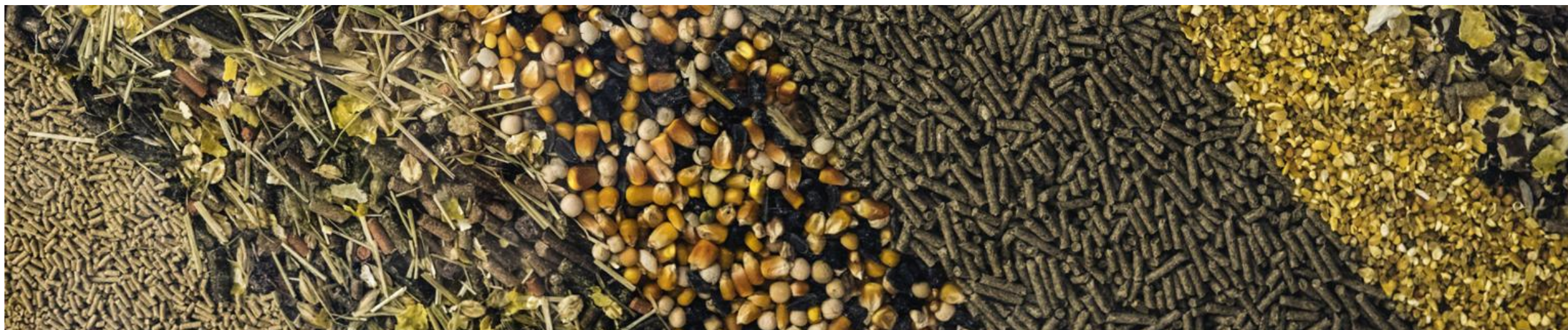


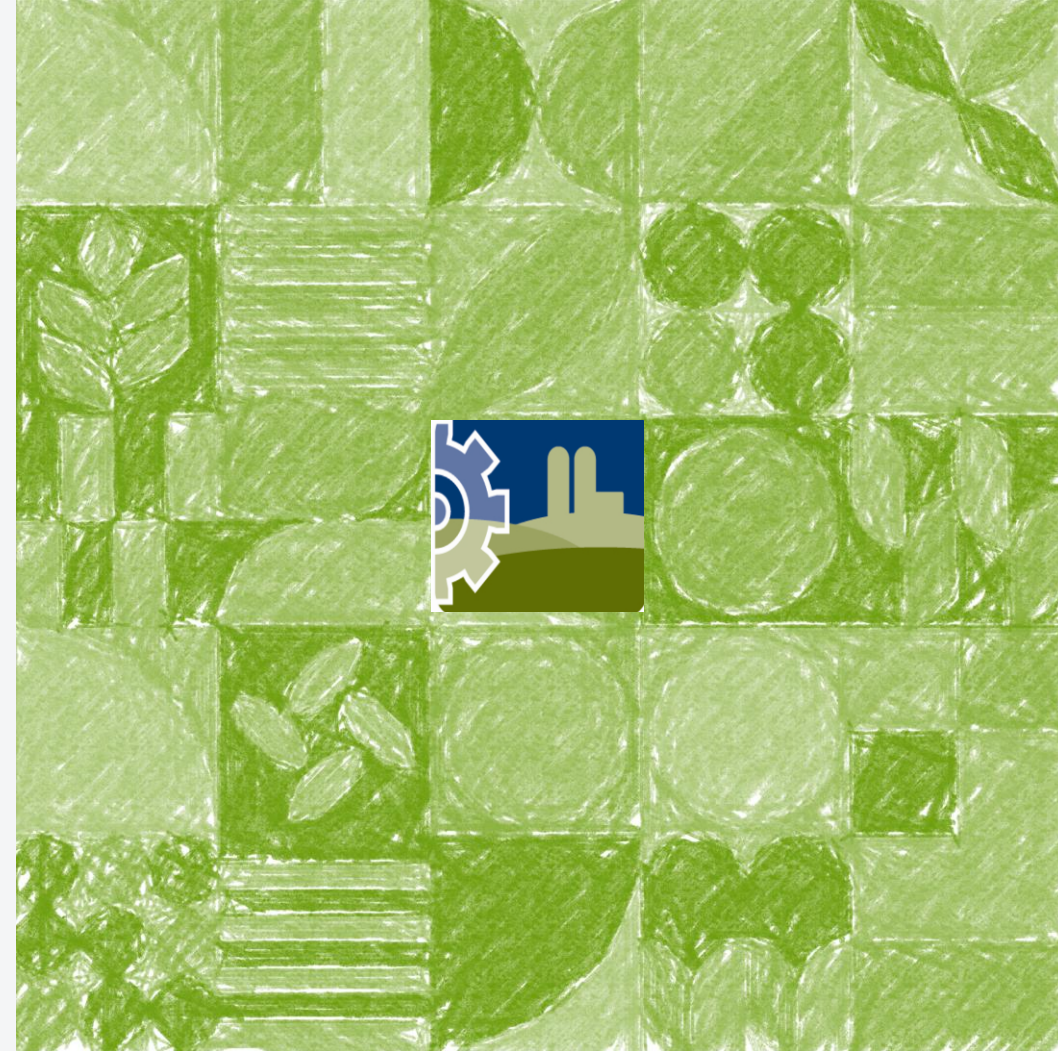
Behind safe feed: What it really takes

Lea Pallaroni



Agenda

1. **FEFAC & Data**
2. Feed Safety
 - a. Formulation – balanced diet
 - b. Feed Security
 - c. Feed Safety
 - d. Worker Safety
3. Conclusion
4. Q&A



Who is FEFAC?

European Association of Compound Feed and Premix Manufacturers - ***founded in 1959*** -

27 EU National Associations as full members

7 associated members:

4 Non-EU National Associations: UK, Norway, Switzerland, Turkey

3 EU Feed sector associations: EFFPA, EMFEMA, FAMI-QS



147 Millions mt
- 23% Total 640 mt. feed -



100,000 direct jobs
3.200 sites, often in rural areas

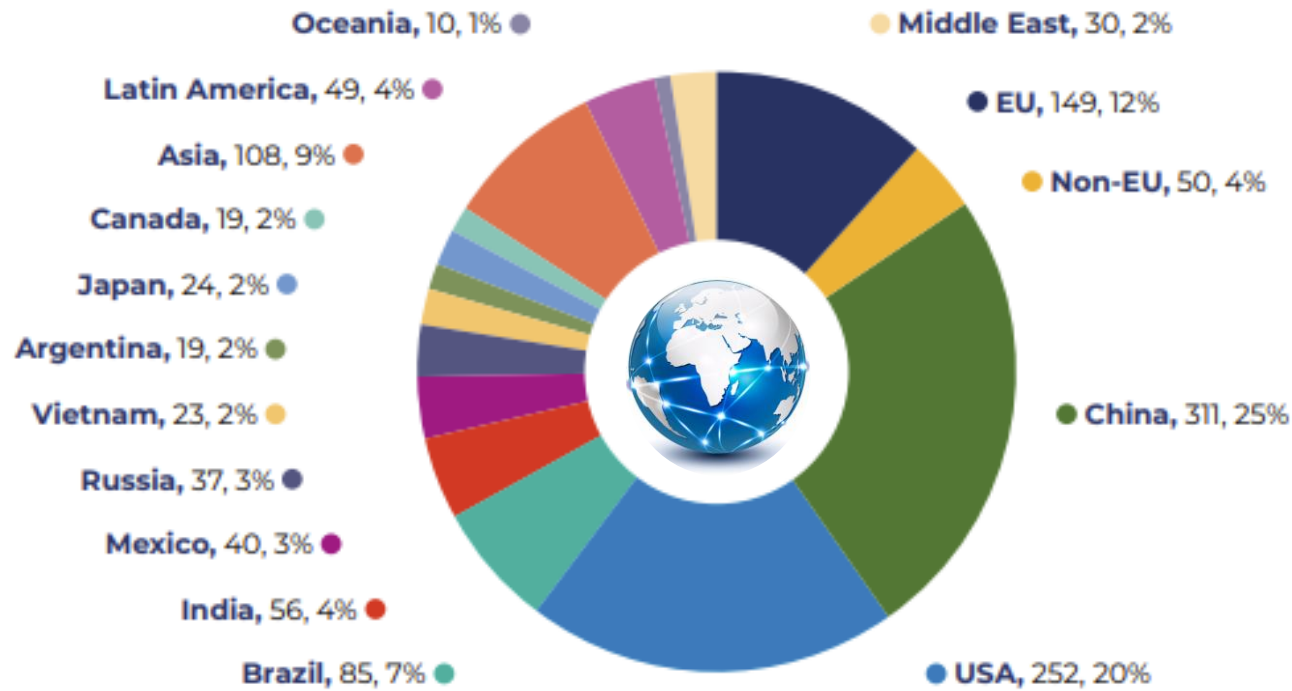


63 Billions € Turnover
- 2024 -



World Production

Global compound feed production in 2024 (1260 mt.)

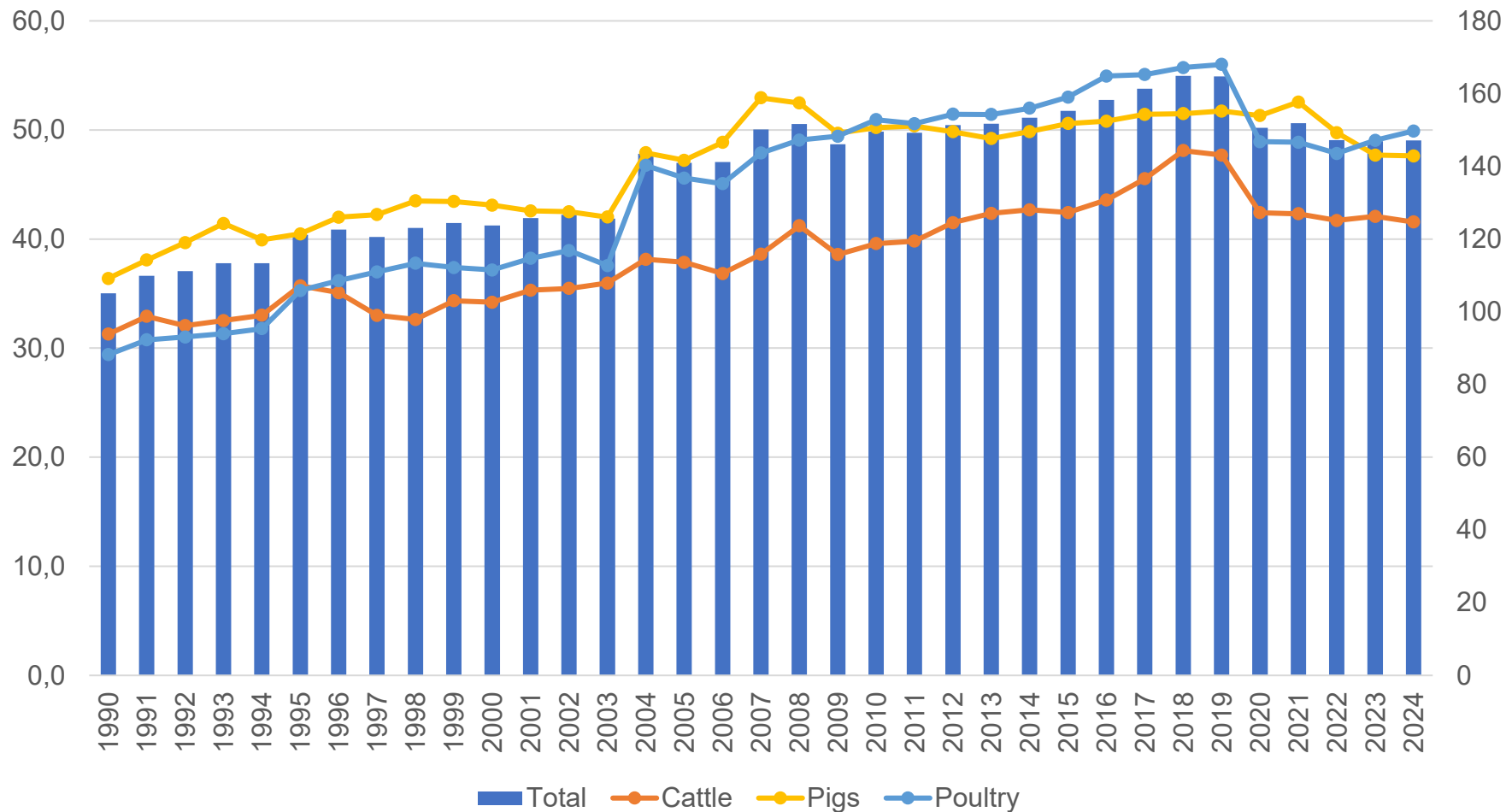


Source: FEFAC based on Alltech

- World production
- 2021** 1.171 mt
- 2022** 1.205 mt
- 2023** 1.172 mt
- 2024** 1.260 mt

Region	2021	2022	2023	2024	Trend
China	240 mt	261 mt	258 mt	311 mt	↑
USA	216 mt	240 mt	225 mt	252 mt	↑
UE 27	153 mt	150 mt	149 mt	149 mt	=

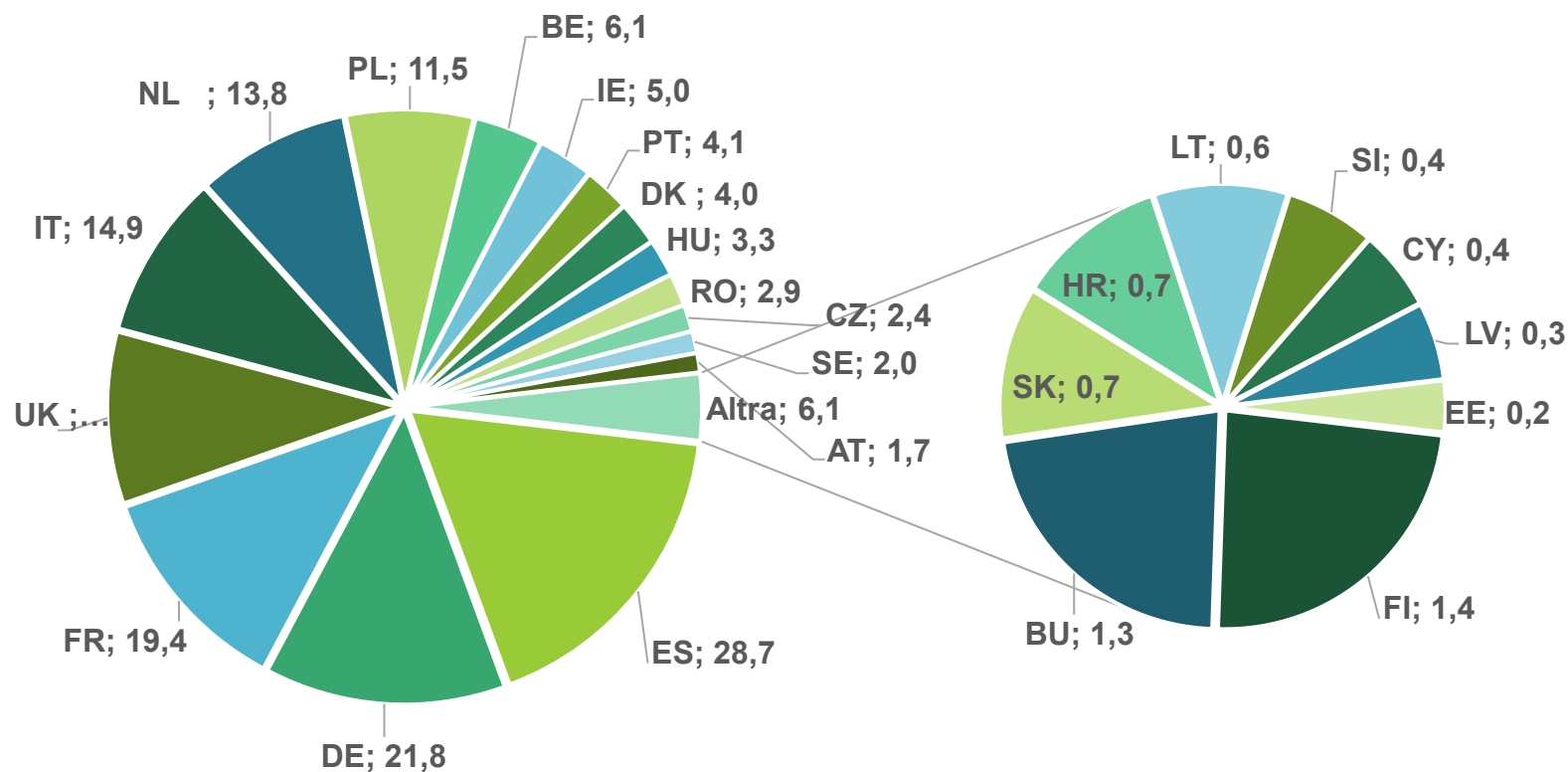
Evolution of compound feed production in the EU (mt.)



*EU-15 from 1994, EU-25 from 2004, EU-27 from 2007, EU-28 from 2013, EU-27 from 2020; excl. Luxembourg, Greece and Malta

EU – Compound feed production

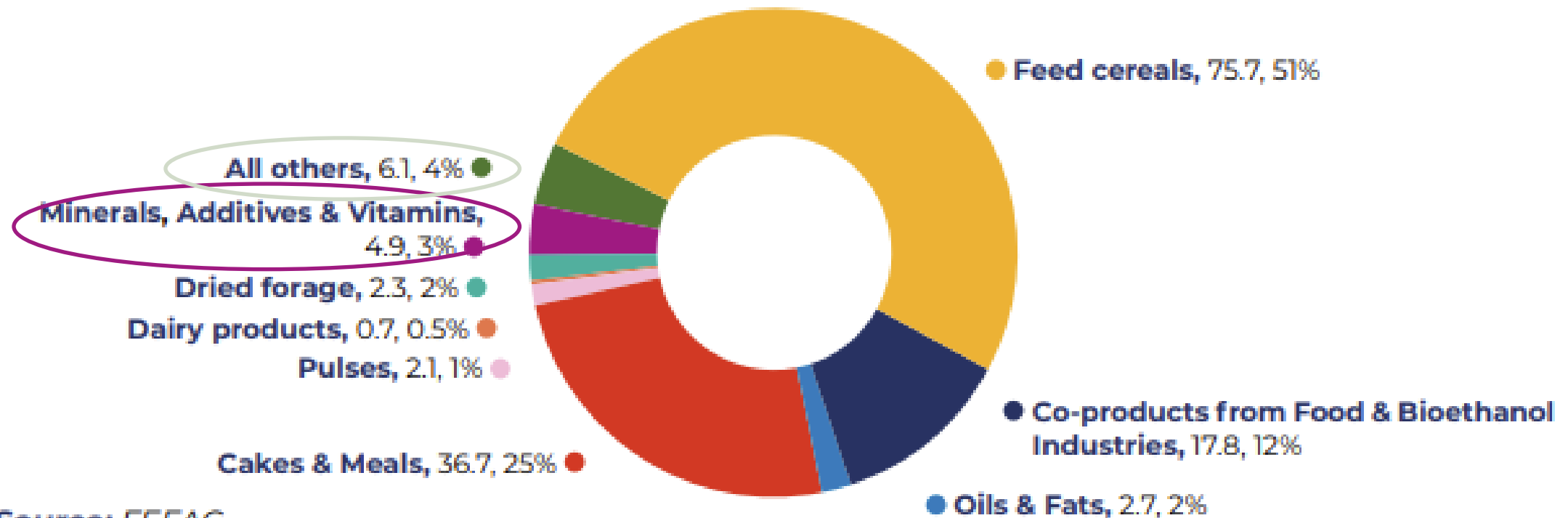
EU (27+UK) Compound Feed Production **163.392.000 t**



Fonte FEFAC

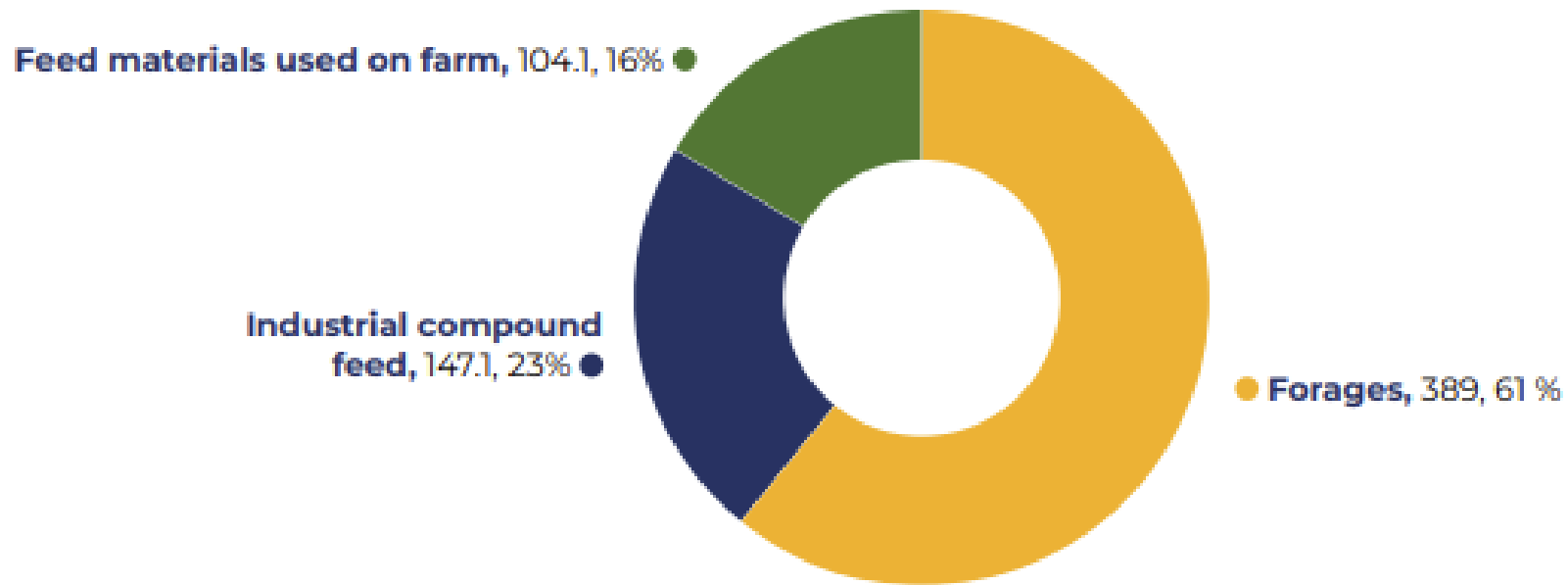
EU-27 Feed material consumption

Produzione di mangimi composti a livello europeo **147,01 mt**



Source: FEFAC

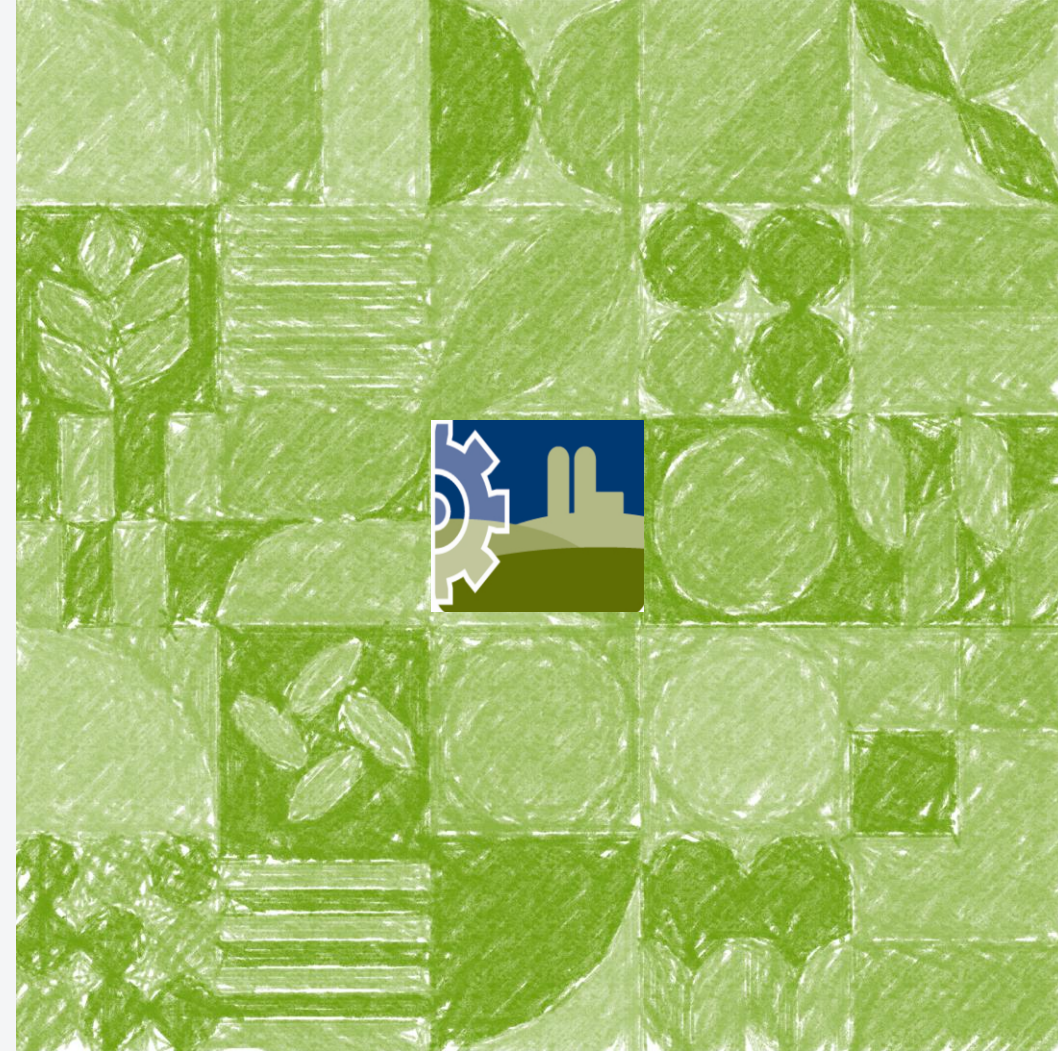
Livestock sourcing in feed in the EU27 (639 mt. in 2023/24)



Source: FEFAC based on Eurostat

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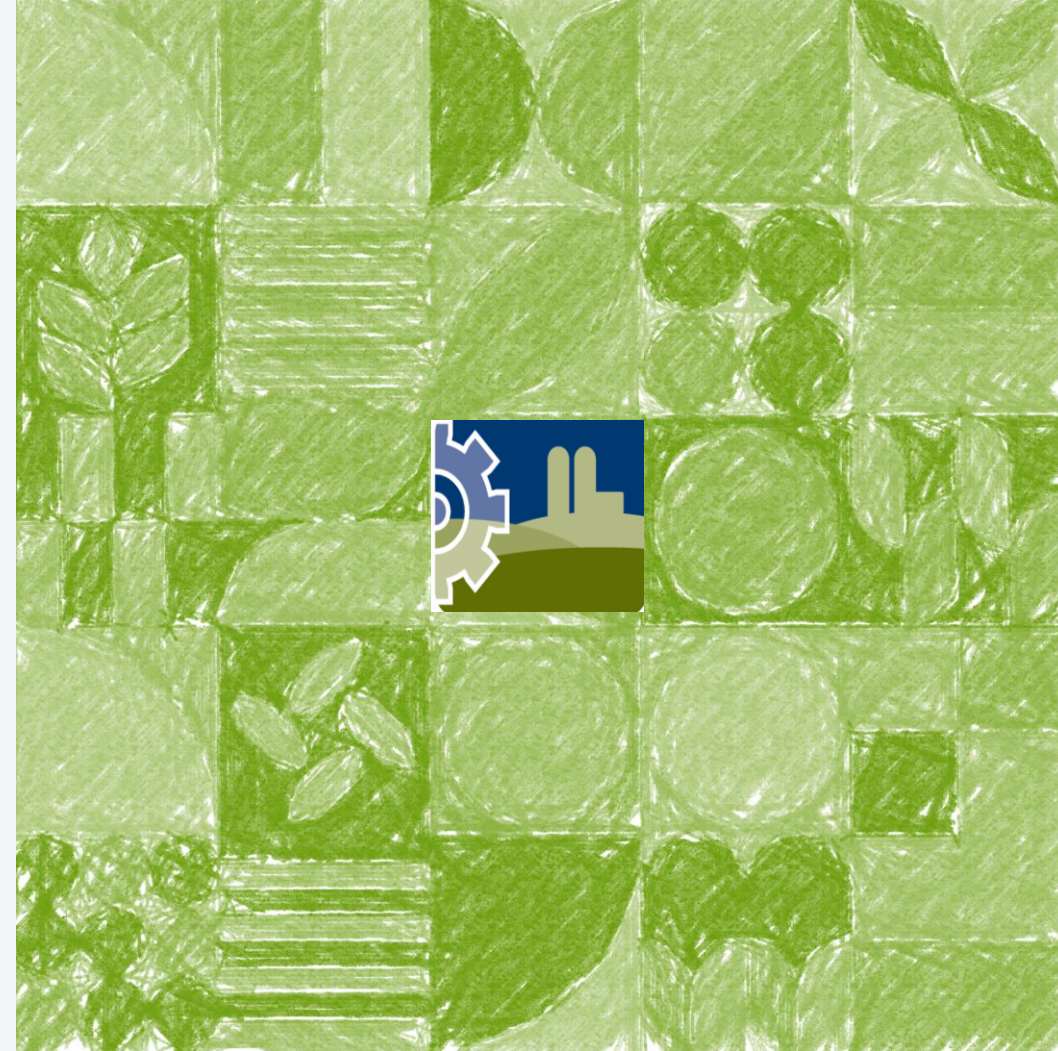


What does “Safe feed” mean today?

- Not just absence of contaminants
 - Not just final checks
 - A process across the entire chain
-
- Formulation: Precision Feeding – Balanced Diet
 - Supply security
 - Feed Safety - Chemical & biological safety
 - Worker safety

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Formulation

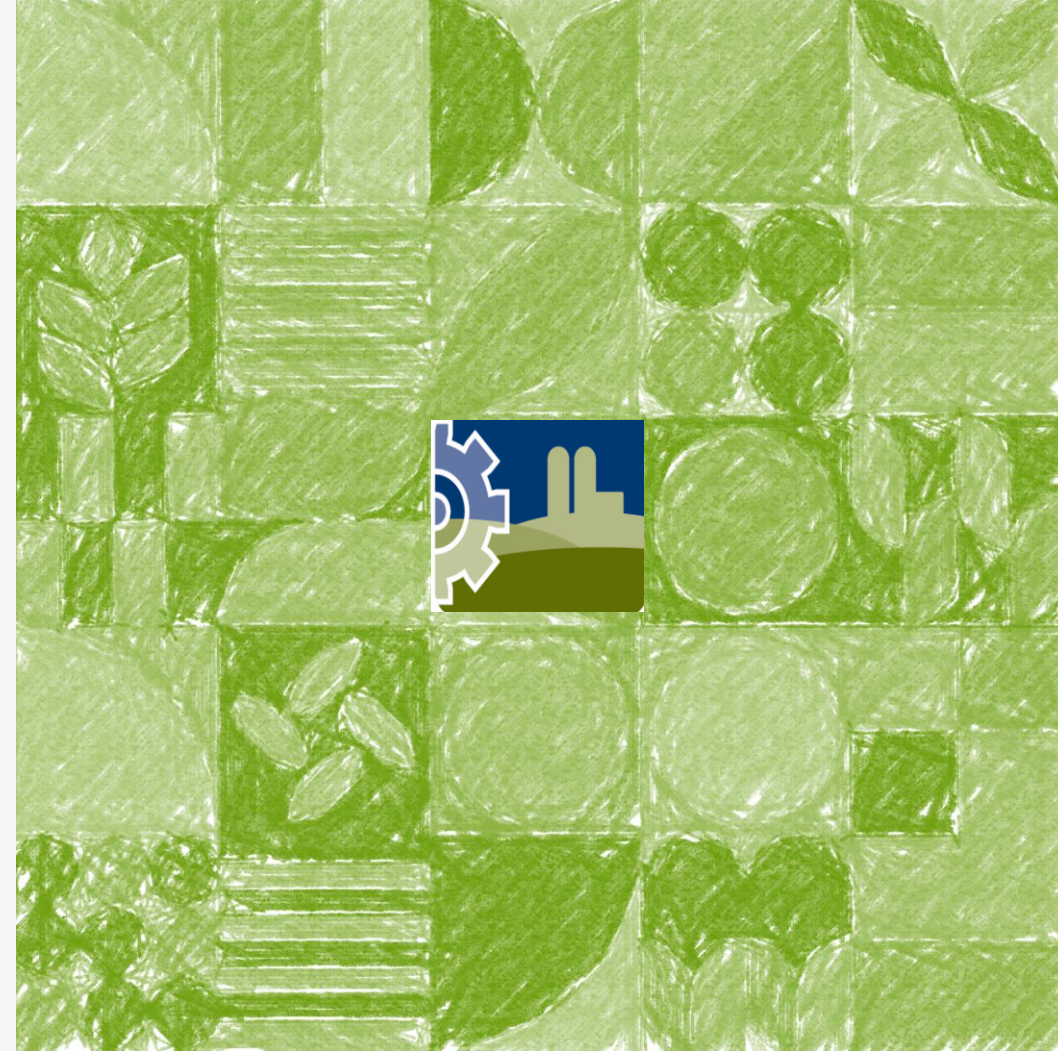
- Balanced nutrition = Safe nutrition
- Designing the Formula
- Deficiencies impact health
- Excess can be harmful
- Legal compliance
- Precision feeding is key
 - Performance
 - Efficiency
 - Sustainability

⇒ Animal Nutrition Science – EAAP 😊

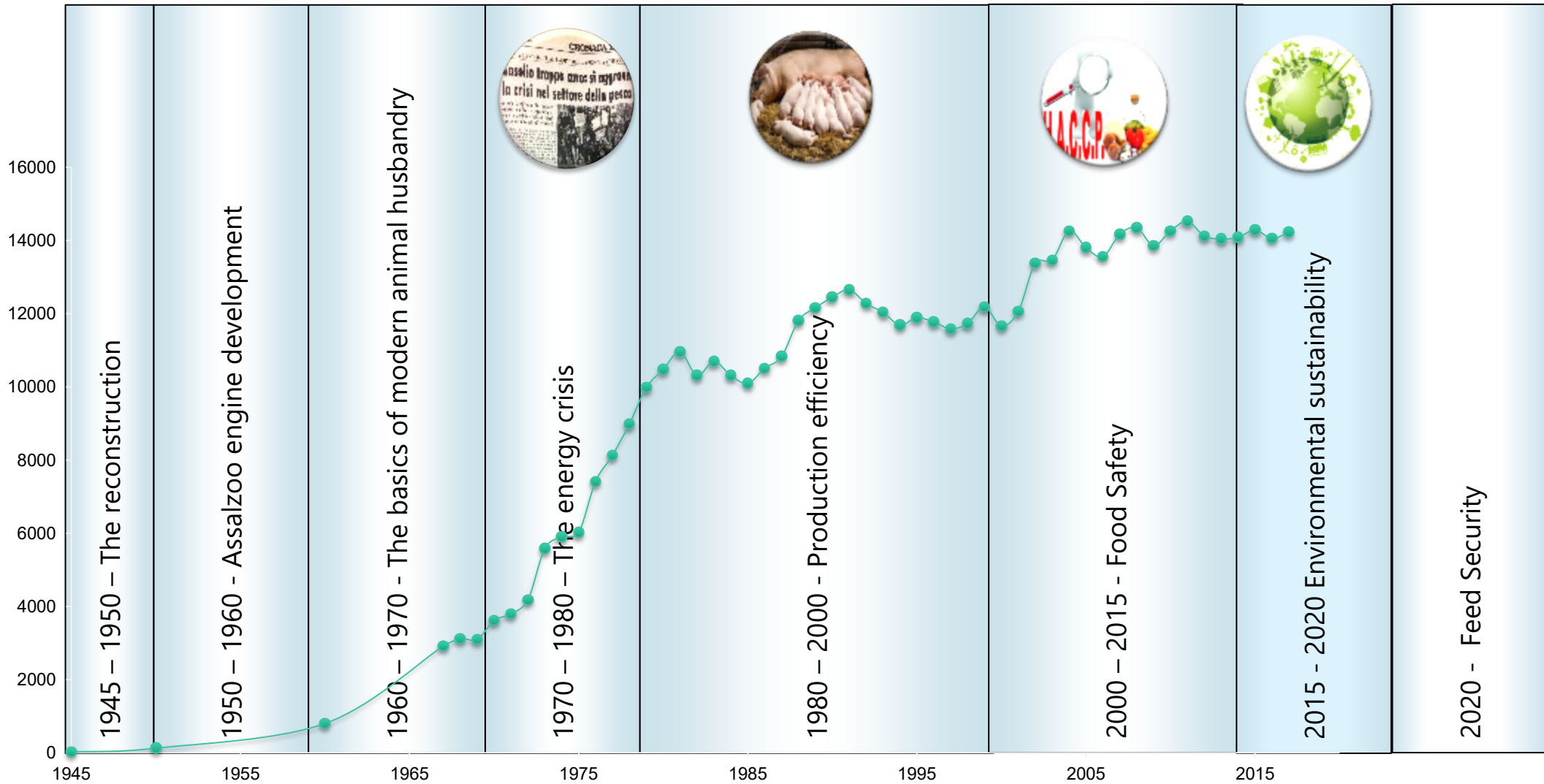


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The feed sector evolution



What if feed materials are not available?

Feed materials dependency: Italian case

RAW MATERIALS	PRODUCTION (tons)	IMPORT (ton)	EXPORT	AVAILABILITY	DEGREE OF SELF-PRODUCED
Corn	4.970.974	7.389.690	29.364	12.331.300	40,3%
Wheat	2.582.022	6.612.638	29.831	9.164.829	28,2%
Barley	899.280	773.677	2.259	1.670.698	53,8%
Other Cereals	380.278	167.329	7.725	539.882	70,4%
Soybean meal	648.000	1.954.407	151.650	4.050.757	16,0%
Sunflower meal	165.200	727.560	17.257	972.403	17,0%
Total	9.645.754	17.625.301	238.086	28.729.869	33,6%

Import 2021

Total: 55,8%

Corn: 45,8%
Soybean meal: 81,1%
Sunflower meal: 93,3%

Import 2022

Total: 64,0%

Corn: 59,2%
Soybean meal: 82,1%
Sunflower meal: 89,4%

Valore: 5 miliardi euro/ann

Import 2023

Total: 60,5%

Corn: 54,7%
Soybean meal: 78,5%
Sunflower meal: 91,1%

Import 2024

Total: 66,4%

Corn: 59,7%
Soybean meal: 84,0%
Sunflower meal: 83,0%

EU Protein Strategy

The EU livestock sector is **critically dependent** on imports of plant-based proteins for animal feed, especially soybeans, from Argentina, Brazil and the United States

High-level political declaration of the EU leaders in Versailles (March 2022):

“increasing the EU production of plant-based proteins, is the way to improve the EU's food security and reduce food prices”

The European Commission will publish its comprehensive EU protein strategy in the **second quarter of 2026**.

Total EU Soy Usage: 33.6 Million Tons (2025)

Brazil	51.1%	17.0M t
Argentina	20.9%	7.0M t
USA	17.2%	5.7M t
Ukraine	8.1%	2.7M t
Canada	2.7%	0.9M t

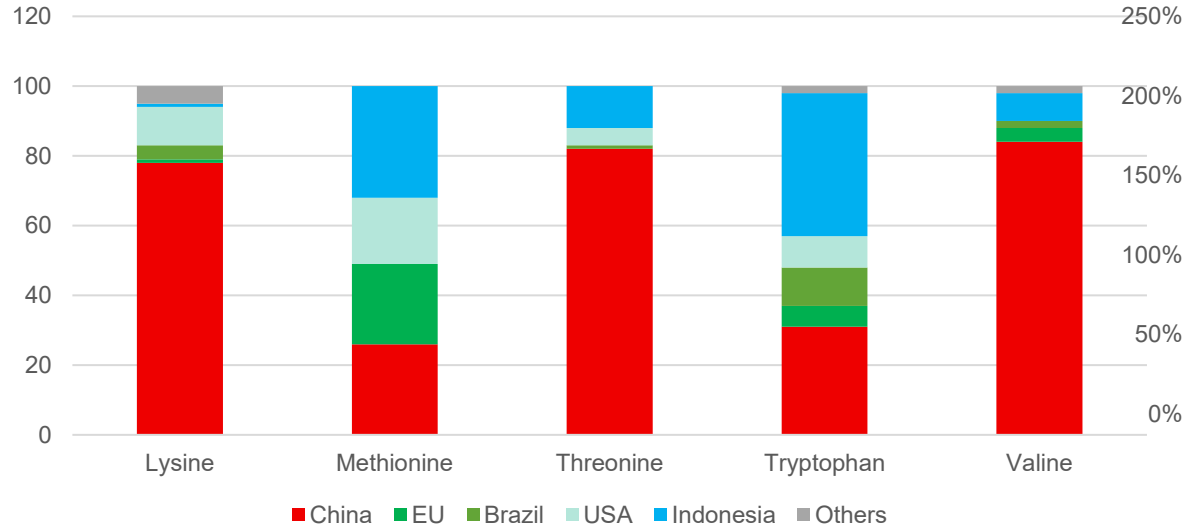


What if additives are not available?

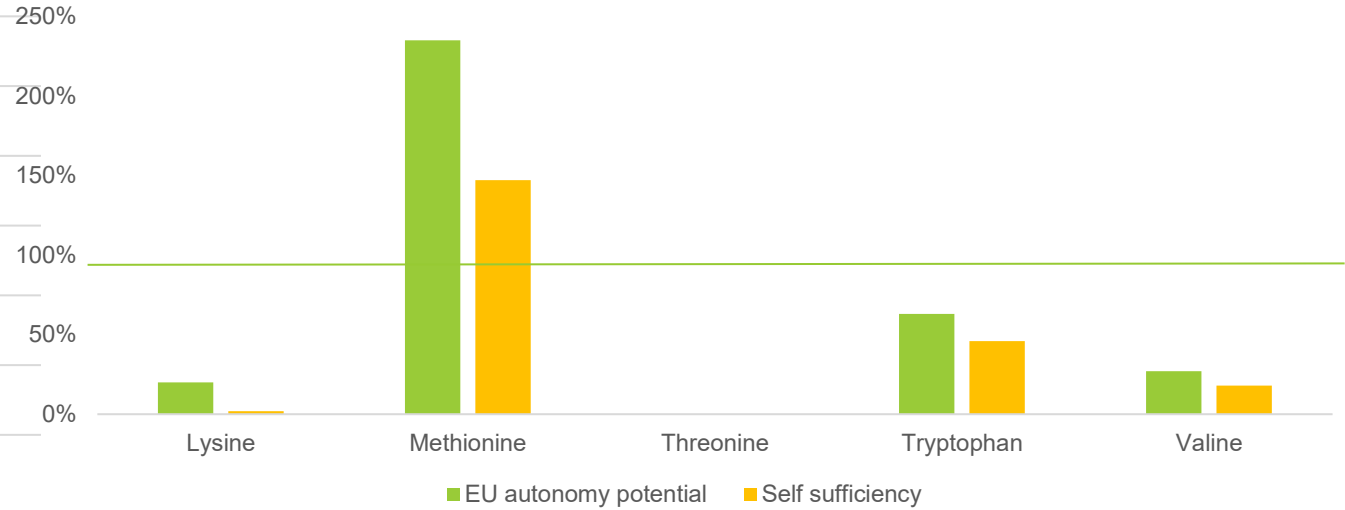
- Impact on animal health
- Limited nutritional options
- Reduced performance
-



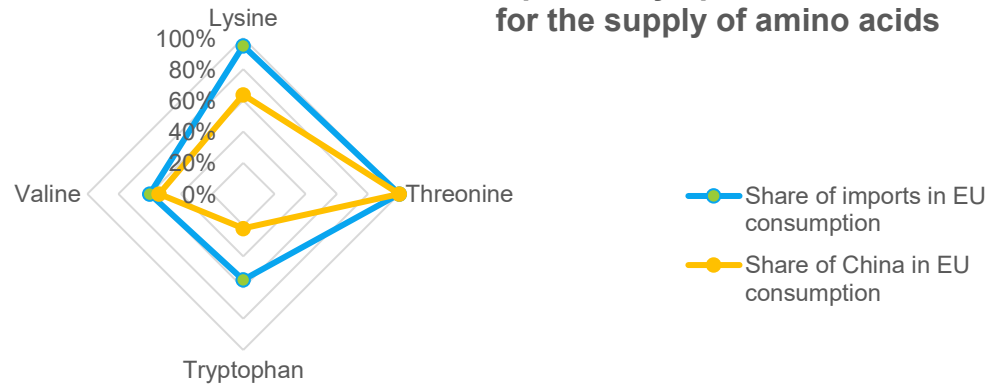
Share of global production of amino acids in 2023 (%)



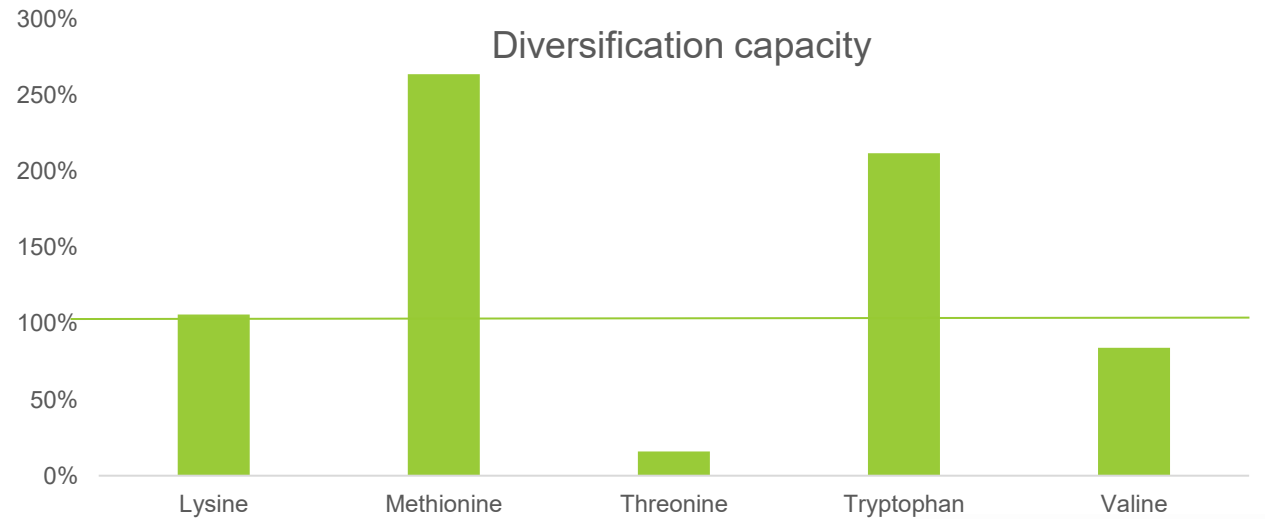
EU capacity to meet the EU demand for feed use



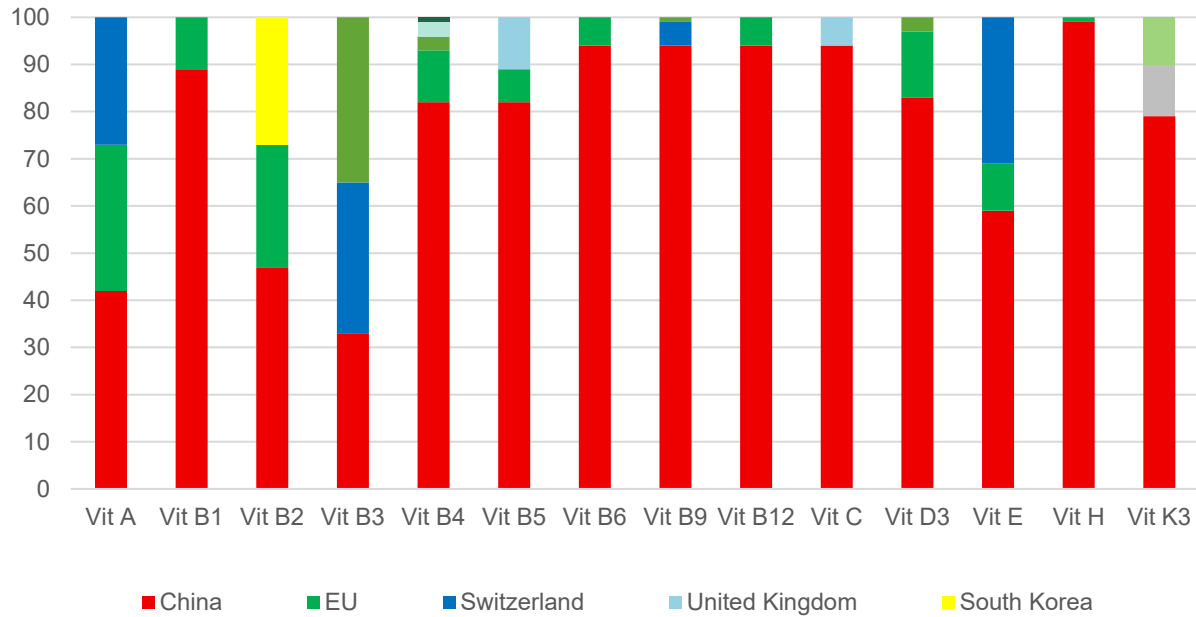
EU dependency upon Third Countries for the supply of amino acids



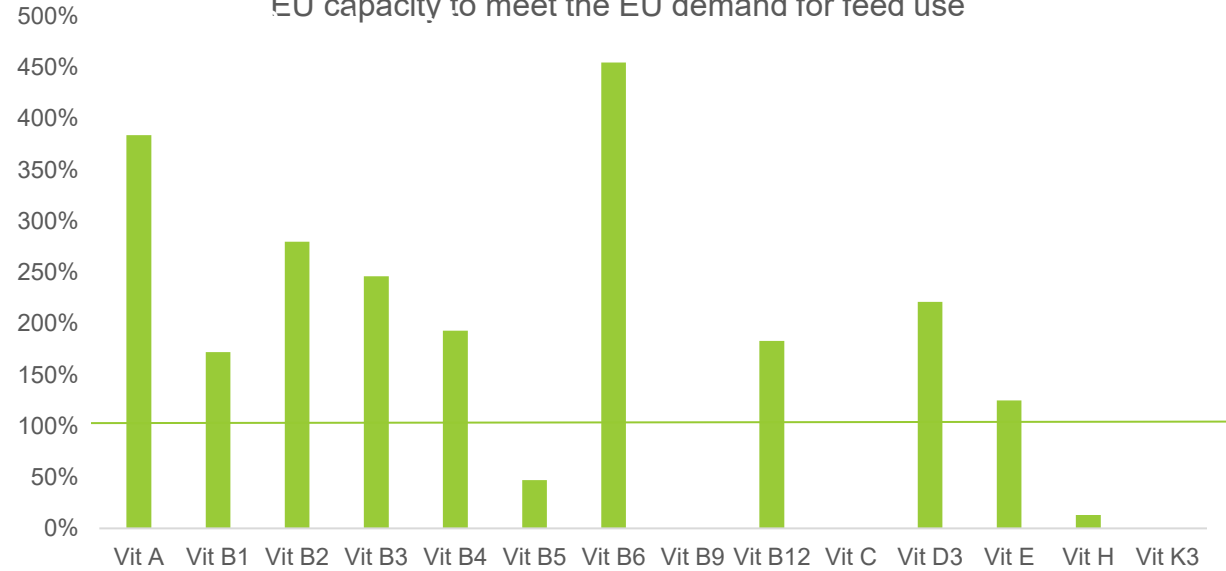
Diversification capacity



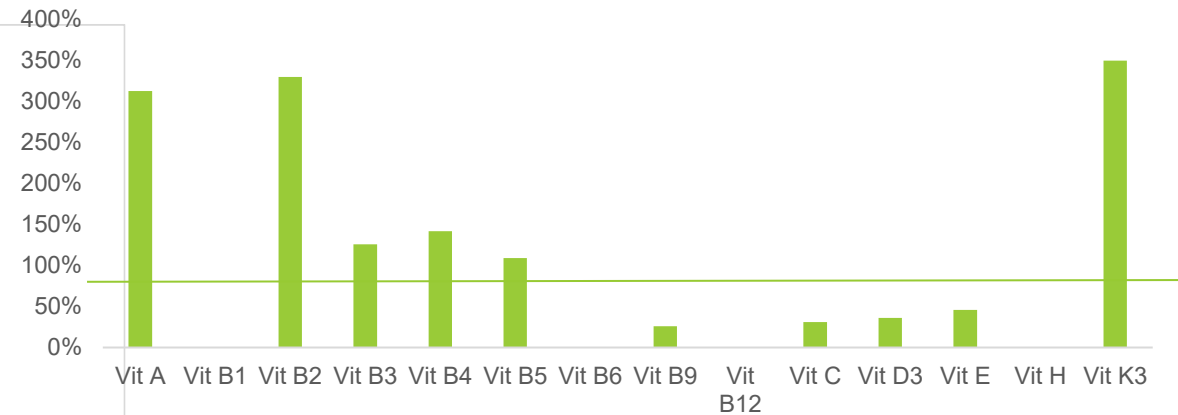
Market share in vitamin production in 2023 (%)



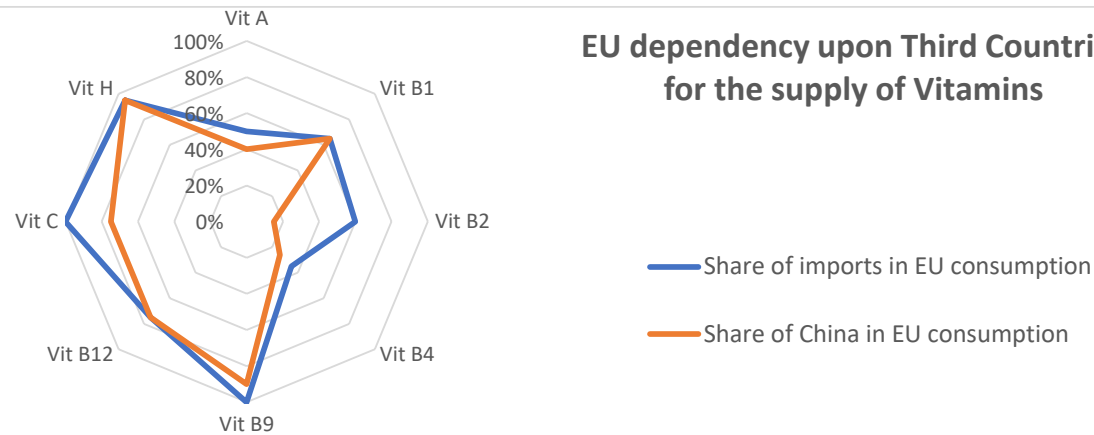
EU capacity to meet the EU demand for feed use



Diversification capacity



EU dependency upon Third Countries for the supply of Vitamins



Key findings of the study

- The global markets of vitamins and amino acids are highly concentrated, with only 10 producing countries for vitamins (thereof no more than 4 per vitamins) and 11 for amino acids. **China** is the only country producing all vitamins and all amino acids, with a **global market share ranging from 25% (methionine) to 99%** (vitamin H – biotin).
- The **EU feed chain imports 35 to 100% of the vitamins it needs and more than 95% of the essential amino acids produced by fermentation it needs**. The EU does not produce vitamins B9, C, K3, and threonine and therefore is **100% dependent on Third Countries** for its supply. For Vitamins B1, B12, H, lysine, and valine, the dependency exceeds 75%. China is the main non-EU supplier to the EU of all vitamins and amino acids and holds even a monopoly for vitamins B1, B12, and H.
- To be autonomous (i.e., independent from high geopolitical risk countries), **the EU would need to invest in production capacities** to meet the feed demand for **vitamins B5, B9, B12, C, H, and K3**, as well as for all amino acids but methionine. Furthermore, measures are needed to address the widening competitiveness deficit of the EU producing industry vs. Third Countries that prevents the EU industry from deploying its production capacity (in particular for vitamins B3 and B6).
- **Diversification of supply** with low and medium-geopolitical-risk countries **is only an option for vitamins A, B2, B3, B4, B5 and K3**.

Gulf War / Strait of Ormuz

- Direct impacts:
 - Availability and cost of energy and energy products and of nitrogen fertilisers
 - Disruptions of trade flows (Strait of Hormuz and potential impacts on the Suez Canal - Red Sea)
 - Geopolitical uncertainty
- Impacts on the EU agri-Food sector:
 - Cost of production: energy and fertiliser
 - Cost of freight (rerouting, availability, timing, insurance premium)
 - Prices of agricultural products: linked to our import/export position, perishability, importance of our trade in the region and beyond (Middle East and Asia)

- **Production disruption of essential feed additives (issued Force Majeure)**
- **Increased prices for:** methionine (+130%) lysine (+33%)
threonine (+27%) vitamins (range of +10% to + 80%)

Strait of Hormuz closure hits Asia's chemical industry

Facilities declare force majeure as feedstock supplies are disrupted

EU Economic Security

- In the European Commission Joint Communication on Strengthening EU Economic Security issued in December 2025, the European Commission and the EU High Representative for Foreign Affairs and Security Policy underlines that:

*“the EU faces strategic dependencies where it relies on a limited number of partners for **feed and feed additives imports**, alongside fertilizers”*

- This statement marks an important milestone in the awareness raising campaign initiated by FEFAC in 2024 and the publication by FEFAC of a vulnerability study in 2025 quantifying this level of dependency upon China



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Feed Safety

- is not negociable – is a prerequisite

Authorities

- Authorization of Feed Business Opertor / activities
- Inspections and monitoring of activities product control

Industry:

- Responsibility
- Promoting safe and innovative technologies
- Certification systems
- Comprehensive control system
- Network



A highly regulated sector



Reg. 178/2002 General Food Law

Reg. 183/2005 Feed hygiene

Reg. 767/2009 Marketing and use of feed

Catalogue of raw materials

Reg. 2022/1104

Additives and premixture

Reg. 1831/2003

Medicated feed

Reg. 2019/4

Reg. 999/2001 TSE

Animal by-products

Reg. 1069/2010

Reg. 142/2011

GMO

Reg. 1829/2003

Reg. 1830/2003

Organic Reg. 2018/848

EU DR Reg. 1115/2023

PDO protected designations

Reg. 2024/1143

Undesirable substances

D. 2002/32 - Reg. 574/2011

Mycotoxins

Rac. 567/2006

Pesticides

Reg. 396/2009

Reg. 625/2017 Official Control

Understanding Hazard

Heavy metals, Mycotoxins, Dioxins, PCBs, Botanical impurities

Microbiological contamination

Formulation, Cross-contamination
Sensitive additives - Coccidiostats



• INCOMING INGREDIENTS

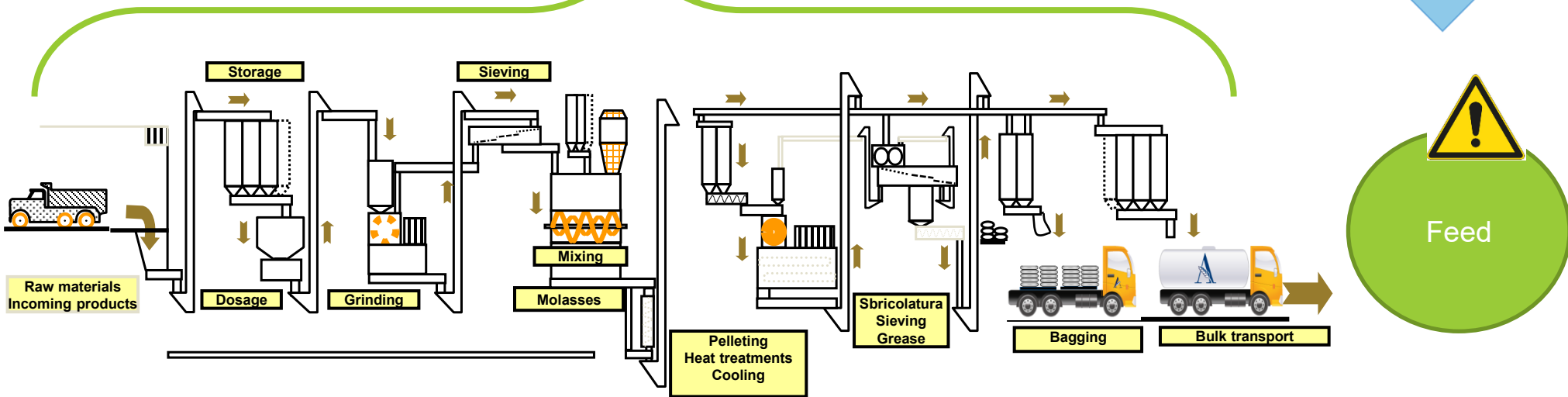
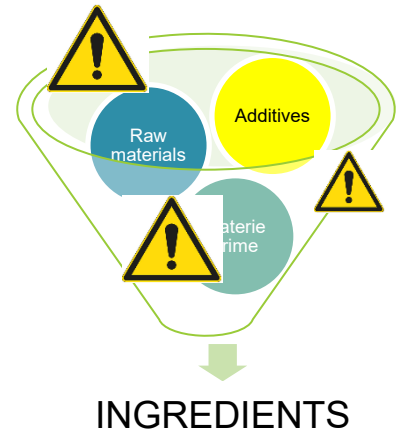
3

4 • PRODUCTION

Microbiological contamination

• FINAL PRODUCT

5



Modus operandi

Hazard

Characteristics of the molecule

Origin of contamination

Toxicity

Risk products (Susceptible substrates)

Susceptible species

Limit

Utilizzare anche i
Pareri EFSA

- Chemical/Physical/Biological Hazard
- Lipophilic, soluble, etc
- Fiel, industrial, process...
- Acute/chronic, cancerous, target organs
- Matrix Cereals/oils/additives....
- Phase: In lactation, young animals, ...
- Legal Limit
- Product specifications/specifications

A complete legislation

Sostanza indesiderabile
Hazard

Product

Sostanza indesiderabile

4. Piombo (12)

Prodotti destinati all'alimentazione degli animali

Contenuto massimo in
mg/kg (ppm) di
mangime con un tasso
di umidità del 12 %

Maximum limit
mg/kg - ppm

Sostanza indesiderabile	Prodotti destinati all'alimentazione degli animali	Contenuto massimo in mg/kg (ppm) di mangime con un tasso di umidità del 12 %
4. Piombo (12)	Materie prime per mangimi	10
	ad eccezione di:	
	— foraggi (2)	30
	— fosfati, alghe marine calcaree e conchiglie marine calcaree	15
	— carbonato di calcio e carbonato di calcio e di magnesio (10);	20
	— lieviti.	5
	Additivi per mangimi appartenenti al gruppo funzionale dei composti di oligoelementi	100
	ad eccezione di:	
	— ossido di zinco,	400
	— ossido manganoso, carbonato ferroso, carbonato rameico e ossido di rame(I)	200
Additivi per mangimi appartenenti ai gruppi funzionali degli agenti leganti e degli antiagglomeranti	30	
ad eccezione di:		
— clinoptilolite di origine vulcanica e natrolite-fonolite.	60	
Premiscele (6)	200	
Mangimi complementari	10	
ad eccezione di:		
— mangimi minerali	15	
— formule a rilascio prolungato di mangimi destinate a particolari fini nutrizionali con una concentrazione di oligoelementi oltre cento volte superiore alla concentrazione massima stabilita nei mangimi completi.	60	
Mangimi completi.	5	

Undesiderable substances

Direttiva UE 2002/32

Inorganic contaminants and nitrogen compounds

- Arsenic
- Cadmium
- Fluoride
- Lead
- Mercury
- Nitrite
- Melamine

Mycotoxins

- Aflatossina B1
- Segale cornuta

Mycotoxins

Recommendation
576/2006
Deoxynivalenol
Zearalenone
Ochratoxin A
Fumonisin B1 and B2
T-2+ HT-2 Toxin

Natural plant toxins

- Free gossypol
- Hydrogen cyanide
- Theobromine
- Vinylthiooxazolidone
- Volatile mustard essence

Sostanze indesiderabili

Organochlorine compounds

- Aldrin
- Dieldrin
- Chlorinated camphene
- Chlordane
- DDT
- Endosulfan
- EndrinHeptachlor
- Hexachlorobenzene
- Hexachlorocyclohexane

Dioxins and PCB

- Dioxins
- Dioxins and PCB-DL Sum
- Non-DL PCB

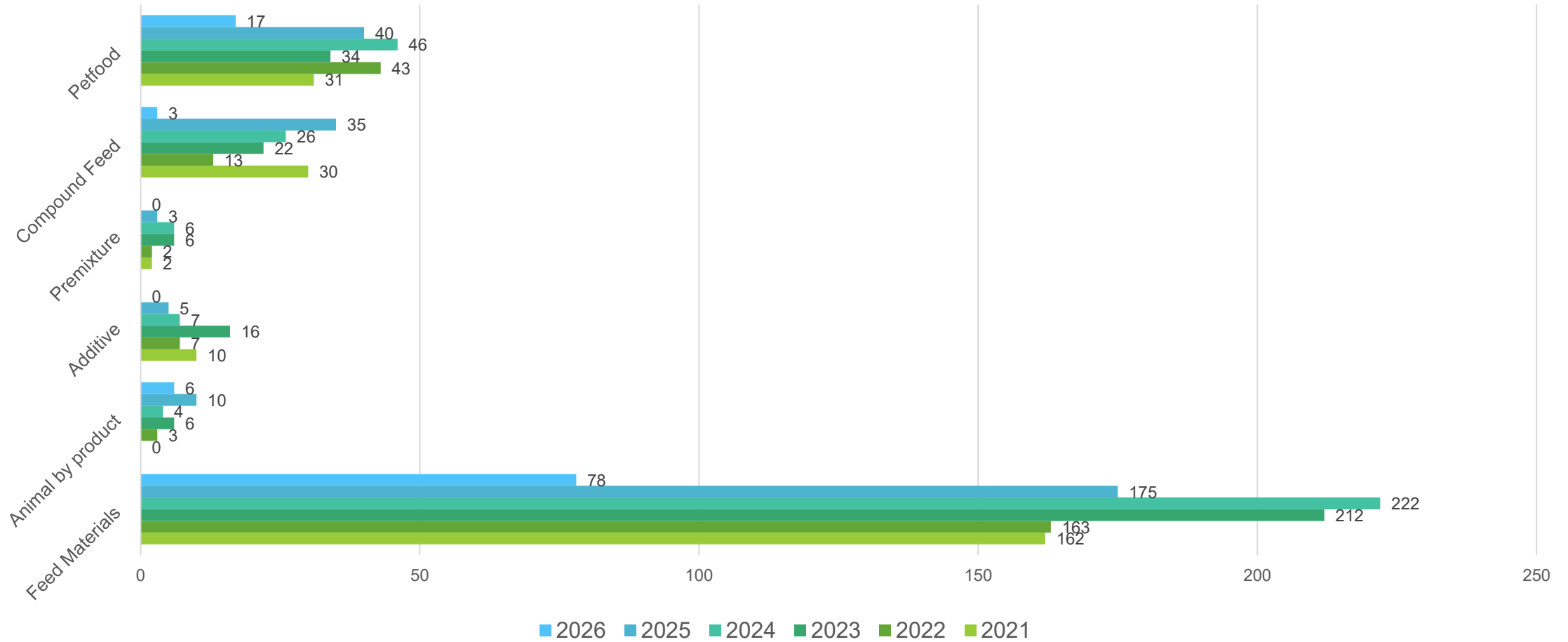
Harmful botanical impurities

- Plant seeds containing alkaloids, glycosides, etc.
- Datura
- Crotalaria
- Castor
- Beech fruits
- Purghera
- Ambrosia
- Mustard seeds
- Plant seeds containing alkaloids, glycosides, etc

Additives in non-target species/Coccidiostats

- Decoquinate
- Diclazuril
- Halofuginone bromohydrate
- Lasalocid A sodium
- Maduramycin ammonium alfa
- Monensin sodium
- Narasine
- Nicarbazine
- Robenidine chlorohydrate
- Salinomycin sodium
- Semduramycin sodium

RASFF 2021-2026

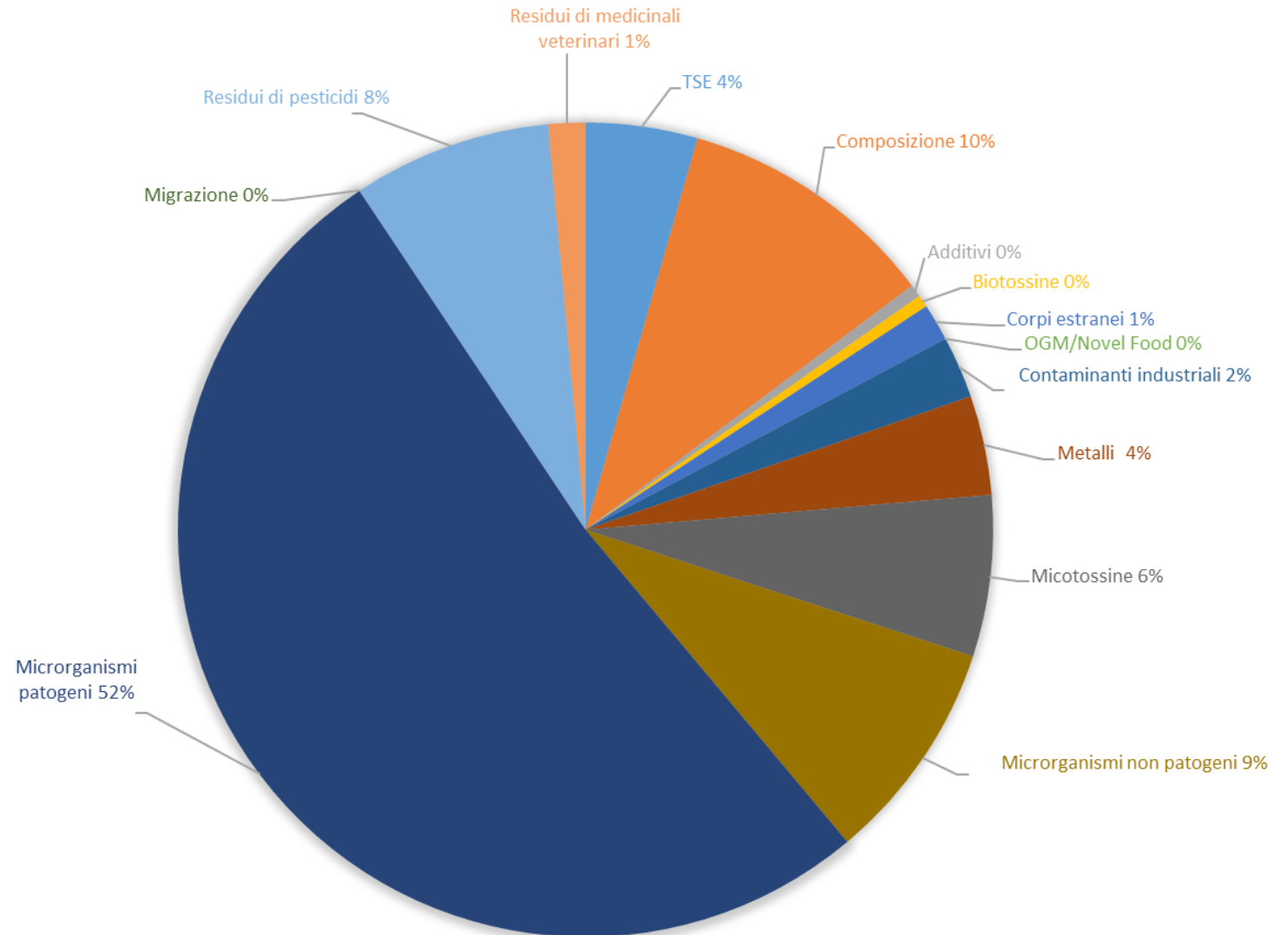


Feed Safety RASFF 2022



TSE	9
Composition	21
Additives	1
Biotoxins	1
Foreign bodies	3
GMO	0
Industrial Contaminans	5
Heavy metal	8
Micotoxins	13
Microorganism	18
Microorganism patogenic	105
Migrations	0
Pesticides	16
Veterinary drugs residues	3
	203

RASFF 2022 NOTIFICHE PER TIPOLOGIA DI RISCHIO

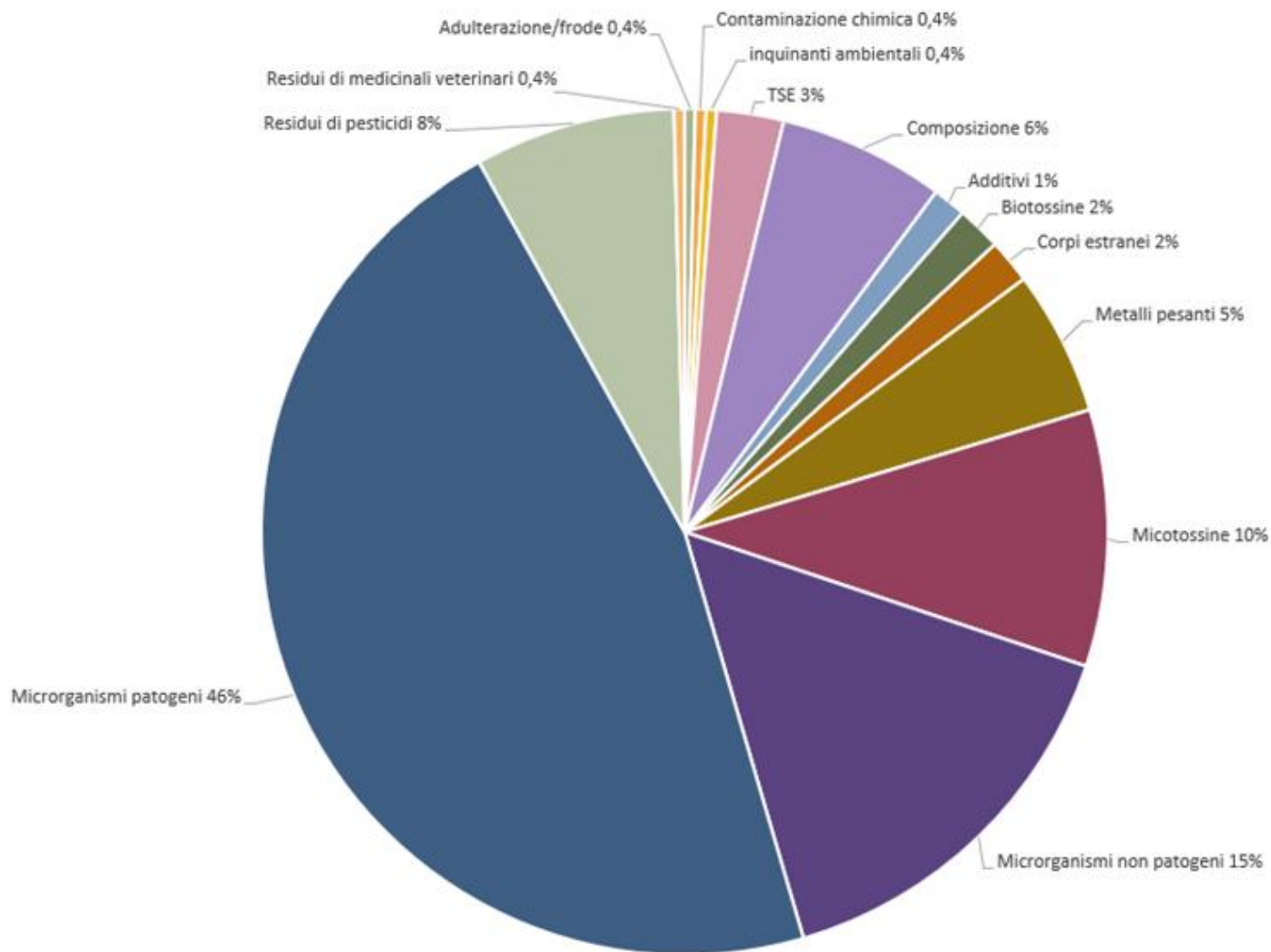


Feed Safety RASFF 2023



TSE	6
Composition	15
Additives	3
Biotoxins	4
Foreign bodies	4
Chemica contamination	1
Heavy metals	13
Micotoxins	23
Microrganism	36
Microrganism patogenic	109
Pesticides	18
Residues of veterinary drugs	1

RASFF 2023 NOTIFICHE PER TIPOLOGIA DI RISCHIO

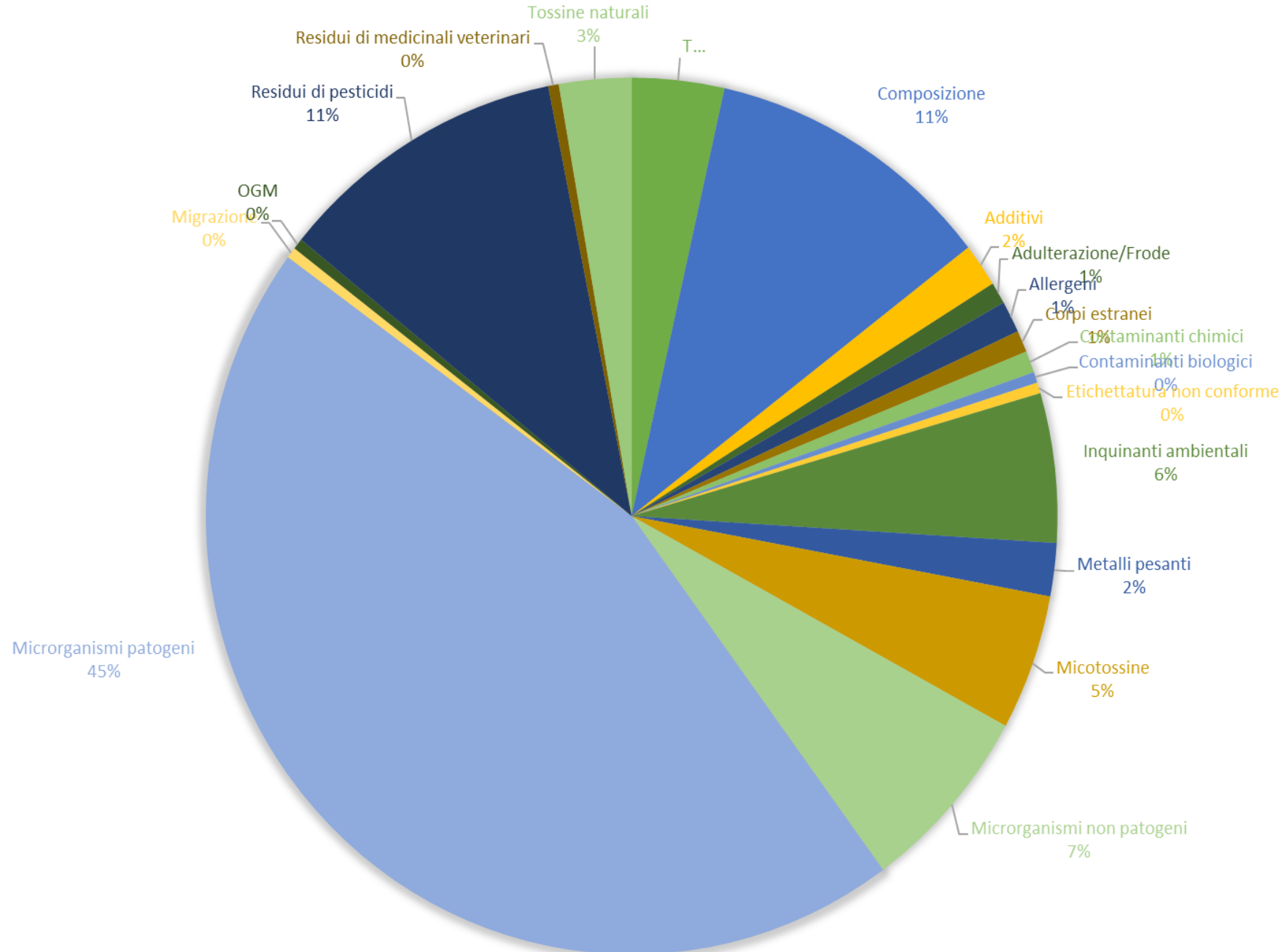


Feed Safety RASFF 2024



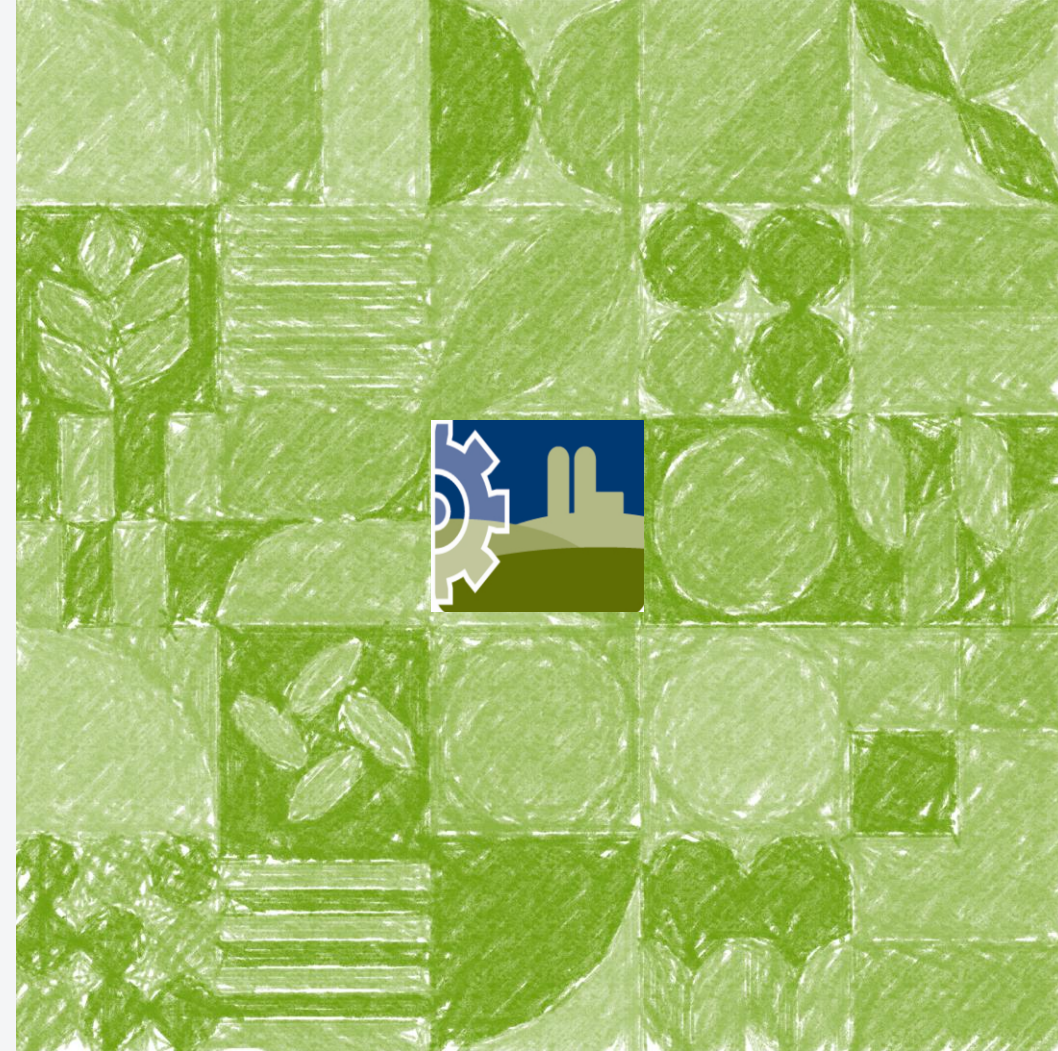
TSE	9
Composition	28
Additives	4
Adulteration /Fraud	2
Foreign Bodies	2
Chemical Contaminants	2
Biological Contaminants	1
Heavy Metal	5
Environmental pollution	11
Non compliant labeling	1
Micotoxins	13
Non pathogenic Microorganismi	18
Pathogenic Microorganism	115
Migration	1
Pesticides	2
Residues of Veterinary Drug	1
Natural Toxins	7
	20

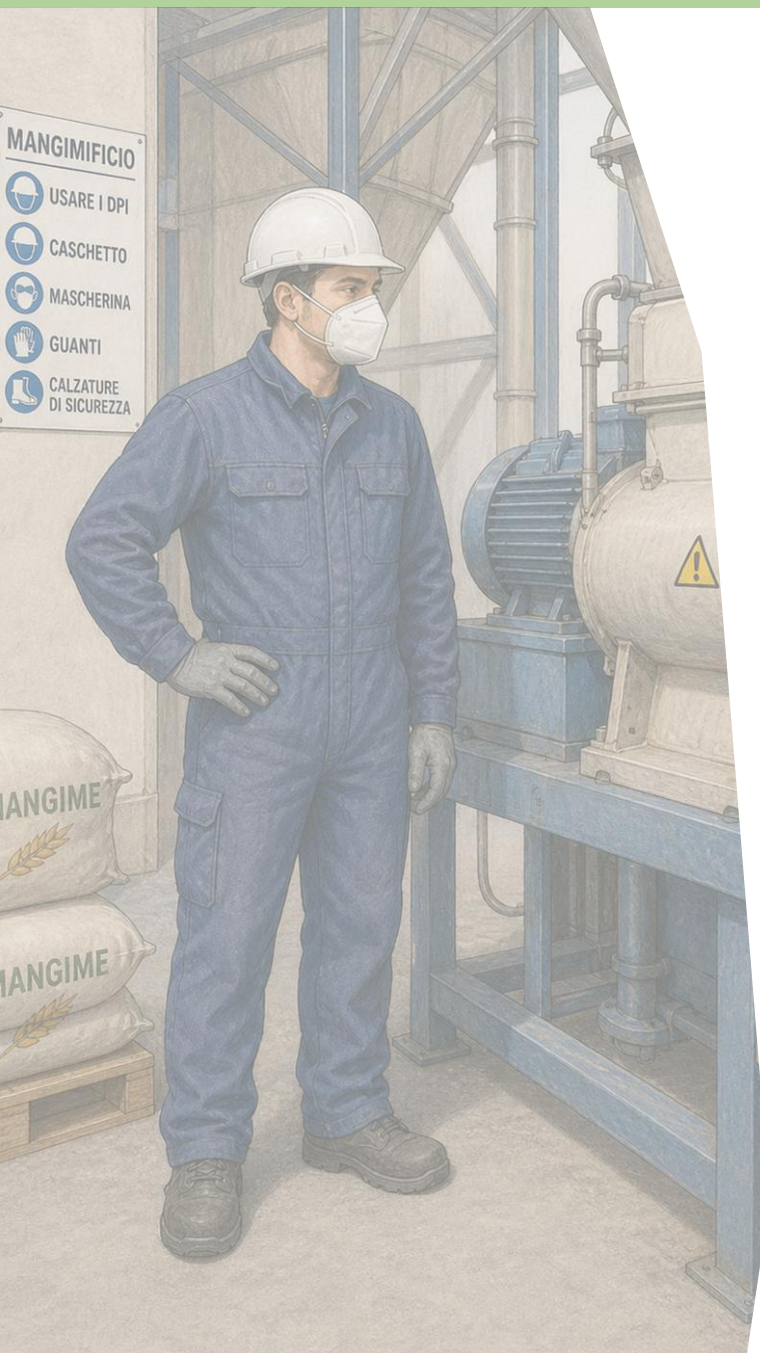
RASFF 2024 - NOTIFICHE PER TIPOLOGIA DI RISCHIO



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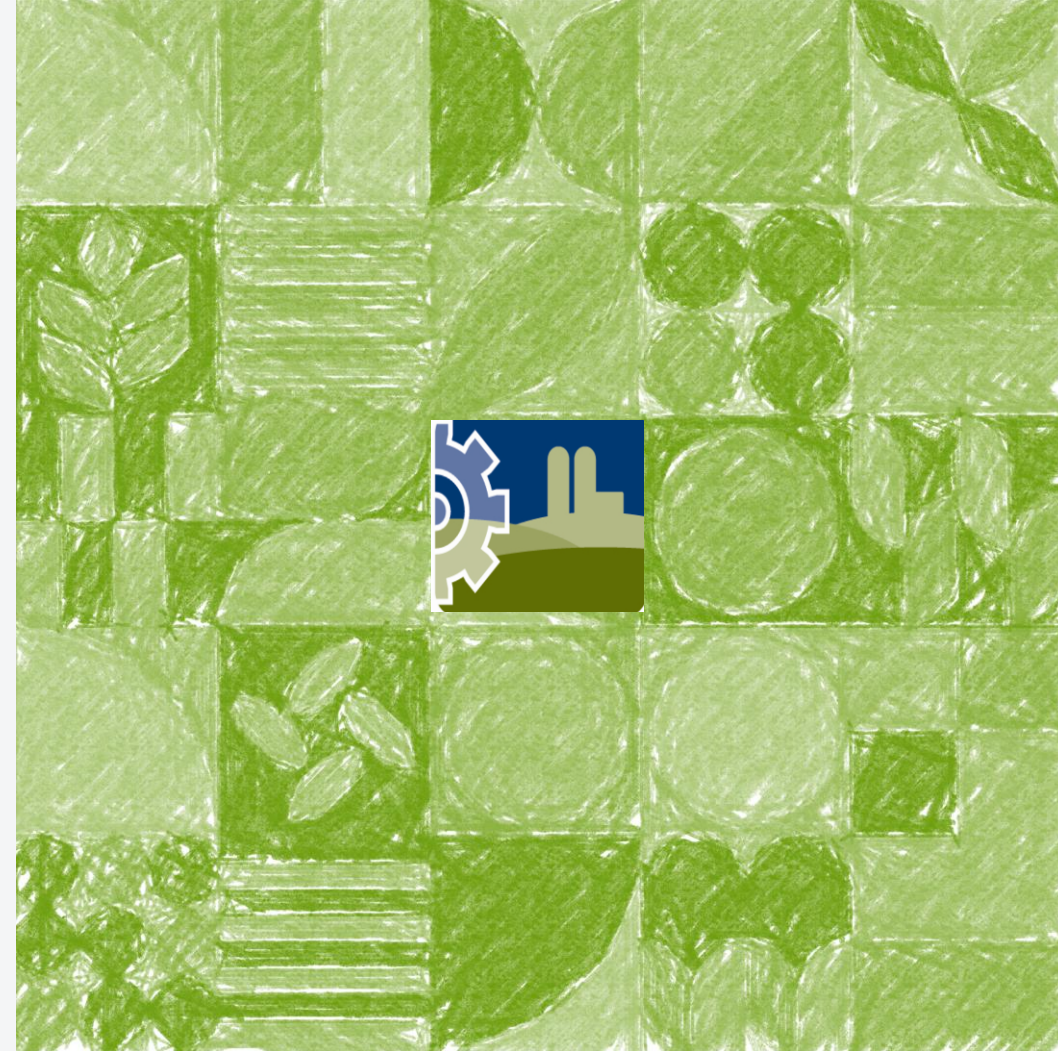
Worker safety

- Exposure to dust:
 - Trace elements
 - Additive
 - Fine particulate matter
 - Additive handling
- Handling
 - Additives
 - Active substances
- Safe production environments



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EU Livestock Strategy - FEFAC recommendations -

- ✓ Recognize livestock as a **strategic** EU food, rural and circular bioeconomy asset
- ✓ Launch a long-term EU **investment plan** for livestock and its value chain
- ✓ **Support** precision feeding, digital tools and farm modernization
- ✓ **Simplify authorizations** for modernization of stables, processing and storage infrastructure at farm
- ✓ Reinforce strategic storage and **stockpiling** for critical feed inputs
- ✓ Modernize **feed additives legislation** and speed up authorizations.
- ✓ **Support additives** to reduce methane emissions, improve digestibility & animal health
- ✓ Preserve existing **EU feed additive production** and reduce dependency on China.
- ✓ Back **NGT's** for protein crops, oilseeds and cereals.
- ✓ Scale up **circular feed** from co-products and non-human-edible biomass.
- ✓ Develop an EU **Circular Feed Roadmap**
- ✓ Expand **simplified eco-schemes** for sustainable feeding strategies



EU Protein Strategy - FEFAC key recommendations Draft -

- ✓ EU Circular Economy Act (2026) - to optimize biomass use across food, feed, and energy sectors.
- ✓ EU Circular Feed Roadmap - to map **regulatory obstacles** and innovative circular feed resources.
- ✓ EU-wide Biomass Balance Sheet - to assess availability and optimize biomass allocation between food, feed, and energy use.
- ✓ Feed Additives Legislation Modernization - Streamlined authorization processes to foster innovation. Support for domestic production of critical additives to reduce China dependency.
- ✓ Breeding and developing high-protein, high-yielding varieties adapted to European agronomic conditions.
- ✓ Supporting infrastructure investments for local storage, cleaning, and processing to improve feed usability.
- ✓ Strengthening risk management tools and market stability mechanisms to make EU-grown protein crops a more reliable option for feed formulation.

FEFAC initial evaluation and recommendations to EC

- The EU should establish realistic targets in terms of sourcing from “**safe**” origins.
- These targets would operate as resilience benchmarks and serve as a reference to tailor structural supportive measures.
- The EU should aim at maintaining existing production sites in the EU, ensure their continued operation and make the best use of the existing production capacity.
- Preferential access to EC financial instruments (e.g. European Commission competitiveness fund): easier access / cheaper financing terms for new investments by domestic producers;
- Access to **low-cost** energy sources and to price-competitive carbohydrates.
- **Diversification of sourcing:** purchasing from several suppliers, preferably based on different countries, with preference to EU and countries with whom the EU has settled a Free Trade Agreement;
- Long-term relationships: long-term buying agreements to secure the needs for additives;
- **Private stockpiling:** companies build their own reserves of additives for stability

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Thank you for your attention



LinkedIn

www.linkedin.com/company/fefaceu/