completed by Stakeholders who identified as 'other'*

In addition, **regional Focus Group Discussions** brought together mixed stakeholders to validate findings and add local nuance.

**01**

### The competence mapping process combined these inputs through:

- Direct analysis of interview transcripts and focus group summaries
- Stakeholder-identified training needs, barriers to learning, and operational constraints
- A structured review of regional differences and common priorities across the six countries

**02**

### Drawing from this evidence base, the SMART4FOOD Key Competence Map identifies the key knowledge, skill, and behavioural domains that small and family farmers need to:

- Embrace digital and smart farming tools
- Transition toward more sustainable and climate-friendly practices
- Navigate increasingly complex market and administrative systems
- Develop entrepreneurial and community-based approaches to resilience and viability

**03**

### This Key Competence Map is intended to support:

- The design of modular training programmes and curricula tailored to real-world needs
- The development of digital and practical tools for use by farmers, trainers, and rural advisors
- The alignment of regional strategies with farmer capabilities, to improve programme uptake and policy impact

# 02

# Key Skill Domains

# Key Skill Domains

Across the six countries studied, **Croatia, Cyprus, Ireland, Italy, Turkey and Slovakia**, small and family farmers demonstrated a **solid foundation** of practical knowledge in land management, crop production, and animal care. This knowledge is deeply embedded in local traditions and typically passed down through generations.

However, throughout the stakeholder interviews, farmers, educators, and policy actors alike highlighted growing challenges. These include adapting to climate stress, managing market and regulatory complexity, and keeping pace with technological change. Together, these observations point to the need for a more structured, responsive and future-facing competence base for smallholder resilience and innovation.

Across interviews and focus group discussions, farmers consistently expressed confidence in their day-to-day work, from planting and harvesting to animal husbandry and field preparation. Many had built up expertise through lived experience and long-standing family practices.

Yet, when asked about areas they found challenging or where they would like further support, common themes began to emerge. These themes were not limited to technical gaps but included difficulties in understanding new requirements, accessing appropriate advice, and adapting to unexpected changes, especially those brought on by climate events, shifting regulations, or market instability.

## 2.1 Recurring Areas of Concern and Learning Needs

### 2.1.1
**Soil & Nutrient Management**

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### 2.1.2
**Pest & Disease Control**

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**Water Use & Climate Adaptation**

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### 2.1.4
**Post-Harvest Handling & Product Quality**

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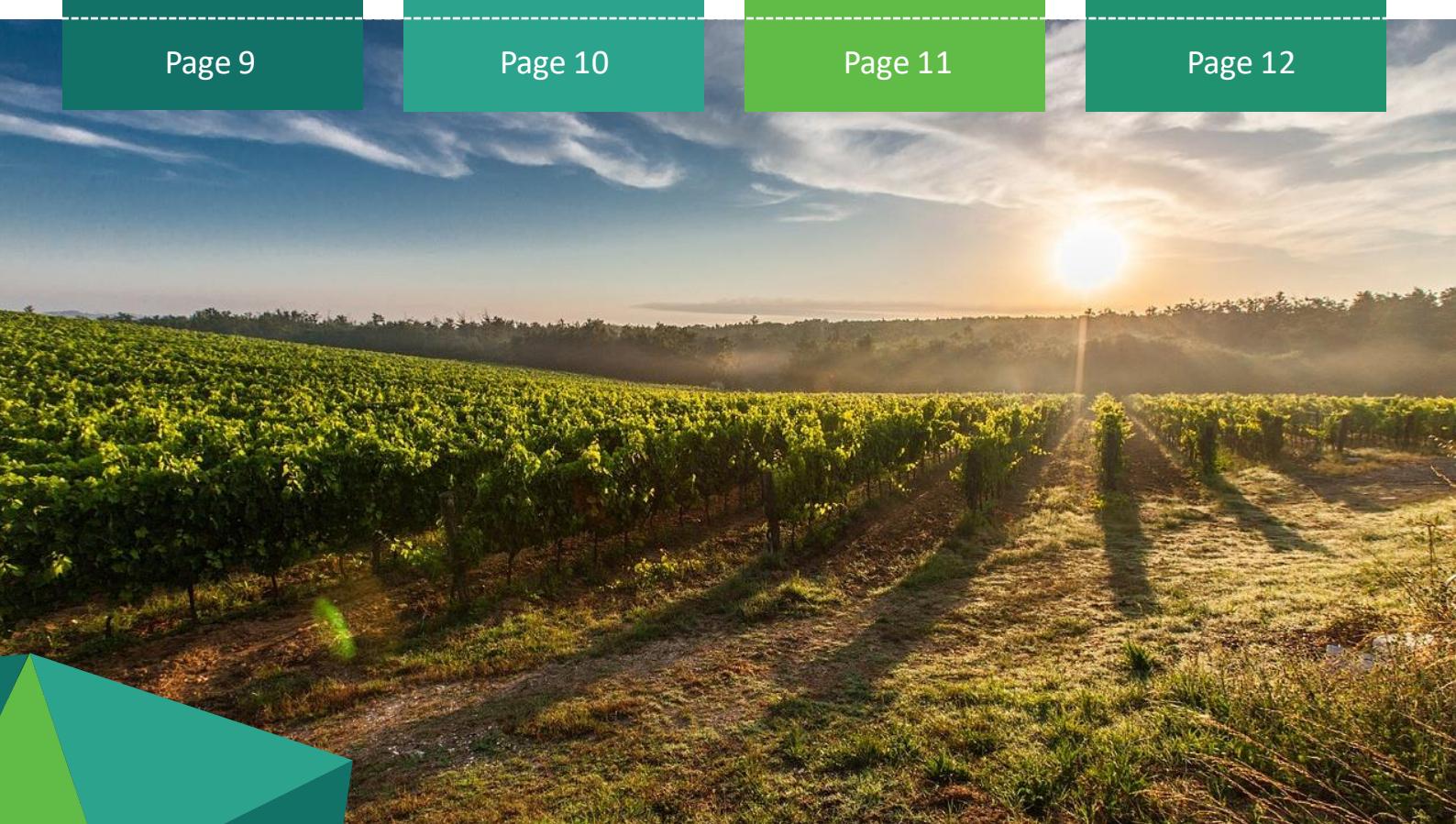
## 2.1 Recurring Areas of Concern and Learning Needs

### 2.1.1 Soil & Nutrient Management

A recurring competence gap concerned farmers' ability to interpret and act on soil test results. Fertiliser use was often based on habit, past experience, or commercial recommendations, rather than on crop-specific requirements or environmental considerations.

This theme was particularly **evident in interviews conducted in Cyprus, Ireland, and Italy,** where farmers described the following **challenges**:

- Using fertilisers without understanding soil test results
- Relying on traditional routines or supplier advice
- Expressing a desire for more targeted and cost-effective input use
- Showing interest in soil health but lacking formal guidance

*"I want to learn how to use fertilisers more efficiently, but I don't know what's in my soil."*

**(Grain farmer, Cyprus)**

This suggests a clear need for training that connects farmers' existing experience with structured knowledge in soil testing, input planning, and nutrient balancing, particularly in the context of rising costs and stricter sustainability requirements.

Such training could also introduce smart and accessible tools (e.g. mobile apps for fertiliser planning, digital soil mapping, weather-linked recommendations) that support farmers in making more informed, data-based decisions, while still relying on their practical understanding of the land.

## 2.1.2 Pest & Disease Control

Farmers across several regions reported ongoing difficulties in managing pests and diseases effectively. While most relied on chemical pesticides or treatments, there was limited awareness of alternative approaches, such as Integrated Pest Management (IPM), monitoring strategies, or biological control options.

This theme was most visible in interviews from **Italy, Croatia, and Cyprus,** where both farmers and educators described the following **issues**:

- Routine use of chemical treatments, without clear thresholds or timing strategies
- Low awareness of preventive practices, such as crop rotation or resistant varieties
- Limited access to independent advice on pest or disease diagnostics
- A lack of tools for early warning or pest forecasting

*"We spray because we always have. There's no clear signal when we should stop or change."*

**(Vinegrower, Croatia)**
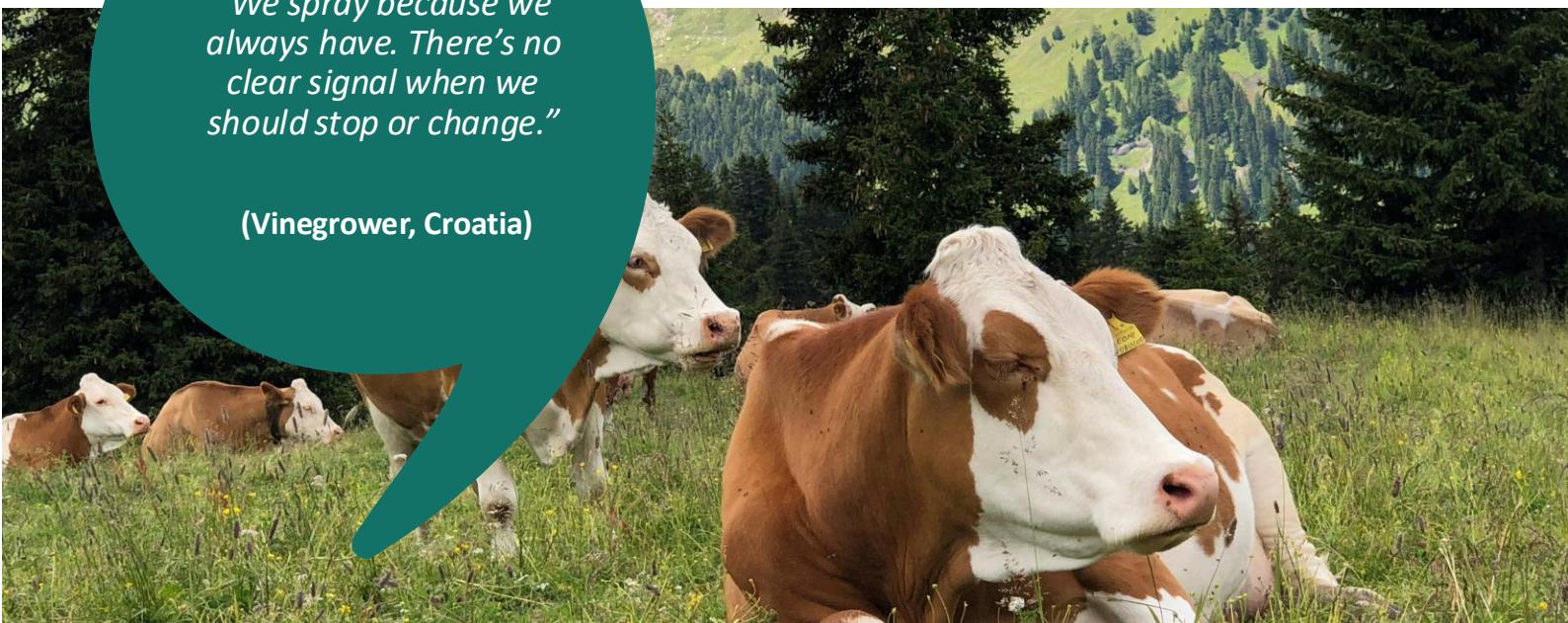
These patterns highlight a need for training that goes beyond product-based solutions and builds farmers' capacity to understand pest lifecycles, risk factors, and monitoring methods. To strengthen decision-making in this area, SMART4FOOD initiatives could introduce smart technologies such as pest alert apps, satellite-based crop stress indicators, or simple field diagnostic tools, helping farmers reduce unnecessary inputs and move toward more targeted, cost-effective, and environmentally responsible protection strategies.
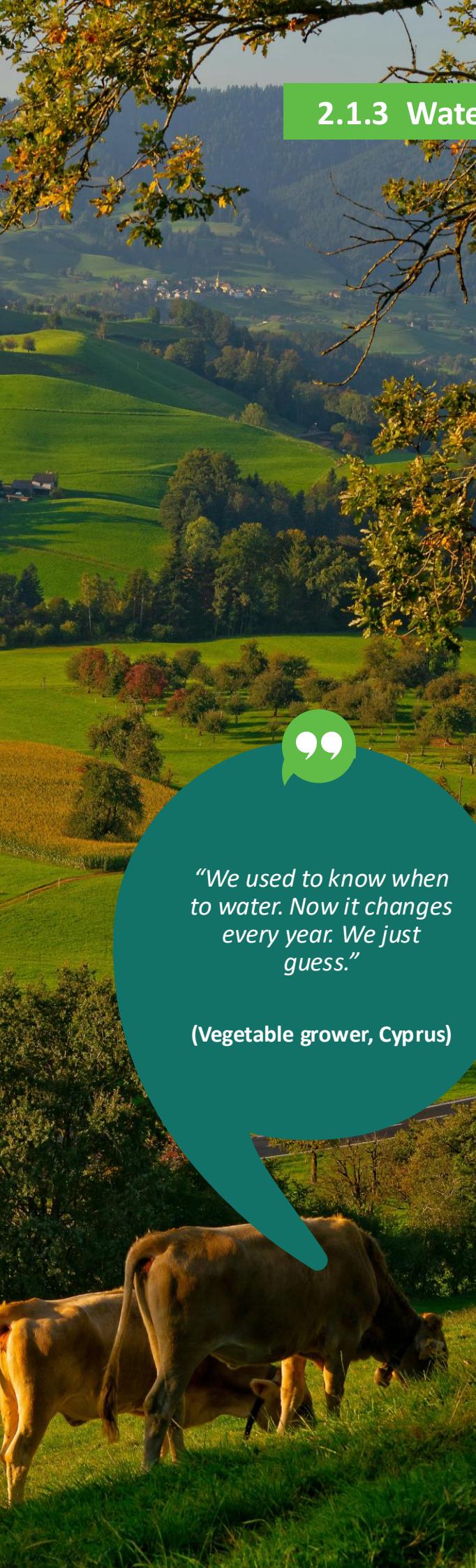
## 2.1.3  Water Use & Climate Adaptation

Water use emerged as a growing concern, particularly in regions already facing drought risk or seasonal unpredictability. While irrigation is widely practised, decisions are often based on tradition or visible signs of crop stress, rather than on precise or predictive data.

This was noted most clearly in interviews from **Cyprus, Italy, and Croatia**, where farmers described the following **challenges**:

- Relying on fixed irrigation routines, regardless of changing conditions
- Limited access to soil moisture data or weather-informed scheduling
- Uncertainty about how to conserve water or plan for shortages
- A lack of advice on crop choices or farming practices adapted to drier climates

*"We used to know when to water. Now it changes every year. We just guess."*

**(Vegetable grower, Cyprus)**

Although a few farmers in Ireland and Slovakia reported exposure to smart irrigation systems through demo farms or pilot programmes, such tools remain out of reach or underused in many small-scale contexts.

This highlights the need for competence development in climate-responsive farming, including water-saving practices, crop selection, and basic risk planning. Training could also introduce affordable digital tools such as weather-linked irrigation timers, soil moisture sensors, or mobile apps with localised forecasts to help farmers make timely, informed decisions without increasing workload. To be of most value to our learners, these solutions must be low-cost, context-sensitive, and linked to real examples that reflect the scale and conditions of family farms.

## 2.1.4 Post-Harvest Handling & Product Quality

In several interviews, particularly from Italy and Croatia, farmers described challenges in maintaining the quality of their products after harvest. These issues were especially visible in niche or value-added sectors such as olives, wine, honey, and vegetables where market value depends heavily on handling, timing, and presentation.

**Key challenges** reported included:

- Lack of basic knowledge around product storage, hygiene, and shelf-life
- Delays in processing due to limited access to local infrastructure
- Uncertainty about packaging, labelling, or traceability requirements
- Difficulty in meeting the standards of higher-value or export markets

*"We produce good oil, but we lose value because we don't know how to preserve it after pressing"*

**(Olive farmer, Italy)**

While some farmers expressed interest in on-farm processing or direct sales, many lacked the technical or regulatory knowledge to do so confidently. This competence gap affects both profitability and market access.

Training in this area should focus on practical, product-specific guidance, e.g. how to store vegetables, manage fermentation, clean equipment, or meet basic food safety rules. In line with SMART4FOOD objectives, there is also potential to introduce digital quality monitoring tools, such as temperature trackers, batch record apps, or mobile-based traceability systems, to help smallholders protect product value with minimal complexity.

## 2.2. Horizontal Competence Areas

In addition to **core agronomic topics, farmers, educators, and policy actors also highlighted a set of broader**, cross-cutting competence needs that influence nearly all aspects of farm decision-making and development.

These are not specific to any one production task but underpin a farmer's ability to adapt, respond, and succeed in a rapidly changing environment. To reflect this, we have clustered these broader capacities into four horizontal competence areas. These emerged consistently across interviews and focus groups, and are increasingly relevant not only to our participants but to small and family farmers across Europe.

### 2.2.1

**Climate Awareness & Agricultural Risk Management**

Understanding and responding to changing weather patterns, climate impacts, and farm-level risks.

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### 2.2.2

**Agricultural Financial Planning & Business Management**

Managing input costs, pricing strategies, seasonal cash flow, and on-farm investments through practical financial tools and farm-specific planning skills.

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### 2.2.3

**Agri Administration & Compliance Literacy**

Smart approaches to navigating farm-related regulations, subsidy applications, certification, and digital government platforms. .

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### 2.2.4

**Cooperation Based Agricultural Approaches**

Developing or engaging in smart, collaborative models such as local producer groups, cooperatives, and shared infrastructure to improve efficiency, access, and market reach within the agri-food system.

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## 2.2 Horizontal Competence Areas

### 2.2.1 Climate Awareness & Agricultural Risk Management

Across all six countries, farmers reported a growing awareness that climate conditions are becoming less predictable with changing rainfall patterns, more frequent droughts or floods, and earlier or later harvest periods. However, most had received little or no formal training in how to respond or adapt to these changes on their farms. While the effects of climate stress were widely acknowledged, it was highlighted that adaptation strategies were often reactive rather than planned or future-proofed.

Farmers identified a clear need for **practical support in areas** such as:

- Choosing more resilient or drought-tolerant crops
- Adjusting planting or harvesting times
- Planning for extreme weather events
- Accessing support schemes linked to environmental resilience

*"We used to know when to plant. Now everything is moving - the weather doesn't follow the old rules."*

**(Farmer, Slovakia)**

Policy and education stakeholders echoed this, stressing that climate adaptation is not only a policy requirement but a key future skill.

It involves strengthening the farmer's capacity to anticipate, plan, and transition, rather than simply react, to environmental shocks and trends.

## 2.2 Horizontal Competence Areas

### 2.2.1 Climate Awareness & Agricultural Risk Management



Through **SMART4FOOD**, this can be addressed by **embedding future-proofing approaches into training content**, including:

- Scenario planning tools
- Climate-smart crop planning guides
- Localised weather forecast and alert systems
- Farm-level risk assessment templates

In designing the SMART4FOOD training response, these tools must be accessible, low-cost, and tailored to the scale and complexity of small and family farms. For farmers working with tight margins and limited technical capacity, climate adaptation training must be grounded in practical, time-efficient solutions that fit into the rhythm of daily work. The aim is to equip farmers to cope with immediate risks, and make proactive, informed decisions that build long-term resilience and future-proof their farming systems.

## 2.2.2   Agricultural Financial Planning & Business Management

A recurring issue identified in farmer interviews was the lack of structured financial oversight.

While most farmers could list their major costs and sales, few used tools or methods to track profitability, margins, or long-term planning. Many described managing finances "by feel" or simply based on what was left at the end of the season. Some relied heavily on past experience, while others expressed uncertainty about pricing, borrowing, or deciding whether to invest in new equipment or processes. Educators and trainers noted that existing business training is often too abstract or overly general, lacking the connection to real farm costs, seasonal income patterns, and the specific risks faced by smallholders.

As a result, many farmers miss opportunities to improve profitability, plan proactively, or access available support. **Clear learning needs were identified** in areas such as:

*"I write down costs, but I don't really know what it tells me. It's hard to see if I'm doing better or worse."*

**(Vegetable grower, Ireland)**

- Enterprise and cost tracking at field or product level
  Using simple Excel sheets or mobile apps to record input costs and yields for individual crops or products.

- Basic cash flow management across the seasons
  Learning to apply seasonal cash flow planners to anticipate income gaps and plan for key expenses (e.g. feed, fuel, labour).

- Forward-looking planning using simple margin and profitability analysis
  Applying tools like gross margin calculators or break-even templates to compare options before committing to a crop or investment.

- Decision-making for on-farm investment
  Using cost-benefit comparison tools or checklists to assess machinery, buildings, or technology upgrades.

- Understanding grants, credit, and return on investment
  Training in how to read funding rules and use loan calculators or grant eligibility checkers to support confident decision-making.

For small-scale farmers operating on tight margins, financial management must be presented not as a bureaucratic exercise, but as a critical skill for stability, survival, and future-proofing. Better financial insight enables smarter decisions, more efficient use of resources, and greater confidence when engaging with banks, buyers, or support schemes.

## 2.2.3  Agri-Administration & Smart Compliance Literacy

Administrative responsibilities and regulatory requirements are a growing challenge for small and family farmers.

Across all six regions, interviewees described these tasks as confusing, time-consuming, and stressful - particularly as national systems become more digitised and increasingly rely on online-only processes. Many farmers said they rely on neighbours, consultants, or accountants to complete applications or declarations on their behalf. Some described a sense of administrative fatigue or actively avoided applying for support schemes, fearing penalties, rejections, or digital errors.

Educators and policy stakeholders confirmed that basic competence in administration and digital systems is no longer optional. Whether to apply for subsidies, meet traceability standards, or respond to inspections, farmers now need a minimum level of digital confidence and organisational capacity to remain visible and viable within modern food systems.  Importantly, these pressures are not only regulatory. For smallholders with tight time and cash margins, being able to manage paperwork, records, and digital tasks efficiently can be the difference between accessing support or missing out.

Interview feedback pointed to several key capability areas where support is needed:

- Developing the confidence to engage with digital public platforms and online systems

- Building organised, repeatable routines for keeping on-farm records (e.g. inputs, treatments, planting)

- Understanding what kinds of documentation are expected in audits or inspections

- Staying informed about new digital and environmental expectations, such as traceability or sustainability requirements

- Knowing where and how to seek support, without over-relying on informal or commercial intermediaries

*"We farm well, but we're behind when it comes to the paperwork. It's easy to miss something important."*

**(Smallholder, Slovakia)**

## 2.2.3 Agri-Administration & Smart Compliance Literacy

While SMART4FOOD cannot and should not be a form-filling training programme, it can play a vital role in helping farmers build the foundational digital confidence and practical routines needed to approach administrative tasks with less stress and more autonomy.



**SMART4FOOD training** in this area could include:

- Training in how to use digital record-keeping apps or software and approaches to help structure farm documentation and inspection readiness

- Introduction to smartphone-based tools to log fieldwork, inputs, or compliance data

- Raising awareness of support systems, such as rural development agencies, digital helplines, or cooperative services

*"Some farmers are just one form away from missing a payment - or one mistake away from a penalty. The process scares them."*

**(Rural advisor, Croatia)**

To be clear, the aim is not to teach specific procedures, but to help farmers build the underlying competence to manage administrative and compliance demands in a smart, organised, and future-proofed way, especially as these demands continue to grow in digital complexity.

## 2.2.4 Cooperation-Based Agricultural Approaches

While most farmers interviewed described working independently, many. particularly those managing smaller farms, voiced a strong interest in more collaborative models.

These included ideas like sharing equipment, pooling resources for processing or transport, or joining together to sell through short supply chains or direct-to-consumer platforms. However, few had experience with formal cooperation, and even fewer felt confident in how to start or manage collective arrangements. For many, cooperation was appealing in principle but felt difficult to organise in practice due to uncertainty about how to structure agreements, manage joint finances, or maintain trust and communication.

Educators and rural advisors confirmed that cooperation is rarely covered in training programmes, despite its increasing importance in policy frameworks and market models. Many regional strategies now assume a level of group organisation, for example, to access public processing infrastructure, e.g. food incubation and innovation hubs or participate in local food branding, yet support to build that competence is often missing

*"We know others around us have the same problems, but no one knows how to organise a group or make it work."*

**(Farmer, Italy)**

Policy actors highlighted that smallholders, in particular, can **benefit from more collaborative models**, but need clear and practical guidance on:
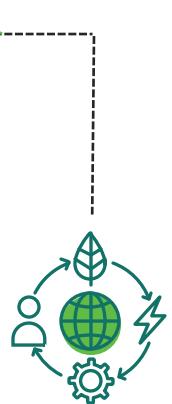
- Different types of cooperation (formal/informal, economic/social)
- Legal and financial considerations (cost sharing, governance, joint ownership)
- Communication, coordination, and conflict resolution
- Group decision-making and leadership in small settings
- Opportunities to engage with short food chains, territorial branding, or community-supported agriculture

## 2.2.4  Cooperation-Based Agricultural Approaches

Cooperation can be economically efficient but can also reduce isolation, support peer learning, and increase the bargaining power and visibility of small producers.

**SMART4FOOD** can play a key role in helping farmers **understand, explore, and test basic cooperation models**, especially **where digital tools or smart platforms** are involved. Relevant training might include:

- Case examples and templates for shared services or group projects
- Guidance on how to identify suitable collaboration partners and start small-scale cooperation
- Showcasing real-life models of collaborative approaches such as group marketing, shared logistics, or joint input purchasing
- Encouraging links with existing local structures such as cooperatives, LEADER groups, or producer networks

For small and family farmers, collaborative approaches can open the door to new markets, shared investments, and mutual resilience, especially in rural areas where support is scarce or infrastructure is thin. Training in this area should empower farmers to think beyond the individual holding, and to explore how working together in smart, low-risk ways which in turn can help future-proof their own operations.

# 03

# Training Design -
# Starting Points

# Training Design –
# Starting Points

## 3.1  Purpose and Pedagogical Approach

The **SMART4FOOD training programme** is designed to strengthen the **vocational education and training (VET)** offer for small and family farmers across Europe, focusing on the competences required to navigate a more digital, sustainable, and resilient agri-food system.

The **training concept is built on two core foundations**:

### 01  A bottom-up consultation process

A bottom-up consultation process, involving 24 in-depth interviews with farmers, VET providers, and policy actors, as well as national focus group discussions. These engagements revealed strong practical know-how among farmers, but also pointed to critical gaps in forward planning, digital readiness, administrative confidence, and the ability to adapt to climate and market pressures, areas where current agricultural training provision is often fragmented, outdated, or inaccessible to the learners who need it most.

### 02  The Strategic Framework

The strategic framework set out in the SMART4FOOD ERASMUS+ project application, which commits to developing innovative vocational education and training (VET) approaches tailored to the realities of small-scale farming. These approaches are aligned with EU priorities such as the Green Deal, Farm to Fork, and the digital transition, while also promoting the inclusion of adult learners in rural and remote areas who are often underserved by mainstream VET provision.

To fulfil its **mandate and potential, SMART4FOOD** must:

**01** **Empowering Adult and Non-Traditional Learners through Practical, VET-Focused Agricultural Training"**

Position itself as an empowering, VET-centred initiative that addresses the specific realities of adult and non-traditional learners in agriculture. Many participants have limited experience with formal education systems but show high motivation when training is practical, seasonal, and directly relevant to their farm context.

**02** **Competence-Based, Flexible Training for Real-World Agricultural Learning**

Apply a competence-based learning approach, grounded in real-world farming scenarios and delivered through micro-learning formats. Training content should be:

- Modular and adaptable – easy to customise across different countries, production systems, and learner profiles
- Practice-oriented – focused on everyday challenges and farm-level decision-making
- Accessible to adult learners – delivered in short, focused units that respect time limitations and varying levels of literacy and digital confidence
- Suitable for both formal VET delivery and non-formal adult learning environments
- Strategically aligned – supporting broader policy priorities while addressing immediate, practical learning needs

## 3.2   Learners

Before we proceed further in defining content and delivery, **it is essential to clarify who SMART4FOOD is for**.

The training will be designed with **a clear focus on adult learners engaged in small and family farming**, many of whom are:

- Working farmers managing mixed or specialised systems, often with limited time or capacity for formal training

- Non-traditional learners, including those returning to education after many years, or with limited formal schooling

- Digitally cautious, yet open to using tools that deliver clear, practical benefits

- Highly experienced, with strong day-to-day farming knowledge, yet seeking support to adapt to evolving demands including environmental requirements, digital systems, traceability standards, and new climate-related challenges.

They could be geographically isolated or otherwise underserved by existing vocational training offers These learners were represented across the 24 stakeholder interviews and focus group discussions carried out in partner countries. Despite differences in context, common themes emerged: a strong practical skill base, but a need for support in areas such as planning, administration, innovation, and collaboration.

**SMART4FOOD** recognises that many of these learners:

- Prefer informal, seasonal, and peer-supported learning environments

- Respond best to training that is visual, modular, and directly tied to tasks

- Are less likely to engage with abstract or heavily theoretical content

- Require training that respects their expertise while introducing new tools and perspectives

The programme is therefore **tailored to serve both individual learners and groups of farmers**, such as **cooperatives, producer associations, or peer learning networks**. It can be used in:

- Formal VET settings, such as agricultural colleges or training centres
- Non-formal adult education environments, such as rural development workshops, advisory services, or cooperative-led sessions

By **making learners visible and central** from the outset, **SMART4FOOD** ensures its training is not only technically sound but **pedagogically relevant, culturally sensitive, and adapted to the working lives of small and family farmers across Europe**.

## 3.3   Training Structure & Delivery Model

Based on the needs identified through field consultations **(Section 1) and the Key Competence Map (Section 2),** the SMART4FOOD training programme will be designed as a modular and flexible offer that can be delivered in different formats and adapted to the realities of small and family farmers across Europe

Rather than a fixed or linear curriculum, SMART4FOOD proposes a training model of standalone learning modules, each aligned to a specific competence domain. This approach supports selective delivery, where VET providers or local training actors can pick and combine only those modules relevant to their learners, production systems, and local context.

### Key Features of the Training Model:

**01  Modular:**

Each unit targets a specific skill domain; modules can be delivered alone or as part of a series.

**02  Format-flexible:**

Suitable for formal and non-formal VET, including face-to-face, digital, or hybrid delivery.

**03  Micro-learning based:**

Sessions are short (up to 90 minutes), enabling integration into seasonal farm routines.

**04  Trainer-ready:**

Each module will be packaged with guidance, tools, and adaptable content for local delivery.

**05  Offline-compatible:**

Materials are designed for use in areas with limited digital access or connectivity.

## 3.4 Alignment with EU Competence Frameworks

The **SMART4FOOD training** approach is intentionally aligned with **key European competence frameworks**, ensuring that its content, methods, and learner outcomes are consistent with broader EU objectives in vocational education and lifelong learning.

This alignment also increases the potential for recognition, modular certification, and transferability across Member States. These frameworks provide a shared European language for what learners need to know and be able to do in order to succeed in a green, digital, and entrepreneurial society. They are especially relevant for adult learners in rural areas, many of whom engage in farming without formal training, but face increasing demands in terms of sustainability, innovation, and administration.

By anchoring **SMART4FOOD modules** in these frameworks, we aim to:

- Reinforce the policy alignment of the training with Green Deal, Farm to Fork, and CAP objectives
- Support learner mobility, recognition, and the potential development of micro-credentials
- Provide a flexible and modular learning structure that reflects the real-world needs of small and family farmers

### 3.4.1 GreenComp
The European Sustainability Competence Framework

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### 3.4.2 DigComp
The Digital Competence Framework for Citizens

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### 3.4.3 EntreComp
The Entrepreneurship Competence Framework

Page 0

### 3.4.4 Supporting Competence for CAP Participation

Page 0

## 3.4.1  GreenComp – The European Sustainability Competence Framework

GreenComp provides a **structure for building environmental literacy and empowering learners** to take action for sustainability

**SMART4FOOD modules** particularly contribute to **GreenComp areas** such as:

**01** **Systems Thinking:**
Understanding how soil, water, biodiversity, and markets interact on the farm.

**02** **Foresight:**
Planning for climate impacts and shifting market conditions.

**03** **Sustainable Resource Use:**
Managing inputs like water and fertilisers more efficiently.

**04** **Responsibility and Agency:**
Enabling farmers to act on sustainability goals through practical tools and techniques.

## 3.4.2  DigComp – The Digital Competence Framework or Citizens

**DigComp defines digital skills** needed in everyday life and work. In SMART4FOOD, this applies to:

**01** **Information and Data Literacy:**
Using weather apps, soil tests, and digital records for better decisions.

**02** **Communication and Collaboration:**
Engaging with supply chains, cooperatives, or advisory systems online.

**03** **Problem Solving**
Using digital tools to address compliance, finance, or risk planning tasks.

## 3.4.3    EntreComp

### – The Entrepreneurship Competence Framework

EntreComp shifts the focus from business creation to broader value creation.

Within **SMART4FOOD, EntreComp underpins areas** such as:

**01 Resource Mobilisation:**
Using budgets, credit, or cooperation to manage the farm as a business.

**02 Planning and Management:**
Forward-looking financial decisions and seasonal planning.

**03 Working with Others:**
Developing skills in negotiation, coordination, and participation in local food systems

**04 Taking the Initiative:**
Building confidence to apply for support schemes or test innovations

Why This Matters for **SMART4FOOD**

**01 Framework Alignment:**
Aligning with EU frameworks supports the quality and relevance of the training programme.

**02 Future-Proofing Micro-Credentials:**
It enables future adaptation of micro-credentials, especially for non-formal learning environments.

**03 Enhanced Policy Impact & Dissemination**
It increases opportunities for policy impact and dissemination across the EU VET landscape.

Each **SMART4FOOD module** includes **clear references to these frameworks**, ensuring that training is not only practical but also **strategically future-oriented and recognisable** in wider vocational learning systems.

## 3.4.4 Supporting Competence for CAP Participation

**The Common Agricultural Policy (CAP)** remains the EU's primary framework for agricultural support, environmental stewardship, and rural development. However, for many small and family farmers, especially those with limited administrative or digital capacity, accessing CAP benefits remains a challenge

**SMART4FOOD training supports** alignment with **CAP** by:

**01 Building Core Agri-Competences:**

Strengthening core competences required to meet cross-compliance and eco-scheme requirements (e.g. soil health, nutrient planning, record-keeping).

**02 Boosting Digital Confidence for CAP Tools:**

Increasing awareness and digital confidence to engage with CAP-related portals, applications, and monitoring tools.

**03 Supporting Informed CAP Participation:**

Empowering learners to make informed decisions about CAP participation — including how to navigate eligibility, sustainability standards, and opportunities under rural development programmes.

By embedding **CAP-relevant skills into each module, SMART4FOOD** ensures that farmers are not only trained for practice but also **prepared to access public support schemes**, reducing inequality and reinforcing inclusion in EU policy goals.

# 04

## Training Framework

# Training Framework

## 4.1   Overview of the SMART4FOOD Training Framework

Based on everything we've developed so far, the **SMART4FOOD Training Framework offers a structured and modular learning approach** tailored to the real-world needs of small and family farmers across Europe.

This **framework** translates the **key competence** domains identified in **Section 2 into a series of adaptable, practice-oriented training modules**. It has been shaped by:

**01**

### The Key Competence Map
The SMART4FOOD Competence Map was derived from 36 interviews and regional focus groups.

**02**

### The Training Principles
The training principles outlined in Section 3, including a strong VET focus, modular design, and alignment with adult learning needs;

**03**

### The integration of EU Competence Frameworks
And the integration of EU competence frameworks such as GreenComp, EntreComp, and DigiComp, ensuring that learning supports broader policy goals in sustainability, entrepreneurship, and digital readiness.

**Each SMART4FOOD module:**

- Targets specific learning needs expressed by farmers, VET providers, and policy actors
- Combines traditional agricultural knowledge with smart and sustainable approaches
- Can be delivered flexibly across formal VET, adult education, and non-formal rural settings
- Includes practical tasks, digital or printable tools, and guidance for trainers

**Together, the modules form a flexible training offer that helps equip small-scale farmers to:**

- Strengthen core farm practices using both traditional knowledge and smart, evidence-based tools
- Respond to climate and market pressures with adaptation strategies, risk planning, and scenario thinking
- Meet regulatory and sustainability demands through improved digital confidence, traceability, and eco-friendly techniques
- Participate more actively in local food economies by exploring collaborative models, short supply chains, and value-added approaches
- Apply smart thinking across decisions, from fertiliser use to record-keeping - using digital apps, decision aids, or simplified templates tailored to small-scale realities

The table that now follows on page 34 in **Section 4.2 outlines the full set of SMART4FOOD modules.**

## 4.2  SMART4FOOD modules

| | Module Title | Short Description | SMART4FOOD Competence Area | EU Competence Framework Alignment |
|---|---|---|---|---|
| 01 | Smart Soil Use | *Building agroecological literacy around soil health, interpreting test results, and planning sustainable nutrient strategies.* | 2.1.1 Building agroecological literacy around soil health, interpreting test results, and planning sustainable nutrient strategies. | **GreenComp:** <br>• Systems Thinking <br>• Agroecological Literacy |
| 02 | Smarter Crop Protection | *Strengthening plant health competence through integrated pest management and reduced chemical dependency.* | 2.1.2 Strengthening plant health competence through integrated pest management and reduced chemical dependency. | **GreenComp:** <br>• Critical Thinking <br>• Preventive Practice |
| 03 | Water-Wise Farming | *Learning how to plan and optimise irrigation using practical tools and weather insights.* | 2.1.3 Enhancing irrigation decision-making using weather-linked tools, crop-stage timing, and water efficiency principles. | **GreenComp:** <br>• Resource Management <br>• Digital for Sustainability |
| 04 | Post-Harvest Value | *Improve competence in post-harvest handling, basic processing, and storage to maintain product quality and value.* | 2.1.4 Developing competence in quality preservation, basic processing, and on-farm handling to retain market value. | **GreenComp:** <br>• Responsible Consumptio <br>• Circular Thinking |
| 05 | Resilient by Design | *Learning to identify climate risks and develop forward-looking farm strategies for greater resilience.* | 2.2.1 Applying farm-level climate risk management and forward-planning to strengthen adaptive capacity. | **GreenComp:** <br>• Adaptability <br>• Future Literacy <br>• Risk Management |
| 06 | Better Farm Planning | *Improving business-oriented decision-making through cost tracking, simple profitability tools, and investment planning.* | 2.2.2 Improving business-oriented decision-making through cost tracking, simple profitability tools, and investment planning. | **EntreComp:** <br>• Financial Literacy <br>• Planning and Management |
| 07 | Smart Farm Records | *Developing digital confidence to manage farm records, meet compliance, and use smart admin tools.* | 2.2.3 Building administrative and digital competence to handle compliance, records, and online platforms with confidence. | **DigComp:** <br>• Information & Data Literacy <br>• Problem Solving |
| 08 | Collaborative Farming | *Understanding models of collective action, shared resources, and short supply chains in farming.* | 2.2.4 Understanding cooperative models and collective strategies for stronger participation in short supply chains and shared services. | **EntreComp:** <br>• Working with Others <br>• Mobilising Resources |

## 4.3  SMART4FOOD PPT STRUCTURE

Each **SMART4FOOD training module** is designed to be delivered in a **clear, engaging, and time-bound format** that aligns with the **needs of adult learners in vocational and non-formal settings**.

The recommended structure is based on a 90-minute session, incorporating short presentations, interactive elements, and practical exercises. To support trainers, each module is accompanied by a dedicated PowerPoint presentation, broken into thematic sections. These ensure consistency in delivery, while allowing for localisation and flexibility depending on the learner group, farming system, and available time.

# Module Example:
## *Module 1 -  Smart Soil Use*

### Section 1:

Introduction

5 - 10 mins

4 - 5 slides

**Purpose: Set context and build relevance**

- Welcome & module title
- Why this topic matters now (e.g. cost, climate, compliance)
- What the module will cover
- Learning outcomes (clear, simple language)
- "What do you already know about your soil?" (Quick poll/discussion)

### Section 2:

Soil Basics Refresher

10 mins

6 - 8 slides

**Purpose: Anchor shared understanding**

- What is healthy soil? (visuals: layers, structure, fertility)
- Soil types and textures
- Key indicators: pH, organic matter, NPK
- Link to farming decisions (e.g. crop suitability, input needs)

## Section 3:

### Interpreting Soil Tests

⏱ 15 mins

🖥 8-10 slides

**Purpose: Build practical literacy**

- Anatomy of a soil test (example report with callouts)
- Reading pH, nitrogen, phosphorus, potassium
- Understanding deficiency/excess and what it means
- Group exercise: interpret a simple test (can be printed or digital)
- Share insights - link back to learner experience

## Section 4:

### Smarter Fertiliser Planning

⏱ 15 mins

🖥 8 slides

**Purpose: Connect knowledge to action**

- Matching soil needs to crop needs
- Example plan: crop → test result → adjustment → timing
- Cost-aware input use: less waste, better results
- Common mistakes and how to avoid them

## Section 5:

### Tools and Apps for Smarter Decisions

⏱ 10 mins

🖥 5-6 slides

**Purpose: Introduce digital confidence and access**

- Intro to 1–2 simple digital tools (mobile/web)
- Demo: how they work (screenshots, QR code links)
- Discussion: how might this help your work?
- Barriers and practical solutions

## Section 6:

### Group Activity / Local Practice Discussion

🕑 10 - 15 mins

🖥 4-5 slides

**Purpose: Embed through reflection and exchange**

- Scenario: "Your fertiliser bill has doubled — what do you change?"
- Small group or pair discussion
- Share ideas across room
- Add 1 local/regional practice example (trainer customises)

## Section 7:

### Wrap-Up and Reflection

🕑 5-7 mins

🖥 3-4 slides

**Purpose: Summarise and create action**

- Summary of key points
- One thing I will try/change (personal reflection prompt)
- Share any available follow-up materials
- Feedback or closing word

**Visual Breaks & Dividers (5–6 slides)**
Use visual slide breaks to mark section changes, allow pauses, or transition to activities.

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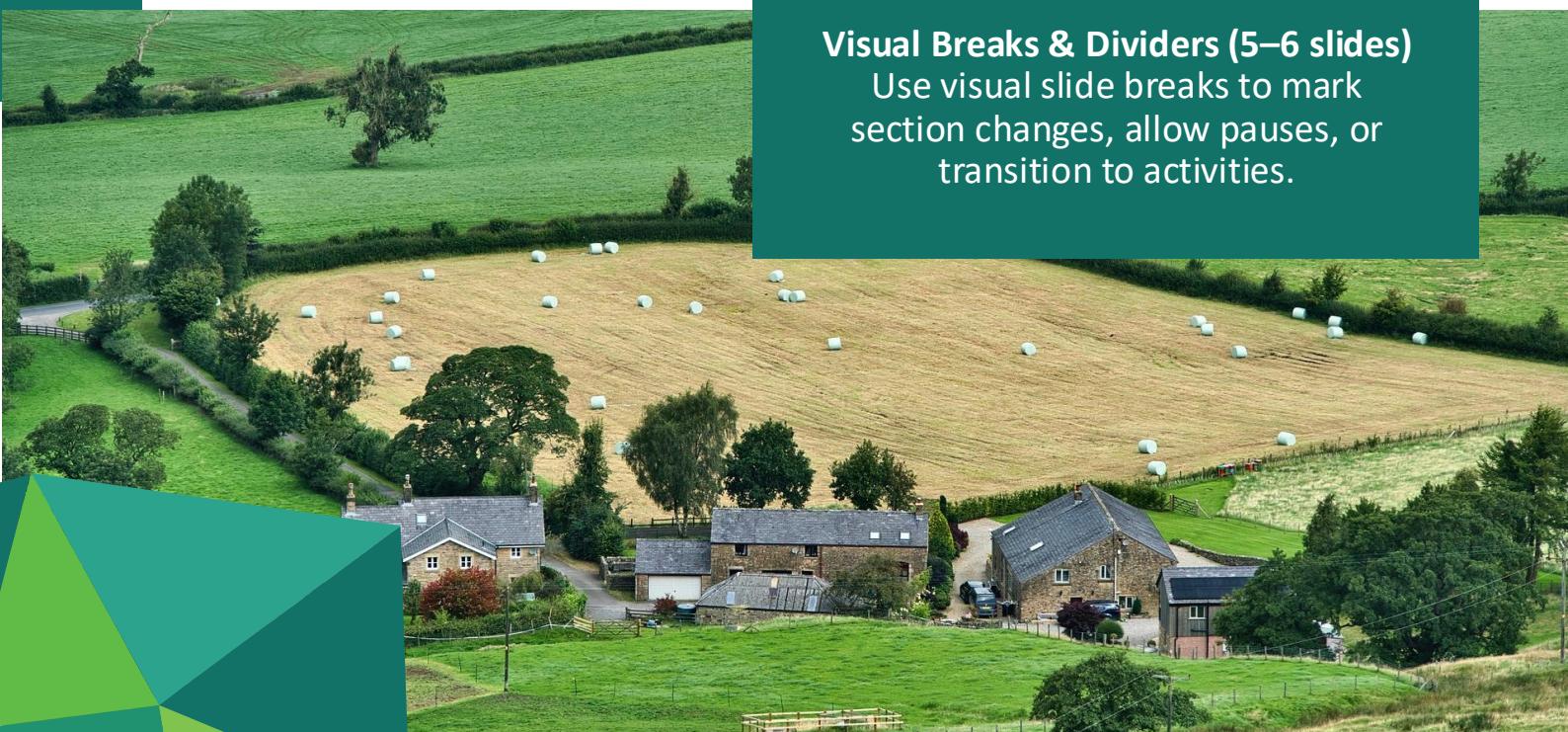
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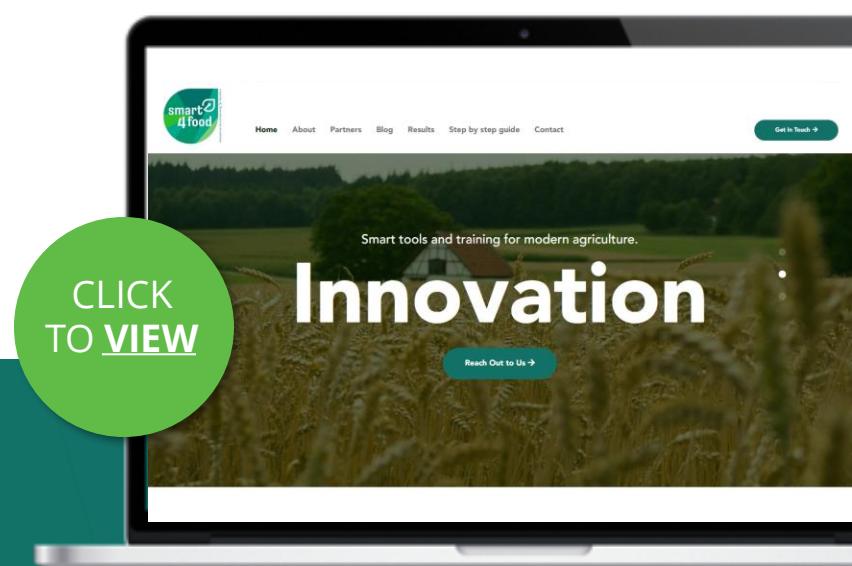
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