

Market developments and policy evaluation aspects of the plant protein sector in the EU

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EVALUATION CARRIED OUT BY:

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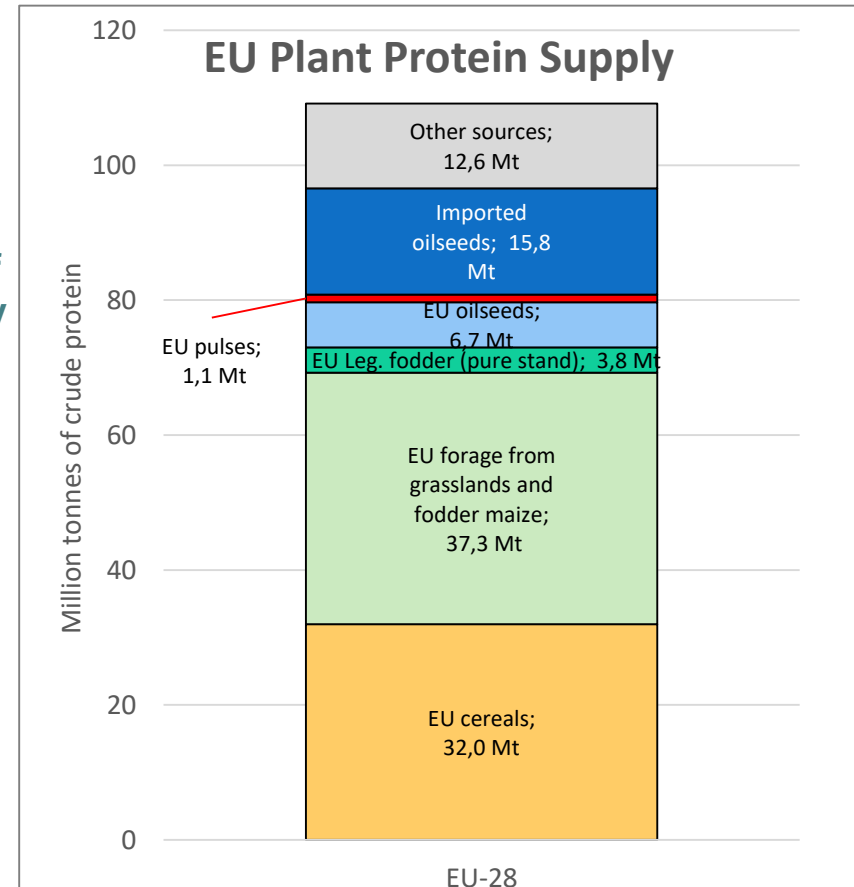
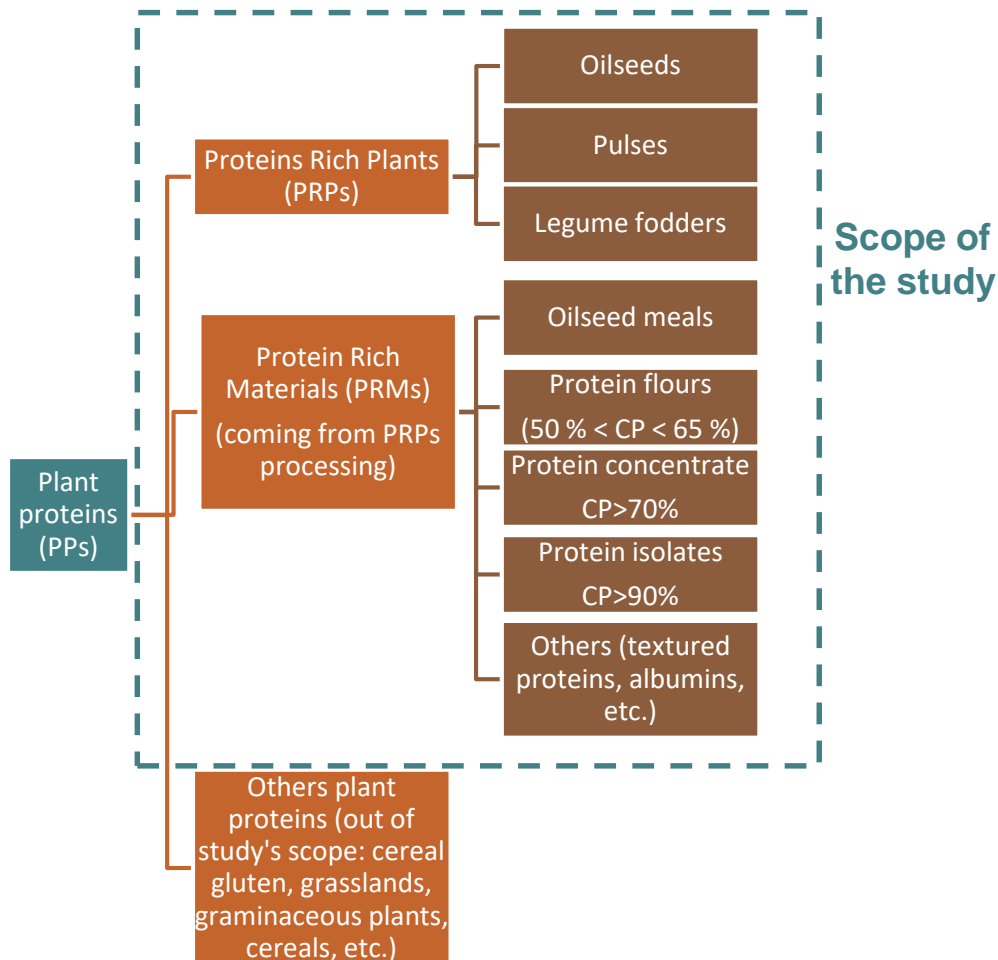
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SCOPE OF THE EVALUATION

The productions studied were:

- Pulses: field beans, field peas, lupines and other dry pulses (chickpeas, lentils and dry beans),
- Sub products (e.g. meals) of the following oil seeds: rapeseed, sunflower and soybean,
- Forages of legumes: mainly alfalfa, clovers, and sainfoil.



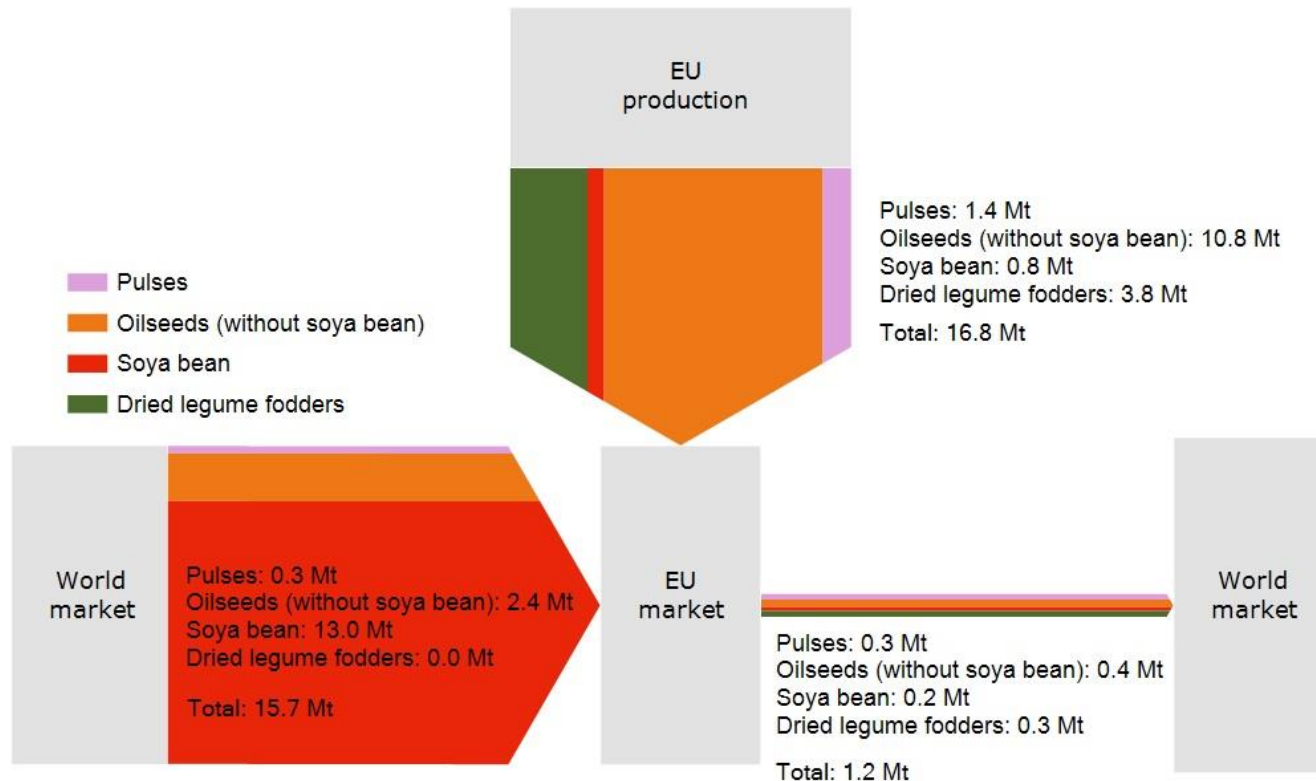
Breakdown of the EU-28 total Plant Protein supply (109 Mt) by taking all plant protein sources: (source: own calculations based on EUROSTAT, EU Commission protein balance sheet, (Huyghe et al., 2014), (Smit et al., 2008)).



Supply, demand and exchange context of the EU relating to PRPs

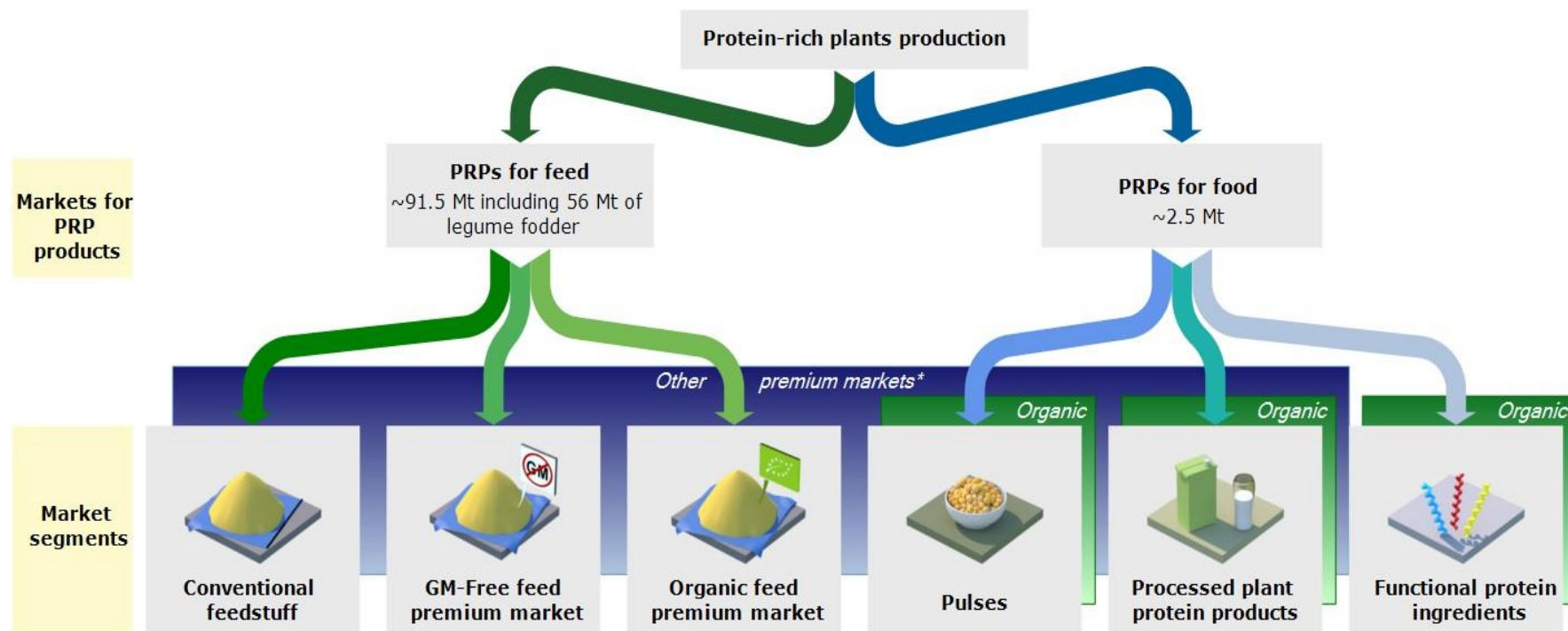
Once **converted in crude protein equivalent**, imports of protein-rich plants to the EU are nearly equivalent to the EU production, respectively 15.7 Mt of imported proteins and 16.8 Mt produced proteins.

→ high dependency of the EU on imports of protein-rich materials and particularly on soya (83% of imports in terms of proteins). In comparison, EU exports of protein-rich crops are 13 times smaller (1.2Mt).





Main market segment for protein rich plants in the EU





FEED market segments

Feed origin in the EU (481Mt in 2015)



(Source: FEFAC)

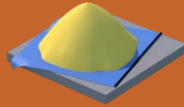
- ☐ High cereal incorporation in poultry >75% for premium poultry: barrier to pulses and driver for soybean meal.
- ☐ PRPs are mostly oilseed meals
- ☐ High protein need in compound feed for ruminants to complement fodder energy



FEED market segments

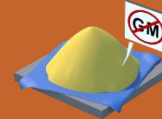
Description of the market segments

Conventional / commodity



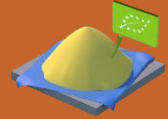
- On-farm feeding = more energy than protein oriented.
- Soya: 55% of PRP protein supply
- Leg. fodders: 10-15% dehydrated
- More rapeseed meal in FR/DE (biodiesel co-product).
- Pulses and forage legumes: far below max incorporation levels.
- Soya and rapeseeds: future markets available.
- Pulses: physical markets and more limited liquidity.
- EU pulses and soybean: competition with food outlets.

GMO free



- Non-GMO market maturity: Milk > eggs > broilers > pork
- Germany and Austria ahead → Ripples in FR and PL.
- Premium
 - 85€ for soybean meal (+25%)
 - logistics (+25-30€/t GM feed)
 - Feed cost: + 17-21%
 - Price (farm gate): +0,015€/l milk, + 0.12-0.30€/kg meat.
- Lower cost impact on cattle.
- Concept meat often implies GMF
- Minimum period of non-GM feeding varies among MS.

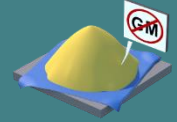
Organic



- Continuous market expansion (retail sales: +350% since 2000).
- PRPs more developed in relative terms (agronomic needs).
- EU-N13: more considered as luxury products or export driven.
- Difficulties to source soybean meal in the EU (reliance to imports).
- More on-farm feed manufacturing.
- High demand for organic alfalfa.
- Lack of B2B services for technological treatments (dehulling, toasting).
- Higher diversity in feeding systems, regional differences.



FEED market segments

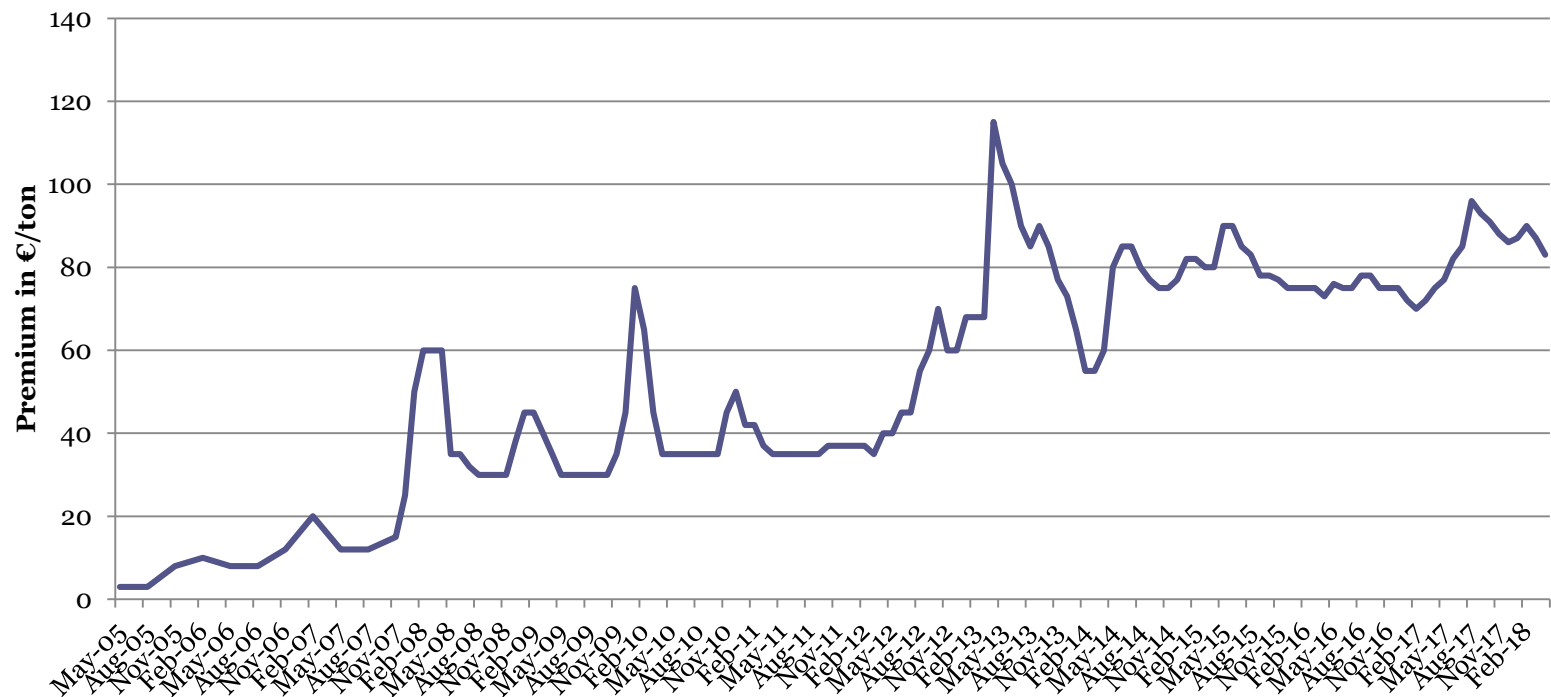


GMF premium segment

- Legislation: regulations 1829/2003 and 1830/2003 – framework of GMOs on EU market
- Development of GMF labelling
 - Private standards
 - National standards → differences between MS
- Driving MS: Austria and Germany
(1,5 and 5,4 billion€ markets in 2017)
- Dairy and poultry sectors growing fast but pork sector slow (with specific constraints)
- GMF price premium volatile but growing since 2005
~85€/t in 2017

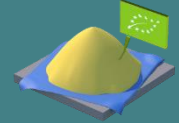


GMF premium on soybean meal (€/t, Feed alliance, 2018)





FEED market segments



Organic segment

- EU organic market recorded a growth of 40% between 2010 and 2016, main segments developed: bovine and poultry, pork is the less developed.
- Difficult supply of raw material=> regulation 5% conventional tolerance in feed for monogastric (100% in 2021).
- The use of synthetics Amino Acids, GMOs and hexane de-oiling are banned.
- Sourcing is based both on EU production and import, as feed demand exceeds EU organic production, for which preference is given to food uses with higher prices.

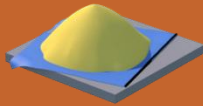




FEED market segments

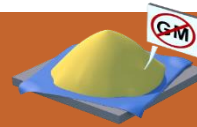
Main economic drivers

Conventional / commodity



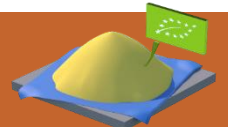
- Seek for standard products, with stable quality and availability. constant availability and quality + standard products.
- Need for hedging solutions (or price indexation if no futures market).
- Feedstuff substitution costs in factories (limited number of silos).
- Labour cost (especially for leguminous fodders).

GMO free



- GMF soya bean price premium (+ 80-100€) or cost of its substitution.
- Availability of GM-free raw materials.
- Branding and PDO/PGI.
- Price premium for milk.
- Additional sourcing, segregation, storage and transaction costs.
- Availability of GMF soya bean.
- GMO regulations.

Organic



- Segregation cost of organic materials: storage, handling and pest management.
- Agronomic constraints inherent to organic production.
- Competition with food outlets.
- Availability of organic raw material for feed.
- High PRP prices in organic.
- Lack of B2B services for technological treatments (dehulling, toasting, storing), especially at small scale.

Outlook for feed: expected trends

- Stabilisation of rapeseed oils in the biofuel complex
- Stable meat demand:
 - less bovine meat,
 - increased poultry production,
 - and intensification of dairy systems.
- Towards a new equilibrium for meat markets:
 - less volume and more value in Northwest Europe,
 - volume growth in Central and Eastern Europe (e.g. to sustain the growing demand for poultry).
- Growing GMF demand
 - Milk/eggs: GMF to become the standard in EU-15 and EU-15 suppliers?
- Demand for organic animal products:
 - increasing at a fast pace.
 - organic feed demand for PRPs growing faster than the production of PRPs.
- Expected CAP support: protein crops spotlighted in the new CAP 2020 proposal.
New measures to boost their development?

Main sources :

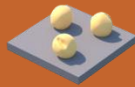
- workshops organised by the European Commission between July and October 2018: two expert protein workshops and a workshop to validate the results of the mid-term agriculture outlook 2018-2030.)
- Insights from interviews and case studies.



FOOD market segments

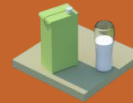
Description of the market segments

Whole grain pulses



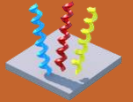
- Whole grains cooked as such by the consumers (bought dried or canned) or incorporation in ready-to-eat dishes
- The decisive consumer is the final consumer → B2C
- Non-processed or low processed

Processed plant proteins products



- Soy drinks, meat alternatives, superfood (e.g. chickpea flour based pasta), etc.
- The decisive consumer is the final consumer → B2C
- Mainly soya bean (but also peas and other pulses)
- Can be highly processed

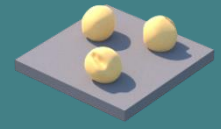
Functional protein ingredients



- Incorporation in meat products, bread and pastry products, etc.
- The decisive consumer is the agri-food industry → B2B
- Mainly soya bean and pea (but also other pulses)
- Can be highly processed



FOOD market segments



Pulses (whole grains)

- Further segmentation within the market segment depending on type and origin:

- Commodity grains with no origin specifications
→ generally imported from Canada and packed in EU

- Products under quality standards, mainly PDO and PGI
→ higher prices compared to commodities

Lentils from the Puy (PDO)	Lentils from France
~2000€/t	~500€/t

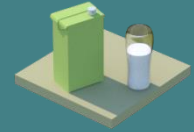
Producers prices in France according to the case study

- Development of country labelling:





FOOD market segments



Processed plant protein products

- Wide variety of products: tofu, soydrinks, pulses-based pasta, meat analogues, etc.
- Dairy alternatives market → mature market with good penetration rate in some member states (e.g. BE, ES)
- Meat alternative market → less mature but developing fast.
- Europe: largest market for meat alternatives in the world (Prasannan, 2018)
- Pulses-based products are also developing fast:
 - More than 1 200 new pulses-based products were launched in the EU in 2013, vs 430 in 2010 (Source: Canadian Ministry of Agriculture, 2015)



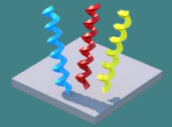
Sourcing?

EU soya bean = **73%** of ENSA members supply in 2017 (100% for organic soya bean-based products)

→ Mainly based on contracts with collectors



FOOD market segments



Functional protein ingredients

- Plant proteins would represent ~30% of protein ingredients in the world (Improve, 2018)
- Functional properties sought by agrifood companies: texture, water retention capacity, emulsification, nutritional composition, coagulation, etc.
- Initially driven by incorporation in meat products:



INGRÉDIENTS
 Viande hachée de bœuf (80%) protéines végétales de soja réhydratées (15%), arôme, sel.
 Ce produit contient : Soja.
 Pourcentage de matières grasses inférieur à 15 %.
 Rapport collagène sur protéines de viande inférieur à 25 %.

Soy protein

- But other markets have developed: **meat and dairy alternatives, infant foods**, etc.

Sourcing?

Soya bean-ingredients = mainly imported

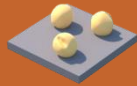
Pea ingredients = some producers in the EU (e.g. Roquette, Cosucra, Emsland) based on EU peas.



FOOD market segments

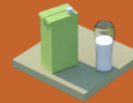
Main economic drivers

Whole grain pulses



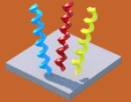
- Consumers habits
- Image of the product (traditional, healthy, etc.)
- Rise of flexitarian/vegetarian/vegan diets
- Availability and stability of the supply (contracts)
- Quality of the grains
- EU origin/local sourcing

Processed plant protein products



- Rise of flexitarian/vegetarian/vegan diets, gluten/lactose free.
- Convenience of the products/cooking time
- Consumers habits
- Image of the products (environmental friendly, healthy, etc.)
- Availability and stability of the supply (contracts)
- Availability of GM free supply
- Quality of the grains
- EU origin/local sourcing

Functional protein ingredients



- Functional and nutritional properties of PRPs (nutriscore)
- Availability and stability of the supply (contracts for peas)
- Availability of GM free supply
- Know-how
- Research and development of new ingredients
- Competition with other protein sources (e.g. gluten, whey)

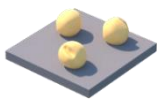


FOOD market segments

Main outlooks

- Diet transition in the EU and rise of vegetarian, flexitarian, vegan and gluten free diets
- Rise of health and environmental concerns
- Local foods
- Reduction of the time allocated to cooking in EU households
- Innovations / development of new products
- Potential concerns regarding ultra-processed food products

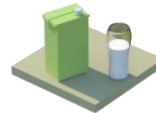
Whole pulses



Difficult to predict

Revival in some areas?
Growth of pre-cooked mixes

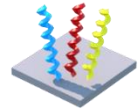
Processed plant protein products



→ Growth

Meat alternatives are expected to grow by 6-7% by 2023

Functional protein ingredients



→ Growth

Soya bean ingredient market will probably keep developing
Pulses based ingredients (especially from pea) will develop

▲ Recommendations for the EU plant protein sector

As this study was not a full fledged evaluation, it was not possible to provide the EC with policy recommendations. Nevertheless, it is possible based on this study to formulate some general recommendations for the development of the sector in the EU.

Action on value chains

❑ Premium and food value chains generate more added value and can give competitiveness to local/EU produced PRPs. The development of such markets could be promoted.

❑ Specific investments in supply chain to store, segregate, sort, dehull, etc. These investments could be supported, through specific policy instruments. Research and Innovation will also be needed to find new and viable technologies.

❑ Local and small-scale solutions may pave the way for the development of new systems and hence must be facilitated. They can be a stepping stone for transition.

❑ Policy makers and inter-branch organisations should promote a diversity of value chain organisation to maintain a spectrum of solutions adapted to a wide diversity of context rather than a “one-size-fits-all” option.

Action on consumption

❑ Promote the nutritional (and environmental) benefits of pulses and plant protein food in national food pyramids and nutritional recommendations. They can also be promoted in catering (e.g. schools) to impact consumer eating habits.

Research and knowledge transfer

❑ Breeding to develop varieties with better yields and more resistance to pests and diseases to bridge the gap with dominant crops. Public investments will be needed for orphan crops.

❑ Knowledge platform to share the success stories and failures in value chain settings and plant protein-related projects between EU countries and regions.

❑ Improve data collection on prices, trade flows, production/consumption to help evidence-based policy making and policy monitoring. Especially in organic productions, forages et premium markets.