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AGRICULTURE & INNOVATION



Sustainable industrial crops in Europe

How can industrial crops contribute to new market opportunities and sustainable farming systems, while not replacing food production?

Industrial crops can offer new market opportunities, support the replacement of petroleum-based materials and contribute to achieving climate and energy targets. Farmers growing these crops can improve their revenue by playing an active role in producing high added-value products such as bioplastics, biolubricants, biochemicals, pharmaceuticals, biocomposites and bioenergy. Entering these new value chains often requires significant changes in agricultural business models, as well as new investments and economic interactions.

Factors contributing to the low uptake of industrial crops throughout Europe include a lack of a necessary market, an apprehension around adopting new agronomy practices required for new crops and land costs. Additionally, there is a concern that industrial crops may replace food production, especially if they are grown on fertile land. In marginal lands, on contaminated soils or through multi/intercropping this risk is less acute.

This EIP-AGRI Focus Group of 18 experts, including farmers, advisors, researchers and industry, gathered existing knowledge and relevant practical experience and good practices in farming industrial crops on different types of agricultural land in Europe without replacing food production. The experts identified better prices for industrial crops and greater flexibility in harvested crop usability as the main risks for industrial crops to displace food production.

The experts highlighted six promising business avenues for industrial crops, considering social, economic and environmental aspects:

- ▶ Hemp for pharmaceuticals / supplements / cosmetics
- ▶ Aromatic plants for pharmaceutical / cosmetic / food additives
- ▶ Ligno-cellulosic biomass crops (switch grass / willow / miscanthus / poplar)
- ▶ Hay / Miscanthus for paper production. Hemp fibre for textile and paper
- ▶ Fibre crops for construction materials (hemp / flax / kenaf)
- ▶ Willow and poplar for land reclamation (marginal and contaminated lands)

“There are several advantages of being a member of the Focus Group on industrial crops: the intensive knowledge exchange within the group, the contact between potential partners of innovative and multidisciplinary projects and the opportunity to receive and directly apply new ideas on the farm - both for a more sustainable agronomic technique and for improving the added value of the current value.”

- Gian Luca Bagnara (Italy),

farmer and expert from the EIP-AGRI Focus Group Sustainable industrial crops in Europe -

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Ideas for Operational Groups

- ▶ Bridging the gap between the farmer's production of industrial crops and consumers through improved supply and value chains.
- ▶ Enhancing industrial production of high-quality raw material of selected MAPs (medicinal and aromatic plants) by developing breeding programmes, agronomic techniques and machinery to adapt cultivation of promising wild species, and identify intercropping opportunities for MAPs.
- ▶ Developing value chains with high quality and low environmental impact, for specific industrial crops such as hemp fibres and other natural fibres.
- ▶ Demonstrating the possibilities of utilising contaminated sites for industrial crop production.
- ▶ Using marginal land for biomass crop establishment (poplar, willow) and applying circular economy models using nutrient-rich waste to improve yields, to make farming on marginal lands economically sustainable.
- ▶ Utilising and measuring industrial crops, such as poplar, willow etc., as carbon capture and storage vehicles.

Research needs

- ▶ Demonstration models and research development of utilisation of the entire crop for numerous markets.
- ▶ Scaling up bio-based industry needs including trialling large-scale crops (1000 - 2000 ha).
- ▶ Identifying the phytomanagement potential of industrial crops under field test demonstrations.
- ▶ Research on the impact of industrial crops on biodiversity, and on ways to enhance biodiversity.
- ▶ Life cycle assessment of industrial crops such as hemp etc., to ensure full confidence in reported figures.
- ▶ Research is needed to be able to validate the carbon captured by industrial crops.
- ▶ Finding new ways to measure and improve profits of industrial crops on marginal land.
- ▶ Understanding the flora of contaminated sites that can be used as a genetic pool for breeding industrial crops.
- ▶ Developing breeding programmes for industrial crops, developing agricultural technologies and introducing new crops.

More ideas for Operational Groups and research needs are in the Focus final report

More information on the EIP-AGRI website



[Final report](#)

[Operational Groups related to industrial crops](#)

[Focus Group webpage](#)

Inspirational idea:

[Growing industrial crops: opportunities for farmers and land-managers - Poland](#)

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Register to www.eip-agri.eu where you can find peers, projects, ideas and resources to catalyse innovation in agriculture, forestry and horticulture together.