

The International platform of insects for food and feed
(IPIFF) presents:

SHAPING EUROPEAN FOOD SYSTEMS

SCAN THE PROGRAMME



16 November 2022



SHAPING EUROPEAN FOOD SYSTEMS

How *insect farming* is contributing to the 'Farm to Fork' strategy targets

16 November 2022



Adriana Casillas - IPIFF's President



SHAPING EUROPEAN FOOD SYSTEMS

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Francisco Reviriego Gordejo - DG SANTE,
European Commission





Shaping European Food systems:

**Public and Animal Health issues
related to insects farming -
contributing to the 'Farm to Fork'
strategy**

Brussels, 16th November 2022

Policy context

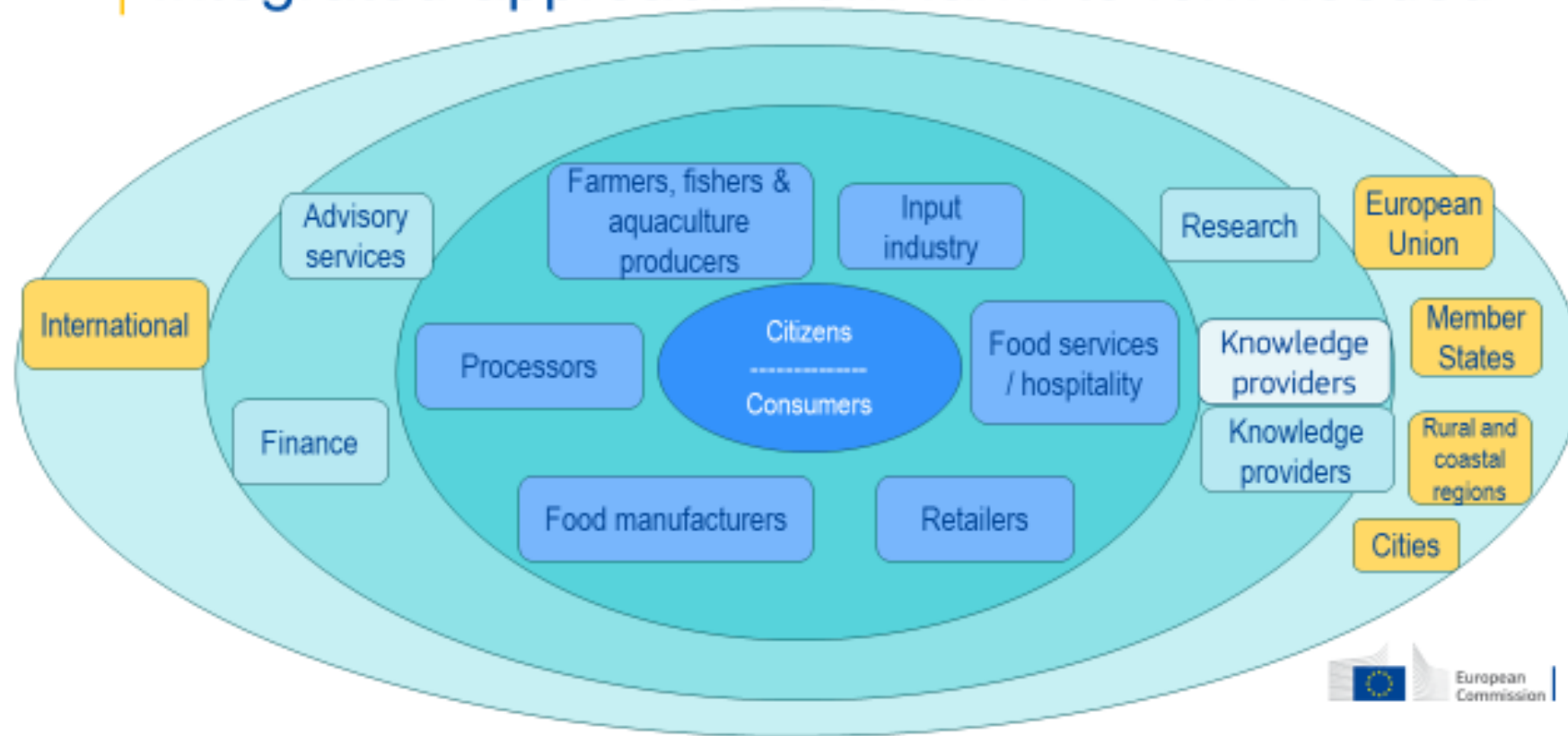
- *Farm to fork*

Farm to Fork



Farm to Fork

Integrated approach from farm to fork needed



Farm to Fork

Farm to Fork Strategy: overall goals



Reduce the
**environmental and
climate footprint** of
the food system

Lead a
global transition
towards competitive
sustainability from farm
to fork

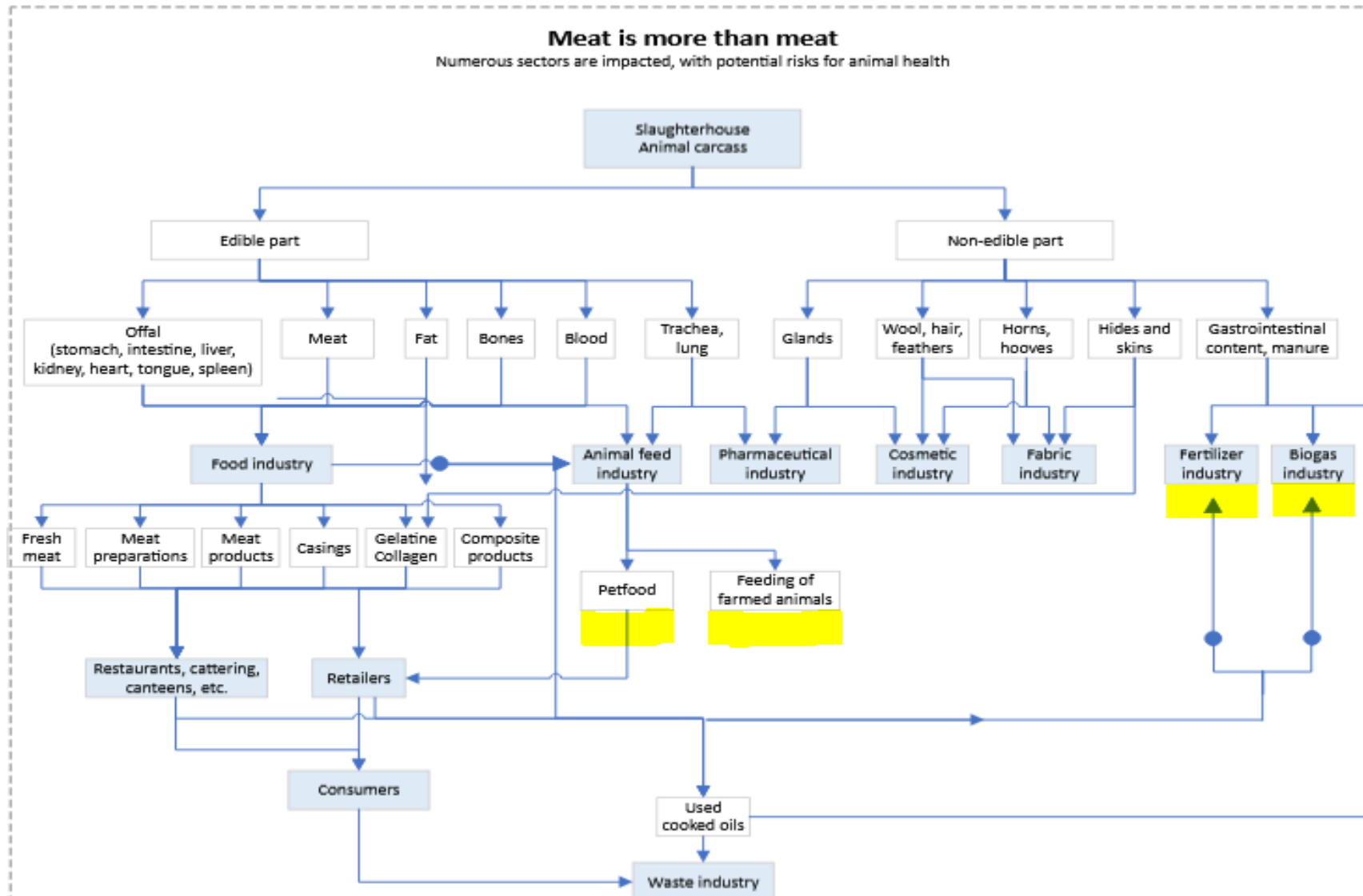
Tap into
new
opportunities

Create a **robust and
resilient** food system

Legislative context

- *Animal health legislation: AHL*
- *TSEs legislation*
- *Animal by-product legislation*
- *Food safety legislation*
- *Feed legislation*
 - Feed hygiene

EU Legislation on animal by-products: the full picture



An introduction to certain relevant aspects of the EU animal by-product

EU Legislation on animal-by products

- **EU Legislation on animal by products ensures animal and public safety of non-edible materials of animal origin.**

It consist mainly of Regulation (EC) No 1069/2009 and the Commission implementing Regulation (EU) No 142/2011.

Some examples of animal by-products of interest for insects industry:

- **Processed insects protein;**
- **Insects rendered fats;**
- **Frass.**

Example for application of the legislation on animal by-products

Following a favourable scientific opinion of the European Food Safety Agency (EFSA) of 8 October 2015, on a **risk profile related to the production and consumption of insects as food and feed** the Commission authorized use of insects protein as feed for certain farmed animals - Commission Regulation (EU) 2017/893:

- **Introduction of insects protein for feeding farmed animals;**
- **The list of authorized insect species for producing insects protein;**
- **The list of authorized feed for insects.**

Example for application of the legislation on animal by-products

In 2021, the Commission adopted **harmonized rules for the use of frass (insects excrements) as fertilizers** and simplified the intra Union trade in insects fertilizers - Commission Regulation (EU) 2021/1925:

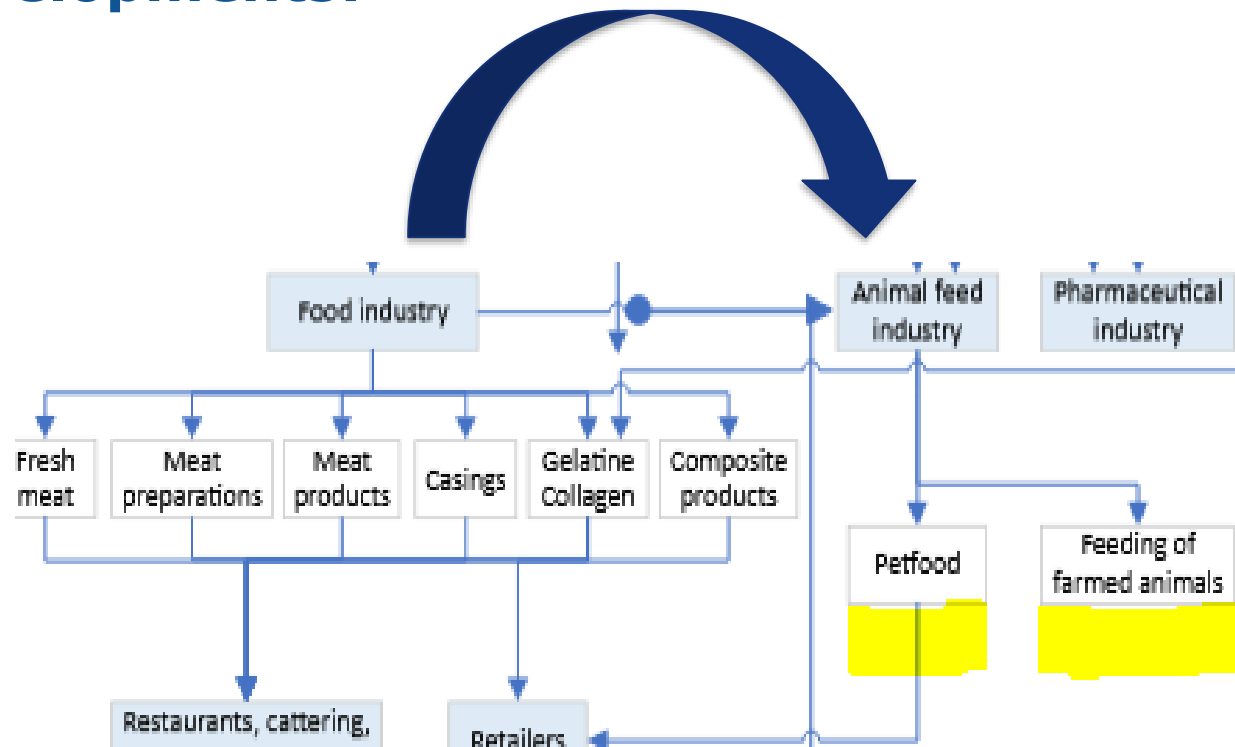
- **Frass is a mixture of insects excrements, feeding substrate and parts of dead insects;**
- **Harmonization of rules open a new business opportunity for insects breeders;**
- **Provides also for its direct use as fertilizers or in the biogas production.**

Examples of progress of the legislation on animal by-products: – in “the pipeline”

Currently, the Commission envisages:

1. Harmonisation of conditions for **imports of frass** from third countries (PRAC);
2. **Determination of endpoint in the manufacturing chain of animal by-products**(e.g.: frass) (DA)

Legislation on animal by products – Future developments:



Legislation on animal by products – Future developments:

A request of IPIFF: Use of former food for insects feed

- Former food is categorised as **Category 3 materials** referred to in Article 10 (f) of Regulation (EC) No 1069/2009.
- With reference to Article 14(d)(i) of the Regulation, it **may*** be used for the manufacturing of feed for farmed animal
 - *Under certain conditions that need to be laid down:
 - Microbiological safety
 - Favourable risk assessment
 - ...

Legislation on animal by products – Future developments:

A request of IPIFF: Use of former food for insects feed

Limitations/complexity:

- **Feeding substrate vs. feeding of insects;**
- **Former food almost always contains ruminant, porcine or poultry materials.**
- **Prohibition of feeding of Ruminants protein to other farmed animals: Article 7 of Regulation (EC) No 999/2001;**
- **Prohibition of intra-species recycling: Article 11 of Regulation (EC) No 1069/2009;**
- **In addition: EFSA scientific opinion from 2015 does not cover feeding of former food...**

Way forward?

- **Industry develops technological solutions for cleaning of insects from the feeding substrate (likely containing traces of prohibited materials) to comply with the feed ban restrictions.**
- **Following a favourable risk assessment (EFSA), the solution may be implemented as a harmonised method into the EU legislation on animal by-products.**



Thanks

Dr Francisco Javier REVIRIEGO GORDEJO

**European Commission
Health and Food Safety Directorate-General
Directorate G, Unit G.2
Animal Health
Head of Unit**

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Martin Hlaváček - Member of the
European Parliament



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Antoine Hubert - IPIFF's 2nd Vice-President



THE INTERNATIONAL PLATFORM OF INSECTS FOR FOOD AND FEED

IPIFF Annual conference

‘Shaping European Food Systems: How insect farming is contributing to the ‘Farm to Fork’ strategy targets

Antoine Hubert, IPIFF’s 2nd Vice President

Le Louise Hotel, 16th November 2022

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voice of insect producers

Consolidating dialogue

with EU public authorities

Advocating

for appropriate legislative frameworks

Support

in the effective implementation of legislation

Promotion and development

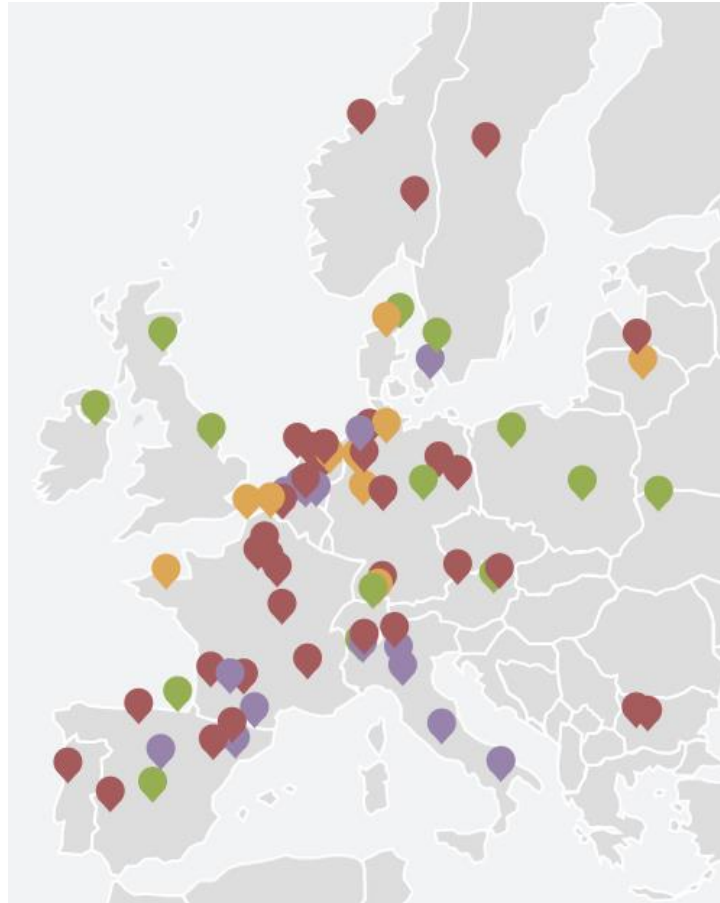
of shared standards and best practices

Collaborative actions

with other umbrella associations



I. Introduction: IPIFF and the European insect sector



Today insect farming is a European business reality



The European insect production sector today

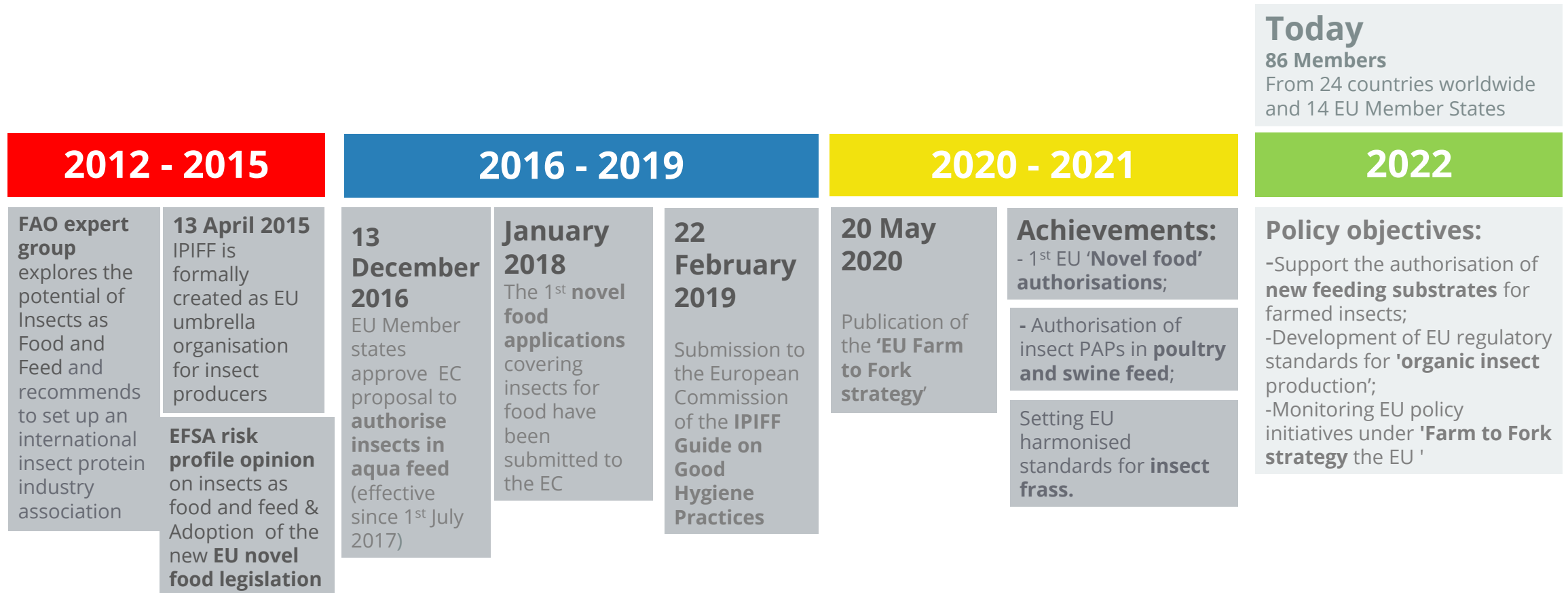
- Predominantly composed of **SMEs**, serving both the **food and feed** markets (start-ups and 'older' businesses, previously active in other segments e.g. in biocontrol, pet food);
- EU production represents today few **thousand tonnes**, whereas investments account for more than **1,5 billion EUR** – this figure is expected to **exceed 3 billion EUR** by 2025;
- **More than a thousand direct jobs today** – likely to exceed thirty thousand by 2030 (source: *IPIFF internal questionnaire 2020*).



II. EU Policy milestones for the insect sector

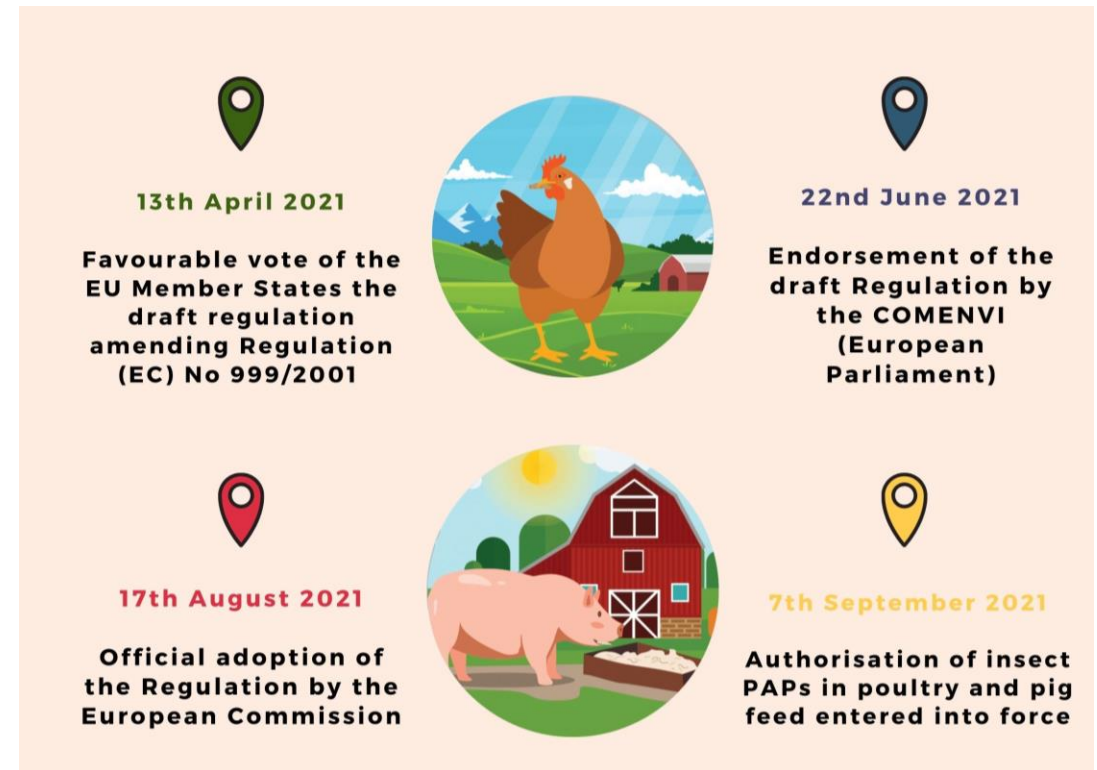


IPIFF activities over the past few years



Authorisation of insect proteins in poultry and swine feed

- The 2017 authorisation of processed animal proteins derived from insects (**insect PAPs**) for use in **aquafeed** has paved the way to new feed markets for insect producers (until then, authorised feed markets were limited to pet food, fur animals and other 'niche' markets) ;
- **Commission Regulation (EU) 2021/1372** authorises the use of insect PAPs in **pig** and **poultry** feed. This authorisation became effective **on 7 September 2021**.



Insects as food: recent regulatory developments and achievements

- 20+ 'novel food' (NF) applications transmitted for evaluation to the European Food Safety Agency;
- CJEU ruling on the 1st of October – 'whole edible insects' are not novel under Reg. 258/97;

Six EFSA opinions on *Tenebrio molitor* (13 January 2021), *Locusta migratoria* (2 July 2021), *Acheta domesticus* (17 August 2021), the second on *Tenebrio molitor* (25 August 2021), partially defatted *Acheta domesticus* (May 2022) and *Alphitobius diaperinus* larva (4 July 2022);

- Products covered by these opinions have been authorised for commercialisation on the EU market (green light given by Member States on partially defatted *Acheta domesticus* and *Alphitobius diaperinus* on 19 October 2022, 8 other novel food applications are in the pipeline).



Establishment of EU baseline standards for processed insect frass

- Regulation 2021/1925 setting EU standards for insect frass (i.e. heat treatment of 70 °C for at least 60 minutes, setting of microbiological standards) entered into force on 28 November 2021.
- The EU legislator also introduced a definition for 'frass': *mixture of excrements derived from farmed insects, the feeding substrate, parts of farmed insects, dead eggs and with a content of dead farmed insects of not more than 5% in volume and not more than 3% in weight.'*

Fact sheet on insect frass



1. What is frass?

The recent reform of the European Union (EU) legislation on animal by-products is of significant relevance for the European insect sector, as it integrates the **first standards for insect frass** as fertilising product in agriculture. Building on the latest technical knowledge, these new norms should facilitate the development of a **level playing field** across the Member States (MS) of the EU by harmonising the processing conditions used for insect frass. In parallel, the EU legislator has **created a definition for insect frass** – an element of crucial importance in this process.

'61. Frass' means a mixture of excrements derived from farmed insects, the feeding substrate, parts of farmed insects, dead eggs and with a content of dead farmed insects of not more than 5% in volume and not more than 3% in weight.

source: Commission Regulation (EU) 2021/1925.

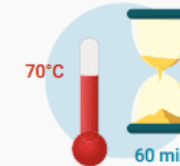
Regulatory context

The first EU standards for the placing on the market of processed insect frass follow the discussions between Member States' experts and EU Commission officials (the legal text was then formally endorsed by the Council of the European Union and the European Commission in accordance with applicable EU procedures). The recently adopted piece of legislation amends the Annex I and Annex XI of Regulation (EU) No 142/2011, by aligning the standards for the placing on the market of frass with those applying to processed animal manure. More specifically, frass treated at 70 degrees Celsius for one-hour (i.e. complying with the above-definition and the relevant microbiological standards from Annex XI, Chapter I, section 2 d) will be allowed on the markets of EU Member States, in line with the national authorisation procedures.

While frass was already subject to certain authorisation procedures at national level (i.e. before the entry into force of this text), the EU legislator foresees a transitional measure in order to assist operators in complying with these new norms at Union level (more information in 'section III').

What is the objective of this factsheet?

This document aims at presenting an overview of the latest regulatory changes related to the use of insect frass as fertilising product in agriculture. Complementary, this document will also present an overview of the **benefits of insect frass** (section II), the **implications** of the latest legislative reform (section III), as well as a quick summary of **manufacturing practices** followed by insect producers (section IV).



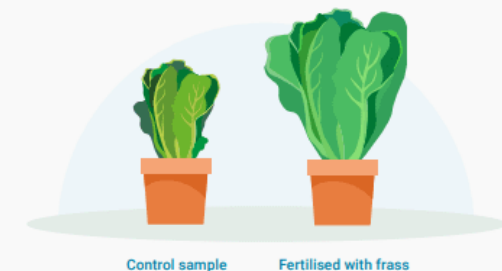
2. What are the benefits of insect frass?

Similar to compost or other types of animal manure, frass is a valuable by-product derived from insect farming activities. The **application of frass on agricultural land** is consistent with the principles of circular economy – closing the loop of insect farming by **reintroducing relevant nutrients and organic matter** in the soil. The valorisation of frass as fertilising product makes insect farming a 'zero waste' activity. Moreover, frass has proven benefits on soil and plant health, such as those listed below.

01 ...provides macro- and micro-nutrients to the soil: from a chemical point of view, frass has concentrations of N, P and K similar to those found in animal manure (e.g. poultry manure). Studies and trials confirm its high potential as fertiliser material, providing minerals that are easily assimilated by the plants. Thanks to the presence of nutrients in a readily available form, insect frass is an efficient natural NPK fertiliser. It increases the biomass and the nutritional content in crops such as **vegetables** (e.g. lettuce), grains (e.g. barley, wheat, maize, rapeseed) and **specialty crops** (e.g. vineyards). The addition of frass provides for a slow release of nutrients ensuring efficient use of micro- or macro-nutrients.

02 ...supplies organic matter that enhances microbiological activity in soil: as frass consists primarily of organic matter, its application improves the soil organic carbon content – as well as other relevant soil parameters, such as water holding capacity. In addition, the use of insect frass as organic fertiliser in agriculture adds beneficial microorganisms and biomolecules relevant for soil and plant health.

03 ...increases plant tolerance to abiotic stresses and resistance to pathogens: due to the presence of different compounds and microorganisms, the application of frass increases the tolerance of the seedlings against stress factors such as drought, flooding, and salinity. In addition, several studies highlight the role of frass in activating plant defence responses – while also inhibiting the growth of certain pathogenic fungi. Such mechanisms are believed to be linked to the presence of chitin (i.e. the main chemical from the exoskeleton on insects – and the second most abundant biomolecule in the world, after cellulose). Lastly, it has been hypothesized that frass showed insecticidal qualities because it was proven to reduce wineworm populations.



III. Contributing to the F2F objectives – what is coming next?



Supporting the EU ‘Farm to Fork’ Strategy

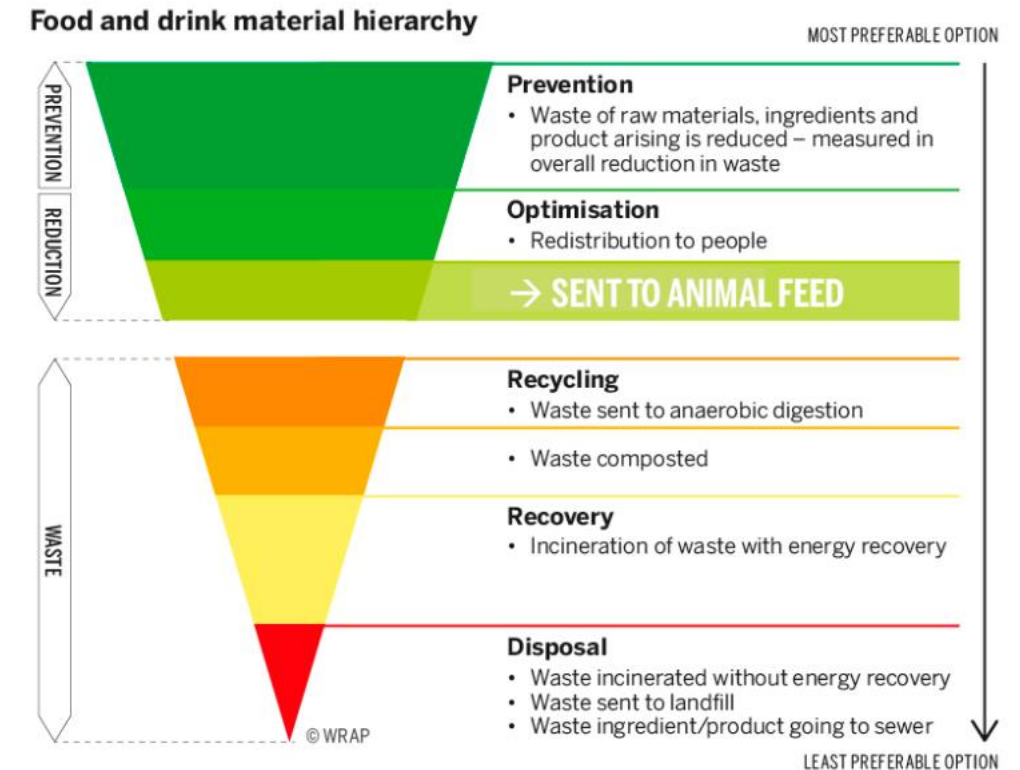
→ In our view, insect farming may contribute to several F2F objectives, such as:

- Strengthening **local food** and **feed self-sufficiency** (locally produced protein-rich food and feed ingredients);
- ‘Halving per capita **food waste** at retail and consumer levels by 2030 (SDG Target 12.3)’;
- Achieving ‘at least **25% of the EU’s agricultural land under organic farming by 2030** and a significant increase in organic aquaculture’;
- Improving animal **health and welfare**.



EU opportunities for authorising new feeding substrates

- Diversifying the spectrum of authorised substrates used in insect farming is considered as key to **reducing the footprint** of insect farming activities while representing a promising opportunity for **tackling the problem of food waste**.
- About 30% of the food waste (e.g. former foodstuffs, catering waste) generated in the EU could be suitable for insect farming activities.



Pyramid source: European Former Foodstuffs Processors Association (EFFPA)

What do we mean ‘former foodstuffs containing meat and fish’?

→ What are ‘former foodstuffs’?

- Regulation (EU) No 68/2013 - Annex, Part A: *‘foodstuffs [...] which are no longer intended for human consumption’.*
- Regulation (EC) No 1069/2009 – Article 10 (f) **‘Category 3 materials: products of animal origin, or foodstuffs containing products of *animal origin*, which are *no longer intended for human consumption* for commercial reasons or due to problems of manufacturing or packaging defects or other defects from which no risk to public or animal health arise’.**

→ Some examples:

- non-vegetarian former foodstuffs (e.g. pizza, tarts, sandwiches);
- ‘ready meals’ (e.g. casserole, stews, etc.);
- canned fish or meat and their derived products;



What is ‘catering waste’?

- Regulation (EU) No 142/2011 – Article 10: *‘all **waste food** (...) originating in restaurants, catering facilities and kitchens, including central kitchens and household kitchens’.*

EU opportunities for using 'new feeding substrates' for farmed insects

- [EU 'Farm to Fork' Strategy](#) (20 May 2020): *'The EC will examine EU rules to reduce dependency on critical feed materials by fostering **alternative feed materials** such as **insects**'.*

- [REFRESH EU project – technical guidelines animal feed](#) (29 April 2019): *'insects are only allowed to eat what (other farmed animals are allowed to eat...). Thus, they would not at this stage help to prevent more surplus leaving the food chain'.*



Parliamentary questions

8 May 2020

30k 17k

E-001080/2020

Answer given by Ms Kyriakides
on behalf of the European Commission

Question reference: E-001080/2020

1. The forthcoming Farm to Fork Strategy⁽¹⁾ will contribute to achieving a circular economy and launch a process to identify new innovative food and feed products. The contribution of insect farming will be looked at in this context, notably as part of possible actions aimed at enhancing the utilisation of more sustainable feed sources for the farmed animals.
2. The European Food Safety Authority has not yet been requested to deliver such an opinion. This could be requested as a result of the actions to be taken forward in the context of the Farm to Fork Strategy.
3. The Commission is considering the possibility to propose allowing the use of insect protein in feed for other animal species. Discussions in that regard have started at technical level with Member States.

⁽¹⁾ https://ec.europa.eu/food/farm2fork_en

Last updated: 11 May 2020

Legal notice - Privacy policy

Building on the available scientific evidence and risk-based management procedures applied by insect producers

→ [Report](#) of the 'Office for Risk Assessment & Research (BuRO) of the Netherlands Food and Consumer Product Safety Authority (NVWA)':

- Sufficient evidence on processing methods used to eliminate **microbiological** contamination (e.g. method 7);
- Low risks of **chemical** contamination, since former foodstuffs should respect the MRLs for human consumption;



Advice on animal and public health risks of insects reared on former foodstuffs as raw material for animal feed

BuRO was asked by the Dutch Ministry of Agriculture, Nature and Food Quality (LNV) to assess the animal and public health risks of insects reared on former foodstuffs as raw material for animal feed. Based on the outcome of this risk assessment, the Minister of LNV will then be able to propose to the European Commission (EC) to make a further adjustment in the legislation that applies to the rearing of insects and the use of insects as raw material for animal feed.

→ [IPIFF Guide on Good Hygiene Practices](#):

- Chapter 4. Overview of processing methods applied to insects intended for human consumption and animal nutrition;
- Chapter 7 - Implementation of HACCP principles by insect producers.



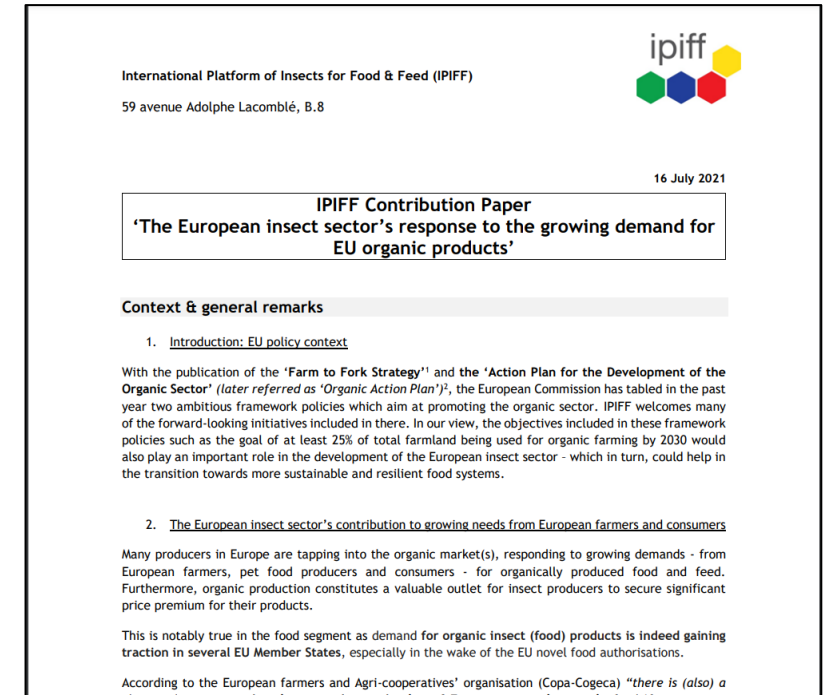
CHAPTER 4 – PREREQUISITE PROGRAMS: INSECT REARING ACTIVITIES

CHAPTER 7 IMPLEMENTATION OF HACCP PRINCIPLES BY INSECT PRODUCERS



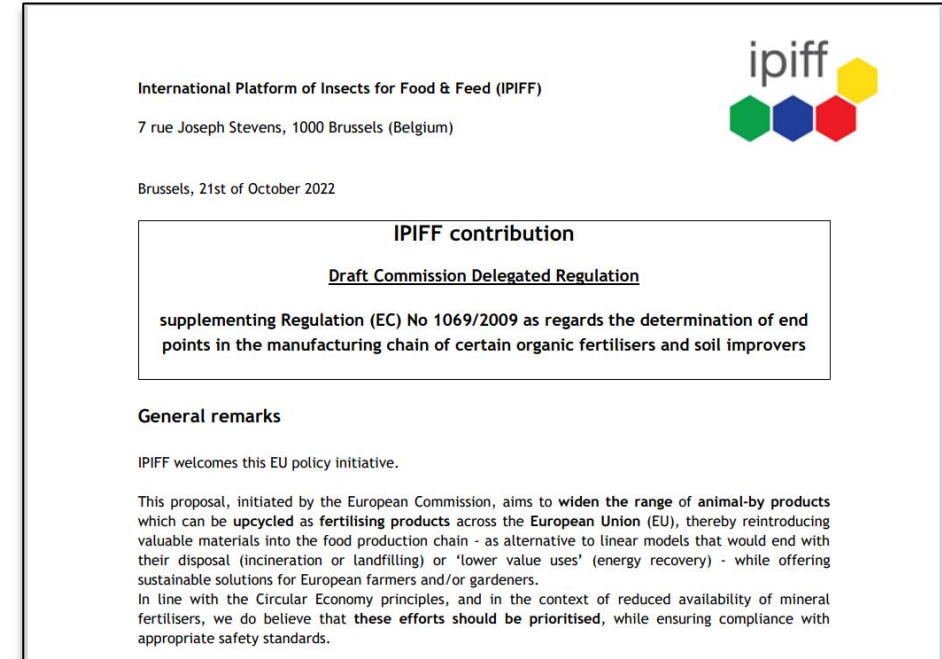
Possible future EU standards for insect organic production

- The European Commission recognises the importance of the insect sector in order to achieve the objectives laid down in the **'Farm to Fork' strategy**, as well as the ambitions developed in the **Organic Action Plan**.
- Today, **organic poultry or swine juveniles (under 12 months)** may be fed with up to 5% non-organically certified feed.
- Earlier this year the European Commission resumed discussions with the EU Member States in view of setting **organic production rules for farmed insects**. Those discussions should continue in 2023.



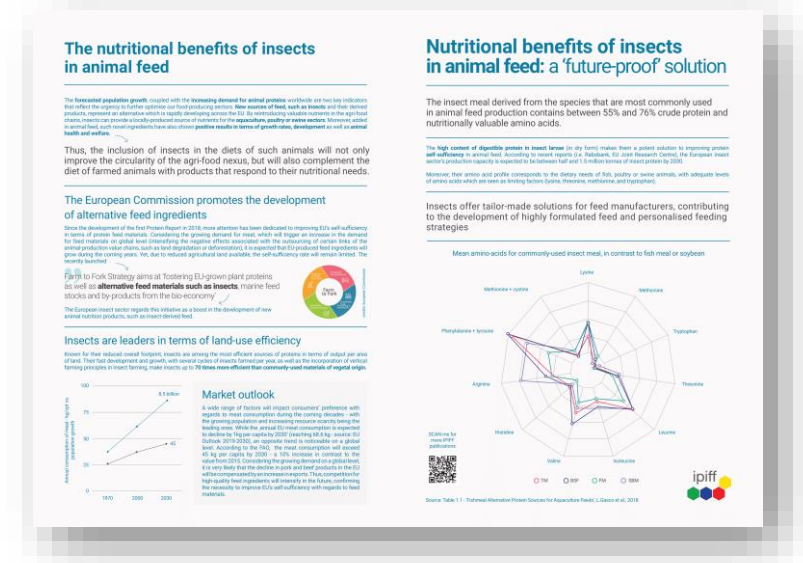
Definition of 'end points'

- Insect frass brings innovative and promising solutions for **European organic farmers**
- **Recent EC Communication** (9-11-22) highlighting the need to '*reduce dependence and consumption on imported mineral fertilisers through (...) sustainable farming practices and (...) better access to organic fertiliser*'
- The **definition of end-points** for insect frass under the APB legislation (ongoing EU initiative) is a pre condition for market access under the EU fertilisers' legislation.
- IPIFF supports the EC proposal to define an '**end point**' for processed insect frass, thereby allowing its commercialisation as fertiliser across the EU.



Contribution of insects to animal health and welfare

- Trials indicate that insect containing diets are preferred by **poultry species**, most likely because of their **taste and nutritive value**. Recent evidence confirms that the incorporation of insects in **poultry's diet** would also allow them to express their natural behaviour - reducing aggressive reactions, such as feather pecking (Star et al., 2020).
- Several insect species also contain bioactive components like lauric acid, antimicrobial peptides and chitin which have **immunostimulatory properties** (e.g. trials realised on **piglets**);



Feeding of whole treated insects to farmed animals: IPIFF proposals

IPIFF position paper on the use of insect larvae as feed for food producing animals

Contextual elements

1. General background

Insect production generates different outputs which may be used in animal feed, ranging from insect **larvae**, either **alive** or **'treated'** (e.g. dehydrated, freeze dried), to insect **meal** (defatted or un-defatted) or **oil**.

Dead (and treated) insect larvae present numerous advantages when used as feed for livestock production (e.g. feed complement) and/or for enticing properties (e.g. used as environmental enrichment in poultry husbandry for its similarity to invertebrates eaten naturally by such animals). These products have indeed proven to entail beneficial effects on the health and welfare of farmed animals, which contributed to the **rapid emergence of this market outlet** in several EU countries.

Insects as feed - Regulation (EU) No 609/2013 on the Catalogue of feed materials	Aquaculture	Poultry	Pigs	Pets	Fur and other animals (e.g. zoo)	Technical use (e.g. cosmetics, industry, bio-based fuels, production of other bio-based materials such as bioplastics)
Insect protein (under entry 9.4.1. "Processed animal protein")	✓**	✓**	✓**	✓	✓	✓
Insect fat (under entry 9.2.3 "Animal fat")	✓	✓	✓	✓	✓	✓
Whole insects (under entry 9.3.2. "Terrestrial insect larvae, dead")	✗	✗	✗	✗	✓*	✓
Freeze-dried (under entry 9.3.2. "Terrestrial insect larvae, dead")	✗	✗	✗	✓*	✓*	✓
Live insects (under entry 9.3.2. "Terrestrial insect larvae, live")	✓*	✓*	✓*	✓*	✓*	✓
Hydrolysed insect protein (under entry 9.3.1. "Hydrolysed animal protein")	✓	✓	✓	✓	✓	✓

Legend: Overview of EU regulatory possibilities for feeding whole insect larvae to farmed and non-farmed animals.
[IPIFF Guide on Good Hygiene Practices](#) - (updated version September 2021) (p 73)

IPIFF pleads for the **establishment of EU tailored rules** - the framework of the EU ABP legislation – in order to regulate the use of these products (i.e. alignment with rules applying to insect PAPs intended as feed for farmed animals).

main parameters of such method would be based on criteria foreseen for the **existing method 7**.

The list of **insect species** which might be used as feed for farmed animals will be **aligned with the ones** which are currently allowed for use as **PAPs for farmed animals**.

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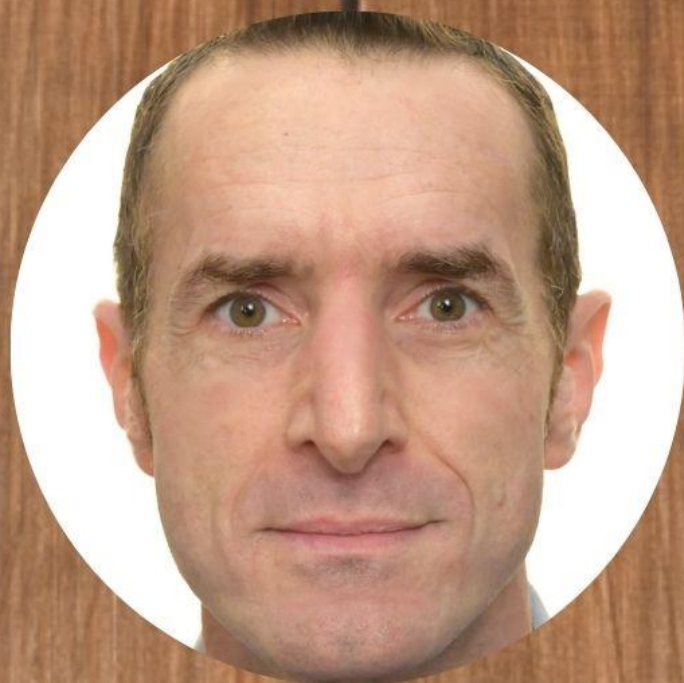
IPIFF (International Platform
of Insects for Food and Feed)



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Alexander Stein - DG AGRI, European
Commission



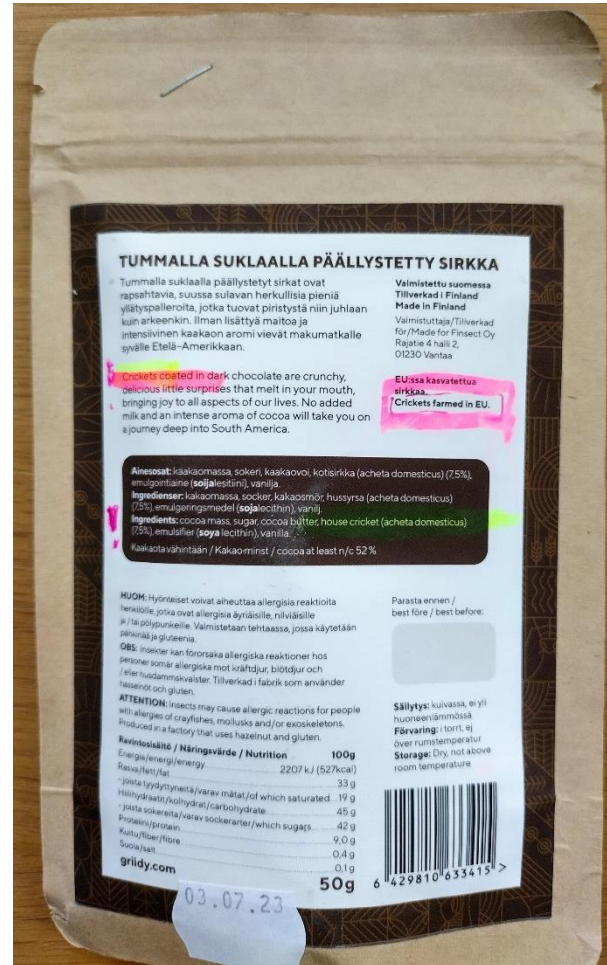
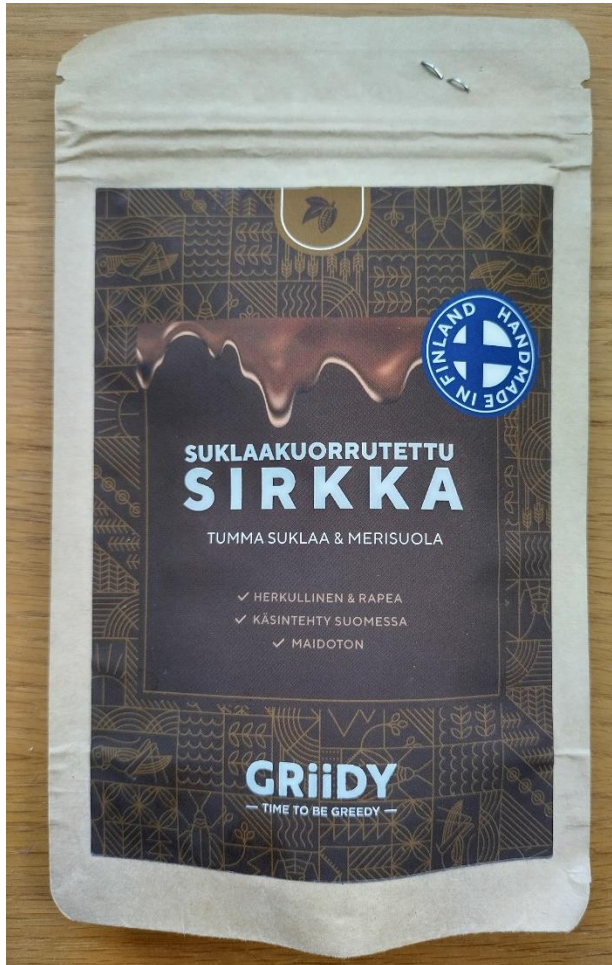


Agricultural Outlook and Insect Farming

IPIFF annual conference 2022

Alexander Stein, DG AGRI

Bring-along from a colleague last week



- Chocolate-covered crickets, farmed in the EU

The Farm to Fork strategy

- The Farm to Fork strategy is at the heart of the European Green Deal, aiming to make food systems fair, healthy and environmentally-friendly*
- Its main objectives are to
 - ensure sustainable food production
 - ensure food security
 - stimulate sustainable practices along the food supply chain
 - promote sustainable consumption incl. dietary change
 - reduce food loss & waste
 - combat food fraud along the chain
 - enable & promote a global transition

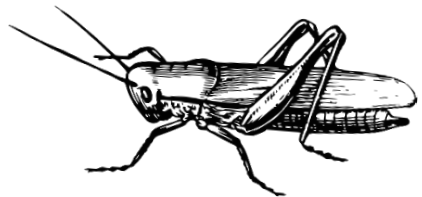


Possible links with insect farming

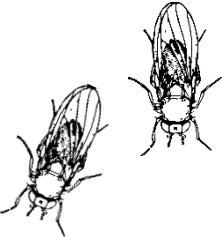
- Sustainable food production:
 - circular bioeconomy (waste to protein)
 - renewable fertilisers* (recycling organic waste)
 - alternative feed materials (insects instead of soy from deforested land)
 - animal welfare
 - more viable aquaculture (cheaper feed)
- Food security: sufficient & varied (diversified) supply
- Sustainable practices: circular business models (making use of food waste)
- Sustainable consumption: diet with less red & processed meat
- Global transition: R&D (last year's presentation by Kerstin Rosenow; EU funding)

Food waste and insect farming in the EU

- The transition towards a sustainable food supply chain is key to the Farm to Fork strategy, which envisions a circular bio-based economy
- Insect farming could contribute to this objective by transforming food losses and waste into an additional supply of protein
- In the EU, roughly one fifth of food produced for human consumption is lost or wasted (129 million t per year)
- Regulations restrict former foodstuffs or catering waste from being used as feed for insects destined for livestock production



Simulating the potential of insect farming



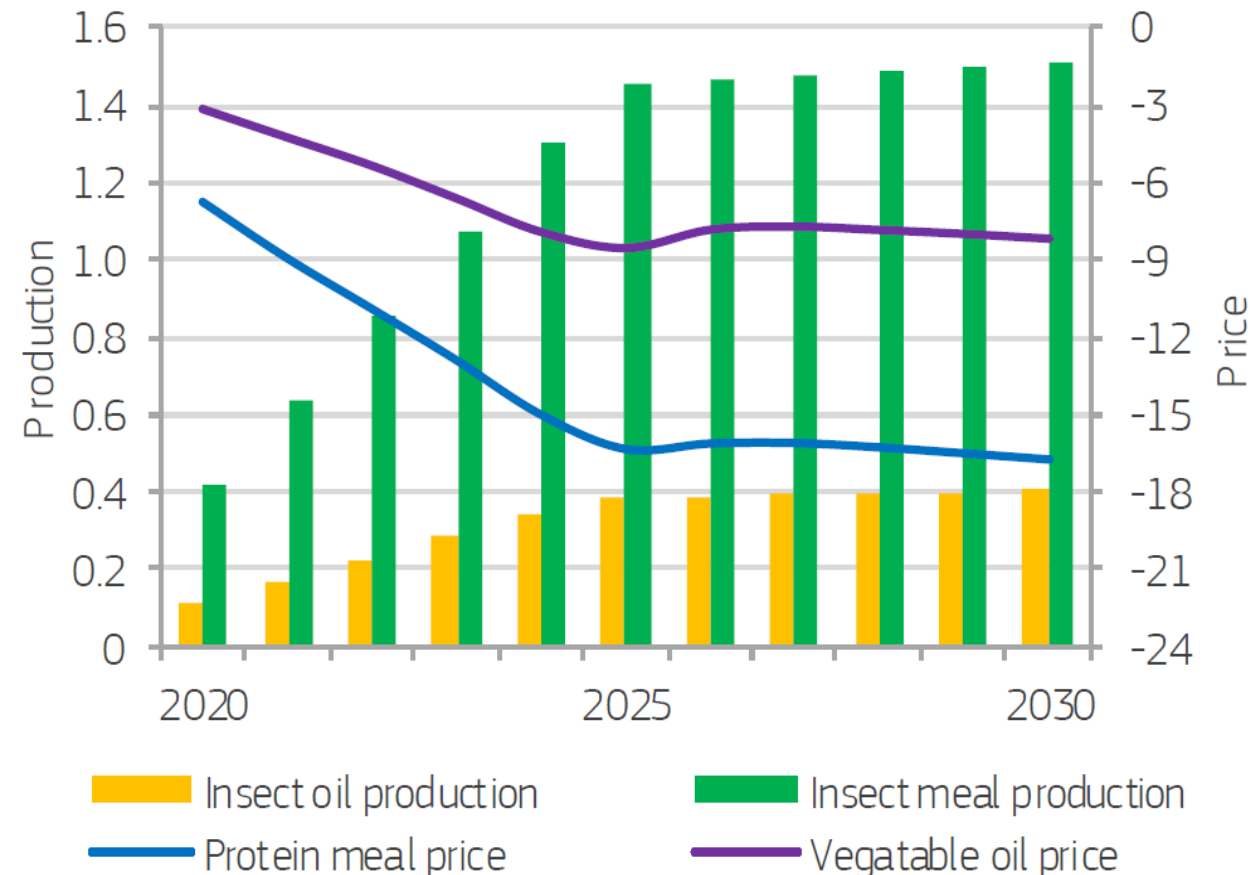
- Scenario*: What would impacts on agricultural markets be **if** food waste could be used as insect feed?
- Assumption: By 2030 50% of global food waste can be collected and fed to insects (black soldier flies)
- Their larvae can be crushed to produce low-fat protein meal and oil (which can be used for biodiesel)
- According to the simulation (not a projection), by 2030 the industry produces 23 million t of protein meal and 6 million t of oil (5.4% of global meal and 2.5% of global oil supply)
- As global markets adjust to the increased supply, the price of protein meals and vegetable oils declines by 18% and 7%, respectively, until 2030

Projection of trends in the EU

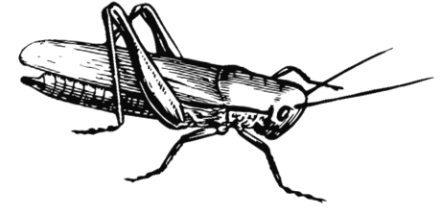


- In the EU, the insect sector would likewise use 50% of waste in 2030 (65 million t, vs 18 million t in 2020)
- The sector would then produce 1.5 million t of protein meal and 0.4 million t of oil in the EU
- EU producer prices would (have to) follow world market prices for protein meals and vegetable oils (to be competitive)

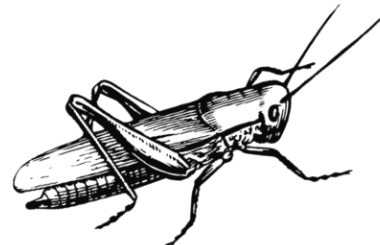
GRAPH 2.22 EU insect meal, insect oil production (million t) and producer price (%) – difference relative to baseline



Repercussions on crop markets



- The domestic production of 1.5 million t of insect meal would lead to a reduction of areas cultivated with oilseeds and a reduced production of oilseed meals by 0.3 million t
- However, it would also reduce imports of meals by 0.4 million t and overall increase the protein meal self-sufficiency ratio by 1.8%
- The reduced demand for oilseeds could in turn lead to an increase in areas used for pulses and fodder, but to a slight reduction of total EU agricultural land
- It could also mean that until 2030 cereal prices might decline by 5% and soya bean prices by 11%



Wider repercussions of insect farming

- Lower meal and oil prices would promote the production of fish, milk and meat in the EU and increase its biodiesel production
- Because world market prices for pork would decline more than EU prices, EU pork production could decline due to lower exports
- The overall increase in livestock production leads to slightly higher GHG emissions in the EU



Developments in meals and oils

- EU demand for protein meals is expected to decline over the next 10 years, given lower demand for animal feed (smaller herd size, better feed conversion, more organic production using other feed sources)
- Also demand for vegetable oil is set to decrease due to a diminishing demand for diesel and replacement by other types of oil in food use
- This means imports of oilseed meals are set to fall, too (e.g. soya bean meal imports, could decline from 18 million t in 2022 to 16 million t in 2031, absorbing most of the drop)*



Oilseeds balance sheet

- The balance sheet is published monthly* and shows the supply and demand (stocks, production, imports vs domestic use, exports, stock change) for oilseeds, meals and oils in the EU (for rapeseed, soya beans, sunflower, palm oil)

EU	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	
OILSEEDS, OILSEED MEALS & VEGETABLE OILS SUPPLY & DEMAND																										
LAST UPDATED: 28/09/2022																										
OILSEED *																										
Thousand metric tonnes																										
2018/19					2019/20					2020/21 est.					2021/22 fo.					2022/23 proj.						
Rapeseed	Soya beans	Seaflower	TOTAL ***		Rapeseed	Soya beans	Seaflower	TOTAL ***		Rapeseed	Soya beans	Seaflower	TOTAL ***		Rapeseed	Soya beans	Seaflower	TOTAL ***		Rapeseed	Soya beans	Seaflower	TOTAL ***			
Beginning stocks	2,057	2,140	337	5,134	2,000	1,930	300	4,230	1,500	1,500	1,000	4,000	500	700	2,300	500	1,200	667	2,567	500	1,200	667	2,567			
Usable production	18,000	2,833	3,873	30,606	15,900	2,742	10,244	28,886	16,634	2,611	3,000	28,211	17,052	2,643	10,550	30,051	13,561	2,574	10,025	32,160	13,561	2,574	10,025	32,160		
Imports (from third countries)	6,249	4,005	4,005	14,259	5,719	3,909	4,269	13,897	6,562	3,427	4,267	14,256	22,023	3,427	4,267	22,023	3,427	4,267	22,023	3,427	4,267	22,023	3,427	4,267		
Total supply	26,306	9,978	8,115	44,399	29,619	6,581	16,513	43,713	24,696	5,338	8,267	36,267	34,675	7,673	23,117	43,624	17,288	8,458	44,366	47,741	17,288	8,458	44,366	47,741		
Exports (to third countries)	4,329	14,433	529	15,291	5,915	14,731	971	21,617	5,737	10,030	618	21,644	5,510	14,709	1,150	21,428	4,700	14,000	12,000	19,300	4,700	14,000	12,000	19,300		
Domestic use	21,630	14,405	11,443	47,478	23,374	14,412	12,113	49,900	23,300	13,411	10,618	50,329	23,623	15,353	12,053	50,029	22,451	12,774	12,051	50,276	22,451	12,774	12,051	50,276		
of which crushing	22,091	17,203	3,941	43,242	21,523	17,722	10,553	49,797	23,917	17,843	3,447	50,614	22,998	16,988	10,930	50,116	23,947	16,532	10,920	51,193	23,947	16,532	10,920	51,193		
Left over	41,505	21,820	8,642	71,967	30,612	15,772	3,889	40,273	32,508	15,754	8,549	46,811	31,425	14,562	8,671	46,077	33,007	14,562	8,671	47,173	33,007	14,562	8,671	47,173		
Ending stocks****	281	25	101	407	332	242	134	508	173	197	671	1,041	414	270	403	1,097	314	241	305	860	314	241	305	860		
Change in stocks****	28,210	11,416	10,323	49,949	11,416	11,113	10,323	32,852	23,470	10,111	10,647	11,553	22,823	17,288	11,233	13,213	24,261	16,374	11,233	32,000	16,374	11,233	32,000			
**** At the end of the marketing year	28,210	11,416	10,323	49,949	11,416	11,113	10,323	32,852	23,470	10,111	10,647	11,553	22,823	17,288	11,233	13,213	24,261	16,374	11,233	32,000	16,374	11,233	32,000			
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Observations



- Insect farming could contribute to a circular food system by upcycling food waste into high-value proteins
 - This also provides an opportunity to improve the protein deficit in the EU
 - Insect farming does not compete directly for land, but it does affect land use in the EU, as well as crop prices and feed costs
- Questions relating to food safety (e.g. pollutants from food waste) and sustainability (e.g. creation of low value organic waste) have to be addressed, especially when scaling up to industrial farming



Thank you



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Images of the insects from Pixabay

SHAPING EUROPEAN FOOD SYSTEMS

How *insect farming* is contributing to the 'Farm to Fork' strategy targets

16 November 2022



Karel van den Velden - EFFPA and Nijssen





EFFPA

EUROPEAN FORMER FOODSTUFF
PROCESSORS ASSOCIATION



Former foodstuffs processing for food- producing animals

IPIFF annual conference –
16 November 2022



Former Foodstuffs Processing

EFFPA: the European Former Foodstuffs Processors Association



- Founded in 2014;
- Represents associations and companies in Europe, Canada and the USA engaged on former foodstuffs processing for food-producing animals;
- Committed to a circular vision of food chains towards more sustainable animal food systems;
- EFFPA is an associate member of FEFAC.



EFFPA

From Former Foodstuffs towards Feed

- The final product of former foodstuffs processors is a **feed ingredient**, destined to feed manufacturers (or directly to livestock farmers).
- Around **5MT of former foodstuffs** processed in Europe per year.
- Because of the former foodstuffs compositions, the feed ingredients produced are **highly nutritious** and **digestible** by animals.
- As feed operators, former foodstuffs processors' main concern is **feed safety**. Continuous efforts and innovations are made in terms of quality, traceability, hygiene, and controls to reach the highest levels of feed safety.

Former Foodstuffs processors provide interesting nutritional feed ingredients at the highest level of feed safety.

FORMER FOODSTUFFS
RESULT FROM FOOD
MANUFACTURING...



...ARE PROCESSED
INTO A HIGH
QUALITY FEED...



...PERFECTLY FITTING INTO
A BALANCED DIET FOR
HEALTHY ANIMALS



EFFPA

Specific features of former foodstuffs

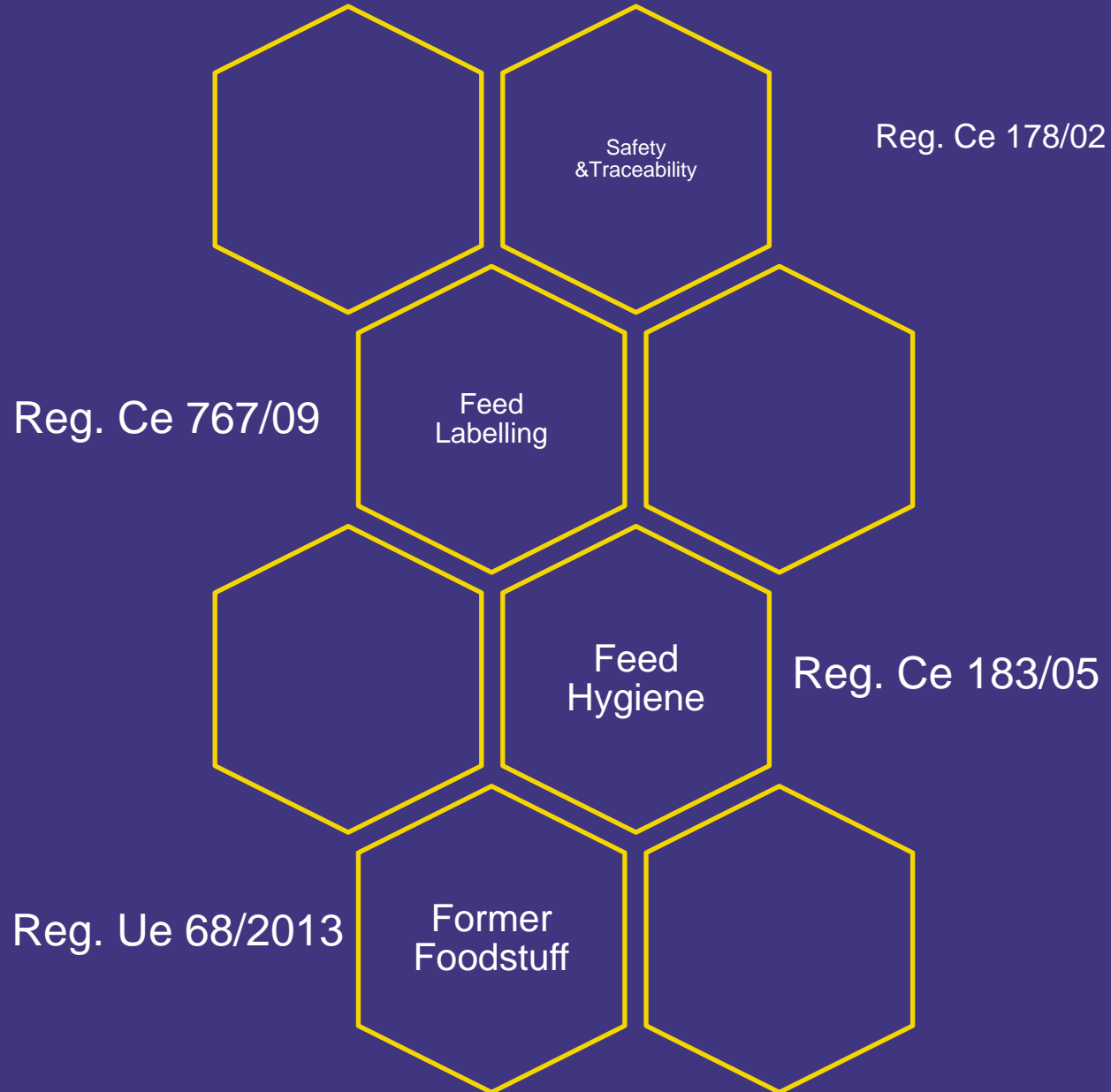
Food losses unintentional and unavoidable

- 95% of material collected intermediate/unfinished/incorrect products, mostly collected from food industry
- Seasonal products
- Products removed from the market only for commercial reason
- They are never waste but high energy ingredients for animal feed
- Higher energy (sugars, fats, cooked starches) in comparison to any raw cereal
- Bread biscuits chocolate, pasta, candies, breakfast cereals, ect..



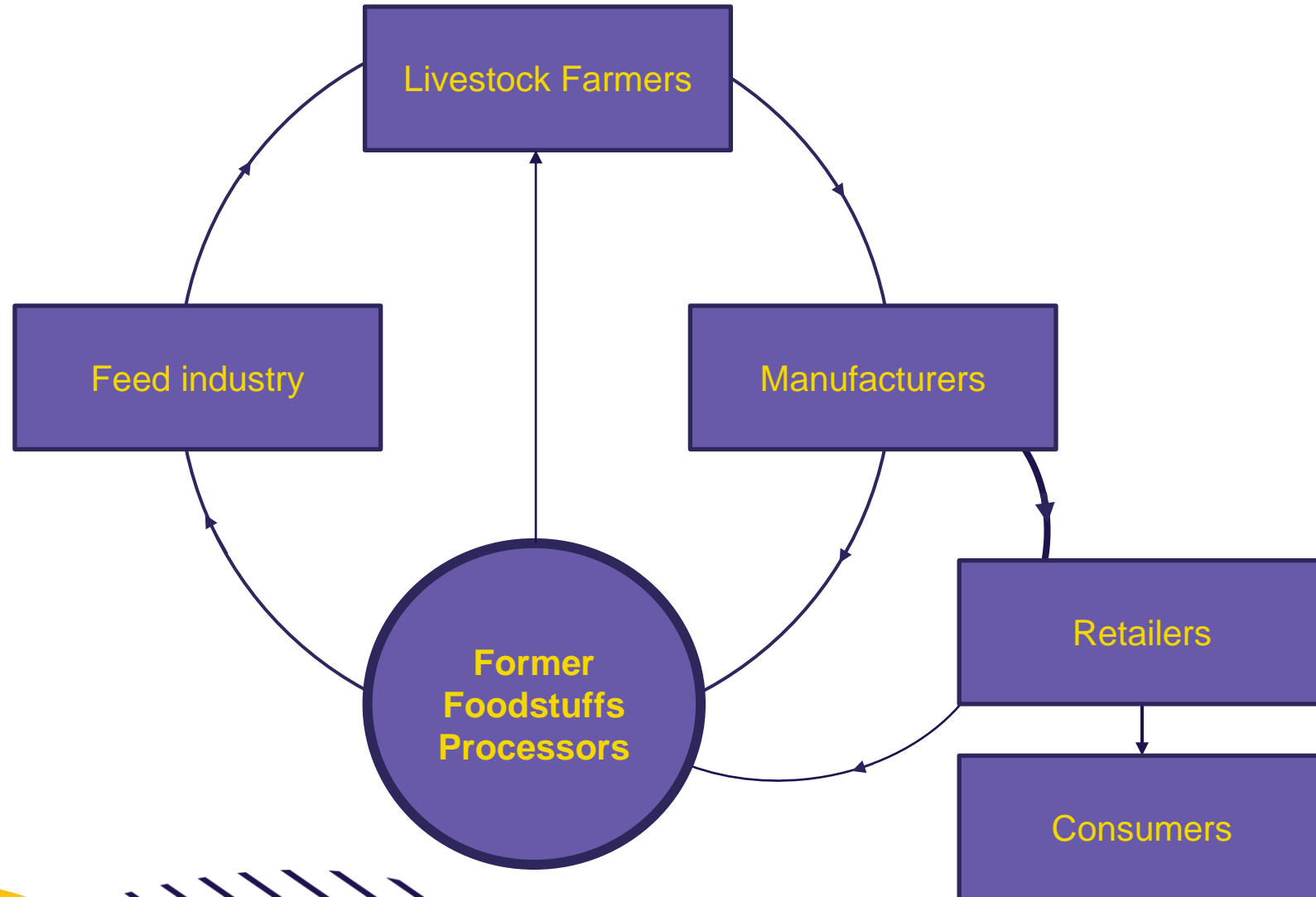
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Legal Framework



EFFPA

Former Foodstuffs Processing, in the hearth of food circular economy



EFFPA



TRACEABILITY

HACCP

**EFFECTIVE
DEPACKING
PROCESS**

**CONTINUOUS
QUALITY
TESTS**



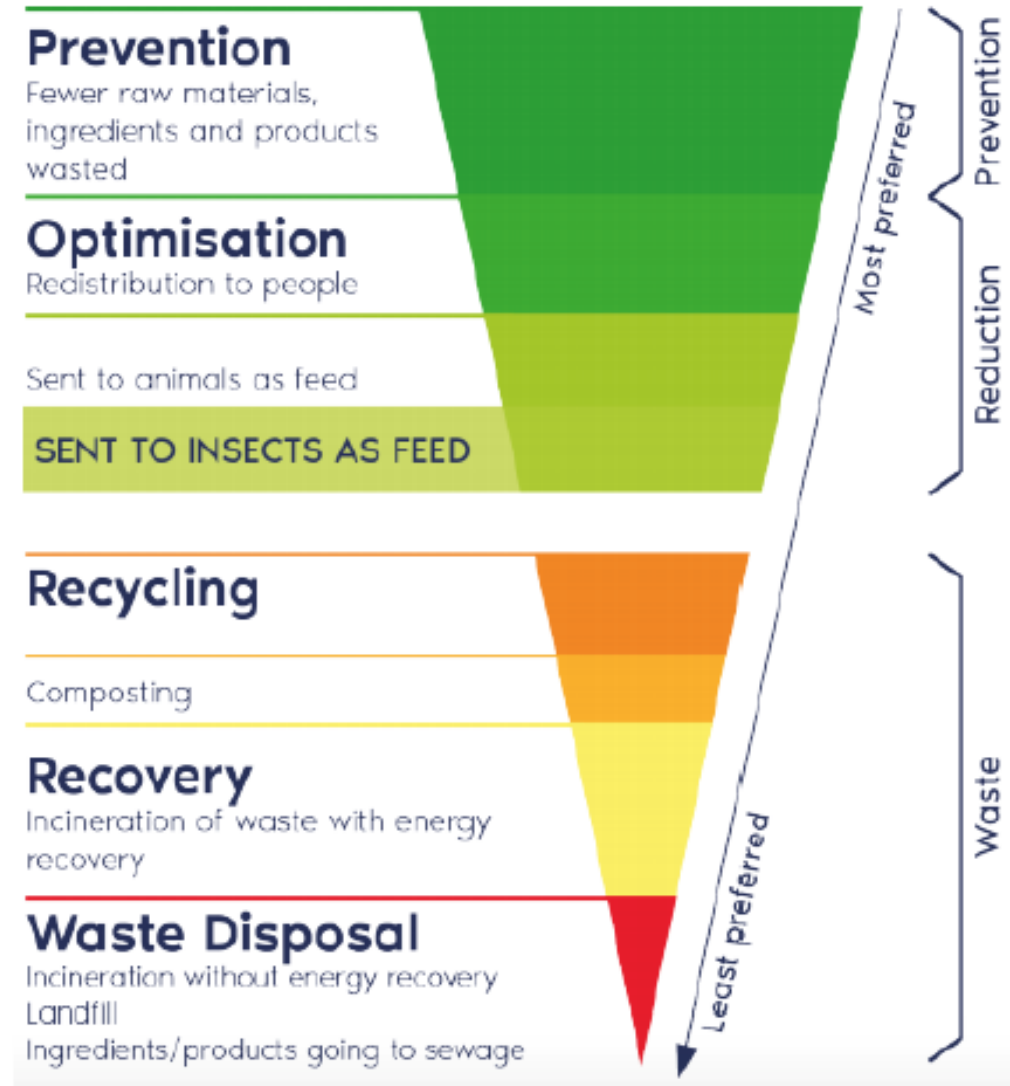
EFFPA

Final product: an ingredient of the complete feed



In the heart of the food chain circular economy

The food waste hierarchy, EFFPA compass to sustainably valorise former foodstuffs

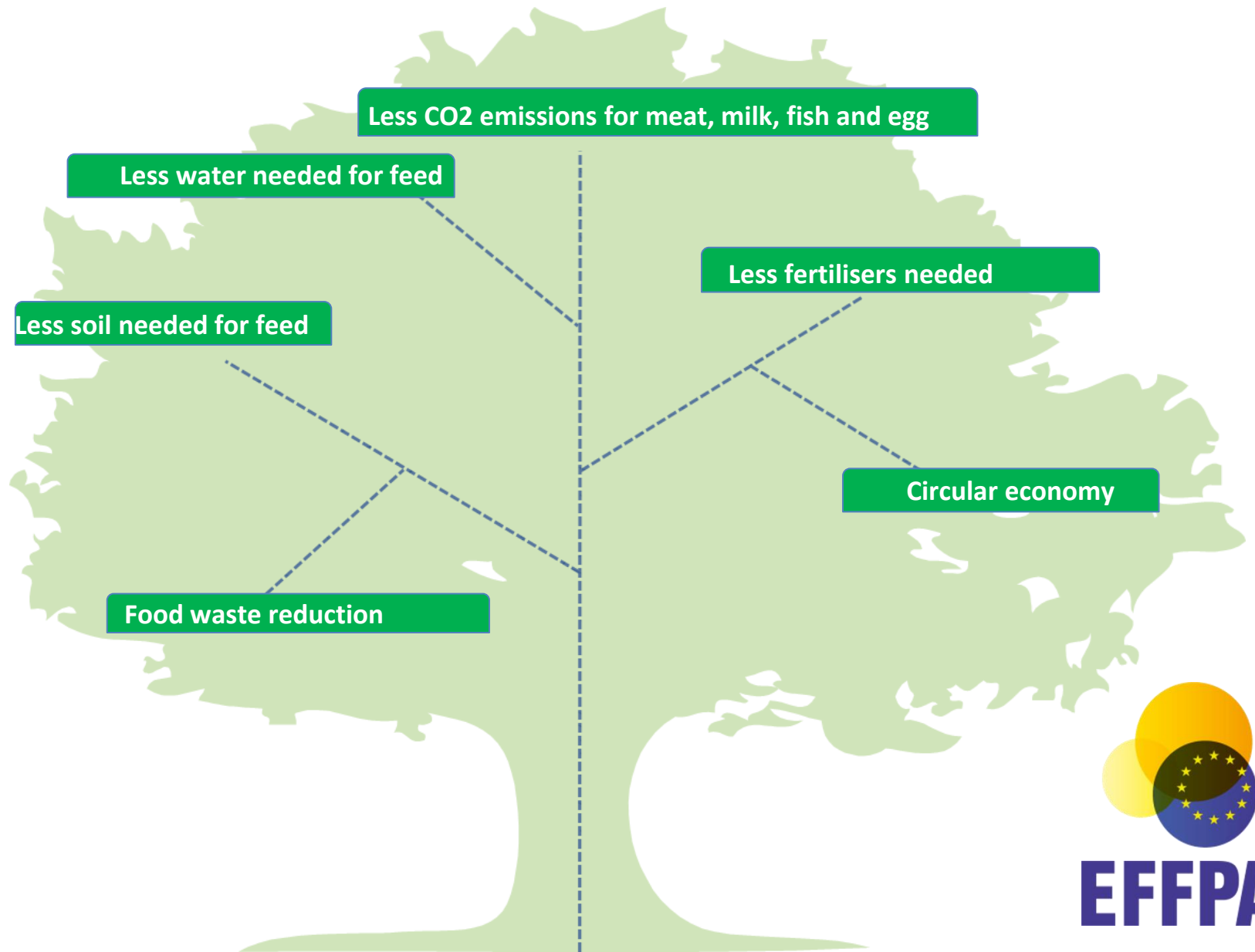


EFFPA

In summary what we can do

Replacing 1 Million tons of former foodstuffs processed into feed by cereals would require:

- 114 000 hectares of cereals usually used for feed
- 0,84 billion liters of water



EFFPA

Nutritional value processed former foodstuffs compared to cereal grains

	Processed former foodstuffs – Typical Pig Feed	Barley	Wheat
Dry matter	88.0%	88.0%	88.0%
Crude protein	10.0%	11.0%	12.4%
Lysine	0.38%	0.38%	0.34%
Crude fat	14.5%	2.8%	2.1%
Crude fibre	2.2%	5.5%	2.7%
Starch	41.0%	51.6%	59.2%
Sugar	14.0%	2.2%	2.4%
Metabolisable energy pig (DE)	16.75 MJ/kg	12.95 MJ/kg	14.43 MJ/kg

Source: NRG, VDLUFA, INRA

Target Species: Monogastric – 52wks/yr requirement

The world of former foodstuffs and insects production

Former foodstuffs & Insect farming

- Former foodstuff processors and insect producers are both 'bio-economy operators' that are part of the future vision of sustainable feed production
- Ideally, former foodstuffs are processed 'directly' into pig/poultry/ruminant feed when they are suitable for that purpose
- Former foodstuffs used as an insect substrate ideally take advantage of the specific upcycling capacity of insects, from a technical and/or legal perspective
 - Potential use of former foodstuffs with meat/fish as an insect substrate for animal feed production should be a key part of the future reflections of a sustainable food system, as a means to allow for future nutrient recovery through food-production animals
- Former foodstuff processors and insect producers will need to anticipate changes human diets and the consequences on the composition of residual streams originating from the food production system



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Potential synergy between Former foodstuff processing & Insect farming

- Former foodstuff processors have the experience
 - Suppliers assessment for feed safety and hygiene
 - Logistical management of former foodstuffs flows
 - Depackaging technology
 - Animal nutrition expertise
- Impossible to use existing former foodstuff processing facilities, it would require dedicated manufacturing sites
- Experimental projects taking place in The Netherlands, also in terms of assessing the conditions for insect production to facilitate GHG emissions mitigation strategies. EFFPA members are also involved in GFLI databases to assess the climate footprint benefits of former foodstuffs,



EFFPA

Thank you for your attention!



**In the heart of circular
sustainable food chain**



SHAPING EUROPEAN FOOD SYSTEMS

How *insect farming* is contributing to the 'Farm to Fork' strategy targets

16 November 2022



Achim Raschka – Renewable Carbon Initiative (RCI)

