INTERCROP VALUES

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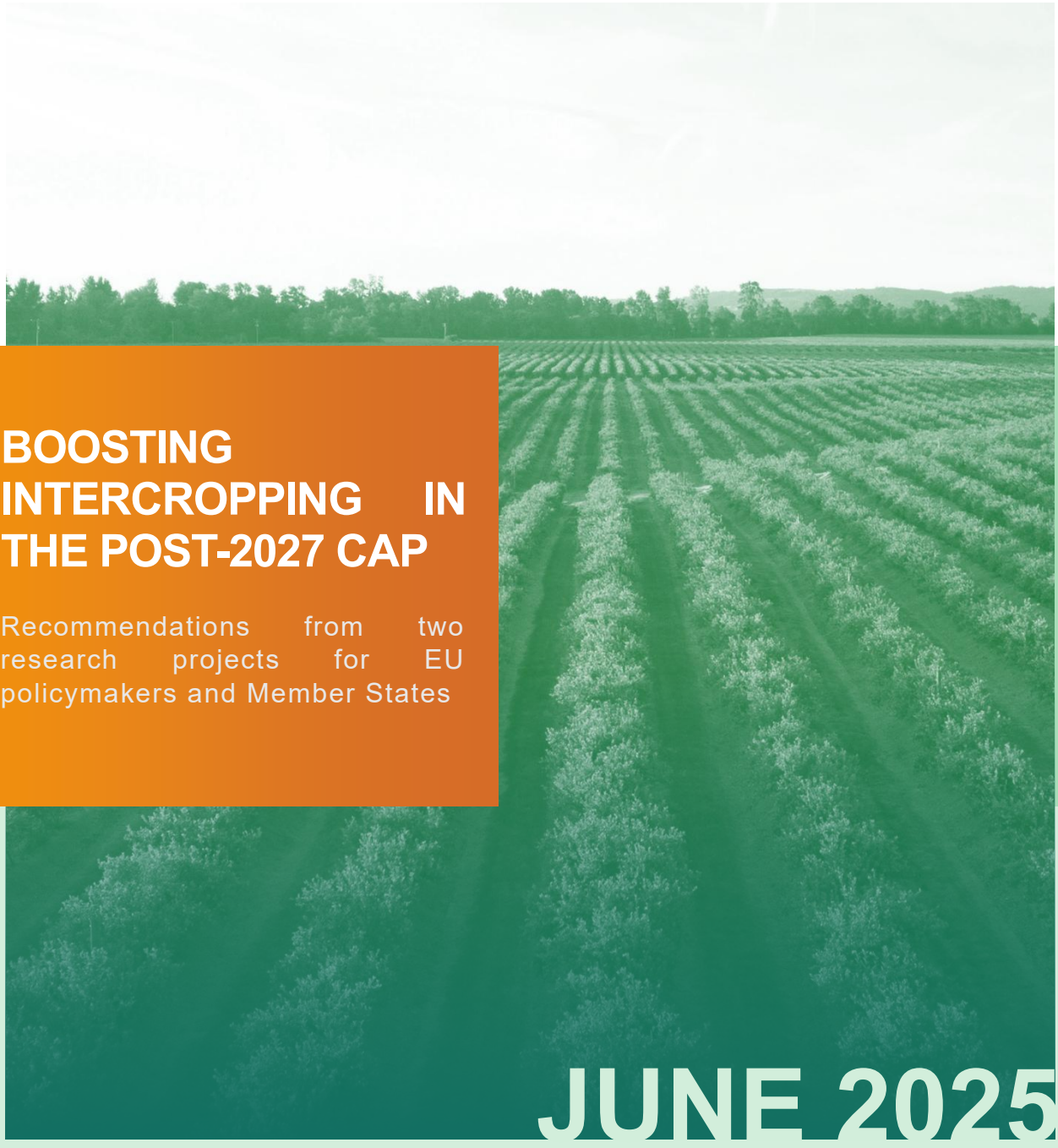
POLICY BRIEF



BOOSTING INTERCROPPING IN THE POST-2027 CAP

Recommendations from two research projects for EU policymakers and Member States

JUNE 2025

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Funded by the European Union

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

This deliverable has not yet been approved by the European Commission.

UK Research and Innovation

This work has received funding by UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding guarantee [grant numbers 10057156 and 10039837] to the Soil Association and the University of Reading.

Introduction

Innovation is a vital tool to make agricultural and food systems resilient, sustainable, and productive. Innovation in agriculture means learning to do things differently and to do more and better with less. Innovation is not always technological, it can also be organisational or methodological—a great example of the latter is intercropping.

Intercropping is a farming technique and practice that grows two or more crops in the same field at the same time.[1] The LEGUMINOSE and IntercropVALUES projects[2] focus on productive legume-cereal intercropping, for food and feed, and investigate its benefits across environmental sustainability, economic viability, and social development.

On the environmental side, intercropping leads to higher plant resource efficiency (space, nutrients, and water), especially nitrogen (N) in the case of grain legume-cereal intercrops[3], as well as natural suppression of insect pests, pathogens and weeds, which altogether enhance crop productivity and farm resilience.[4] This practice contributes to reducing greenhouse gas emissions due to low or no use of synthetic fertilisers and herbicides, reducing ground and surface water contamination, improving pollination activity, and overall biodiversity (agricultural and non-cultivated biodiversity).[5] Moreover, a greater diversity of species, varieties, and ecosystems makes production systems more resilient to shocks and stresses.[6]

Intercropping grain legumes and cereals contributes to maintaining yield with less external inputs (fertilisers, pesticides, herbicides).[7] Intercropping might also increase yield stability by combining crops that vary in stress tolerance and improving soil health through the diversity of crops, which also diversifies income streams for farmers. Thus, in low input farming systems and organic farming, it increases land efficiency with a higher total crop output produced on a unit of land and offers innovative land use for food and feed. Finally, looking at the social impacts, intercropping contributes to producing healthy and nutritious food and animal feed, preserving agricultural heritage and ecosystem services.[8]

Despite the clear benefits of intercropping, its adoption across EU Member States remains limited due to several technical, economic, cultural, organisational, and market- and knowledge-related barriers.[9] To overcome these challenges, it is crucial to develop public policies that incentivise intercropping. Such policies must not only offer financial support but also facilitate access to innovation, knowledge-sharing platforms, and the necessary tools and resources that enable farmers and all actors of the value-chain to transition towards intercropping.[10]

Policy context: addressing EU challenges and strategic priorities

Intercropping aligns closely with the European Union's strategic goals and the current agri-food policy agenda. Establishing competitiveness as one of the EU's overarching principles for action, the **Competitiveness compass**[11] aims to reduce excessive dependencies and increase security. Intercropping is relevant to competitiveness as growing more protein crops can help reduce protein dependency and increase food security in Europe. Intercropping involving grain legumes mixed with other species can reduce the protein deficiency (dependency on imported soy protein mainly) by increasing the European production of grain legumes, while keeping strategic autonomy on cereals. Furthermore, it contributes to the decarbonisation of agriculture through climate change adaptation (diversification of species leading to resilience and food security) and mitigation (carbon sequestration).[12]

The **Vision for Agriculture and Food**[13] focuses on a competitive and resilient sector in the face of global challenges through the development of a comprehensive protein plan to address protein supply challenges. Intercropping can play a major role in the transformation of the agri-food chain towards sustainable protein diversification, enhancing competitiveness, food security, and biodiversity. Last, intercropping is clearly in line with the recommendations of the **Strategic Dialogue on the future of EU agriculture**[14]: deploying a new approach to deliver on sustainability, enhancing sustainable farming practices, reducing GHG emissions in agriculture, better preserve and manage farmland, and promoting water-resilient agriculture.

This policy brief focuses on recommendations for the Common Agriculture Policy (CAP) post 2027 to support intercropping based on good practices identified in CAP National Strategic Plans (NSP) in 12 Member States.[15] While in many cases current legislation does not specifically mention intercropping, Member States can implement most recommendations under the current CAP. These possibilities should remain in the legislation after 2027, and

Member States should adapt and clarify existing provisions to make the support for this practice more explicit and robust in their NSPs.

The aim of the policy brief is to demonstrate that intercropping is an adaptable innovative practice to achieve multiple strategic objectives coherently. **Diversification through intercropping is a versatile tool suitable to pursuing the diverse priorities of Member States**, be it soil health improvement, enhancing biodiversity below and above ground, reducing inputs, or climate adaptation and mitigation.[16] Overall, boosting intercropping requires Member States and the EU to subsidise transitioning farms, finance equipment, enhance knowledge and skills, and reimagine value chains and markets.[17]

Recommendations

1. A holistic regulatory environment

In the current political context and the lingering threat of the instrumentalisation of farmers protests, food policy narratives are needed that do not posit farming against nature. The post-2027 CAP needs to strengthen its position as a bridge between farming and nature and implement the environmental and climate ambitions of the EU while ensuring European agricultural competitiveness.

For that, **the CAP should foster agroecological practices that benefit soil health, biodiversity, and water cycles while improving farm resilience and profitability.** Heeding the guidance of the Strategic Dialogue, the post-2027 CAP must support farmers in the transition towards a sustainable food and farming system, rewarding agroecological farm practices, such as intercropping, that contribute to the reduction of chemical inputs and thus to sustainability while upholding the financial resilience of farms during the transition.

To create an incentivising regulatory context, the next CAP should reinforce EU standards on good agricultural and environmental condition of land (GAEC) to be fit for farmers' realities and extreme weather conditions in a changing climate. Intercropping should be listed as a relevant optional practice to implement to comply with the following GAECs:

- GAEC 5 Tillage management, reducing the risk of soil degradation and erosion, including consideration of the slope gradient
- GAEC 6 Minimum soil cover to avoid bare soil in periods that are most sensitive
- GAEC 7 Crop rotation in arable land, except for crops growing underwater

GAEC 7 already allows Member States to "authorise in the regions concerned other practices of enhanced crop rotation with leguminous crops or crop diversification which aim at improving and preserving the soil potential"[18] but fails to specify intercropping as an option to do so. Benchmarking data will be needed to make it eligible for GAEC 7.

In all, adjusting and strengthening GAECs by reinstating their full mandatory status will help create a regulatory environment conducive to the sustainable transition of food and farming systems. GAECs should foster understanding of the benefits of biodiversity for farm productivity and of farming with nature.

2. Direct payments: extra support for intercropping

CAP direct payments could give higher support for intercropping, both productive cash crops and cover crops. **Coupled income support (CIS) offers an opportunity to Member States to reward mixed cropping.** According to Article 33, Member States may grant coupled income support to a determined list of sectors and productions or specific types of farming important for socio-economic or environmental reasons, including "protein crops, including legumes and mixtures of legumes and grasses provided that legumes remain predominant in the mixture."

For instance, the French National Strategic Plan (NSP) provides coupled income support for mixtures of cereals and protein crops if protein crops make up more than 50% of the seed mixture sown in specific areas. Other Member States should also take advantage of this opportunity in their NSPs. In a more ambitious measure, yet more extra support could be given per variety or plant family that is part of the mixture. The more diversity, the more reward, thus incentivising agro-biodiversification.

However, any NSP must consider the compatibility of CIS payments, eco-schemes, and climate-environmental measures to avoid double funding the same practice. Member States should choose the funding instrument best

suited to their context and sectoral structure to reward the most ambitious practices and offer the most incentives for farmers to engage in productive intercropping.

3. Eco-schemes and climate-environmental commitments

NSP analysis shows that **public support is necessary to incentivise farmers to take up intercropping and thus obtain its benefits**. There are few specific incentives for farmers to take up intercropping, while barriers abound.[19] The EU should unambiguously promote this option to Member States and provide guidance on growing protein crops in intercropping, including in mixture with grasses, through funding instruments that best suit local farmers. **Member States should develop eco-schemes rewarding intercropping practices** as it contributes to all of the listed "areas of actions for the climate, the environment, animal welfare and combatting antimicrobial resistance.[20] Similarly, under rural development, they should **design environmental, climate-related and other management commitments that prioritise intercropping**, especially collective schemes, as it can contribute to achieving all of the nine specific objectives (SO) outlined in Article 6.[21]

Some Member States offer others lessons to learn. The Flemish is one of the only CAP National Strategic Plans (NSP) with specific interventions on intercropping, showcasing good practices for policy intervention at the EU level. Flanders has an eco-scheme supporting cereal-legume intercropping (peas or field beans) and an ENVCLIM intervention on multi-annual protein crops that can be combined with no-till, rotation, or organic measures. Mostly organic farmers take advantage of intercropping support (ranging from €230-600/ha) and much of the protein crops are used fully as feed, exposing the need for a food system policy approach for impact.

Wallonia too has an eco-scheme on favourable crops for the environment promoting mixed crops (minimum 20% legumes, 50% cereals) and allows a mixture of protein crops with grasses, cereals, or oilseeds under a direct income support scheme for plant-based protein crops. Other Member States also promote protein crops, cover crops, crop rotation, or legume production (sometimes for fodder) in their NSPs (Austria, France, Italy, Hungary, Germany, Spain, Denmark, and Czechia) but fail to offer opportunities for intercropping. Incentives are mostly focused on protein crops (e.g., offering subsidies when over 50% of a mixture is a protein crop in Czechia), which is a positive step, but should be promoted specifically with intercropping parameters. Likewise, crop rotation can be enhanced not only by temporal but also by spatial mixing (intercropping) to break up sole crop plots. Last, eco-schemes should embody a holistic approach so that systematic sustainable management such as organic is rewarded more than cherry-picked single practices on select plots with limited impact.[22]

4. Rural development: investing in value chains for intercropped products

Intercropping contributes to the development of a holistic approach both as a farming practice delivering ecosystem services and as a production method enriching value chains from field through processing to consumption. Implementing intercropping often faces barriers beyond the farm gate, so any policy supporting this practice must take a whole of value chain approach.[23] The new CAP should elevate investment opportunities to facilitate growing, harvesting, processing, distributing, and consuming intercropping products under Pillar II. **Member States should design interventions through the European agricultural fund for rural development (EAFRD) that support buying and sharing (second hand) machinery for seeding, harvesting, separating and processing intercrop harvests.**

Setting up and operating processing facilities for separating and processing multiple products (usually cereals from legumes) require strategic CAP investments. Cleaning and separating mixed crops are challenging, and specialised cleaning and sorting machinery requires massive investment, more than a sowing machine. Due to imperfect separation and residues, these products often need to find their niche added value (e.g., high-protein bread, pasta, or beer) and marketing, which burdens their integration into agri-food supply chains. Interventions beyond and in coherence with the CAP, such as a European protein strategy, are critical to ensuring the high market value of leguminous and mixed products.

While many of the assessed NSPs (Germany, Spain, Hungary, Poland, Wallonia, Austria) include **investment schemes supporting machinery and equipment**, often with green or competitiveness objectives, only two Member States offer specific productive investment opportunities for intercropping. Flanders supports multi-sowing machines with 50% investment subsidy, increased to 60% for young farmers (under 40) or groups of farmers. Czechia has two seed hoppers, modular sowing machines under eligible expenditures and provides 40% investment subsidy, plus 10% for young farmers (under 40), plus 10% for organic farmers.

Pillar II national interventions should follow these examples and incentivise not only equipment purchasing, particularly second hand, but sharing among farmers, owned by a cooperative or association and shared as needed, bypassing private ownership costs. In Wallonia, groups of farmers receive higher

subsidies for shared machinery, which should be emulated as a good practice specifically for multi-crop machinery. Cooperation schemes should offer long-term support to farmer groups or regions with intercropping ambitions. Increased collaboration through shared financing also strengthens rural communities and farmers' negotiating position in the value chain and can prevent a downward spiral of price competition among them. Moreover, as per Article 50, operational programmes implemented by producer organisations to promote environmental and climate objectives and competitiveness should also be targeted to effectively develop value chains suited for distributing intercropping products.[24]

5. Knowledge and innovation: support advisory services and research

To reap the diverse benefits that intercropping offers, this practice needs to become a mainstream farming and policy tool. Major barriers to uptake are linked to a disabling context: lack of specialised regulations, advisors, knowledge sharing and a dominant agricultural and consumer culture incompatible with intercropping and other innovative methods leading to risk aversion and de-incentivising innovation.[25]

Education, peer-to-peer exchange, and advisory services have a central role in encouraging farmers and processors to intercrop, yet European advisory systems often lack this experience and expertise.[26] Farmers gather most knowledge from colleagues and advisors. **Strengthening agroecological advisory services with deep and nuanced knowledge on intercropping and funding sources and specialised advice adapted to the individual context is indispensable for the transition of food systems.** Article 15 of the CAP regulation on farm advisory services requires Member States to ensure "that advisors are suitably qualified, appropriately trained and have no conflict of interest," while Article 78 "Knowledge exchange and dissemination of information" empowers Member States to support innovation and learning.[27] **Member States should direct this support to training agricultural knowledge and innovation systems (AKIS) and creating peer-to-peer learning opportunities that prepare farmers for resilient and competitive production using—not only technological—innovation and help them make the best use of CAP funding opportunities.**

Last, the EU research agenda must continue investigating the agronomic performance and profitability of intercropping to provide credible evidence for practitioners, advisors, and policymakers. Further research is needed in market organisation and consumer willingness on dietary change, nudges to incentivise demand-side transformation, and seeds bred for diversified cropping systems.[28]

6. Demand side: develop a protein strategy

In line with SO2 to enhance market orientation and increase competitiveness, **the EU needs to develop a protein diversification strategy that capitalises on intercropping practices as a vehicle of food and feed security and sovereignty, rural development, and public health.** The reason why the Flemish NSP includes focused actions for intercropping is because Flanders has a protein strategy (2021-2030)[29] for sustainable, diverse, and future-focused protein provision and thus incentives to increase and diversify plant protein production. The Flemish case shows the potential of strategic policy coherence across agriculture, aquaculture, public health, and markets. Research indicates that applying more demand-side instruments when introducing environmental policies increases policy performance and impact.[30]

Pulses for human consumption offer healthy plant-based proteins, can restore indigenous, resilient varieties, diversify diets, and assist the sustainable transition of the livestock sector. A European protein diversification strategy should place farmers in the centre and strengthen their position in the market, diversify value chains, improve food environments, increase the resilience of farms and rural landscapes, and support high animal welfare systems.[31] Intercropping is a tool that can contribute to each of these public policy targets. EU institutions also have important levers in implementing a protein strategy through public procurement prioritising goods from intercropping, breeding regulations, nutrition and health campaigns, and food safety standards.

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