Brussels, 19 May 2026

COST 035/26

DECISION

Subject: Memorandum of Understanding for the implementation of the COST Action “Harnessing AI for Responsive, Valuable, and Efficient Sustainable Technologies” (HARVEST) CA25121

The COST Member Countries will find attached the Memorandum of Understanding for the COST Action Harnessing AI for Responsive, Valuable, and Efficient Sustainable Technologies approved by the Committee of Senior Officials at its 227th meeting held in Brussels on 19 May 2026.

MEMORANDUM OF UNDERSTANDING

For the implementation of a COST Action designated as

COST Action CA25121
HARNESSING AI FOR RESPONSIVE, VALUABLE, AND EFFICIENT SUSTAINABLE TECHNOLOGIES (HARVEST)

The COST Members through the present Memorandum of Understanding (MoU) wish to undertake joint activities of mutual interest and declare their common intention to participate in the COST Action, referred to above and described in the Technical Annex of this MoU.

The Action will be carried out in accordance with the set of COST Implementation Rules approved by the Committee of Senior Officials (CSO), or any document amending or replacing them.

The main aim and objective of the Action is to build an AI-aware community to standardise, integrate, and annotate crop data, enabling technologies that match profitable, sustainable varieties to local climates, using barley as a blueprint for global crop prediction. This will be achieved through the specific objectives detailed in the Technical Annex.

The present MoU enters into force on the date of the approval of the COST Action by the CSO.

OVERVIEW

Summary
The HARVEST COST Action will support AI-driven agricultural innovation across Europe by addressing the urgent challenge of climate change and its impact on crop productivity. The Action brings together a critical mass of researchers, farmers, data scientists, and industry stakeholders to standardise and integrate fragmented crop data (starting with barley) to enable predictive modelling and automated decision-making. By developing best-practice guidelines, open-access platforms, and community resources, HARVEST will build research capacity, foster cross-disciplinary collaboration, and support the development of AI recommender systems tailored to local climate conditions.

Climate unpredictability threatens food security and farmer livelihoods. To counter this, HARVEST will promote resilient data stewardship and FAIR-compliant standards to ensure agricultural data is accessible, interoperable, and AI-ready. The Action aligns with EU priorities including the Farm to Fork Strategy and Digital Europe Programme, contributing directly to sustainable farming and digital transformation goals.

HARVEST will organise workshops, training schools, short-term scientific missions, and collaborative events across five Working Groups focused on omics, phenomics, AI tools, dissemination, and coordination. These efforts will empower stakeholders to co-design solutions, unlock new funding opportunities, and build a future-proof agricultural data ecosystem.

Areas of Expertise Relevant for the Action	**Keywords**
● Other agricultural sciences: Databases, data mining, data curation, computational modelling for other agricultural sciences ● Computer and Information Sciences: Machine learning algorithms ● Computer and Information Sciences: Artificial intelligence, intelligent systems, multi agent systems ● Computer and Information Sciences: Computing on unconventional substrates, e.g. DNA and molecular computation	● Data Science ● Crop Metadada ● Agriculture ● Artificial Intelligence ● Crop Science

Specific Objectives
To achieve the main objective described in this MoU, the following specific objectives shall be accomplished:

Research Coordination
● Catalyze seamless communication and collaboration through workshops, networking events, and coordinated travel across the supply chain—farmers, scientists, policymakers, and end□users.
● Create standardised AI□ready data formats (aligned with ISO) and shared data□generation protocols.
● Develop a normalised data□integration procedure to support comprehensive AI model training, alongside training partners in best practices for collecting, storing, and using omics and phenotypic data with metadata.
● Support efforts to build minimal viable prototype models and AI generated recommendations, thereby demonstrating proof of concept and preliminary results.
● Develop comprehensive, specialised resources for key stakeholders to enable the widespread dissemination and utilisation of consolidated information from all Working Groups (WGs).
● Explore solutions to lower access barriers for non□programmers and streamline data retrieval across the consortium

Capacity Building

● Build a multidisciplinary European network of researchers, farmers, processors, policymakers, and users to enable knowledge exchange.
● Promote collaboration between participants through co-design of a multidisciplinary framework dedicated to standardise and annotate heterogenous data sources for AI utilisation.
● Promote inclusive research and knowledge exchange across career stages, ensuring an environment open to all ages, genders, and nationalities.
● Support interdisciplinary research skills in early-career participants by organising short-term scientific missions (STSMs) to foster their future leadership potential and encouraging uptake of leadership roles.
● Encourage collaboration between diverse participants through knowledge exchange events that include researchers, farming organisations, food businesses and policy makers.
● Encourage community engagement through Open Access repositories.

TECHNICAL ANNEX

1. EXCELLENCE IN S&T AND NETWORKING

A. Main challenge

Climate change is dramatically reshaping our natural world. Unpredictable or unfavourable weather patterns significantly impact on crop yields, food security and farmers' incomes. In combination with changes in pesticide and fertilizer policies, implemented to safeguard natural habitats, mean we must drastically rethink how we farm and what we grow[1].

Wild crop relatives hold great potential for improving cultivated varieties. While traditional genetics are slow to reach the field, newer methods like speed breeding, gene editing (GE), and artificial intelligence (AI) can accelerate progress[2,3]. Speed breeding and GE are already in use, but AI is still being developed. Its integration could streamline the path from lab to farm by automating decisions based on standardized data[4]. However, a major hurdle remains: the lack of high-quality, integrated data needed for reliable AI outcomes[5].

To raise global awareness and address key challenges in agriculture, we aim to establish HARVEST (**H**arnessing **AI** for **R**esponsive, **V**aluable, and **E**fficient **S**ustainable **T**echnologies)—a diverse, cross-disciplinary community dedicated to quantifying the bioeconomic impact of global warming on the food supply chain[6]. This includes critical areas such as farming, breeding, and genetics, which underpin global food security. HARVEST will explore how to standardise, accelerate, and apply modern technologies (AI, data science, genomics, phenomics, and open-access tools) to develop AI-informed recommendations that address climate change's effects on agriculture. We will identify unresolved challenges and missing links needed to build globally deployable technologies that match profitable, sustainable crop varieties to shifting regional climates. Central to our approach is a farmer-centric, crop-agnostic perspective, ensuring that farmers and industry stakeholders actively shape the solutions. HARVEST will also serve as a platform to attract and coordinate interdisciplinary funding for mission-critical technologies identified by our COST-Action community.

An **AI-powered recommender system is a computer-automated decision-making and classification procedure (predictive model)** trained on relevant expert-labelled data sources which can then input and examine novel set of input data (e.g. new environmental conditions and varieties) and recommend - predict - the best possible outcome, assuming that the training dataset is the 'ground-truth'[7]. AI's promise is to learn and identify novel patterns and rules within vastly heterogeneous data, yielding more sensitive and scalable predictive applications. This claim is proven for some applications such as natural language processing, protein folding and acceleration of the drug discovery pipeline[8-10]. Currently, AI recommendations for profitable crop varieties within challenging climates are not yet reliable and mostly out of reach for conventional breeders, farmers and the broader food sector. A major limitation for this approach to succeed is lack of data normalisation, standardisation and integration for AI applications in the agricultural pipeline[6]. To solve this, we will lean on expertise in the barley crop community, which already fosters communication across the entire supply chain (from crop genetics and breeding to farming), through strong, mutually beneficial partnership agreements and well-established pathways. Leveraging valuable and rich existing barley data, including DNA sequences, field trial results, phenomics data, biochemical analyses, digitalised written notes, domain-specific and simulated datasets (such as weather forecasts), satellite imagery, audio recordings, meeting minutes, PhD theses, manuscripts, plant passport data, published articles, images, and social media posts collected over the past 20+ years, we will develop an extrapolatable scenario for assessing impacts of climate through integrated data analysis for AI application. However, barley-related data across Europe remain fragmented, highly heterogeneous, and vary widely in quality. These datasets are also dynamic, and integrating them to quantify the bioeconomic costs and impacts of climate change continues. Our HARVEST community will highlight these challenges and pose solutions to inform and empower other sectors in the agricultural pipeline to exploit AI in their respective communities.

HARVEST's main ambition is to build an **interdisciplinary network that develops guidelines and community resources to promote data standardisation and integration for AI utilisation**. Ultimately, it aims to identify gaps that must be filled to enable the use of AI applications, such as recommender systems, which heavily rely on standardised and well-annotated data sources to produce useful recommendations. We will:
1. Identify and collate independently stored and non-standardised barley data and resources across Europe, and create a publicly accessible, fully annotated landing website or "The Barley Database" focusing on enabling AI model training and validation for the wider community. We envision the creation and advertisement of dedicated new data formats following ISO standards which are future proof for AI utilisation.
2. Coordinate efforts to standardise and organise best-practice procedures for resilient and sustainable data management (especially to guide or even onboard newly created data), ensuring their suitability and readiness for AI-powered recommender systems.
3. Provide a broad community-backed landing zone for researchers, industry, and end-users to develop proof-of-concept AI solutions that support grant applications for larger projects.
4. Actively engage with industry stakeholders (Partners: scientists, breeders, farmers, processing, and end-product users) to support the implementation and adoption of new technologies and protocols.

B. Objectives

The Problem: Climate change creates unpredictable and challenging conditions, jeopardizing food security and farmer profitability. Decades of crop data (genomic, field, phenomic) are heterogeneous, fragmented, and not AI-ready, making predictive modelling unreliable.
Our Solution: Build a robust and AI-aware community to advise on data annotation, integration and standardisation to foster the next generation of deployable technologies which match the most profitable and sustainable varieties with local, changing climates experienced by farmers. While barley is our exemplar crop, our work will support a global blueprint for standardizing, integrating, and labelling data for AI-powered predictions for any crop.
HARVEST Pan European Network will focus on making **practical seed deployment recommendations** through close interactions with researchers, farmers, policy-makers, and industry. **Best-practice guidelines** will be synthesized into actionable outcomes detailing how to best use heterogeneous data. These guidelines will help **structure, describe and promote reuse of data resources** for more effective mining for novel insight to advance scientific discovery, decision-making or data-driven communication. We will make barley data more accessible across the supply chain and explore **AI-powered recommender systems** for accelerating research outputs and agricultural performance. This will be supercharged by AI-based Early Career Researchers projects (PhD/Post-doc) already in place at HARVEST contributing organisations.
HARVEST will:

- Identify and map existing data resources across the network and coordinate standardisation for resilient, sustainable data management and AI utilisation.
- Establish shared standards for data and knowledge management, research protocols, biotechnology resources, and collaboration.
- Pair data generators with AI modellers and identify tangible shortcomings in the food supply chain that are ripe for AI disruption.
- Ensure data outputs, AI models and their predictions (once created through dedicated landing-zone grants) are accessible and usable across the entire supply chain.
- Foster cross-disciplinary matchmaking among partners (academia, industry, policy) along the barley supply chain to drive joint solutions to climate challenges.

Key Objectives:

- Bridge gaps among geneticists, data scientists, computational biologists, AI experts, physiologists, farmers, and policymakers (recommended list) to enable cross-disciplinary innovation.
- Align existing initiatives to reduce duplication and amplify collective impact.
- Promote shared data stewardship and interoperability.
- Enhance accessibility and uptake of scientific outputs through co-designed communication strategies.
- Build dedicated software sharing platforms on GitHub to kick-start open-source software and AI model development and thereby draw expertise from the entire open-source software community.

HARVEST ***Research Coordination objectives (RCOs).***
RCO1: Catalyze seamless communication and collaboration pathways through workshops, networking events, and travel partners along the supply-chain (farmers, scientists, policymakers and end-users) to

foster collaborative landing-zone grant applications. Our aim is for all partners to seek each other out to work on a new problem, gap, or funding opportunity.
RCO2: In step with RCO1 workshops and networking, develop standardised data formats for AI training (following ISO[11] and related efforts) and protocols for data generation to empower all partners to exploit our full data resources for their individual project tasks. We will work towards developing user-friendly application interfaces (landing pages) to further reduce barriers faced by non-programming experts to access our resources and retrieve data.
RCO3: Develop a normalised data-integration procedure to inform more comprehensive AI model training tasks. This will incorporate promotion and partner training on best practices for the collection, storage, and utilization of omics and phenotypic data and its associated metadata, ensuring maximum benefit and impact for target actors (scientists, breeders, farmers, processing, and end-product users)
RCO4: Support efforts to build minimal variable prototype models and AI generated recommendations, thereby demonstrating proof of concept and preliminary results for grant applications (landing-zone).
RCO5: Develop comprehensive, specialised resources for key stakeholders to enable the widespread dissemination and utilisation of consolidated information from all Working Groups (WGs).
HARVEST Capacity building Objectives:
HARVEST will contribute to capacity building by meeting the following objectives:
CBO1: Establish a multidisciplinary network of experts and stakeholders representing researchers, farmers, processors, policy-makers. and users across Europe and create a platform for lateral knowledge exchange and joint grant applications. Our network will focus on incentivising grant applications between program partners who identify explicit limitations/bottlenecks in the food-supply. We will prioritise projects and initiatives that seek to increase our understanding of the AI tool landscape, their application across the food-supply chain and their current limitations to build momentum of specialised discovery and engineering.
CBO2: Promote collaboration between participants through co-design of a multidisciplinary framework dedicated to standardise and annotate heterogenous data sources for AI utilisation.
CBO3: Promote inclusive research and knowledge-exchange between participants at different career stages, including PhD students, with an open and inclusive environment with respect to age, gender and nationality. We will ensure that our steering committee is composed of members representing all career-stages (Junior, Mid, Senior PIs) to ensure that research maturity (Senior PI experience) can meet future-driven problem solving (Junior/Mid PI long-term vision) in its most productive form.
CBO4: Incentivise future research and knowledge exchange, support partners who identify opportunities for joint grant applications and collaboration within our network and/or who onboard external collaborators to our network.
CBO5: Support interdisciplinary research skills in early-career participants by organising short-term scientific missions (STSMs) to foster their future leadership potential and encouraging uptake of leadership roles.
CBO6: Encourage collaboration between diverse participants through knowledge exchange events that include researchers, farming organisations, food businesses and policy makers.
CBO7: Submit all computer code, documentation and best practice guides to Open Access repositories. This will promote community engagement and contributions. HARVEST will also prioritise the support of partners to record dedicated instruction videos for sharing on Vimeo or YouTube to reach a global audience for our database and AI training efforts.
The **HARVEST** Action is well-aligned with **European Union** efforts because:
1) **Data refinement** for AI deployment is critical to all ongoing Horizon Europe funding projects and its efficient storage and utilisation is paramount to research project success.
2) It strengthens several ongoing Horizon Europe projects by **providing a blueprint** for future network efforts that focus on supporting the uptake of crops, as well as scientific and technological approaches to sustainable farming.
HARVEST will contribute to European Union effort by:
Building a more predictable better future: Climate change disrupts normal growing conditions putting enormous pressure on food supply. Thus, now, more than ever, the food supply chain can benefit from automated-decision making, collaboration, learning, standardisation and foresight, thereby drawing on knowledge and expertise both within Europe and worldwide. We envision that the initial 4-year investment into our network will facilitate training placements and research collaborations for another 3-6 years among supply-chain partners through co-applications to external fundings. We anticipate that funding our 4-year COST-Action plan **has the potential to unlock at least 10 years' worth of networking, research, and policy-exploration efforts**.
The strength of the current network: In the proposal stage, this initiative was supported by over 60 partners from 19 countries, spanning disciplines such as cereal genetics, AI, bioinformatics, and farming. These

experts contribute to best practices for managing and standardizing experimental data, with most **HARVEST** partners equipped to label barley datasets using weather models and satellite imagery for AI training. The barley community stands out for its early efforts in data standardisation, enabling an ideal strong foundation for AI recommender systems targeting underutilised crops. Backed by data scientists, AI specialists, and end-user organisations such as breeders, farmer association, AI developer, the project promotes interdisciplinary collaboration and will recruit and inform talent focused on AI-driven agricultural innovation.

Fostering knowledge exchange: AI's full potential can be realised only if researchers, breeders, and end-users have the skills and tools to collect, manage, and analyse high-quality data. By creating a unified approach, we will label and standardise our well-established barley data resources for deployment of AI models to foster the engineering of making powerful predictions and deliver tangible benefits for the agricultural sector across Europe. Although our starting point is around barley data, we have already engaged with other crop communities (wheat, potatoes) and expect our network guidelines to have positive ripple effects in these contexts. We will facilitate wider uptake by recruiting members throughout the 4 years of the program, participation in workshops, conferences, public engagement and by engaging with other active COST Actions (RECROP[12], DIVERSICROP[13], EPICROP[14], CROSS-CASCADE[15]), European and International initiatives (BESTCROP[16], AGROBOOST[17], CROPSAFE[18], ROTATES[19], BOLD[20]).

Maintaining European Science Excellence: Knowledge and data sharing are pivotal to Europe's competitiveness and to reduce barriers across geographical and socio political differences within research communities. Valuable barley datasets exist in both national and European projects/databases but are currently highly heterogeneous and dispersed across research disciplines. We need to consolidate these highly valuable datasets by bringing data together in one place or, more appropriately, using a federated approach allowing research groups to focus on their specialisms. Common standards, formats and Application Programming Interfaces (APIs) help facilitate this and can help combine datasets more easily. Fostering cross-generational collaboration is also crucial to engage and retain researchers through interdisciplinary mentoring and exposure to stakeholders.

Contributing to European Priorities: The Farm to Fork[21] strategy highlights the importance of Agricultural Knowledge and Innovation Systems (AKIS) for tailored advisory services across Europe and neighbouring countries. Sharing and consolidating data is key to building sustainable food systems. As part of the 'Shaping Europe's Digital Future' strategy, the European Commission promotes the Digital Europe Programme[22], which includes an agriculture data space to improve data analysis in farming, and a Green Deal data space to support climate and biodiversity goals. The '2025 State of the Digital Decade' report[23] calls for renewed efforts in digital transformation, security, and technological sovereignty—areas this Action supports. It also aligns with the EC's Coordinated Plan on Artificial Intelligence. These initiatives aim to make agricultural data widely available to support informed decision-making, strengthen digital capabilities, reduce investment risks, and improve income and stability for businesses and the public.

HARVEST is a blueprint for how crop science and AI can grow together to address today and tomorrow's important societal challenges.

C. State-of-the-art

From the past few decades, research supported by national initiatives and Horizon 2020 has generated an extraordinary volume of barley and other crop-related data using a variety of approaches, from field trials to high-resolution genomic sequencing. These efforts have contributed to a rich but fragmented data landscape. Projects such as the Crop Diversification Cluster[24] and crop-specific platforms like the PLANTdataHUB[25] routinely reuse existing datasets, generate new ones, and apply them to knowledge discovery and synthesis. Despite detailed data plans within each project, the absence of a unified data standard across initiatives hampers integration along the supply chain, a lack of cohesion that slows innovation, duplicates effort, and limits the broader utility of the data. Several HARVEST partners are now exploring the use of artificial intelligence to unlock new insights from barley datasets. However, they face persistent challenges, including:

- Inaccurate or inaccessible research data;
- Limited training and expertise in handling specific datasets;
- Fragmented data sources requiring manual aggregation;
- Few opportunities for collaboration with AI specialists.

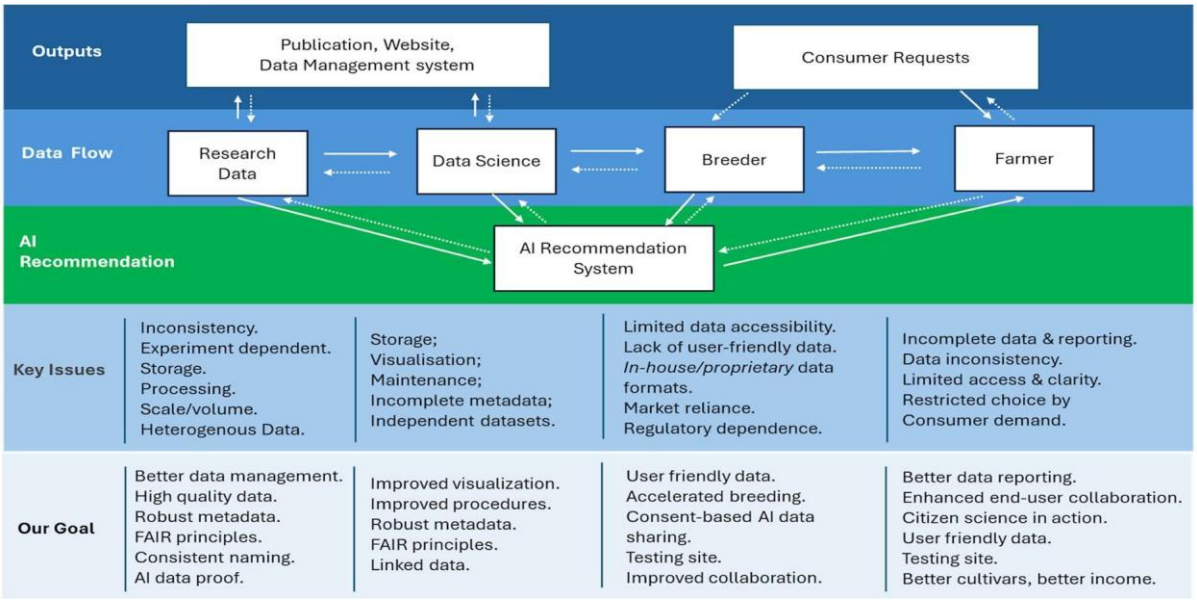

Fig. 1 Data flow across the supply chain: Key issues and solutions - solid arrows show direct data direction, while dotted arrows reflect potential feedback/influences that are uncontrolled.

First, we defined the data generators, the types of data produced, and how data are released and used across the supply chain (Fig. 1). For our purposes, we categorised data generators into five groups: **Researcher, Data Scientist/AI Expert, Breeder, Farmer, and Consumer**. Each group generates and uses data and resources to the best of their knowledge. By identifying key issues within each group, we established that the primary challenge lies in **heterogeneous, inconsistent, and incomplete data** (missing annotations or labels required for model training) Inconsistencies are pervasive across barley resources, such as the lack of matching gene model numbers across databases or the use of different gene expression units. Additionally, we found that farmers have limited autonomy in deciding what to grow and receive minimal support in making optimal decisions regarding field treatments during the growing season, a challenge further compounded by their high dependency on unpredictable external pressures. By redefining how experimental data are structured, interpreted, and applied, while also aligning data across disciplines and embedding FAIR (Findable, Accessible, Interoperable, Reusable) principles, we aim to **improve data consistency, management, visualization, and utilisation** across the supply chain.

Second, we examined similar projects to gain best practice. For example, the Arabidopsis community successfully shared resources through TAIR[26], but its generation and maintenance required much manual work and now relies on a subscription model for long-term sustainability. Equally, The Wheat@URGI[27] portal offers useful genetic and genomic data for wheat, but this data resources cannot currently be used for AI modelling, because it needs manual updates and lacks long-term funding. Moreover, large community databases like Gramene[28]/Ensembl[29] and GrainGenes[30] struggle to keep up with fast releases of plant genome data. We will avoid these issues by drafting a shortlist of such shortcomings and encouraging all partners to consider these long-term sustainability issues and seek long-term solutions for data management rather than focusing on funding dataset generation for niche questions in the short term.

Third, we will train **HARVEST** partners on a well-managed dataset to explain how to use resources and build a user-friendly and single dedicated platform landing page to instill community confidence in long-term data management and utilisation vision. This will help the community move beyond isolated systems and foster trust in using **Artificial Intelligence** to gain deeper insights, build predictive models, and support automated decision-making across the agriculture pipeline. This effort will be supported by ongoing AI projects from **HARVEST** partners, involving PhD students, postdocs, farms, and industry.

To deliver our mission, **HARVEST** is organized into five focused working groups (WGs):

WG1: Omics Data Management: Developing clear guidelines for collecting and organising biological data (DNA, RNA, proteins, metabolites) to support AI-driven research. Shared tools and methods will enable genome annotation, RNA analysis, and deeper insights into barley breeding and resilience.

WG2: Phenotypic Data Standards: Promoting frameworks like MIAPPE[31] and ELIXIR[32] to ensure consistent, FAIR-compliant plant trait data. Training and workshops will support adoption across the research community.

WG3: AI Tools for Research, Agriculture and Farm Recommendations: Applying AI to real-world

farming challenges; for example, integrating DeepMind's[33] weather models, satellite imagery, and soil health data with our genomic understanding of plant varieties. Collaborating with industry to build scalable tools for high-throughput phenotyping and smarter decision-making.
WG4: Dissemination, Communication & Training: Engaging researchers, farmers, and stakeholders through events, workshops, and training schools. Supporting early-career researchers with supply chain visits to develop domain specific skills and confidence in the interdisciplinary strengths derived from utilising the **HARVEST** network. **Coordination & Management:** Ensuring smooth collaboration by incentivising cross-disciplinary and cross-supply-chain partnerships and problem identification, managing logistics, and aligning all teams with the project's strategic goals.

D. Rationale for choosing networking to address the main challenge

The **HARVEST** initiative addresses a complex and urgent societal and food-supply challenge: **how to exploit AI to safeguard farming, breeding, and crop genetics in the face of climate change.** Building future-proof and robust global partnerships through networking is a strategic solution because it pools resources and helps form dedicated landing zones that can mobilize funds for cross-disciplinary efforts. The impact of global warming on the bioeconomy of farming, as identified by the **HARVEST** community, reveals critical knowledge gaps about how climate unpredictability will affect food security. Deploying cost-effective funds for community-building across our sweeping network will help secure larger funds through specific opportunities as identified by network partners. We see **HARVEST** as a kick-starting collaboration at this global scale (representing >60 supporters from 19 countries. COST funding plays a pivotal role by providing the infrastructure and support needed to incentivise these collaborations and future funding applications. **HARVEST moves beyond the project structure to represent a movement to transform agricultural science through data-driven, user-centric innovation using barley as a blueprint.**
Two key factors guided the formation of the network. First, it is **multidisciplinary**, bringing together experts in AI engineering, computational biology, informatics, data science, barley genetics, farming, plant breeding, and policy-makers. These stakeholders share a commitment to leveraging disruptive technologies to meet global demands for climate resilience and food security. Early discussions within our **Working Groups** have already led to valuable exchanges about existing datasets across Europe and the potential to harmonize and document these resources for future AI deployment. Second, **geographic diversity is essential**. Barley cultivation varies significantly across Europe due to agronomic and political conditions. Cross-border collaboration enables knowledge exchange that informs policy, best practices, and serves as a model for transdisciplinary cooperation. The HARVEST network includes members from COST Member Countries, Inclusiveness Target Countries (ITC), Near Neighbour Countries (NNC), and International Partner Countries (IPC), with a balanced representation of young researchers, mid-career professionals, and senior experts. Participants span academia, research institutes, farming, non-governmental organisations (NGO), and businesses, each connected to broader stakeholder communities including policymakers, breeders, consumers, and farmers.
Stakeholders will actively expand membership within their categories, engaging additional partners, NGOs, and Agricultural Knowledge and Innovation Systems (AKIS). We anticipate increased participation from NNCs, ITCs and IPCs, reflecting the global relevance of the challenges we address. **Networking is the engine that drives HARVEST's ambition** by breaking down disciplinary silos, scaling collaboration, and building the technological foundation for a climate-resilient bioeconomy.

E. Critical mass of the network

To meet the ambitious objectives of this COST Action, we have assembled a critical mass of expertise across disciplines, geographies, and career stages. Our inclusive and collaborative approach is central to the COST framework and will amplify our scientific and technological impact while fostering long-term partnerships and innovation. Many existing initiatives in data management and agricultural resources remain underused due to limited awareness and accessibility. **HARVEST** will surmount this gap by creating a pilot platform to explore effective, AI-integrated data management strategies.
How HARVEST is unique: To our knowledge, **HARVEST** represents a unique network to exploit barley science as a blueprint to deploy AI in an advanced, interdisciplinary way to inform all steps along the food-supply-chain. Unlike projects that focus narrowly on crop data **or** AI, **HARVEST** aims to bridge both—bringing together farmers, breeders, computational scientists, AI experts, business leaders, and ethics analysts across career stages and regions. What makes **HARVEST** stand out:

- **Barley as an AI testbed:** ours is the only initiative using rich barley data with the explicit goal to develop it as a blueprint to mobilise data from all crops for emerging data technologies such as AI training (automated decision making) and AI-informed farming recommendations.
- **Unprecedented collaboration:** We have already gathered a diverse mix of stakeholders to co-design

data practices and have activities in place to expand to a larger scale. We envision that project partners across our network will identify problems and AI-driven technologies which could substantiate in **dedicated grant proposals** or even **deep-technology startups**.

- **Skill-building at scale:** HARVEST will not only generate insights but will train partners in the technological advances unlocked through AI and management strategies required to model, train, and deploy AIs on standardised data.
- **Systemic impact:** By consolidating datasets and fostering new interactions, HARVEST lays the groundwork for future-ready and highly climate adaptive agriculture.
- **Strategic continuity:** Building on previous COST Action and Horizon 2020 projects, HARVEST goes further with deep analysis and recommendations for future projects.

Our platform will be a launchpad for experimentation, training, and collaboration. **HARVEST** will bring together a pan-European network of subject-matter experts in AI engineering, computational biology, informatics, barley genetics, agronomy, plant pathology, and farming industry, as well as educators and policy makers dedicated to:

- **Multidisciplinary Expertise:** Integrating specialists in AI engineering, computational biology, informatics, barley genetics, agronomy, plant pathology, and the farming industry to enhance data management and AI-driven applications.
- **Geographical Representation:** Involving diverse participants from across Europe, with a focus on Inclusiveness Target Countries (ITCs) and Near Neighbouring Countries (NNCs), to connect established and emerging research communities.
- **Support for Early-Career Researchers and Gender Equity:** Building capacity for young innovators while promoting gender-balanced and minority opportunities.
- **Global Collaboration:** Expanding the network beyond COST members to encourage international knowledge exchange and a unified approach to data practices. We envision developing a blueprint for other COST Action networks to adopt when attempting to explore how to incorporate the use of AI into their domain specific communities.
- **Interactive Knowledge Sharing:** Hosting meetings, workshops, and leveraging digital tools to foster collaborative learning and problem-solving.
- **Alignment with Broader Initiatives:** Coordinating with programs like Horizon Europe to strengthen efforts in sustainable agriculture and climate resilience.
- **Sustained Impact:** Creating lasting partnerships, dedicated grant applications, and driving continuous innovation beyond the project's duration.
- **Academic Mobility:** Encouraging long-term cooperation through STSMs and agreements such as ERASMUS and Marie-Curie Fellowships.

2. IMPACT

A. Impact related to objectives

Research Impact: HARVEST promotes a pan-European, multidisciplinary collaboration among academic and industry communities focused on barley improvement. It encourages data sharing and coordination across existing initiatives to accelerate scientific progress and enhance food security. The network will develop best practice guidelines for collecting, curating, and managing omics and phenotypic data in barley research, aligned with international genomics standards. For example, by applying AI to genome annotation and genotype-to-phenotype prediction, **HARVEST** will help to identify the deeper biological insights required to advance plant breeding and resilience.

Technology Impact: HARVEST will strongly incentivise projects and partnership formation around exploring the requirements and existing limitations of integrating artificial intelligence into both research and industrial pipelines. It trains stakeholders in data management and prepares the food-supply chain for AI adoption in accordance with European ethics and standards. We will include ongoing projects across network partners to highlight AI applications that include satellite imaging analysis workflows and predictive modelling to encourage and inspire other network partners to invest into AI innovations/solutions suitable for immediate applicability by end users and tailored to their specific needs, maximizing return on network-initiation investment.

Socio-Economic Impact: HARVEST provides interdisciplinary and cross-sector training, scientific exchanges, and career development opportunities for early career professionals in academia, industry, and policy. Students gain access to specialized training schools, STSMs, and international meetings, enhancing their career development. The public HARVEST website will act as a central hub for barley research but also as a blueprint for other plants offering transferable guidelines for other minor or emerging crops.

HARVEST is supporting 8 of the 17 United Nations Sustainable Development Goals[34].

- **Goal 2**: Improving food security through disease prevention.
- **Goal 4**: Providing diverse and high quality education through interdisciplinary and international (19 countries) training and career development for young professionals.
- **Goal 8**: Promoting decent work and economic growth by equipping individuals with marketable skills (especially in directing AI agents for agricultural benefits), supporting job creation and sustainable agricultural development.
- **Goal 9**: Advancing industry, innovation, and infrastructure by modernizing farming practices and diagnostics through AI and data science.
- **Goal 12**: Promoting responsible production via smart diagnostics and sustainable farming practices.
- **Goal 13**: Supporting climate resilience through AI-driven insights. By analyzing data on weather patterns, soil conditions, and barley health, AI helps farmers adapt to climate change and manage risks such as extreme or unstable weather events.
- **Goal 15**: Contributing to biodiversity and ecosystem health by optimising AI use to catalyze crop diversity and sustainable land use.
- **Goal 17**: Fostering partnerships among farmers, small and medium-sized enterprises (SMEs), researchers, and policy-makers. These collaborations ensure practical, scalable solutions and create networks of shared knowledge and resources, accelerating progress toward other goals.

B. Involvement of stakeholders

The **HARVEST** initiative thrives on inclusive, cross-disciplinary collaboration. Stakeholders from across the agricultural value chain will shape the development and deployment of AI-powered technologies for climate-smart farming. The following groups are central to success:

1. **Scientific Experts and Researchers:** HARVEST will bring together experts in AI, plant genetics, bioinformatics, computational biology, and phenomics to advance crop stress response, genomics, and data science. Collaboration will occur through workshops, training schools, and thematic meetings. Contributions from biomolecular and developmental biologists (yield optimisation) will further enrich data integration and predictive modelling approaches.
2. **Technology Companies and AI Developers:** Biotechnology companies focused on plant breeding, farming and AI experts will explore and identify available resources, deployment limitations, and funding opportunities that are available to design, test, and scale predictive AI models such as recommender systems tailored to agricultural data. **HARVEST** will foster collaboration through joint workshops, co-development missions, and pilot projects. These partners will help transform complex and disconnected datasets into integrated data resources supporting construction of intuitive user platforms for automated data retrieval and analysis such as AI model training and data science.
3. **Farmer Organisations and Unions:** While geneticists and developmental biologists have traditionally focused on the fundamental research of the plant itself, our COST-Action is designed to place farmers at the center of HARVEST's mission. Via training schools, workshops, and feedback sessions, farmers will co-design trait recording and management priorities, directly shaping AI-driven recommender systems and data protocols. We will engage new farmers to drive innovation and address generational shifts through round tables and specialised sessions. Our goal is to understand the cost-benefit decisions farmers make and quantify the incentives needed to gain farmers trust in AI recommendations despite yield uncertainties.

4. **General Public:** Public engagement is a cornerstone of HARVEST's dissemination strategy. By sharing the initiative's goals and outcomes through accessible platforms, HARVEST aims to raise awareness of data-driven and AI guided agriculture and climate resilience. Our outreach will empower citizens to understand and support sustainable farming practices, reinforcing the democratic foundation of agricultural policy and innovation in Europe. In addition, HARVEST will promote **responsible AI literacy** among the public, educating in easy-to-follow terms how AI technologies are developed, applied, and governed within agriculture. Through educational campaigns, webinars, and partnerships with NGOs and schools, the Consortium will encourage critical thinking about AI's benefits, limitations, and ethical use. This will build public trust, ensure transparency, and foster informed support for AI-driven solutions aligned with societal values and environmental sustainability.

To ensure meaningful involvement and lasting impact, HARVEST will implement the following strategies:

- **Stakeholder Mapping**: Identify and map key actors (researchers, tech firms, farmers, AI developers, and policymakers) across all member countries to align goals with stakeholders.
- **Early Engagement & Co-Creation**: Involve stakeholders from the start to co-develop practical, scalable solutions, especially around data use and AI integration.
- **Capacity Building**: Offer workshops and training for farmers, agronomists, and industry

professionals to strengthen skills in data management and sharing.

- **Cross-Sector Collaboration**: Build bridges and actively remove barriers between academia, industry, and agriculture to translate research into application and inform policy development.
- **Policy Advocacy**: **Public Outreach**: Promote understanding of AI-driven agriculture through science communication, social media, webinars, and partnerships with NGOs.

C. Communication, dissemination and valorisation

- **Publications in internationally renowned peer reviewed journals** such as original articles, reviews, opinions, perspectives in Open Access format, including research, data science, and AI protocols and guidelines.
- **Blogs or short articles on websites and specialized journals:** Information should be relevant to farmers and breeders and science magazines for the public. Topics of interest will include information on AI, FAIR data and data management, crop genetic improvement for developing stress resilient crops or their management.
- **Annual international conference** with sessions covering all disciplines that are relevant for HARVEST, which will bring together top scientists from all around the world.
- **Workshops** focused on specific topics related to HARVEST and stakeholder engagement.
- **Training schools** and **webinars** on topics such as barley resources, tutorials, practical experiments, data management and FAIR data principles, AI in research and Agriculture, how to use AI responsibly, big data and modelling.
- **Use of social media** (X, Bluesky, Facebook, Instagram, YouTube, Vimeo, TikTok) or Professional Platforms (e.g. LinkedIn, ResearchGate) and partner websites to disseminate activities and reach out outside of the network.
- Present the activities of our consortium in **public events** like “Fascination of Plants Day”, an European Plant Science Organization (EPSO) initiative, as well as **local events** organized Europe-wide such as university-led science festivals or farmer events.
- Update on activities and achievements of HARVEST on the website and through regular communication (e.g newsletter). **Create a Youtube channel for webinars and podcasts**.

3. IMPLEMENTATION

A. Action Structure

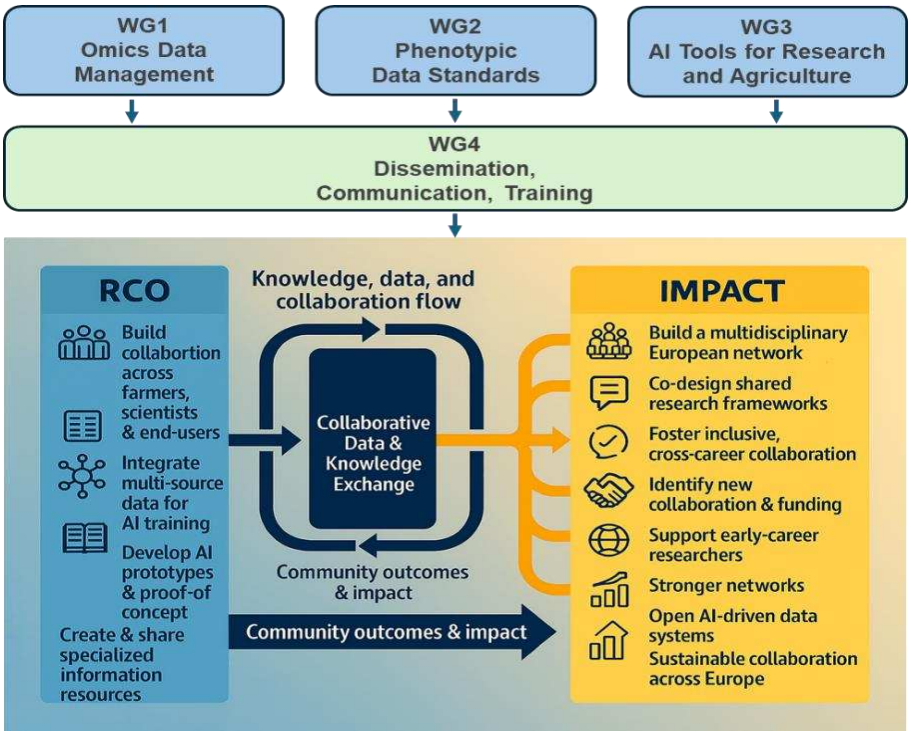

Fig. 2 Action Structure - how each of the WG’s contributes towards the overall aims and impacts of HARVEST.

B. Work plan (tasks, activities and timeframe)

Working Group 1 - Omics Data Management:

This working group aims to build a collaborative network to develop best practice guidelines for collecting, standardising and managing omics data in crop research, aligned with advances in AI such as large language models, genome models, and protein structure predictors. These models can uncover regulatory links between sequences, genes, transcripts, and proteins, and be adapted to specific tasks through transfer learning, provided expert-labelled data is available. Labelled data is costly but crucial for benchmarking and fine-tuning AI models. Biologists with deep knowledge of specific molecular pathways play a key role. Using barley as a model and blueprint for AI training, the consortium will coordinate data collection and use it to refine AI protocols and formats, improving data practices for the AI era. To bridge the gap between biology and AI, we will host monthly seminars featuring researchers applying AI to biological problems, and support Short Scientific Missions to train young scientists in these emerging methods. The network will build on consortium-led local initiatives to enhance data curation frameworks, improving interoperability, metadata quality, and long-term access. It aims to align with global genomics standards while integrating local datasets to enrich international repositories. AI will be explored for genome annotation in barley, identifying areas where machine learning can accelerate gene discovery. Our network will discuss and provide detailed guidelines on how to include RNA-Seq analysis, protein interaction mapping, and gene model prediction using tools such as AlphaFold, fostering collaboration across bioinformatics and molecular biology. Shared infrastructure and harmonized methods will support deeper insights and innovation in barley breeding. This WG will also assess how EOSC cloud services can support long-term data hosting and storage and which funding model will ensure long-term sustainability.

T1.1 Identify and index available barley omics resources, databases and germplasm collections.

T1.2 Community evaluation of requirements and emerging standards to maximize data uptake and re-use by emerging AI technologies. The ELIXIR Plant Sciences community will also be consulted.

T1.3 Audit of indexed resources to identify problems that hamper data integration. This will involve consultation with resource developers and possibly curation by the consortium.

T1.4 Proof-of-concept AI application integrating data from indexed resources: unified gene annotation. Currently there are +100 genome annotation datasets but no unifying tools to map these onto each other. This is an open and persistent problem affecting all species with genomics data.

T1.5 Initiate the landing zone for "*The Barley Blueprint Database*" where collated data sources will be collected, described (including tutorials).

T1.6 Co-organize quarterly WG leader meetings

Working Group 2 - Phenotypic Data Standards:

This working group will explore and promote the adoption of standardized frameworks such as EMPHASIS[35], MIAPPE[31], PhenomUK[36], AgBioData[37], and ELIXIR[38], to ensure robust and reproducible phenotypic data collection and analysis under Findable, Accessible Interoperable, Reusable (FAIR) data principles[39] and interoperability from farm to phenotypic platforms. Initiatives such as GO FAIR[40] will also help guide this Action. Many of these networks focus on high-level image and computationally heavy phenotyping. However, phenotypic data can also be derived from diverse modalities from manually scored phenotyping (such as growth development scores), national field trials data, data extracted from complex imaging and image analysis processes including 3D datasets, drone-based imaging, RGB cameras, infrared sensors, X-ray-ct and microscopy. Datasets may be re-used if findable thus all datasets should be accompanied by rich metadata detailing acquisition parameters, environmental conditions, and biological context. Integrating AI into image analysis workflows enables efficient and scalable trait extraction, with in-house applications already demonstrating success in tasks such as weed detection, shape classification, stress response monitoring, stomata identification and counting, and root hair segmentation. To maximize the utility of phenotypic datasets, researchers should also incorporate domain-specific ontologies, maintain rigorous quality control, and ensure seamless integration with genotypic and environmental data sources. To bridge the gap between phenotyping at all levels and AI, we will host a seminar series featuring researchers applying AI to biological problems from text based analysis (e.g. using AI to create metadata from publications relevant to a dataset where the metadata does not exist at modern standards), through farm data gathering and automated phenotyping facilities. Short Scientific Missions that cross phenotyping AI barriers will be supported to train young scientists in these emerging methods.

T2.1 Evaluate data requirements from HARVEST Action collaborators to prepare guidelines on how to achieve best-practice from initial phenotyping through image analysis and data storage, including use of existing standards such as MIAPPE and PHENOME UK.

T2.2 Promote digital tools to collect phenotypic data in the field/lab and farm to best future-proof data

for emerging AI technologies.
T2.3 Undertake an audit of historical data (including publicly available trial data, e.g. from national list trials) and provide guidance on how to curate these data in standardised ways to current and emerging standards. Undertake audit of existing databases and data resources and generate a community curated list of resources to publish on the central Action website.
T2.4 Webinar series demonstrating utility of AI assisted data mapping processes available for phenotyping from phenotyping facilities to on-farm, data collation and metadata exploration and collation.
T2.5 Co-organize quarterly WG leader meetings

Working Group 3 - AI Tools for Research and Agriculture:
Artificial intelligence is transforming the use of technology and data to solve societal problems at scale. While much hype and misunderstanding exists around the tasks and problems that AI can tackle (e.g. automate scaling of data processing (retrieval/training) and interpret (prediction), the best historic analogy to the applications of AI to help solve domain specific problems is the Personal Computer (PC). When PCs were introduced, neither the internet nor clear applications beyond scaling computations (a more powerful calculator) were envisioned. Yet, the ability to abstract computing through computer code enabled data processing at unprecedented scale which ultimately fundamentally restructured our society, ushering in the Digital Age. Analogous to early personal computing, AI models and agents can now be seen as domain specific computers able to solve well-defined problems through data processing and prediction (AI age). Well-defined means that any AI model, agent, or prediction is only as good as the training data or the pattern it recognised. As a result, any community looking to adopt AI for their domain specific application, will need to prepare their datasets for meaningful AI training. In detail, this means substantial effort into data labelling and annotation, not only for a classic data lookup, but standardised enough automated model training and interpretation. The application of AI in crop research and agriculture to enable precise, data-driven farming would need to design AI models that are able to interpret crop growth under varying weather, soil, and nutrient conditions, using satellite imagery and sensor data to forecast yields and optimize resources. Such models would also need to anticipate pest and disease outbreaks by linking environmental factors with historical patterns, allowing timely interventions. High-throughput phenotyping powered by AI could accelerate detection of crop health issues and improve diagnostics across large populations. As a final outcome, such an agriculturally (food-supply-chain) aware AI model or agent could inform the yearly seed recommendation list provided to farmers based on an AI-powered recommender system. We envision that our COST Action network will discuss how to prepare agriculture for the AI age by exploring which datasets available across the food-supply-chain are already able to be integrated for AI recommender systems, while also highlighting datasets and bottlenecks that prevent use in AI applications. Since weather forecasting and soil composition are key markers traditionally used to make seed recommendations to farmers, a dedicated working group on our COST Action will promote the use of Google DeepMind's short- and medium-term predictive weather models (WeatherNext) and AI-based analysis of satellite imagery for barley fields, growth patterns, pest impact, and soil-nutrient dynamics (global image datasets). The initiative will tackle data quality and interoperability challenges while fostering collaboration among researchers, industry partners, and farmers. Through workshops, pilot projects, and data-sharing platforms, the network will drive the development of data standards and meta-data standards for new data generation to enable scalable AI tools to train and traverse these data resources and thereby ensure future-proof innovations that meet real-world agricultural needs, especially in climate-stressed regions.
T3.1 In collaboration with WG4, establish a network of farmers and researchers to explore problems solvable through AI methods to mitigate climate impacts from genotype to phenotype predictions.
T3.2 In collaboration with WG4, undertake survey and mapping exercise of selected farmers and their needs, expectations and requirements for incorporating AI solutions into farming practices to mitigate stress in barley. Identify potential exemplar projects and propose prototype solutions.
T3.3 Establish a community of farmers, breeders, researchers, policymakers and the public interested in AI applications in farming.
T3.4 Coordinate workshops to engage with the industry and external stakeholders.
T3.5 Co-organize quarterly WG leader meetings

Working Group 4 - Dissemination, communication, training and events:
To ensure long-term impact of HARVEST and foster grant applications between partners, WG4 will coordinate dissemination, ESR training, organization of conferences and meetings, general outreach and KTE activities along with the Actions other WG's. The WG4 will support dialogue between scientists, farmers and the public as well as policymakers and other associated research actions and projects at

both an EU and international level. The WG4 will further promote open science and FAIR principles and closely interact with relevant ethics committees to help oversee interactions with farmers and other relevant actors ensuring GDPR compliance while undertaking surveys and questionnaires. Effective dissemination, communication, and training are vital for driving collaboration and innovation in AI-supported barley data research. We will publish original and review papers in open-access journals, present findings at HARVEST and partner conferences, share datasets via FAIR-compliant repositories, and produce tutorial videos. Communication will target researchers, industry stakeholders, and the public through newsletters, webinars, social media, and project websites managed by HARVEST members. HARVEST meetings will align with major community events to boost participation and reduce environmental impact. Training will include STSMs, workshops, and schools, with at least 30% of STSMs bridging academic and applied sectors. Training schools and Workshops could focus on data standards, imaging, and AI tools to promote best practices. Regular seminars, user meetings, and interdisciplinary forums will foster networking, knowledge exchange, and showcase emerging technologies, effectively building a dynamic community to advance phenotyping science. The working group will engage scientists, breeders, industry (including farmers), and the public through the following initiatives:

T4.1 Organise the annual HARVEST Conference with consideration for gender and minority balance, career stage, geographical representation and industry participation.
T4.2 Select and coordinate training schools. We will encourage participation from ITCs, low-research-investment countries and NNCs for broad inclusion and skill development.
T4.3 Advertise, promote and select STSMs for both scientists and industry partners in collaboration with the Management Committee (MC).
T4.4 Monitor publication effort through publishing original and review papers in open-access journals and other relevant mediums on selected topics.
T4.5 Organize Annual Management Meetings
T4.6: Coordinate Quarterly WG Leader Meetings
T4.7: Oversee HARVEST Digital Presence & Media – e.g. HARVEST website, GitHub repository, YouTube, TikTok, Vimeo channels for the dissemination of results to the community and general public.
T4.8 Promote and support communication of results to HARVEST collaborators and members through website, social media, newsletter or Knowledge event.

C. Deliverables

WG1	**D1.1** List of existing resources published on HARVEST Action website and organized by topic. Could include a small introduction, summary statistics and links to tutorials. **[M3-24]** **D1.2** Awareness of community standards for AI-Ready Data. Could be through best practices guides, training materials and seminar series. **[M15-36]** **D1.3** Diagnostics and proposed solutions for barley omics resources. Could include AI-readiness guides, open discussion on what future work is needed to use the resource for AI training and modelling. **[M27-48]** **D1.4** Actively participate in discussion for unified barley gene annotation using our data standards defined in **D1.2**.**[M3-48]** **D1.5** Barley Blueprint Database Launch **[M33-48]** **D1.6** Co-organize Quarterly WG Leader Meetings **[M3-48]**
WG2	**D2.1** Development of best practice guide on data management for phenomic and other types of relevant data. **[M3-36]** **D2.2** List of existing data resources published on HARVEST Action website. **[M3-42]** **D2.3** Develop training materials, seminars and user engagement to increase the action communities' skills and raise awareness for AI use cases across the food-supply-chain**. [M27-48]** **D2.4** Organize an AI focused seminar **[M15-48]** **D2.5** Co-organize Quarterly WG Leader Meetings **.[M3-48]**
WG3	**D3.1** New Industry/researcher collaborative network **[M15-48]** **D3.2** Identification of farmer/Industry's need **[M16-39]** **D3.3** Exemplar projects and propose prototype solutions on the use of AI in agriculture or other industry **[M27-48]** **D3.4** Coordinate the organization of industry workshops. This can include field trips,

	roundtable discussions involving local stakeholders and can be organized as part of larger local events (e.g. Barley Mutants Workshop in Upsala Summer 2026).**[M27-48]** **D3.5** Co-organize Quarterly WG Leader Meetings .**[M3-48]**
WG4	**D4.1** Coordination the action annual conference with support from local organizers. 50% of the presentation will be dedicated for early career researchers and 25% to mid-career researchers. We will also monitor gender and minority balance as well as geolocation. **[M15-48]** **D4.2** Coordinate training schools, or the development of protocols or the implementation of new Technology. We will explore the use of hybrid (online and in-person) format. **[M15-48]** **D4.3** Coordinate STSMs especially promoting interaction of academic and industrial partners. **[M15-48]** **D4.4** Oversee the production of paper, reviews, protocol papers and tutorial videos throughout the duration of the action.**[M15-48]** **D4.5** Organize Annual Management Meetings **[M12-48]** **D4.6** Coordinate Quarterly WG Leader Meetings **[M3-48]** **D4.7** Oversee HARVEST digital presence – Could include HARVEST website and video to propagate HARVEST COST action, preparation of Github repository to share materials, protocols and information between HARVEST WGs, stakeholders and the public.**[M3-48]** **D4.8.** Promote and support communication & outreach – for example, publicize articles, protocols and activities from the network though social media, website, conferences, podcast.**[M3-48]**

D. Gantt chart

WG	Tasks	Year1				Year2				Year3				Year4			
		M3	M6	M9	M12	M15	M18	M21	M24	M27	M30	M33	M36	M39	M42	M45	M48
WG1	T1.1: Barley Omics Resource Indexing								D1.1								
	T1.2: Awareness of Community Standards for AI-Ready Data												D1.2				
	T1.3: Principle for Data Integration Audit & Curation																D1.3
	T1.4: Pinciple for AI-Driven Unified Gene Annotation																D1.4
	T1.5: Barley Blueprint Database Launch																D1.5
	T1.6: Co-organize Quarterly WG Leader Meetings																D1.6
WG2	T2.1: Awarness of Phenotyping Data Standards & Guidelines												D2.2				
	T2.2: curated list of Digital Tools for Phenotyping													D2.2			
	T2.3: Audit & Curation of Historical Data																D2.3
	T2.4: AI in Phenotyping Webinar Series					D2.4											
	T2.5: Co-organize Quarterly WG Leader Meetings																D2.5
WG3	T3.1 Building an Industry/Researcher AI Network																D3.1
	T3.2: Farmer/Industry Needs Assessment for AI Solutions													D3.2			
	T3.3: Supporting AI in Agriculture Community Building																D3.4
	T3.4: Develop Industry & Stakeholder Workshops																D3.5
	T3.5: Co-organize Quarterly WG Leader Meetings																D3.6
WG4	T4.1 Organize HARVEST Conferences								*D4.1*				*D4.1*				D4.1
	T4.2: Coordinate Training Schools for Inclusive Capacity Building																D4.2
	T4.3: Coordinate Short-Term Missions																D4.3
	T4.4: Monitor Open Access Publications & Dissemination																D4.4
	T4.5: Organize Annual Management Meetings								*D4.5*				*D4.5*				D4.5
	T4.6: Coordinate Quarterly WG Leader Meetings																D4.6
	T4.7: Oversee HARVEST Digital Presence & Media																D4.7
	T4.8: Promote and support Communication & Outreach																D4.8

Risk Register

Risk	WG	Probability	Risk Mitigation
Delayed access to data, data collection	WG1,2,3	Low to Medium	The current consortium already pledged to collate, curate and share data and has to some extent already started during the development of this proposal.
Low stakeholder engagement	WG1,4	Medium	Increase communication medium (blogs, articles, social media posts), engage with stakeholders at the early stage, recognise their contribution and added value to the project, open access to training, visits.
Little participation of the ITCs in events	ALL	Low	Preferably organise events in ITCs location and as central as possible from the current consortium. Open travel grants for ITCs and increase regional visibility.
Delayed publication and outputs	ALL	Medium	Discuss potential publication early, ensure a fast internal peer review process and promote co-authorship.
Budget shortage	ALL	Medium	Prioritise activity and re-allocate budget. Make use of videoconferencing facilities and existing local events for action dissemination.
Little intake of the STSMs and or delayed start	ALL	Low to medium	Ensure early communication about these opportunities, reassign missions to other partners, open to all career stages in academia and industry.
Low number of YRIs	ALL	Low	Although the number seems low from the proposer list, each meeting will encourage YRI participation by offering dedicated sessions/talks from the beginning of the action. We will explore a mentoring scheme for leadership positions.
Another pandemic (e.g covid)	ALL	Medium	Although in person meetings are preferable, we will use hybrid meetings for our events and our regular meetings (MC and WG leaders).