

eip-agri
AGRICULTURE & INNOVATION

Ideas for Operational Groups and other innovative projects, from Focus Groups experts



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In this brochure, you can find a non-exhaustive list of ideas for Operational Groups (OGs) and other innovative projects from EIP-AGRI Focus Groups. For each idea, you will find a link for more information. You will also find some examples of OGs and H2020 projects to inspire you and further share the knowledge about their results. Please note that the aim of this list is to provide inspiration; it does not represent a specific selection, nor is it complete. You can find additional inspiring examples in the [EIP-AGRI innovative projects catalogue](#) and in the project database on the [EIP-AGRI website](#). Also, for the complete list of EIP-AGRI publications, please consult the [EIP-AGRI website](#).





Introduction

This report aims to **inspire** advisers, farmers and foresters, researchers, rural development programmes' managing authorities, and others, who are considering either starting an OG project or planning to open a call for projects.

The EIP-AGRI promotes the bottom-up creation of a great variety of **Operational Groups** (OGs), which bring together people with different types of experience and professional backgrounds to advance innovation in the agricultural and forestry sectors to tackle the needs and opportunities of farming practice ([Operational Groups Brochure](#)).

The EIP-AGRI Service Point collects **ideas for OGs** and other innovative projects as a result of EIP-AGRI Focus Groups, during workshops, seminars and other networking activities.

As part of their regular tasks, EIP-AGRI Focus Group experts collect and summarise knowledge on good practices in a specific field, identify **problems, needs and challenges from practice** as well as opportunities. Based on this, the groups propose **ideas from practice** that point to areas where OGs could make a difference. This report is a collection of those ideas, coming from all Focus Groups that were concluded by April 2020. The full list of the Focus Groups can be found [here](#).

Each OG idea aims to tackle a particular challenge or problem, or an opportunity existing in agricultural or forestry practice. In this report, the OG ideas have been grouped by theme. These represent **specific challenges** that were identified by the [2018 OG assessment](#) exercise. They include resource management (in general and soil-related), food safety/product quality, socio-economic sustainability/competitiveness, pest and disease treatment, animal health and welfare, pollution, biodiversity/nature/landscape management and climate change. In addition to the themes mentioned above, a new cross-cutting cluster has been added for precision farming and smart solutions called "Digitalising agriculture". Agricultural digitalisation can increase profitability, improve working conditions for farmers, and reduce the environmental impacts of agriculture. The ideas mentioned under this heading have also been included under the relevant thematic headings, for ease of reference.





Resource management

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|---------------------|--|
| Valorising biogas digestate as biofertiliser | Crops/ livestock | Renewable energy on the farm |
| Combining biogas with small-scale ethanol production | All sectors | |
| Low-tech methods for upgrading biogas into biomethane | All sectors | |
| Testing and assessing energy storage techniques and energy control systems for farm energy-intensive operations (heating, ventilation, lighting, feed preparation, etc.), for different farm types | Livestock | |
| Exploring technological options for mobile heating units (e.g for seasonal grain drying) | Crops | |
| Small-scale wood-based energy systems: testing various options for small-scale on-farm use of woody side streams for energy self-consumption | All sectors | |
| Energy communities for district/industrial | All sectors | |
| Producing charcoal/pellets on farm | Forestry | Circular horticulture |
| Develop and test alternative and renewable growing media | Crops | |
| Develop and test new rainwater storage systems | Crops | |
| Urban farming, finding ways to integrate greenhouses in city buildings | Crops | |
| Mixed farming and bio-digestion of manure and use of biogas to heat greenhouses | Crops | |
| Support data analysis and focus on the development and evaluation of indicators of greenhouse systems performance | Crops | Moving from source to sink in arable farming |
| Find and test ways to integrate conservation agriculture with precision farming techniques and adapt these to local conditions. | Crops | |

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|---------------------|--|
| Analysis of mitigation options along specific value chains (e.g. for pine) to improve carbon balance | Forestry | Forest practices and climate change |
| Developing local strategies for a proper use of cover-crops | Crops | Diseases and pests in viticulture |
| Test climate-smart agroforestry practices for ecosystem services at farm level | Forestry | Agroforestry: woody vegetation |
| Demonstration of how tailor-made biobased fertilisers match plant requirements | Crops | Nutrient recycling |
| Demonstration of nutrient recycling technologies such as low ammonia (NH₃ emission techniques) while involving the whole value chain to highlight the improvements in terms of sustainability | Crops | |
| Nutrient release of organic fertilisers in organic farming | Crops | Organic farming - Optimising arable yields |
| Development of new fertilisers for organic farming | Crops | |
| Developing advice based on a system approach, avoiding opposing information | Crops | Fertiliser efficiency |
| Increasing nutrient efficiency with cover crops and optimal use of organic manure | Crops | |
| Optimising the use of innovative organic sourced fertiliser | Crops | |
| Explore impact of water governance, footprint and pricing on water use on farm | All sectors | Water & agriculture |
| Develop innovative solutions for using alternative water sources | Crops | |
| Determine local benchmarks and use as references for irrigation and crop performance | Crops | |
| Crop suitability index and improved crop rotation | Crops | |
| Adapt locally conservation agriculture | Crops | |
| Precision irrigation through the use of sensors on drones and variable rate sprinklers | Crops | |
| Early sowing | Crops | |

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|----------------------------|---------------------------------------|
| Identify best practices to optimise energy/nutrient cycles including combination of already existing practices | Crops, livestock | Mixed farming systems |
| Appropriate handling and use of organic fertilizer | Crops, | |
| Manure composting | Crops, livestock, forestry | |
| On-farm implementation of green manure | Crops | IPM practices for soil-borne diseases |
| Promote legumes by inoculation of seeds of specific species with effective Rhizobium strains to assure an efficient symbiotic Nitrogen fixation. | Crops | Profitability of permanent grassland |
| Improve fertilisation strategies to increase grassland production with less fertiliser inputs (timing and dose) | Crops, livestock, | |

Resource management > Soil

| | | |
|---|------------------|--|
| Test and locally adapt decision support tools for farmers and advisers to assess soil C sequestration and its benefits. | Crops | Moving from source to sink in arable farming |
| Test and locally adapt decision support tools for farmers and advisers to assess soil C sequestration and its benefits. | Crops | Grazing for Carbon |
| Test and locally adapt good practices of water management strategies to increase soil carbon content, especially in dry climates. | Crops | Moving from source to sink in arable farming |
| Develop and test cover crop mixtures for different farming systems and regions, assessing their impact on soil carbon and biodiversity. | Crops | Moving from source to sink in arable farming |
| Develop and test cover crop mixtures for different farming systems and regions, assessing their impact on soil carbon and biodiversity. | Crops | Pests and diseases of the olive tree |
| Guidelines for production and persistence of multispecies swards under grazing | Livestock | Grazing for Carbon |
| Convert traditional management to alternatives such as conservation management, low N input management, silvopastoral management | Crops, livestock | |
| Improve long term pasture productivity and fertility through rotational grazing | Crops, livestock | |

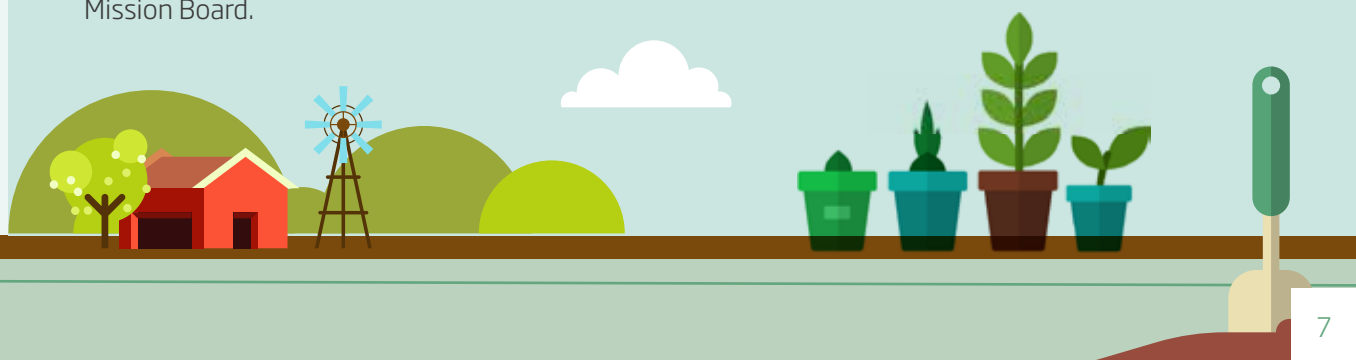
| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|----------------------------|--|
| Increase of soil microbial activity and biodiversity (including N-fixing) by farming | Crops | Organic farming - Optimising arable yields |
| Fine-tuning composting techniques in organic farming | Crops | |
| Innovative tillage techniques for organic farming | Crops | |
| Optimising the use of fertilisers and pesticides in conservation agriculture | Crops | Soil organic matter content |
| Diagnostic procedure and recommendations for soil organic matter management | Crops | |
| Benchmarking for soil organic matter | Crops | |
| Organic resources for tree-based cropping systems | Forestry | |
| Biomass production- bioenergy crops and soil organic matter content | Crops | |
| Introducing conservation agriculture within organic farming systems | Crops | |
| Optimising Soil Organic Matter Levels Through Soil Amendment | Crops | |
| Technology transfer of best irrigation practices to the end users | Crops | Water & agriculture |
| Identify best mixed farming systems practices in real farms to optimise soil quality | Crops, livestock, forestry | Mixed farming systems |
| Developing tools on soil quality management. | Crops. Forestry | IPM practices for soil-borne diseases |
| Defining losses and sustainable “wastes” removal rates from the farm | Crops | Reducing food loss on the farm |



Caring for soil is caring for life

The [EU mission “caring for soil is caring for life”](#) will raise awareness on the importance of soils, engage with citizens, create knowledge and develop a range of solutions to address the various challenges for soils and soil management in Europe. This will allow full use of the potential of soils to support food production, protect biodiversity and mitigate the effects of climate change.

Read more about the mission “Caring for soil is caring for life” in the [Agrinnovation magazine 2020](#) in the interview with former Dutch Minister of Agriculture Cees Veerman, Chair of the Soil health and food Mission Board.



Resource management

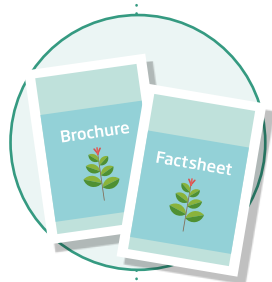


Relevant innovative projects



- [OG Irrigation control in crop production](#) - situational, site-specific and automated (Precision Irrigation)
- [OG Sensor supported irrigation control of potatoes](#)
- [OG CABIOS](#) - Conservation agriculture and bioenergy buffer strips for soil and water quality improvement
- [OG Data assimilation](#) from soil-crop-climate sensor network in IRRINET DSS
- [OG RISCOSSA](#) Saving and conservation of Nitrogen in agricultural systems with pigs
- [OG H3](#) Precision Agriculture as an Advantage in Fruits and Vegetables production in Andalucía
- [OG Humus formation by legumes](#)
- [OG Innovation compost systems for more soil fertility](#)
- [OG BIOREFINERY GLAS](#) Small-scale Farmer-led Green Biorefineries
- [OG DIGESTATE 100%](#) Innovative integrated system for digestate fertigation
- [Solar powered desalination for irrigation of plant nursery](#)
- [H2020 FATIMA](#) Farming Tools for external nutrient Inputs and water Management
- [H2020 LANDmark](#) LAND Management: Assessment, Research, Knowledge base

Relevant EIP-AGRI publications



- The [EIP-AGRI Brochure water and agriculture](#) shows you some inspiring examples of smart solutions for on-farm water management.
- The [EIP-AGRI Brochure Soil organic matter matters](#) highlights methods to improve soil organic matter content which can help ensure adequate soil functionality and soil fertility
- The [Operational Groups represented at the EIP-AGRI Workshop 'Organic is operational' booklet](#) contains information on all Operational Groups, and other innovative projects, that were represented at the event.
- [EIP-AGRI Video: Soil fertility through carbon storage: Operational Group project BIOBO](#)



Food safety / product quality

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|---------------------|--|
| <u>A local-scale decision support system for selecting methods of protection or for assessing frost risks in fruit production</u> | Crops | <u>Protecting fruit production from frost damage</u> |
| <u>Field experiments to try different frost protective agents (chemicals)</u> | Crops | |
| <u>Establishing and optimising a T/RH (wind) sensor network in a fruit growing region</u> | Crops | |
| <u>Frost Research Effective Database (FRED)</u> | Crops | |
| <u>Hand device to measure frost damage</u> | Crops | |
| <u>Test how far adding micro algae to the drinking water of laying hens can help to produce omega-3 enriched eggs</u> | Livestock | <u>New feed for pigs and poultry</u> |
| <u>Inconsistent quality of bread from small(er) scale producers (using leftover bread for feed)</u> | Livestock | |
| <u>Standardisation of the end product (bakery) (to use leftovers for feed)</u> | Livestock | |
| <u>Methodology for sampling products with high water content and with different fractions (for new feed for pigs and poultry)</u> | Livestock | |
| <u>How to analyse and get "on-line" (fast) nutrient value for (by-) products (liquid/solid pasty)</u> | Livestock | |
| <u>Development or adaptation of cooperation business models to improve the production and marketing of tailor-made fertilisers</u> | Crops | <u>Nutrient recycling</u> |
| <u>Integration of nutrient management in certifying schemes to create transparency and trust</u> | Crops | |
| <u>Facilitate consumers' access to local breeds</u> | Crops, livestock | <u>Genetic Resources - Cooperation models</u> |



| Ideas for Operational Groups or other innovative projects <i>(click on the topic to get more information)</i> | Agricultural sector | Focus Group |
|--|----------------------------|---|
| <u>Develop territorial guarantee schemes to support local added value of products from small producers operating within short food supply chains</u> | All sectors | <u>Short Food Supply Chain management</u> |
| <u>Increasing fruit quality with reduced water supply</u> | Crops | <u>Water & agriculture</u> |
| <u>Develop new measuring tools - visual assessment, plate meter, sward stick, palatable species height, GIS, etc. - to estimate dry matter production adapted to different grassland types</u> | Crops, livestock | <u>Profitability of permanent grassland</u> |
| <u>Develop new effective and ecologically friendly methods to renovate swards (e.g. by using animals as seed dispersers).</u> | Crops, livestock | |
| <u>Introduce legumes and herbs into pasture to enhance productivity, sward palatability, quality (digestibility) and herbage intake by grazing animals</u> | Livestock | |
| <u>Use of legumes, forbs and shrubs rich in tannins to maximise protein utilisation, prevent bloat in grazing ruminants, suppress internal parasites and produce healthier food.</u> | Livestock | |
| <u>Develop new efficient and sustainable solutions for targeted mechanical weed control (low labour input) in grassland sward. Removing toxic plants from extensively used flower-rich meadows, e.g. <i>Colchicum autumnale</i>, <i>Ranunculus</i> sp., <i>Pteridium</i> sp., <i>Enantus crocata</i> which can affect animal health, or even cause mortality</u> | Livestock | |
| <u>Optimise time of cutting, particularly after first regrowth to maximise the nutritive value and digestibility of herbage.</u> | Livestock | |
| <u>Optimise and/or develop new forage conservation techniques to avoid nutrient losses, mitigate the risk of forage contamination (e.g. mycotoxins accumulation in silage or hay) and minimise the use of maize and concentrates.</u> | Livestock | |
| <u>Develop and “market” new systems of mixed grazing (for cleaner grazing with fewer parasite eggs, better use and higher animal and grassland growth rates)</u> | Livestock | |
| <u>Improve grazing practices and strategies to reduce the parasite burden, especially on meadows. Look for plants containing condensed tannins or other beneficial animal health/nutritional elements associated with legumes and grasses (e.g. Lotus, sainfoin) and also shrubs (e.g. heather)</u> | Livestock | |

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|---------------------|--|
| Optimise silvo-pasture practices to promote efficient production of milk, meat, bio-energy, biodiversity etc. | Livestock, forestry | Profitability of permanent grassland |
| Adapt manufacturing laws to control food safety of homemade products, so that they can be implemented in rural conditions | Livestock | |
| Develop new ways to increase the presence of well-nodulated, diverse legumes in permanent grasslands to improve pasture productivity (quantity x quality) and profitability. | Livestock | |
| Co-design groups working on their cropping systems for non-chemical weed management | Crops | Non-chemical weed management |
| Developing local strategies for a proper use of intercropping | Crops | |
| Participatory projects that focus on varieties or crop mixtures with an increased tolerance or competition to weeds. | Crops | |

Food safety and product quality



Relevant innovative projects



- [Development of processing technologies for raspberry \(*Rubus sp.*\) seed oil](#)
- [Plus milk](#): adding value to dairy milk produced in bio and conventional dairy farms in Galicia
- [OG Production of organic pasta](#) enriched with Spirulina algae made in Marche produced through the valorisation of olive oil mill wastewater
- [OG Alternative to traditional post-harvest fungicide treatments applied in apple and pear production](#)
- [OG Pomegranate Add Value](#)
- [H2020 TREASURE](#) Diversity of local pig breeds and production systems for high quality traditional products and sustainable pork chains
- [H2020 TRADITOM](#) Traditional tomato varieties and cultural practices: a case for agricultural diversification with impact on food security and health of European population



Socio-economic sustainability/competitiveness

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|---------------------|--|
| Find ways for farmers to cooperate in biomass/vegetables logistics | All sectors | Circular horticulture |
| Documenting experiences related to circularity in protected cultivation systems - "Seeing is believing" | All sectors | |
| Test ways to encourage the use of local biomass by facilitating biomass exchange between farmers. | Crops | Moving from source to sink in arable farming |
| Develop or gather resources and tools to foster local adaptation in forest management by enhancing awareness and peer to peer learning | Forestry | Forest practices and climate change |
| Increase agroforestry profitability through innovative value chains and increased added value products | Forestry | Agroforestry: woody vegetation |
| Share practical experiences and knowledge: collect data at local level, create platforms and helpdesk services, peer to peer learning, and demonstration plots | Forestry | |
| Establishing tree nurseries with focus on agroforestry systems | Forestry | |
| Key Performance Indicators: identify indicators to assess skills for robust and resilient dairy production systems, what advisory areas are needed to increase robustness and resilience of dairy farms? | Livestock | Dairy production systems |
| Scarcity of labour force for dairy farms: identify causes of shortage of labour at dairy farms; develop training for new employees and co-operation between farms. | Livestock | |
| How to improve communication from your dairy farm to the glass of milk? | Livestock | |
| Translate indicators into labels | Livestock | |

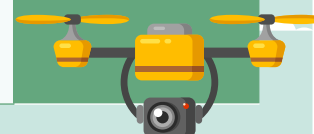
| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|---------------------|--|
| Efficiency in use of data at farm level | Livestock | Dairy production systems |
| Skills needed by farmers and advisers | Livestock | |
| Develop regional models (including Decision Support Systems) for improved forest management in small-scale forests | Forestry | Sustainable mobilisation of forest biomass |
| Develop or test new models for innovative virtual timber sales/ marketing hubs | Forestry | |
| Review existing awareness-raising measures for forest owners addressing the importance of their forests in providing ecosystem services | Forestry | |
| Promote and adapt existing “good practice” examples to share existing knowledge amongst practitioners and/or regions | Forestry | |
| Profile regional models for the development of forest owner groups to become more self-sufficient without over-dependency on “volunteerism” | Forestry | |
| Exchange of information and practices between farms on the use of bio based fertilisers, including nutrient and carbon behaviour in the soil | Crops | Nutrient recycling |
| Organic farming systems co-design | Crops, forestry | Organic farming - Optimising arable yields |
| Information and decision support systems for organic farming | Crops | |
| Use and fine-tuning of new machines and tools for organic farming | Crops | |
| Structuring of joint purchase of machines (machine rings) for organic farming | All sectors | |
| Selection of robust varieties for organic farming | Crops | |
| Cover crops and companion planting for organic farming | Crops | |
| Development and use of local breeds, on-farm breeding and seed production and selection of heterogeneous materials for organic farming | Crops | Genetic Resources - Cooperation models |
| Enhancing the development of better-adapted crops and breeds through cooperation between ex-situ conservation of genetic resources and on-farm management. | Crops | |
| Developing the cooperation between various value chain actors, using business and success stories | All sectors | Fertiliser efficiency |
| Improving knowledge exchange to increase nutrient use efficiency by including different experts | Crops | |
| Making fertiliser advice more farmer friendly and sustainable. | Crops | |

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|-------------------------------|--|
| Make more efficient transportation and distribution in short food supply chains by developing collaborative logistics. | All sectors | Short Food Supply Chain management |
| Set up territorial “food hubs” which enable short food supply groups of farmers and producers to collaborate and serve the needs of large customers | Crops, livestock, aquaculture | |
| Downsize and simplify innovative technologies to match the needs of collaborative Short Food Supply Chains enterprises | Crops, livestock, aquaculture | |
| Develop funding schemes to promote product innovation in collaborative short food supply chains | Crops, livestock, aquaculture | |
| Toolkit for local administrations to engage new entrants into farming | All sectors | New entrants into farming |
| Set up new agribusiness incubator structures to be used by new entrants into farming | All sectors | |
| Develop share farming to connect new entrants and other actors through projects | All sectors | |
| Joint processing units; sharing, combining different resources and developing new products to create added value, and develop social capital and new business models | All sectors | |
| Technology transfer of best irrigation practices to the end users | All sectors | Water & agriculture |
| Involving local authorities and citizens in decisions on large-scale black soldier fly facilities | Crops, livestock | New feed for pigs and poultry |
| Establish a platform where supply and demand meet for bakery by products or leftovers for animal feed | Livestock | |
| Single cell protein bacteria - consumer acceptance | All sectors | |
| Develop locally-adapted multi criteria evaluation of mixed farming systems | All sectors | Mixed farming systems |
| Building self-sufficiency at territory level through crop-livestock integration between farms | Crops, livestock | |
| Test new managerial solutions found by farmers to deal with complexity and risk in mixed farming systems | All sectors | |
| Identify and adapt tools for the analysis of labour requirements throughout the year and time spent in management. | All sectors | |
| Develop marketing strategies to add value to mixed farming systems products and integrate specificities of MFS into already existing value chains | All sectors | |

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|---------------------|--|
| Automatic data sharing based on data - authorisations to promote benchmarking and better use of data in farm management. | All sectors | Benchmarking farm performance |
| Benchmarking farm performance with real time operational data. | All sectors | |
| Benchmarking on sustainability and strategic changes. | All sectors | |
| Business models and governance in benchmark systems. | All sectors | |
| Benchmarking for small farms performance | All sectors | |
| Develop and test practical economic tools and research results to support farmers in their transition from cereals to protein crops. Consider the effect of the protein crops on the whole rotation system | Crops | Protein crops |
| Investigate the scope for adapting and developing protein crops other than beans or oilseed rape for oceanic climates. | Crops | |
| Develop new practices and set up new trials with mixtures of 4 to 6 different species. | Crops | |
| Test different varieties of soya at farm level | Crops | |
| Establish a local farmers' network for the pesticide-free management of Meligethes at a broader landscape scale | Crops | Integrated Pest Management (IPM) - Focus on Brassica species |
| Carry out study on market differentiation of HNV products | All sectors | High Nature Value (HNV) - Farming profitability |
| Focus on innovative technology to increase output | All sectors | |
| Animation and networking by involving a local NGO | All sectors | |
| Piloting payment schemes for ecosystem services. | All sectors | |
| Organising communities of practice on integrated management of soil-borne diseases | Crops | IPM practices for soil-borne diseases |
| Networking actions to optimise the introduction and use of biological control agents | Crops | |
| Impact of landscape features on crop production profitability | Crops | Ecological Focus Areas |



| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|---------------------|---|
| <u>Develop internet/Smartphone applications for grassland management (e.g. grazing planning, grazing measurements, assessing forage quality, etc.).</u> | Livestock | <u>Profitability of permanent grassland</u> |
| <u>Develop national and Europe-wide grassland databases. These databases would be populated with data from commercial farms within member states</u> | Livestock | |
| <u>Develop user-friendly, low-cost, ICT (Information and Communication Technologies)-based tools to provide information to farmers about potential forage quantity and quality.</u> | Livestock | |
| <u>Reduce labour by using new technology to supervise animals on large areas</u> | Livestock | |
| <u>Provide tools to develop and promote new quality products based on enhancement of grassland-based production systems for permanent grassland areas and promote in new ways.</u> | Livestock | |
| <u>For grazing systems, synchronisation of feed demand, pasture availability and market demand of products, to increase efficiency, especially of labour</u> | Livestock | |
| <u>Establish mobile applications explaining product delivery from sustainable managed areas</u> | Livestock | |
| <u>New strategies and tools to communicate to final consumers Life Cycle Thinking assessments of permanent grassland systems (i.e. territorial committees of stakeholders where farmers and consumers directly participate, using social media to improve connections between rural life and urban life, to form a network of educational grassland-based farms).</u> | Livestock | <u>Profitability of permanent grassland</u> |
| <u>The co-creation of Precision Farming data analysis and management tools such as web support/DSS systems.</u> | All sectors | <u>Mainstreaming precision farming</u> |
| <u>The co-creation of appropriate Precision Farming implementation/ support packages for different regions, cropping systems, livestock systems, scale of farms, and suitability for socio-economic regions</u> | All sectors | |
| <u>Testing decision support tools in different real farm situations. This will help identify barriers to adoption of these tools, and hopefully improve their usefulness.</u> | All sectors | |
| <u>Clear cost-benefit (real business case) research to demonstrate the benefit of Precision Farming adoption in different scale/region/ enterprise scenarios - allowing farmers to evaluate whether or not a certain technology could be worthwhile to adopt on their farm</u> | All sectors | |



| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|---------------------|--------------------------------------|
| The development of appropriate technical support for independent (public or private) advisory services to ensure that precision farming methods are delivered as part of an integrated farm management package. | All sectors | Mainstreaming precision farming |
| Operational groups are needed on remote sensing applications for agriculture, with a focus on nutrient management, disease detection, yield prediction, water stress detection and precision irrigation using combined imagery from unmanned vehicles (drones), manned aircraft and satellites. | Crops | |
| Cost-benefit analysis of Precision Farming components and complete Precision Farming systems, including risk mitigation, across all enterprises. | All sectors | |
| Develop economic calculators for different cropping systems, geographical areas and socio-economic conditions within the EU. | Crops | |
| Data management and sharing, and for the development of common standards for data files, in the context of Precision Farming and Precision Livestock Farming. | All sectors | |
| Developing and testing sustainable infrastructures for sharing machinery, software, hardware and advisory services among small and medium-sized farming operations. | All sectors | |
| Increase the knowledge of farmers/stakeholders on use of agro-ecological principles oriented to pests/diseases control | Crops | Pests and diseases of the olive tree |
| Local/regional collection of olive germplasm and knowledge for pests and diseases management | Crops | |
| Enhancing on-farm operational efficiency | All sectors | Reducing food loss on the farm |
| Enhancing consumer awareness | Crops | |
| Testing ways to maximise value for “unavoidable” wastes, co-products and by-products | All sectors | |
| Developing and testing new business models and fair trading practices | All sectors | |
| Involving local arable farmers in testing equipment for precise weed management | Crops | Non-chemical weed management |
| Projects and demonstrations that fully integrate direct physical control methods with the overall crop/weed management system particularly with cultural practices such as crop/cultivar choice, tillage operations, other agronomic practices | Crops | |
| Test and disseminate good approaches to help producers to put their insect products on the market | Livestock | New feed for pigs and poultry |



Socio-economic sustainability and competitiveness

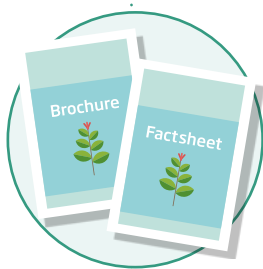


Relevant innovative projects



- [OG BIO2](#) Competitiveness increase of high hill and mountain farms through cereal biodiversity valorisation under organic farming
- [OG GOPTAEEx](#) Technological Platform for Organic Agriculture in Extremadura
- [OG Winter Harvest](#) Seasonal, energy-extensive and innovative vegetable production
- [FoodOASIS](#) - Development and optimization of an aquaponics system to increase sustainability in food production
- [H2020 network EUFRUIT](#) EUropean FRUIT Network
- [H2020 network FERTINNOWA](#) Transfer of INNOvative techniques for sustainable WAtter use in FERTigated crops
- [H2020 network AFINET](#) AGROFORESTRY INNOVATION NETWORKS
- [H2020 network WINETWORK](#) Network for the exchange and transfer of innovative knowledge between European wine-growing regions to increase the productivity and sustainability of the sector

Relevant EIP-AGRI publications



- The [EIP-AGRI Brochure Innovation in short food supply chains](#) highlights a number of Operational Groups and other innovative projects that illustrate successful ways of bringing innovation and collaboration to short food chains, for more impact.
- The [Operational Groups represented at the EIP-AGRI Workshop 'Innovation in the supply chain'](#) booklet contains information on all Operational Groups and other innovative projects that were represented at the event
- The [Operational Groups represented at the EIP-AGRI Workshop 'Operational Groups: First experiences'](#) booklet contains information on all Operational Groups and other innovative projects that were represented at the event
- [EIP-AGRI Video: Non-chemical weed management in arable cropping systems](#): Portuguese Operational Group HortInf



Pest and disease treatment

| Ideas for Operational Groups or other innovative projects <i>(click on the topic to get more information)</i> | Agricultural sector | Focus Group |
|---|---------------------|--|
| <u>Develop a user-friendly early warning system on local forest health issues which can help to assess the situation and raise the alarm when necessary</u> | Forestry | <u>Forest practices and climate change</u> |
| <u>Grapevine trunk diseases management</u> | Crops | <u>Diseases and pests in viticulture</u> |
| <u>Identify and test appropriate IPM and precision viticulture practices, with locally adapted strategies and specific regional implementation requirements.</u> | Crops | |
| <u>Test and select locally adapted varieties and heterogeneous planting materials fitting local conditions and market demands.</u> | Crops | |
| <u>On-farm production of compost combined with the development of indicators predicting the qualities (e.g. disease suppressiveness) of compost</u> | Crops | |
| <u>Biofumigation crops and farmer networks applying solarisation, anaerobic soil disinfestation or inundation.</u> | Crops | <u>IPM practices for soil-borne diseases</u> |
| <u>On-farm grafting techniques, completed by testing of resistances against local strains of soil-borne diseases present on their farm.</u> | Crops | |
| <u>Working with specific biological control agents could optimise the introduction and use of biological control agents by exchanging experience and knowledge.</u> | Crops | |
| <u>Spatial scale and time dimension of landscape feature management</u> | Crops | <u>Ecological Focus Areas</u> |

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|---------------------|--|
| Harmonisation of pest/pathogen monitoring techniques and development of new systems/approaches of monitoring | Crops | Pests and diseases of the olive tree |
| Quantification of the effect of agro-ecological principles/green infrastructure on pest and disease control | Crops | |
| Experimental and demonstration farms and field networks for testing biocontrol agents for disease control | Crops | |
| Introduction of use of big data and artificial intelligence to help in decision-making for treatment application | Crops | |
| Improve on IPM in Brussels sprouts | Crops | Integrated Pest Management (IPM) - Focus on Brassica species |
| Develop insecticide-free cabbage | Crops | |
| Design low-pesticide cropping systems for Brassica vegetables | Crops | |
| Looking for synergy between alternative solutions to pest management in Brassica crops (especially partial resistance and biocontrol products) | Crops | |

Pest and disease treatment



Relevant innovative projects

- [OG Vigispores](#) development of a decision support tool to manage three fungal diseases of shallots
- [OG INNOVEG](#) Development of innovative technologies in agricultural sector
- [OG](#) Development of a decision support system for the management of leaf and ear diseases in [winter wheat](#)
- [OG Control of *Monilinia spp.* in stone fruit](#): use of prediction models and cultural practices
- Horizon 2020 Thematic Network [WINETWORK](#)

Relevant EIP-AGRI publications

- The [EIP-AGRI brochure IPM for brassica](#) suggests promising ways to effectively deal with pests and diseases in Brassica crops. It also offers ideas on how farmers, advisers and researchers can collaborate to promote an economically viable IPM for Brassica in Europe.
- [EIP-AGRI Video: Pests and diseases in olive trees in Mediterranean regions](#)
- [EIP-AGRI infographic: "A soil health strategy and its interaction with the soil"](#)



Animal health and welfare

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|---------------------|-------------------------------|
| Test the use of grass/clover to control tail biting and feed piglets | Livestock | New feed for pigs and poultry |
| Test how to efficiently and effectively separate the packaging from the bakery products to be turned into feed. | Livestock | |
| Compare the efficiency of available screw presses and other technologies to extract grass protein to the liquid, which is pressed from green biomass such as grass or maize silage. | Livestock | |
| Test different varieties of peas adapted to the specific climate, learn how to produce them. | Crops, livestock | |
| Availability of by-products for insect farming | Livestock | |
| Combining liquid at pig feed farms with potential single cell protein production sites | Livestock | |
| The use of legumes is associated with some nutritional problems (e.g. antinutritional factors) | Crops, livestock | |
| Single cell protein at early stage of development | Livestock | |
| What is the "optimal algae" | Livestock | |
| Micro-algae - gap between industry and end-users | Livestock | |
| Can grass/clover be used for monogastrics and how to incorporate it into the farming systems? | Livestock | Dairy production systems |
| Enhancing precision livestock farming | Livestock | |

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|---------------------|---|
| New cleaning and disinfection products for pig rearing | Livestock | Animal husbandry - Reduction of antibiotic use in the pig sector |
| Innovative solutions to control the hygienic and climatic conditions during pig transport | Livestock | |
| Design innovative facilities and systems for livestock-keeping that minimises disease risks | Livestock | |
| Develop regional and national programmes to deal with pig diseases | Livestock | |
| Design multi-factor systems and tools to reduce the incidence of disease with long incubation periods, multiple risk factors and difficult to diagnose. | Livestock | |

Animal health and welfare



Relevant innovative projects

- [OG Senior laying hens](#)- optimization of animal welfare and significant extension of the residence period for vital senior laying hens in organic farming
- [OG Testing easily digestible red and white clover pellets in feed for laying hens](#)
- [OG Integral use of rapeseed as a sustainable alternative for DOP Idiazabal cheese production](#)
- [OG MAVAS](#) - Biosensor development for detection of mastitis causing bacteria and early identification of mastitis-infected dairy cows

Relevant EIP-AGRI publications

- The [EIP-AGRI Brochure Sustainable livestock farming](#) highlights a number of inspiring Operational Groups and other innovative projects that are exploring solutions for more sustainable and resilient livestock farming with a focus on cattle, and examples of successful collaboration and knowledge exchange
- [EIP-AGRI Brochure on Reducing antibiotics in pig farming](#)
- [EIP-AGRI Video: Monitoring bee health through beehive sensors](#), Operational Group "NOMADI-APP"



Pollution

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|---------------------|--|
| On-farm testing of robust, accurate and affordable sensor systems for NH₃-concentrations | Livestock | Reducing emissions from cattle farming |
| On-farm testing and monitoring of feeding strategies aimed to mitigate methane emissions | Livestock | |
| Development and testing of decision tools to improve N-use efficiency | Livestock, Crops | |
| Testing new and existing emission tools or use of tools and data management | Livestock | |
| Piloting innovative cattle housing construction, which includes new mitigation techniques | Livestock | |

Pollution



Relevant innovative projects

- [OG Zero herbicides](#) in Mediterranean perennial crops
- [OG FERRARA NITRATES](#) Agricultural practices to prevent nitrates pollution and promote organic matter conservation
- [OG Clean Farm, Clean Ditch](#) project stimulates fruit growers to take innovative measures to reduce emission
- [EIP-AGRI Video: protecting soils from contamination](#), Operational Group OROFRUIT



Biodiversity / nature / landscape management

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|---------------------|---|
| <u>Agro-forestry landscapes and additional monetizable ecosystem services and C sequestration</u> | Crops, forestry | <u>Grazing for Carbon</u> |
| <u>Explore methods to boost the use of broadleaf species by increasing their potential in forest regeneration</u> | Forestry | <u>Forest practices and climate change</u> |
| <u>Test ways to enhance both functional and vine biodiversity in vineyards to increase vineyard resilience</u> | Crops | <u>Diseases and pests in viticulture</u> |
| <u>Experiment with setting up appropriate agroforestry systems at different scales</u> | Forestry, crops | <u>Agroforestry: woody vegetation</u> |
| <u>Create new opportunities and added value for shelterbelts</u> | Forestry | |
| <u>Management of trees in agroforestry systems</u> | Forestry | |
| <u>Introduction of new crops and variety trials in organic farming</u> | Crops | <u>Organic farming - Optimising arable yields</u> |
| <u>Affordable innovative technologies for breeding</u> | Crops | <u>Genetic Resources - Cooperation models</u> |
| <u>Defining the objective(s) of landscape features- combining ecosystem functions and site specificities</u> | All sectors | <u>Ecological Focus Areas</u> |
| <u>Collaboration within groups of farmers and with other involved stakeholders is particularly important as some landscape features benefits are for society as a whole</u> | All sectors | |

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|--|---------------------|---|
| Develop and optimise types, density and distribution of trees and shrubs using agroforestry practices (hedges, silvo-arable, silvo-pasture, multi-purpose trees woody vegetation). | Forestry | Profitability of permanent grassland |
| Testing ways to enhance weed diversity on arable fields, through the activation of existing local farmer networks to protect and enhance both functional biodiversity and biodiversity in arable systems | Crops | Non-chemical weed management |
| Involvement of nature conservation people to ensure that HNV characteristics are maintained and not damaged | All sectors | High Nature Value (HNV) - Farming profitability |

Biodiversity, nature and landscape management

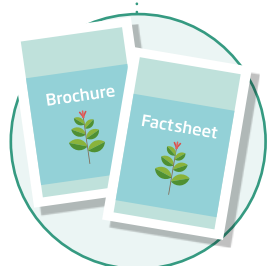


Relevant innovative projects



- [OG THE BRIDE PROJECT](#)- restore biodiversity lost through farm intensification
- [OG ValorInVitis](#) Broadening and improving biodiversity for a more competitive and sustainable viticulture in the Colli Piacentini area
- Horizon 2020 Thematic Network [HNV link](#)

Relevant EIP-AGRI publications



- The [EIP-AGRI brochure on agro-ecology](#) offers inspiration from Operational Groups and other innovative projects that create solutions adapted to local needs and adjusted to on-farm conditions.
- The [EIP-AGRI brochure on Innovation for European forestry](#) illustrates how innovative practices and tools can help build resilient, future-proof forests.
- The [EIP-AGRI Brochure organic is operational](#) offers some examples of potential solutions inspired by organic farming.
- [EIP-AGRI Video: Increasing biodiversity in agricultural landscapes GEEE biodiversity](#)
- [EIP-AGRI Video: Crop diversification in grass land](#)

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|---------------------|--|
| Make crops more resilient to climate change by adapting them to rain-fed conditions. | Crops | Moving from source to sink in arable farming |
| Farmer's management of species, importance of sown diversity, local species and legumes | Crops | Grazing for Carbon |
| Test methods to improve assisted regeneration or afforestation in drought-prone areas | Forestry | Forest practices and climate change |
| Explore ways to enhance landscape management by helping individuals to make decisions aligned with strategies to fight climate change | Forestry | |
| Develop collective and effective plans to mitigate climate change effects (drought, forest fires), promote actions to increase ecosystem resilience and awareness of all actors | Forestry | |
| Define strategies, based on local conditions and requirements, to increase vineyard resilience, to cope with climate change effects on pest and disease pressure. | Crops | Diseases and pests in viticulture |
| Wild cornel populations with high climate adaptation potential: Identification and cultivation in arid & semi-arid areas | Crops | Water & agriculture |

Relevant innovative projects

- [OG Irrigation system optimization in fruit farming for adaptation to climate change](#)
- [FACCE-JPI- EU CLIMATE CAFE](#)- It will propose and evaluate adapted high performance strategies for EU areas with different climatic threats to re-design farming systems for adaptation to climate change
- [H2020 NEURICE](#): New commercial EUropean RICE (Oryza sativa) harbouring salt tolerance alleles to protect the rice sector against climate change and apple snail invasion

Relevant EIP-AGRI publications

- The [EIP-AGRI brochure on Innovation for European forestry](#) illustrates how innovative practices and tools can help build resilient, future-proof forests.
- The [EIP-AGRI Brochure Cooperating for genetic resources](#) provides examples of successful cooperation in the field of animal and plant genetic resources
- [EIP-AGRI Video: Crop diversification in grass land](#)

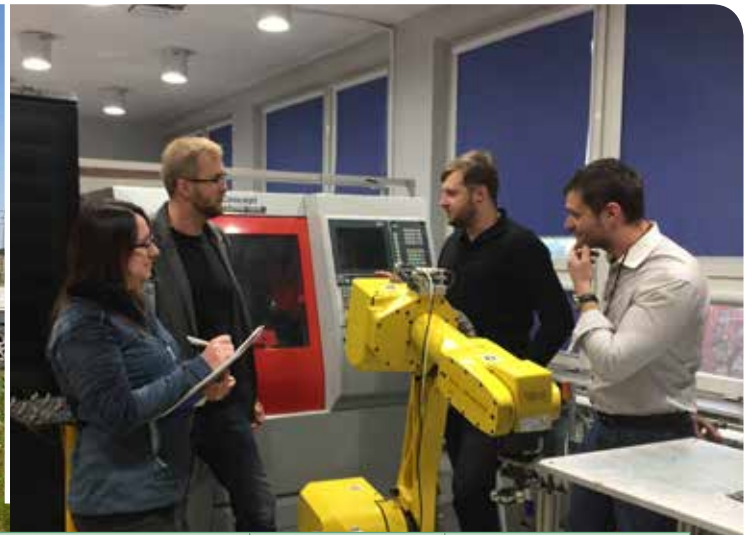




Digitalising agriculture

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|---------------------|--|
| Digitalising agriculture > Resource management | | |
| Support data analysis and focus on the development and evaluation of indicators of greenhouse systems performance | Crops | Circular horticulture |
| Find and test ways to integrate conservation agriculture with precision farming techniques and adapt these to local conditions. | Crops | Moving from source to sink in arable farming |
| Precision irrigation through the use of sensors on drones and variable rate sprinklers | Crops | Water & agriculture |
| Digitalising agriculture > Resource management > Soil | | |
| Test and locally adapt decision support tools for farmers and advisers to assess soil C sequestration and its benefits. | Crops | Moving from source to sink in arable farming Grazing for Carbon |
| Diagnostic procedure and recommendations for soil organic matter management | Crops | Soil organic matter content |
| Developing tools on soil quality management. | Crops, Forestry | IPM practices for soil-borne diseases |
| Digitalising agriculture > Food safety / product quality | | |
| A local-scale decision support system for selecting methods of protection or for assessing frost risks in fruit production | Crops | Protecting fruit production from frost damage |
| Hand device to measure frost damage | Crops | |

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|---------------------|--|
| How to analyse and get "on-line" (fast) nutrient value for (by-) products (liquid/solid pasty) | Livestock | New feed for pigs and poultry |
| Develop new measuring tools - visual assessment, plate meter, sward stick, palatable species height, GIS, etc. - to estimate dry matter production adapted to different grassland types | Crops, livestock | Profitability of permanent grassland |
| Develop new efficient and sustainable solutions for targeted mechanical weed control (low labour input) in grassland sward. Removing toxic plants from extensively used flower-rich meadows, e.g. <i>Colchicum autumnale</i>, <i>Ranunculus</i> sp., <i>Pteridium</i> sp., <i>Enantus crocata</i> which can affect animal health, or even cause mortality | Livestock | |
| Digitalising agriculture > Socio-economic sustainability/ competitiveness | | |
| Efficiency in use of data at farm level | Livestock | Dairy production systems |
| Information and decision support systems for organic farming | Crops | Organic farming - Optimising arable yields |
| Use and fine-tuning of new machines and tools for organic farming | Crops | |
| Identify and adapt tools for the analysis of labour requirements throughout the year and time spent in management. | All sectors | Mixed farming systems |
| Automatic data sharing based on data - authorisations to promote benchmarking and better use of data in farm management. | All sectors | Benchmarking farm performance |
| Benchmarking farm performance with real time operational data. | All sectors | |
| Benchmarking on sustainability and strategic changes. | All sectors | |
| Business models and governance in benchmark systems. | All sectors | |
| Benchmarking for small farms performance | All sectors | |
| Develop internet/Smartphone applications for grassland management (e.g. grazing planning, grazing measurements, assessing forage quality, etc.). | Livestock | Profitability of permanent grassland |
| Develop national and Europe-wide grassland databases. These databases would be populated with data from commercial farms within member states | Livestock | |
| Develop user-friendly, low-cost, ICT (Information and Communication Technologies)-based tools to provide information to farmers about potential forage quantity and quality. | Livestock | |
| Reduce labour by using new technology to supervise animals on large areas | Livestock | |
| Establish mobile applications explaining product delivery from sustainable managed areas | Livestock | |



| Ideas for Operational Groups or other innovative projects <i>(click on the topic to get more information)</i> | Agricultural sector | Focus Group |
|--|----------------------------|--|
| <u>The co-creation of Precision Farming data analysis and management tools such as web support/DSS systems.</u> | All sectors | <u>Mainstreaming precision farming</u> |
| <u>The co-creation of appropriate Precision Farming implementation/support packages for different regions, cropping systems, livestock systems, scale of farms, and suitability for socio-economic regions</u> | All sectors | |
| <u>Testing decision support tools in different real farm situations. This will help identify barriers to adoption of these tools, and hopefully improve their usefulness.</u> | All sectors | |
| <u>Clear cost-benefit (real business case) research to demonstrate the benefit of Precision Farming adoption in different scale/region/enterprise scenarios - allowing farmers to evaluate whether or not a certain technology could be worthwhile to adopt on their farm</u> | All sectors | |
| <u>The development of appropriate technical support for independent (public or private) advisory services to ensure that precision farming methods are delivered as part of an integrated farm management package.</u> | All sectors | |
| <u>Operational groups are needed on remote sensing applications for agriculture, with a focus on nutrient management, disease detection, yield prediction, water stress detection and precision irrigation using combined imagery from unmanned vehicles (drones), manned aircraft and satellites.</u> | Crops | |
| <u>Cost-benefit analysis of Precision Farming components and complete Precision Farming systems, including risk mitigation, across all enterprises.</u> | All sectors | |
| <u>Develop economic calculators for different cropping systems, geographical areas and socio-economic conditions within the EU.</u> | Crops | |
| <u>Data management and sharing, and for the development of common standards for data files, in the context of Precision Farming and Precision Livestock Farming.</u> | All sectors | |

| Ideas for Operational Groups or other innovative projects (click on the topic to get more information) | Agricultural sector | Focus Group |
|---|---------------------|---|
| Developing and testing sustainable infrastructures for sharing machinery, software, hardware and advisory services among small and medium-sized farming operations. | All sectors | Mainstreaming precision farming |
| Involving local arable farmers in testing equipment for precise weed management | Crops | Non-chemical weed management |

Digitalising agriculture > Pest and disease treatment

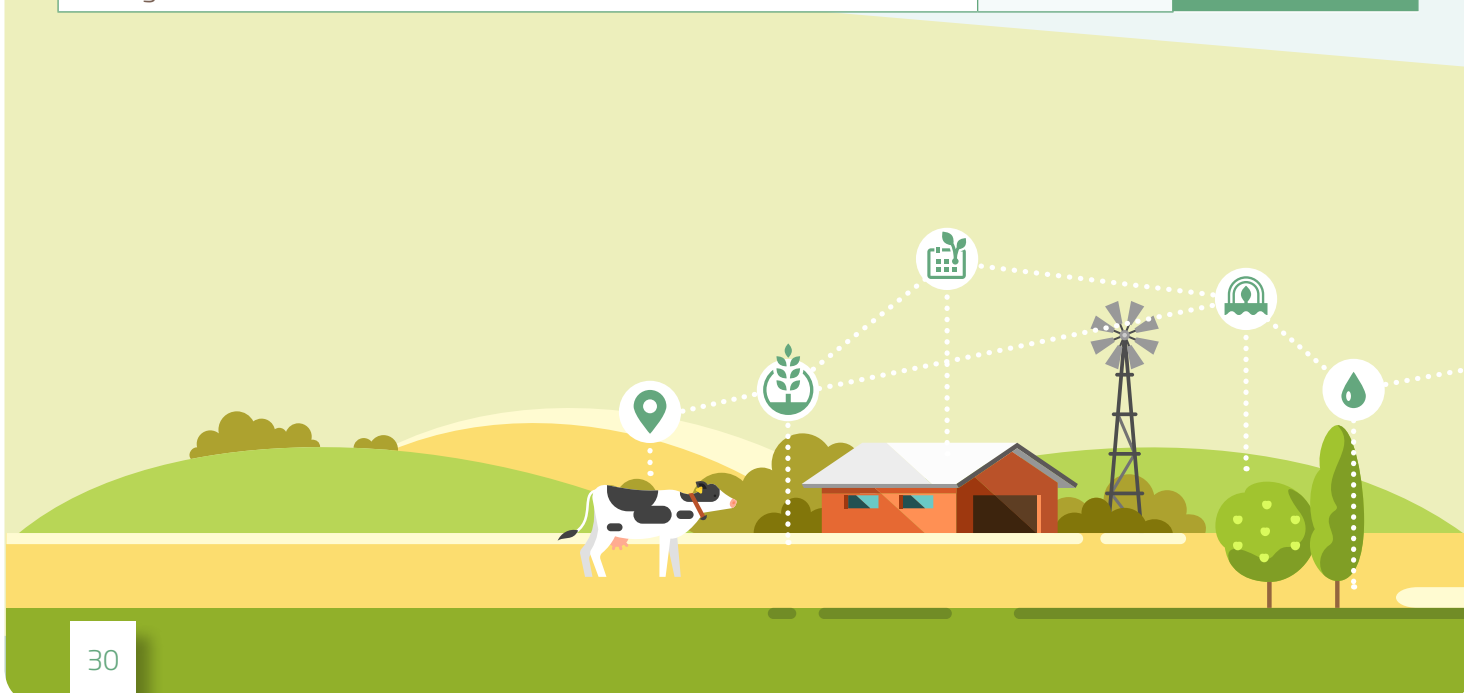
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|--|----------|---|
| Develop a user-friendly early warning system on local forest health issues which can help to assess the situation and raise the alarm when necessary | Forestry | Forest practices and climate change |
| On-farm production of compost combined with the development of indicators predicting the qualities (e.g. disease suppressiveness) of compost | Crops | IPM practices for soil-borne diseases |
| Introduction of use of big data and artificial intelligence to help in decision-making for treatment application | Crops | Pests and diseases of the olive tree |

Digitalising agriculture > Animal health and welfare

| | | |
|---|-----------|--|
| Enhancing precision livestock farming | Livestock | Dairy production systems |
|---|-----------|--|

Digitalising agriculture > Pollution

| | | |
|--|-----------------|--|
| On-farm testing of robust, accurate and affordable sensor systems for NH3-concentrations | Livestock | Reducing emissions from cattle farming |
| Development and testing of decision tools to improve N-use efficiency | Livestoc, Crops | |
| Testing new and existing emission tools or use of tools and data management | Livestock | |



Digitalising agriculture



Relevant innovative projects



- [OG MAVAS](#) project for development of mastitis sensor
- [OG AQUA C+](#); More efficient water use in the fruit orchard through water accounting
- [OG SIVID](#): Integrated Dynamic Intelligent Viticulture System
- [OG: Experimental digital platform LoRa in agriculture](#)
- Horizon 2020 Network [Smart AKIS](#)

Relevant EIP-AGRI publications



- The [EIP-AGRI Brochure Shaping the digital \(r\)evolution in agriculture](#) illustrates how digitisation can benefit the farming sector.
- The [EIP-AGRI Factsheet on Shaping digital \(r\)evolution in agriculture](#) encourages the use of digital technologies
- Be inspired by digital technologies and innovative projects for the farming and forestry community at the '[digital agriculture](#)' section at the [EIP-AGRI website](#) and find out how to improve your digital knowledge and skills.
- The [Agrinnovation magazine 2018](#) features stories about Operational Groups and other innovation projects that are making the most of digital solutions and knowledge exchange.



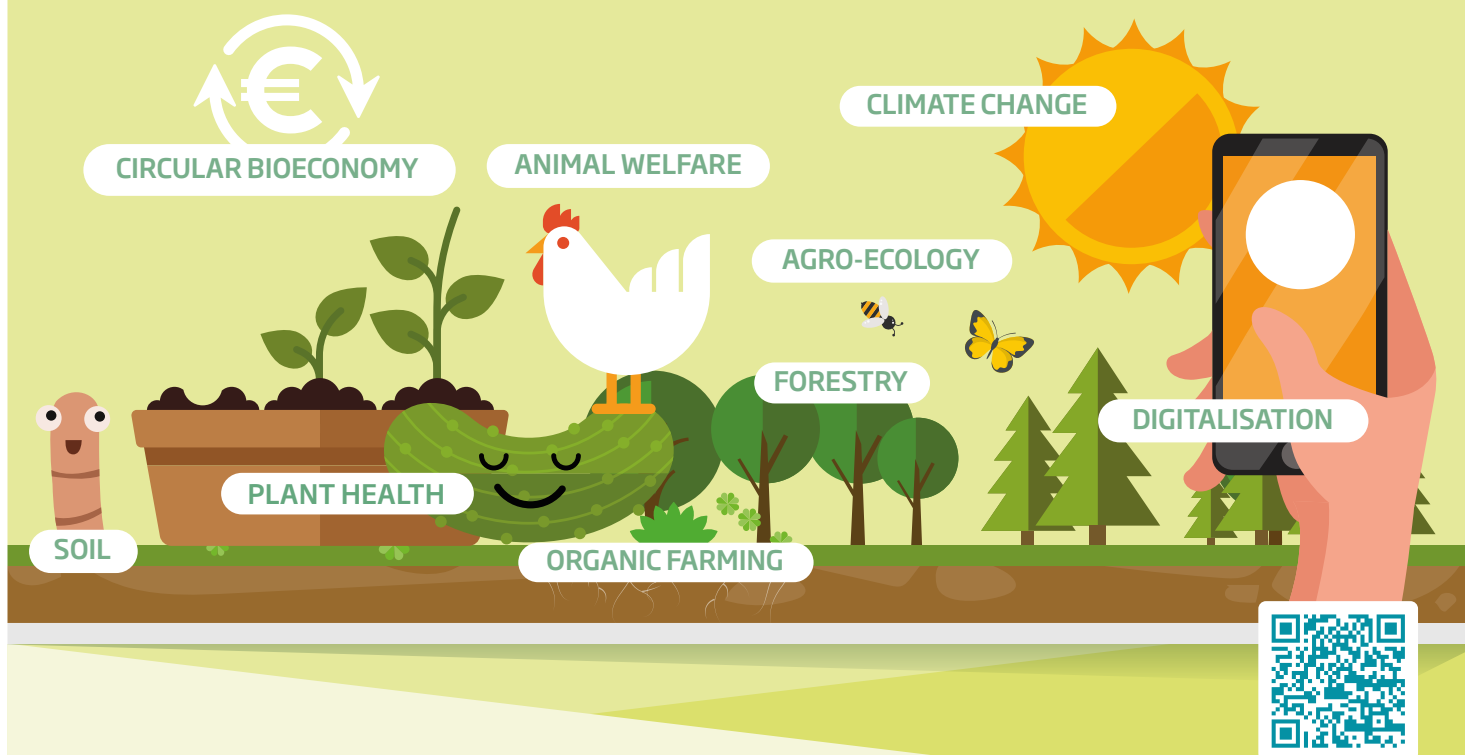


Farming and forestry topics in the spotlight

The EIP-AGRI regularly highlights important themes for European farming and forestry on the EIP-AGRI website and through social media.

- ▶ Innovation on key topics from European agriculture and forestry
- ▶ EIP-AGRI activities, publications, Videos, inspirational ideas,...
- ▶ Dedicated thematic newsletters
- ▶ More inspiration for the EIP-AGRI network through social media

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