Alternative / Plant Proteins Workshops

Workshop Report

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Location: Mons

Programme: Cross S3 Interreg France-Wallonia-Flanders.

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Objective of this report: To provide a report of the workshops and identify pathways to further develop the theme.

Overview

- Workshop 1 - Risk Sharing Between Farmers and Processing Industries
- Workshop 2 - Accelerating the Protein Transition from Production to Plate
- Workshop 3 - Sustainable Processing of Plant Proteins

Workshop 1 - Risk Sharing Between Farmers and Processing Industries

Context

The development of sustainable and diversified plant protein value chains requires stronger coordination between agricultural producers and processing industries. However, both actors face significant economic, technical, and organisational uncertainties that slow down the development of robust supply chains.

Farmers and processors must operate within a relatively new and evolving market environment where production capacities, market demand, contractual arrangements, and processing infrastructures are still under development.

This workshop aimed to facilitate dialogue between agricultural stakeholders, processors, cooperatives, researchers, and regional innovation actors in order to better understand the distribution of risks across the value chain and identify collaborative solutions.

Workshop objective

The objective of this workshop was to collectively identify:

- the main risks and barriers faced by farmers and processors;
- possible governance and contractual solutions;
- opportunities for collaboration and shared infrastructure development.

Workshop development

Several challenges were identified through examples and discussions. These can be grouped into six overarching challenge areas affecting the development of resilient and sustainable plant protein value chains: economic viability and market risks; supply chain organisation and infrastructure; production and technical challenges; knowledge, skills and innovation; collaboration, governance and risk sharing; and regulatory and administrative constraints.

1. Consumer demand

Linked to: economic viability and market risks.

The main challenge remains consumer demand. Without sufficient market uptake of plant-based protein products, the development of the entire value chain is constrained. Increasing consumer awareness and encouraging behavioural change are therefore critical. Several solutions were identified, including nudging strategies and the use of public procurement as a market lever. A notable example is the role of hospitals in Denmark, where large public buyers have integrated more plant-based proteins into their procurement policies. Such decisions create stable demand and encourage producers and processors to adapt their production and investment strategies accordingly.

2. Securing farmers margins

Linked to: economic viability and market risks; collaboration, governance and risk sharing.

A second major challenge is ensuring adequate and stable margins for farmers. Production risks, price volatility and technical uncertainty can discourage farmers from investing in protein crops. Potential solutions include long-term fixed-price contracts, weather-related insurance schemes, and a fixed price for consumers with risk-sharing mechanisms across the value chain. Participants highlighted the importance of internal arrangements between farmers, processors and distributors to provide greater price stability for both producers and consumers while ensuring a fair distribution of value.

3. Strengthening co-investment across the value chain

Linked to: production and technical challenges; knowledge, skills and innovation.

The third challenge concerns the need for co-investment, particularly in seed breeding and varietal development. Identifying and developing varieties that are adapted to local conditions requires significant research and development efforts, which often exceed the capacity of individual actors. Addressing this challenge requires stronger collaboration and shared investment across the value chain. This can take the form of direct financial support for R&D, commitments to purchase seeds or harvested crops, and long-term agreements guaranteeing outlets for processed products. Such mechanisms can reduce uncertainty, support innovation and accelerate the development of competitive local plant protein value chains.

Wagralim comments

An important observation from the discussions is that most of these challenges are not new. The same issues have been raised repeatedly over the years.

In particular, the disconnect between farmers and processing industries remains a recurring concern. While both actors depend on one another, they often operate with different constraints, time horizons and risk perceptions. Farmers need visibility on prices, volumes and market outlets before investing in new crops, whereas processors require reliable volumes and consistent quality before committing to market development and investments. This interdependence creates a chicken-and-egg situation in which neither side is willing or able to take the first step alone.

Another recurring theme was the role of public authorities. While governments have provided support through research funding, agricultural subsidies and innovation programmes, participants noted that public intervention has not always been sufficient to address the market barriers facing the sector. Beyond financial support, governments can play a key role in

consumer and future generation awareness and integrate plant proteins in school and institutional catering as a public strategy.

The ultimate driver behind several of these difficulties is market demand, particularly its sensitivity to price. When demand remains weak or highly price-driven, it becomes difficult to create value differentiation for local production. This pressure on price intensifies with free-trade agreements with non-EU countries.

Workshop 2 - Accelerating the Protein Transition from Production to Plate

Context

The transition towards more sustainable food systems requires a profound transformation of protein production and consumption patterns. Strengthening protein autonomy for livestock systems while supporting the development of plant-based food applications has become a strategic priority across Europe.

However, accelerating the protein transition requires stronger alignment between agricultural production, market demand, processing capacities, and consumer expectations. Farmers need secure and profitable outlets, while downstream actors increasingly demand diversified and sustainable plant protein sources.

This workshop aimed to foster dialogue between agricultural actors, researchers, processors, feed and food stakeholders, and regional innovation ecosystems in order to identify the key levers that can accelerate the development of sustainable plant protein value chains.

Workshop objective

The objective of this workshop was to collectively identify the most promising levers to support the development of protein crops and related markets, while exploring opportunities for collaboration between upstream and downstream actors across the value chain.

Given the broad scope of the topic, the workshop gathered participants with diverse expertise and a strong understanding of both market dynamics and sectoral challenges. Discussions focused on identifying key barriers, validating existing solutions, and exploring potential areas for joint action.

Workshop development

Identification and validation of key levers

As a starting point, participants were invited to review a pre-defined, non-exhaustive list of levers that could contribute to accelerating the protein transition. The proposed levers were discussed collectively, validated by the participants, and complemented with additional suggestions based on their expertise and experience.

The levers were organised into five categories:

- Agronomic levers
- Economic and market levers
- Processing and infrastructure levers
- Food and consumer levers

- Governance and collaboration levers

Additional levers identified during the workshop

Agronomic levers

- Faster approval procedures for crop protection products dedicated to emerging protein crops.
- Greater integration of plant protein topics into agricultural and food education programmes.

Processing and infrastructure levers

- Further development of zero-waste approaches, including the valorisation of side streams and fibres generated during processing.
- Increased research on processing impacts, particularly regarding nutritional quality and potential losses occurring during transformation processes.

Food and consumer levers

- Price remains a key marketing argument and purchasing criterion.
- Greater awareness-raising among younger consumers is needed to encourage the adoption of plant-based proteins from an early age.
- Development of educational initiatives, such as cooking classes, chef training programmes, and exposure to new protein sources.
- Strengthening consumers cooking skills, as plant-based protein ingredients often require more preparation time and culinary knowledge than animal-based products.
- Development of hybrid products combining plant and animal proteins as a potential pathway to improve consumer acceptance and facilitate dietary transition.
- Participants also noted that certain communication strategies can be counterproductive. In particular, plant-based products are often presented as direct alternatives to animal products and are sometimes named after traditional animal-based foods. This approach may create confusion among consumers and can hinder rather than support product acceptance.

Governance and collaboration levers

- Increased collaboration is needed to address new food safety issues associated with novel protein crops and ingredients. One example discussed was the discovery of previously unidentified Bacillus strains during a yellow pea project conducted in Flanders.
- Novel Food regulations remain a major challenge for innovation. Participants acknowledged that significant regulatory barriers still exist and that solutions are currently limited.

Potential areas for collaboration

1. Communication, education and marketing

The need for stronger communication and education efforts was consistently highlighted across all discussion groups.

Participants suggested that a joint project involving the three regions could generate significant added value. Beyond awareness-raising activities, such a project could focus on exchanging and scaling successful marketing practices, including approaches developed by retailers, food service actors, and consumer organisations.

- Chef training programmes and culinary education initiatives.
- Student competitions organised by organisations such as ProVeg in Flanders.
- Food innovation competitions inspired by television formats such as Top Chef, already implemented in France with media involvement.
- Development of a dedicated online platform for plant-based recipes, similar to existing culinary websites such as Marmiton.

The objective would be to improve consumer awareness, strengthen culinary skills, and increase the visibility and attractiveness of plant-based protein products.

2. Development of new protein crop varieties

A second collaboration opportunity concerns plant breeding and varietal development.

Given the geographical proximity of the three regions and the similarity of many agronomic challenges, participants identified opportunities to strengthen cooperation in areas such as crop quality, protein content, climate resilience, agronomic performance, and adaptation to regional growing conditions.

Pooling expertise and research capacities could accelerate the development of varieties better suited to regional value chains.

3. Value chain demonstration projects

Participants also proposed the development of integrated projects covering the entire value chain, from production to final market applications.

Such projects could focus on one or two priority protein crops and involve all relevant stakeholders, including farmers, processors, researchers, food and feed industries, retailers, and consumers.

This approach would help identify bottlenecks, test solutions under real conditions, and demonstrate the viability of regional protein value chains.

4. Consumer acceptance of new protein sources

Consumer acceptance was identified as a major research topic requiring further investigation.

Participants highlighted the need to better understand the factors influencing consumer acceptance, the barriers to adoption, regional differences in consumer perceptions, and the effectiveness of different communication and marketing approaches.

An important discussion point concerned the diversity of protein products available on the market. Participants emphasised the need to clearly define which types of proteins are being considered when analysing consumer behaviour, as acceptance drivers may differ significantly between ingredients, processed products, hybrid products, and novel protein sources.

Conclusion

The workshop confirmed that accelerating the protein transition requires action across the entire value chain. While agronomic innovation and market development remain essential, participants highlighted the importance of communication, consumer engagement, regulatory adaptation, and cross-sector collaboration.

The discussions also demonstrated strong potential for interregional cooperation, particularly in the areas of communication and marketing, varietal development, value chain demonstration projects, and consumer acceptance research.

Workshop 3 - Sustainable Processing of Plant Proteins

Context

The transition towards more diversified and sustainable protein systems is accelerating across Europe. Beyond agricultural production, one of the key challenges now lies in the transformation of plant proteins into ingredients and products that meet industrial and consumer expectations.

Processing technologies play a central role in improving taste and texture, techno-functional properties, nutritional value, sustainability, scalability and industrial feasibility.

This workshop aimed to create exchanges between industrial actors, researchers and innovation stakeholders around three major processing approaches used in plant protein valorisation:

- Hydrolysis and functionalities of hydrolysates;
- Fractionation and extraction;
- Fermentation.

The objective of the discussions was to identify challenges, promising solutions and collaboration opportunities related to the sustainable processing of plant proteins.

Workshop development

Hydrolysis

Discussions focused on hydrolysis processes and hydrolysates. Topics discussed included bitterness, wet processing and predictive functional properties. Elements mentioned during the discussions included bioactive hydrolysates, foaming hydrolysates and SH activity. Collaboration opportunities mentioned included new product development and industry-research collaboration.

Fractionation / extraction

Discussions focused on fractionation and extraction technologies applied to plant proteins. Topics discussed included by-product valorisation, taste and functionality of resulting proteins, bitterness and equipment costs. Elements mentioned during the discussions included shared equipment, platforms at scale, heat treatment for taste and bioactive fractions. Collaboration opportunities mentioned included functional foods, new by-products, funding opportunities, education of new students, baking applications and probiotics.

Fermentation

Discussions focused on fermentation processes and applications. Topics discussed included liquid, solid and semi-solid matrices, as well as upstream and downstream processing. Elements mentioned during the discussions included microbiota modification, natural inductors, continuous fermentation, fed-batch fermentation and bioactivity. Collaboration opportunities mentioned included data-sharing initiatives and collaborative platforms between industrial partners.

Main points highlighted during the collective restitution

Challenges

Fractionation / extraction

- Valorisation of by-products.
- Taste and texture of resulting proteins.
- Cost of equipment.

Hydrolysis

- Bitterness.
- Wet processing.

Fermentation

- Choice between liquid, solid and semi-solid matrices.
- Upstream and downstream processes.

Promising solutions

Fractionation / extraction

- Shared equipment.
- Platform at scale.
- Heat treatment for taste.

Hydrolysis

- Study of techno-functional properties.
- Bioactivity.

Fermentation

- Microbiota modification (geno.).
- Inductors (natural ways).
- Continuous / fed-batch fermentation.

Collaborative opportunities

Fractionation / extraction

- Development of an upscaling fund.
- Development of functional food from co-products.
- Education of new students.

Hydrolysis

- Baking industry.
- Probiotics.

Fermentation

- Data sharing platform between industrial partners.

Conclusion

The workshop discussions highlighted the diversity of technological approaches currently being explored to improve the performance and sustainability of plant proteins. While the three processing routes discussed - hydrolysis, fractionation/extraction and fermentation - address different challenges, several recurring themes emerged throughout the exchanges.

Across the discussions, particular attention was given to the relationship between processing technologies and the resulting functional, sensory and bioactive properties of plant-based ingredients. Questions related to bitterness, taste, texture and functionality were raised in both the hydrolysis and fractionation/extraction discussions, illustrating the importance of maintaining ingredient performance while developing sustainable processing solutions.

The valorisation of biomass and co-products also emerged as a recurring topic, particularly within the fractionation/extraction discussions, where opportunities linked to functional foods and new value-added applications were identified.

Within the fermentation discussions, participants explored opportunities related to microbiota modification, natural molecules and continuous processing approaches, highlighting the diversity of innovation pathways currently being investigated in this field.

Finally, several discussions pointed towards the importance of collaboration and shared resources. Topics such as shared equipment, data-sharing platforms, funding mechanisms, education and collaboration between industry and research organisations were mentioned across the different workshops, reflecting a common interest in strengthening the ecosystem supporting plant protein innovation.

Overall, the workshop provided an opportunity to explore complementary technological approaches and to identify a range of challenges, innovation opportunities and potential areas for future collaboration within the plant protein value chain.

General Conclusion

The three workshops highlighted the complexity of developing sustainable alternative and plant protein value chains. Across the discussions, participants emphasised that the protein transition cannot be addressed through a single entry point, but requires coordinated action across the entire value chain, from agricultural production to processing, market development and consumer acceptance.

Several recurring challenges emerged. Economic viability, market demand and price sensitivity remain central issues, particularly for farmers and processors who need greater visibility, stable outlets and fair risk-sharing mechanisms. The discussions also confirmed the importance of strengthening collaboration between upstream and downstream actors, as well as between industry, research organisations, public authorities and innovation ecosystems.

From a technical perspective, the workshops highlighted the need to further develop adapted crop varieties, improve processing technologies and better understand the impact of transformation processes on taste, texture, functionality, nutritional quality and bioactivity. The valorisation of co-products and side streams also appeared as an important opportunity, particularly in relation to sustainable processing and the development of new applications.

Consumer acceptance was identified as a key factor for the development of plant-based protein markets. Communication, education, culinary skills, product positioning and marketing approaches were repeatedly mentioned as important levers to support behavioural change and improve the attractiveness of plant-based protein products.

Finally, the workshops pointed to several areas where future action could be developed: improved coordination and governance across value chains, shared infrastructure and equipment, interregional collaboration, value chain demonstration projects, consumer-

oriented initiatives, varietal development, data sharing and stronger links between research and industry.

Overall, the workshops confirmed that the alternative and plant protein transition requires a systemic approach, combining agronomic, technological, economic, regulatory and consumer-related dimensions. They also identified concrete opportunities for collaboration and provided useful directions to further structure and strengthen this thematic area.