Innovation, Knowledge exchange | EIP-AGRI

Smart circular farming to address high energy and fertiliser prices

Circular economy approaches in agriculture strongly rely on reducing waste, improving efficiency, sustainable resource use, and creating synergies within the agricultural system. Circular thinking prompts farmers to close the loop, recycle resources, and achieve positive environmental impact. It also encourages diversification through new markets and business development, stimulates community engagement and collaboration, and promotes the creation of a sustainable food system.

The overall objective of the EU CAP Network seminar 'Smart circular farming to address high energy and fertiliser prices' was to find innovative solutions in response to the accessibility of energy and fertilisers by building resilient farming and food systems through smart circular economy approaches at farm and local level to safeguard food security and climate objectives.

A brief summary of the seminar discussions: to reduce the intensity of energy use in agriculture, strategies should focus on increasing efficiency and promoting less energy-intensive forms of food production based on the principles of sustainable agriculture and organic farming. Resource management plays a crucial role, employing tiered approaches for recycling and cascading production of food and energy. Circular agriculture, agroecology, and precision farming offer solutions for energy reduction and sustainable fertilisation. Research and development investments are needed for sustainable technologies, accompanied by multi-actor involvement and sustainability assessments. Knowledge exchange platforms, networking and education enhance awareness and promote circular approaches. Holistic transformations require stakeholder cooperation, local sovereignty, cost reduction, and financial support for technology adoption.

"Local cooperation and collaboration are essential for the successful implementation of circular economy approaches. Different stakeholders, such as local governments, businesses, universities, research institutes, NGOs, and citizens must work together to create an effective system. Including a variety of relevant stakeholders can contribute to the dissemination of knowledge and technology needed to overcome prospective energy and fertiliser shortages on a large scale."

Zdeněk Linhart (Czech Republic),
participant at the EU CAP Network Seminar 'Smart circular farming to address high energy and fertiliser prices'

Smart circular farming to address high energy and fertiliser prices

During the seminar, the following knowledge gaps, research needs from practice and ideas for innovative projects were identified:

Knowledge gaps and research needs

- **Developing new and sustainable technologies** (e. g. green hydrogen, plastic alternatives, short-term and long-term energy storage solutions, improving energy efficiency of machinery and farm equipment, carbon capture techniques, diversified renewable energy sources, sustainable fertilisation including renewable and recycled nutrient sources, bio-stimulants, pyrolysis, biochar, and suitability of robotics and artificial intelligence to reduce dependencies).
- **Improving and increasing efficiency of already existing technology and machinery** (e. g. biogas production, storage solutions, solar, water and, wind power applications).
- **Farming system research** e.g. on-farm nutrient assessment and management, cascading production of food and energy, increasing food systems efficiency by promoting short food supply chains and localised food networks, etc.).

Ideas for Operational Groups

- Supporting cooperation between local governments, farmers, and citizens to produce and share renewable energy.
- Production of fertiliser from municipal organic waste.
- Introduction of shared infrastructure at community level to facilitate more efficient use of resources.
- Less energy-intensive forms of food production based on the principles of sustainable agriculture and organic farming.
- Recovery of nutrients for fertilisation from bio-waste.
- Identification and quantification of the environmental impacts associated with new technologies and products.

More Information

- Seminar webpage
- Seminar report 'Smart circular farming to address high energy and fertiliser prices'
- Brokerage report 'Smart circular farming to address high energy and fertiliser prices'

Projects

- Operational groups on circular farming
- Horizon projects on circular farming

Inspirational ideas

- Fertibio - Microorganisms in Support of Agriculture (Italy)
- Agrofossilfree - The path towards a fossil-free EU agriculture (Greece)
- HyPErFarm – Hydrogen and photovoltaic electrification on farm (Belgium)
- GO-Grass - Grass-based circular solutions for rural agri-food value chains (EU)
- Since-AFC - Exploring the unlimited potential of Agrifood sector in Circular Economy (Greece)
- Nutrient spill overs for valuable fertiliser (Italy)
- Climate-friendly practices (Germany, Italy, Sweden)
- From great soil comes great food – a farmers' story (France)
- Biovakka, Manure management to produce biogas and nutrients (Finland)
- Agro-industrial waste put to good use as biofertiliser (Italy)
- EIP-AGRI Challenge video 'Smart circular farming' (Porto)

Feedback and questions:

Support Facility Innovation & knowledge exchange | EIP-AGRI
Koning Albert II laan 15-1210
Brussels - Belgium Tel +32 2 543 72 81
innovation-knowledge@eucapnetwork.eu
https://eu-cap-network.ec.europa.eu

Find out more about the EU CAP Network

Visit the EU CAP Network website to discover projects, ideas and resources to catalyse innovation in agriculture, forestry and rural areas.

Funded by the European Union