CROPDIVA POLICY BRIEF

DIVERSIFYING EUROPEAN AGRICULTURE WITH UNDERUTILISED CROPS

KEY MESSAGE FOR EU POLICY MAKERS

Underutilised crops are proven, scalable tools to deliver the objectives of the European Green Deal and the CAP. Targeted incentives, coordinated breeding support, strong advisory systems and clear food-safety guidance are essential to unlock their full contribution to a climate-resilient, biodiversity-positive and protein-secure European agriculture.

EXECUTIVE SUMMARY

European arable farming systems face increasing pressure from climate change, soil degradation, biodiversity loss and reliance on imported protein. Evidence from the CROPDIVA project demonstrates that integrating underutilised crops into arable systems can significantly enhance climate resilience, environmental performance and protein self-sufficiency, without increasing food safety risks.

This policy brief presents key evidence from CROPDIVA and outlines targeted policy actions to support the uptake of diversified cropping systems within the Common Agricultural Policy (CAP), the European Green Deal and national strategic plans.

POLICY CONTEXT

The European Green Deal, the Farm to Fork Strategy and the EU Biodiversity Strategy call for more resilient, low-input and diversified agricultural systems. However, current arable production remains dominated by a narrow range of crops, increasing vulnerability to climatic shocks and market volatility.

Underutilised crops such as oat, triticale, hull-less barley, narrow-leafed lupin, buckwheat and faba bean, offer an opportunity to operationalise Green Deal objectives through practical, field-tested diversification strategies aligned with CAP eco-schemes and agri-environmental measures.

EVIDENCE FROM CROPDIVA

1 Biodiversity and ecosystem services

- Buckwheat borders and diversified canopies increase pollinator activity, directly supporting EU biodiversity and pollination objectives.
- Intercropping suppresses weeds by up to 80%, reducing herbicide use and associated environmental and health impacts.
- Mixed cropping systems support beneficial insects and landscape diversity, strengthening ecosystem service delivery at farm and regional level.

2 Soil health and nutrient effiency

- Intercropping enhances biological nitrogen fixation, lowering dependency on mineral fertilisers and supporting EU targets on nutrient loss reduction.
- Cover crops following legumes capture residual nitrogen, reducing winter nitrate leaching and improving compliance with water quality objectives.
- Improved soil cover and deeper rooting systems enhance soil structure and water retention, increasing resilience to both drought and heavy rainfall.

3 Climate resilience and system stability

- Cereal–legume and buckwheat-based mixtures increase yield stability under drought and heat stress, reducing income volatility and production risk for farmers in climate-exposed regions.
- Diversified rotations buffer inter-annual climatic variability more effectively than sole crops, contributing to long-term production stability under climate change.

4 Protein self-sufficiency

- Faba bean–triticale mixtures increase protein yield per hectare, reducing dependence on imported protein feed and improving feed system resilience.
- Whole-crop triticale biomass provides a climate-resilient alternative to maize silage, particularly relevant for drought-prone and marginal regions.

5 Food safety and risk management

- Crop diversification does not increase mycotoxin contamination risks, maintaining food and feed safety while enabling system diversification.
- Cereal–lupin intercropping may increase quinolizidine alkaloid (QA) concentrations, requiring targeted breeding and monitoring strategies.
- Lupin-based systems require allergen-aware handling, particularly to prevent cross-contamination in mixed harvest and processing chains
- Processing significantly reduces anti-nutritional factors, enabling safe integration of underutilised crops into food and feed value chains.

BARRIERS TO LARGE-SCALE UPTAKE

Limited availability of crop varieties adapted to intercropping systems

Restrictive or inconsistent interpretation of CAP eco-schemes across member states

Insufficient advisory guidance on allergen and alkaloid management in lupin-based systems

Limited availability of processing and value chain infrastructure for underutilised crops

Low consumer awareness and market development for underutilised crops

MITIGATING POLICY RECOMMENDATIONS

Invest in breeding and seed systems

Support the development of stress-tolerant, intercropping-adapted varieties (e.g. low-QA lupin, disease-resistant triticale). · Reinforce EU-level pre-breeding cooperation and genetic resource use.

Strengthen CAP eco-schemes and inter-ventions

Explicitly recognise cereal–legume intercropping and multi-species systems as eligible and high-value eco-scheme practices.

Reinforce advisory systems and Living Labs

Embed Living Labs as long-term regional platforms for farmer training, demonstration and co-creation. Integrate clear guidance on allergen-safe handling of lupin into CAP-supported diversification schemes

Enable processing and value chain development

·Support investments in local milling, extrusion, fractionation and drying infrastructure. Promote circular valorisation of crop residues (e.g. biostimulants, bio-based materials).

Stimulate demand and consumer awareness

Align underutilised crops with EU sustainability, biodiversity and protein transition objectives. · Support effective labelling, public procurement and market development for diversified crop-based products.

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CROP DIVA

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