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L'uso degli insetti nella mangimistica: la situazione in Europa

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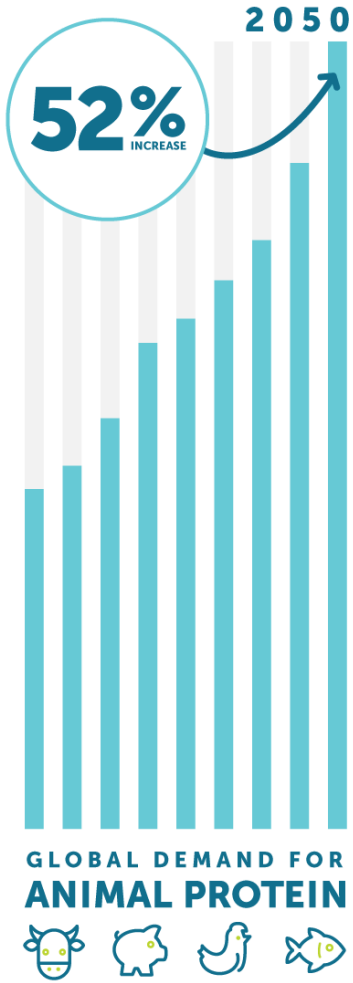


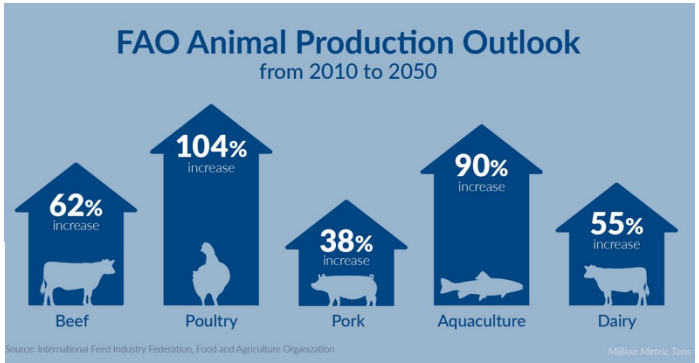
Proteins = ISSUE

↓

alternatives

↓

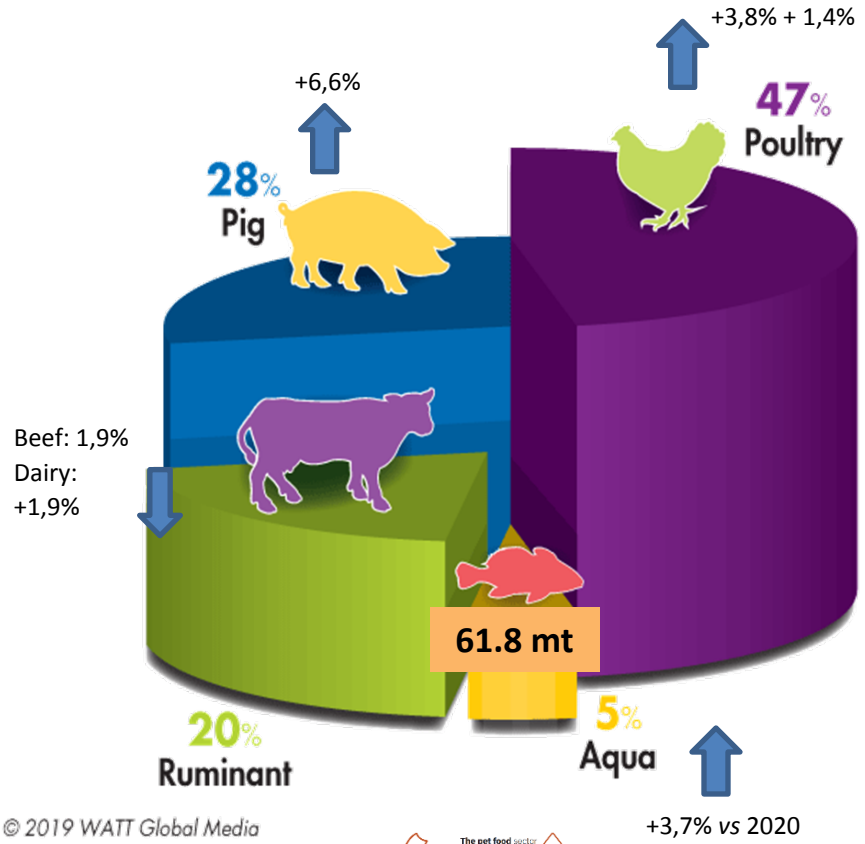
????



Animal SCIENCE

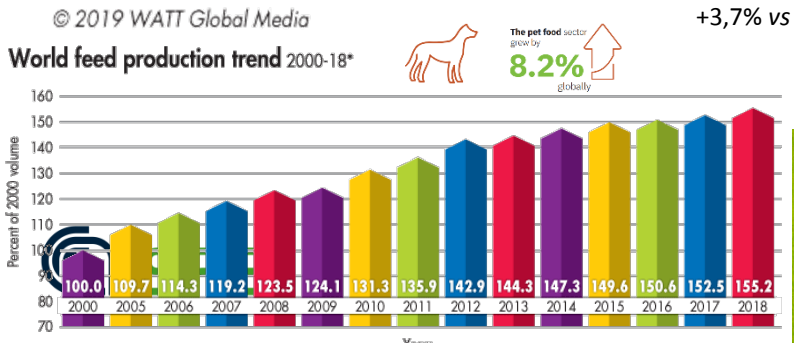
2021: 1.235,5 million t → Feed +2,3% *vs* 2020

15% CP in feeds → **about 185 million t proteins**



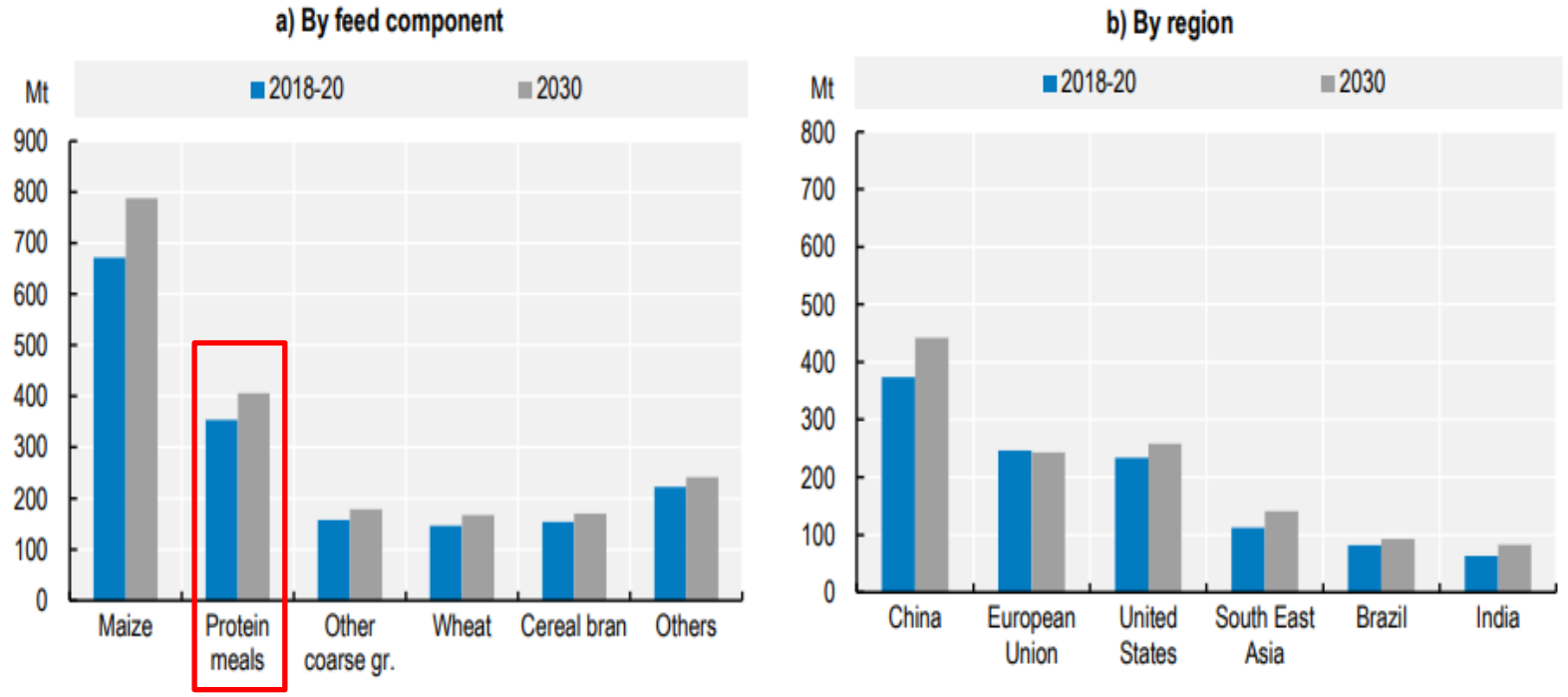
- **Plant (SBM, SPC, GM, …)**
- **Animal: PAPs (FM, PBP, MBM, BM, …)**

- Costs SBM & FM: increased (60-70% of production costs)
- Limited availability of natural resources
  - SBM: land for cultivation is limited (increasing deforestation!)
  - FM: max production reached
- FOOD – FEED – FUEL competition (land)
- EU: protein deficit (70% reliance on import)



Alltech Agri-Food Outlook 2022

Figure 1.12. Demand for feed



Note: South East Asia includes Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor Leste, and Viet Nam

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

The EU Protein Deficit

EU produce only the 30% of the proteins for animal feed (70% reliance from Brazil, Argentina, USA)

Trend towards an increase of this deficit

26 mt = by-products derived from vegetable oil production (mainly **SBM)** → **Animal feeds**



2011: The EU Parliament adopted a resolution to address the EU's **protein deficit**, stating that **urgent action is needed** to **replace imported protein** crops **with alternative and additional European sources**

ISPA

PROteINSECT
INSECTS AS A SUSTAINABLE SOURCE OF PROTEIN
www.proteinsect.eu

Protein sources in aquafeed

Animal sources

- Marine sources
  - Fishmeal (FM)
  - Fish protein concentrates (FPC)
  - Other
- Processed Animal Protein sources
  - Poultry meal
  - Feather meal hydrolysate
  - Porcine meal
  - Porcine blood meal
  - Insects

Plant sources

- SBM
- Wheat gluten
- Corn gluten meal
- Soy protein concentrate (SPC)
- Pea protein concentrate
- …

Microbial ingredient sources

- Algae

codepesca.net; greenreport.it; marketplace.org; Alibaba.com; fasa.ind.br; naturesseed.com; shape.com; epicgardening.com

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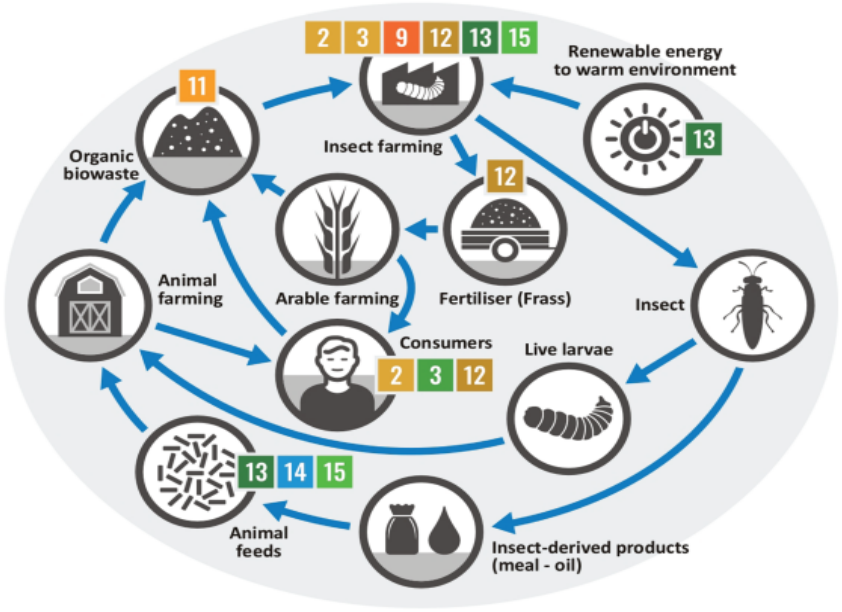
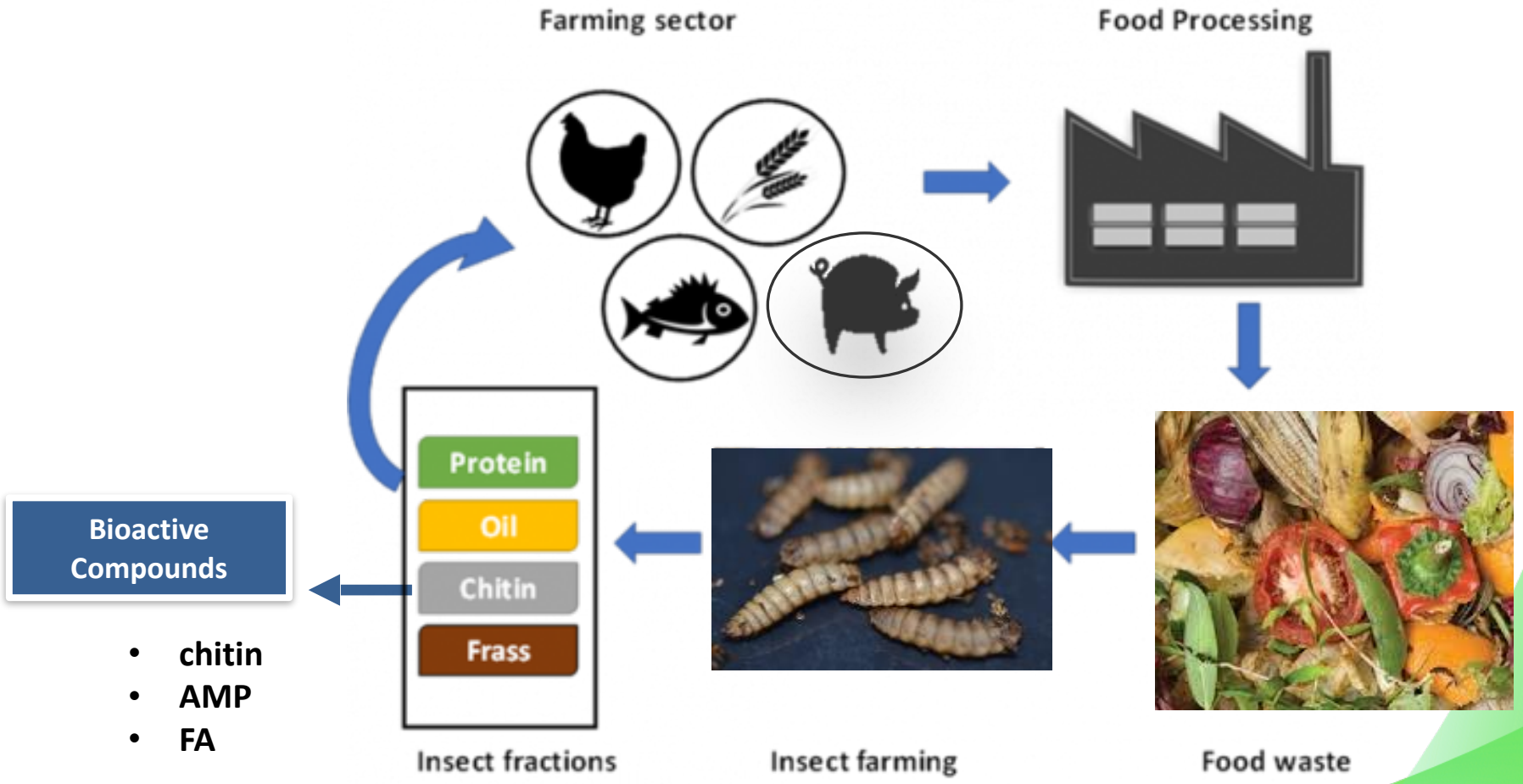


Gasco et al. (2023)
Insect meals in a circular economy and applications in monogastric diets.
Animal Frontiers, 13(4), 81-90.

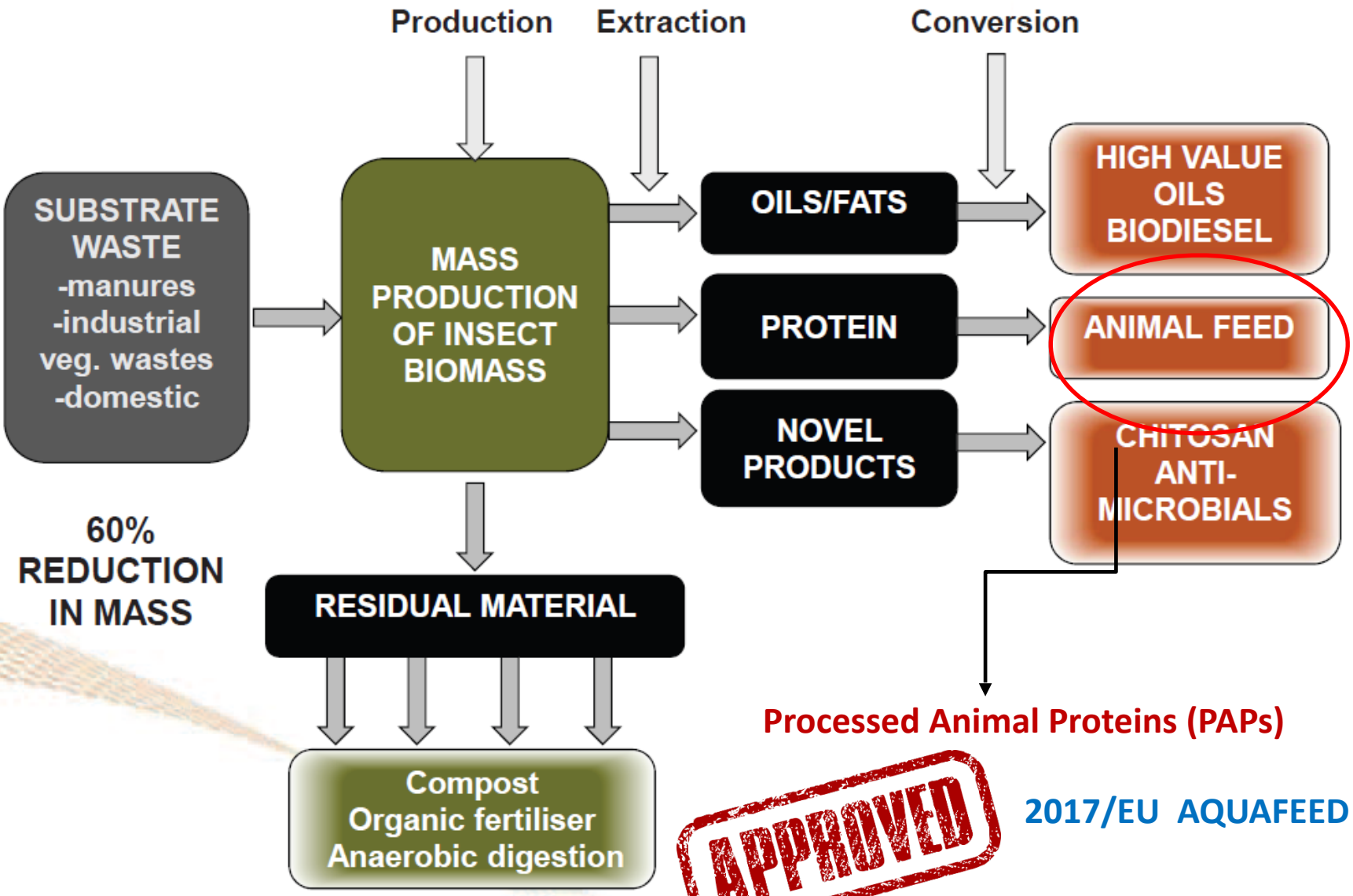
Circular Economy

turning **low value** organic side streams (waste, by-products) into high value products (proteins, lipids, bioactive compounds)



- chitin
- AMP
- FA

Insect Mass Production



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http://www.proteinsect.eu/index.php?id=35

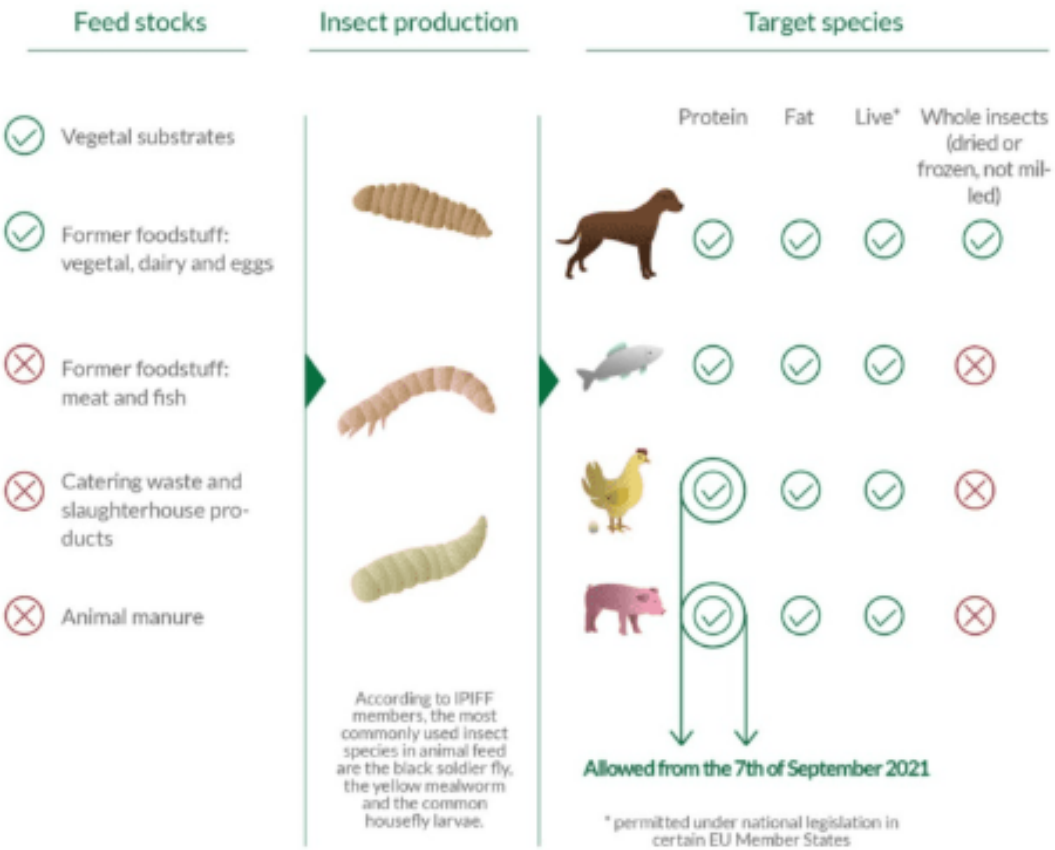
- The Regulation No 2001/999 (Annex IV) amended by the Regulation 2017/893 (Annex X) indeed authorises **the use of insect proteins originating from seven insect species** – namely black soldier fly (*Hermetia illucens),* common housefly (*Musca domestica*), yellow mealworm (*Tenebrio molitor*), lesser mealworm (*Alphitobius diaperinus*), house cricket (*Acheta domesticus*), banded cricket (*Gryllodes sigillatus)* and field cricket (*Gryllus assimilis*) **– in feed for aquaculture, poultry and swine animals**.
- Note: As of November 2021, as part of the EU legislation on animal by-products (i.e. **Regulation (EU) 2021/1925**), the EU legislator authorised the use of silkworm (*Bombyx mori*) processed animal proteins (PAPs) in aquaculture, poultry and pig feed, expanding the list from seven to **eight authorised species**.

http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0893&from=en

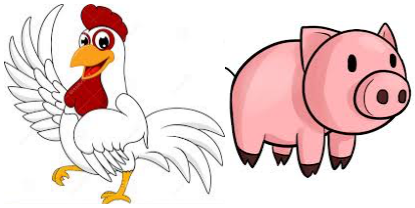
EU LEGISLATION

IPIFF is an EU non-profit organisation which represents the interests of the insect production sector towards EU policy makers, European stakeholders and citizens. Composed of 85 members, IPIFF promotes the use of insects for human consumption and insect-derived products as a top tier source of nutrients for animal feed.

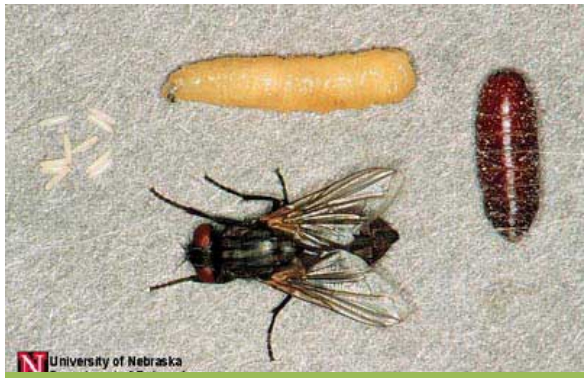
https://ipiff.org



Which insects?

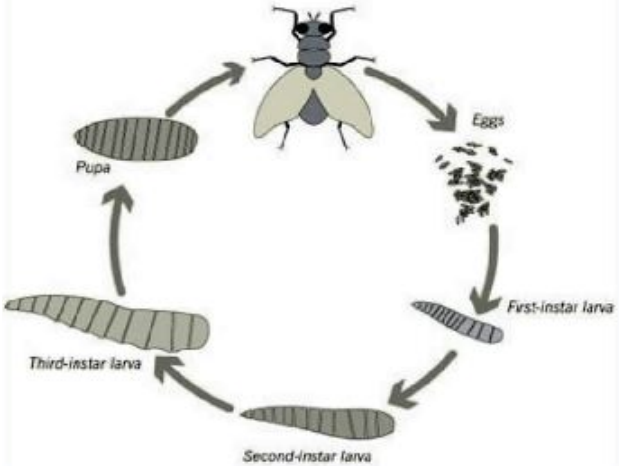




Black Soldier Fly
Hermetia illucens



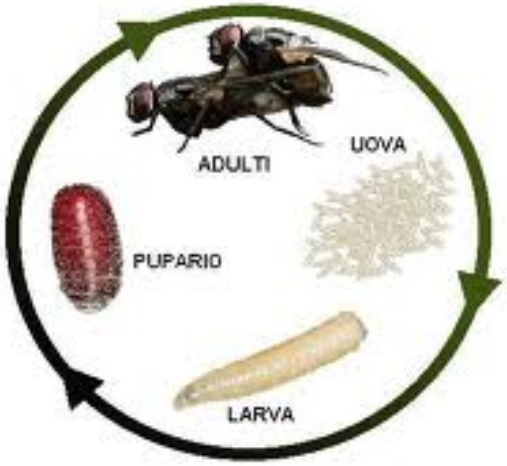
Maggot
Musca domestica

Yellow mealworm
Tenebrio molitor

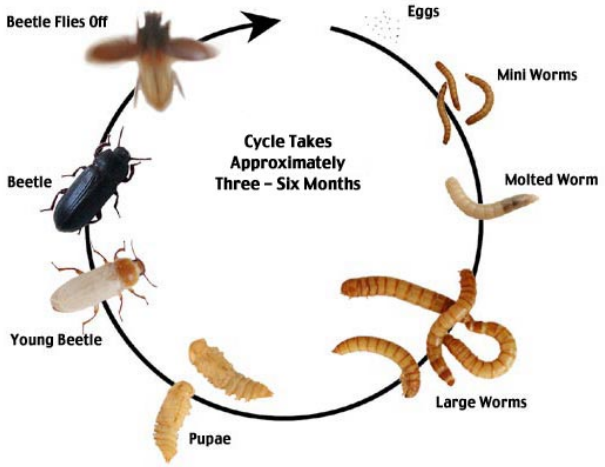


6 – 30 weeks

(Makkar et al., 2014)



5 – 10 d / 45-50 d)
(T° optimal: 35°C)
(Makkar et al., 2014)



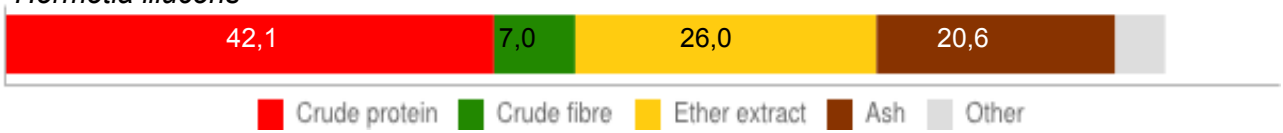
40 – 90 weeks
(Makkar et al., 2014)

https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2016-6396619/feedback/add_en

Insect proximate composition (% Dry Matter)

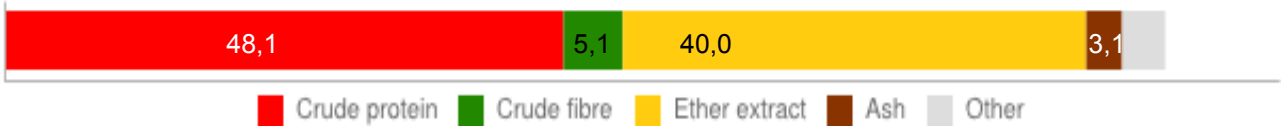
Feedipedia Animal Feed Resources Information System

Hermetia illucens



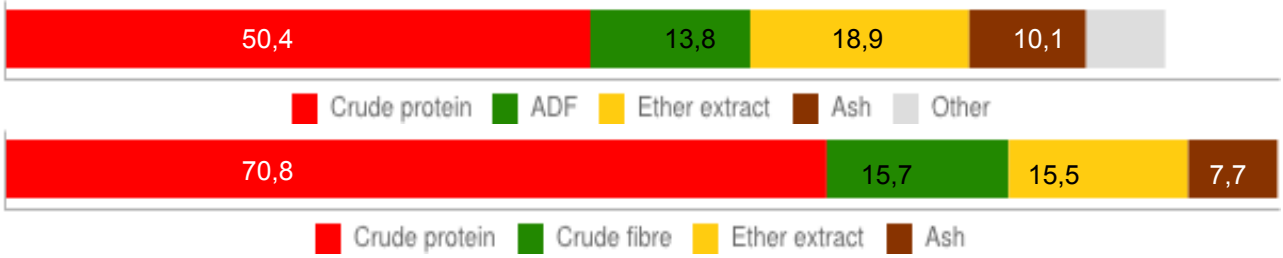
Larvae

Tenebrio molitor



Larvae

Musca domestica



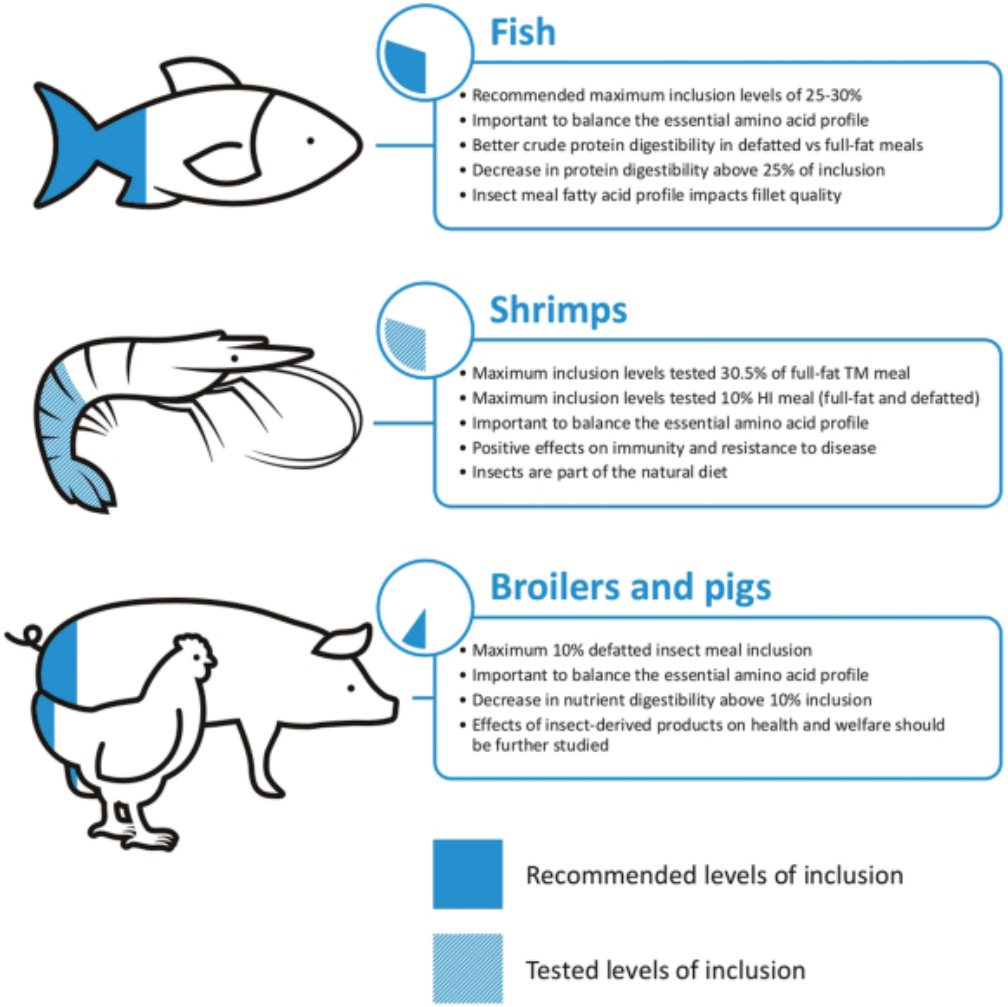
Larvae

Pupae

Bombix mori

Larvae

http://www.feedipedia.org



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INNOVAFEED

ACCUEIL | PRÉSENTATION | EXPERTISES | PRODUITS | CARRIÈRES | NEWSROOM

Auchan SKRETTING TRUITE SERVICE

ETUDE DE CAS

Décembre 2018 : lancement de la 1ère truite « nourrie à la protéine d'insectes » au monde

Faire équipe avec des fournisseurs pour pouvoir nous rassembler autour d'un business plus durable est clé. Pour une croissance durable, il faut des matières premières durables et la protéine d'insectes en est définitivement une.

En 2018, Innovafeed a rassemblé toute la filière pour offrir aux consommateurs français la première truite « nourrie à la protéine d'insectes » au monde.

Innovafeed, le piscicole Truite Service, le distributeur Auchan, le label Mister GoodFish et le formulateur d'aliments Skretting ont combiné leurs expertises pour permettre le succès de cette initiative pionnière.

- **50 % de la farine de poisson** présente dans l'alimentation de la truite a été remplacée par la **protéine d'insectes d'Innovafeed**
- Les truites « nourries à la protéine d'insectes » sont **disponibles sur les étals de plus de 50 magasins** dans le nord de la France
- **200+ poissonniers chez Auchan ont été formés**, et un **label spécifique « nourrie à l'insecte »**

Fort du succès de la truite «nourrie à la protéine d'insectes», l'équipe a décidé d'aller encore plus loin et a lancé la «truite durable» en février 2020:

- 50 % de farine de poisson toujours remplacée par des protéines d'insectes
- Une partie de l'huile de poisson remplacée par de l'huile de micro-algues pour augmenter la teneur en oméga 3 des filets

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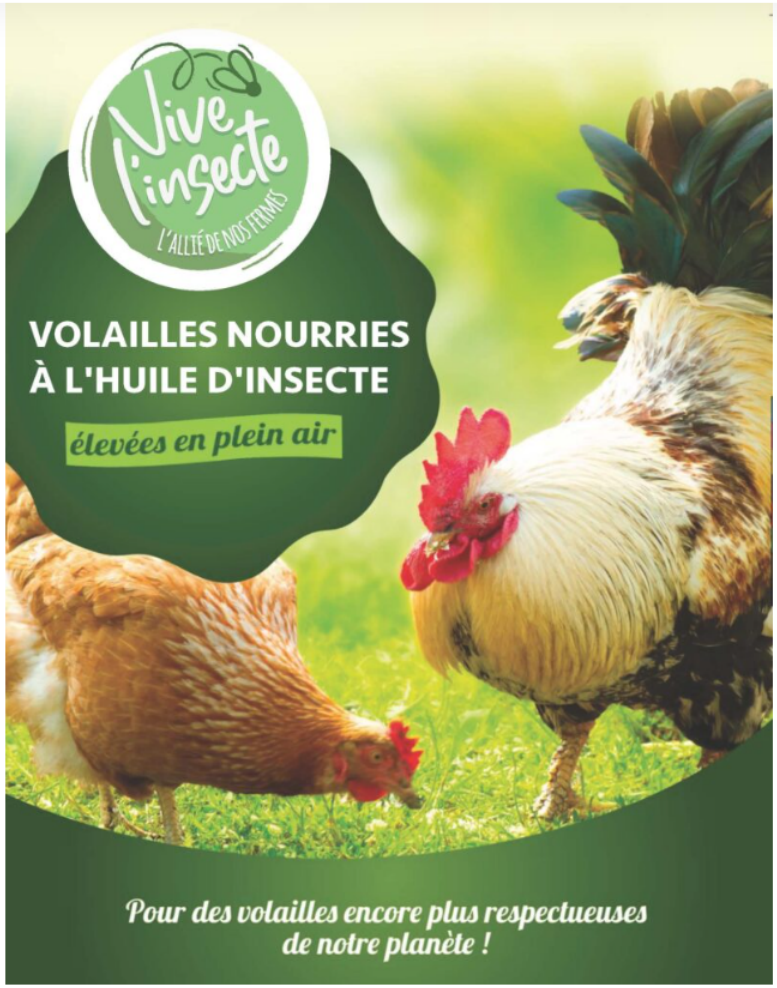
INNOVAFEED

ACCUEIL PRÉSENTATION EXPERTISES PRODUITS CARRIÈRES NEWSROOM



ETUDE DE CAS

Juin 2020 : Innovafeed lance la 1ère volaille au monde à l'alimentation enrichie en huile d'insecte

Cette première mondiale résulte de l'étroite collaboration de toute une filière, de la ferme à l'assiette, réunie par Innovafeed. Ces acteurs ont combiné leur savoir-faire et leur expertise pour offrir aux consommateurs une volaille naturelle et durable pour laquelle 100 % de l'huile de soja présente dans les rations d'élevage a été remplacée par de l'huile d'insectes.

Cette approche a été détaillée auprès des consommateurs grâce à un marketing et un label dédiés. Les équipes de ventes des supermarchés Auchan, spécifiquement formées, ont reçu des commentaires positifs de consommateurs désireux d'en savoir plus sur cette initiative.

Le formulateur d'aliments Nealia a souligné que le remplacement de l'huile de soja par l'huile d'insectes d'Innovafeed a un impact positif sur la croissance, la santé et le bien-être des volailles.

Suite au lancement de cette filière pionnière, Malvoisine a déposé une demande d'inclusion de l'huile d'insectes dans le cahier des charges de la volaille Label Rouge.

En décembre 2020, Innovafeed a annoncé le lancement d'une autre première mondiale en partenariat avec Le Porcilin pour commercialiser des porcs nourris avec de l'huile d'insectes d'Innovafeed en janvier 2021.

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SKRETTING

Feed & services for aquaculture | Transparency & trust | Sustainability | Innovation | T

Skretting > News and stories > Klaas Puul and Skretting partner to supply sustainable shrimp to European supermarkets

Klaas Puul and Skretting partner to supply sustainable shrimp to European supermarkets

Partnerships | Sustainability

19 January 2023

Leading Netherlands-based shrimp importer Klaas Puul is teaming up with Nutreco-owned Skretting, the largest shrimp feed manufacturer in Ecuador, and Dutch sustainable feed ingredient suppliers Protix and Veramaris to supply supermarkets across Europe with more sustainable shrimp produced in Latin America.

SHRIMP | FEED INGREDIENTS | CLIMATE CHANGE +9 more 17 January 2023, at 9:29am

Skretting to include more insects and algae in their shrimp feeds

Dutch shrimp importer Klaas Puul is teaming up with Skretting, the largest shrimp feed manufacturer in Ecuador, and the feed ingredient suppliers Protix and Veramaris to supply supermarkets across Europe with more sustainable shrimp.

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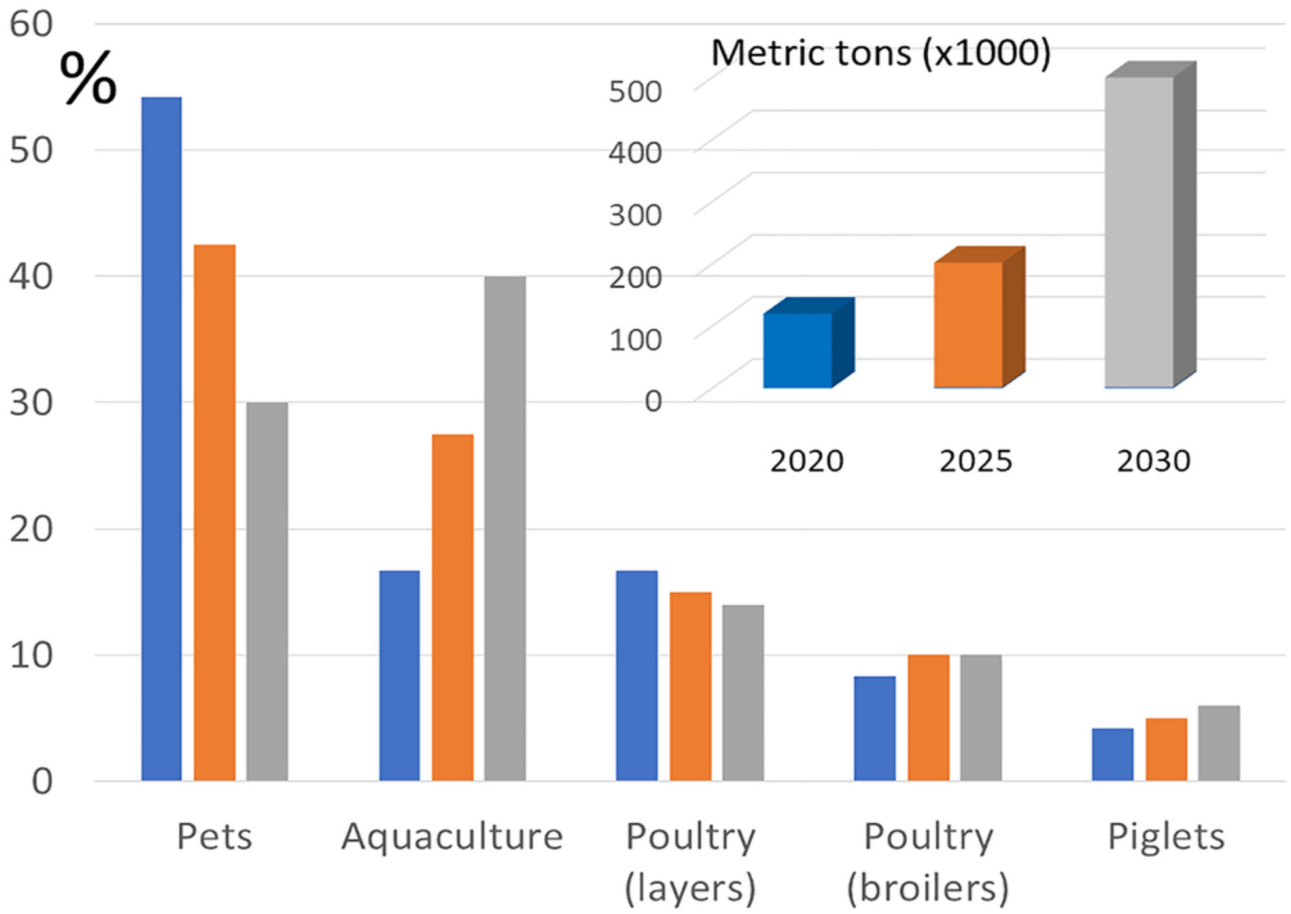
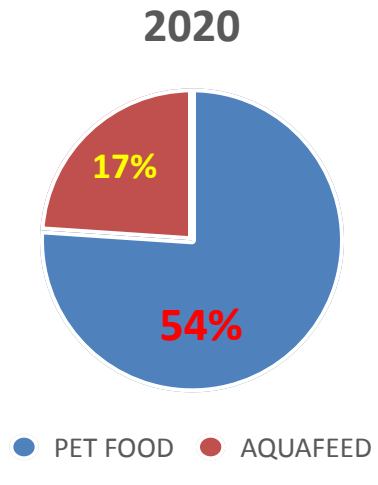


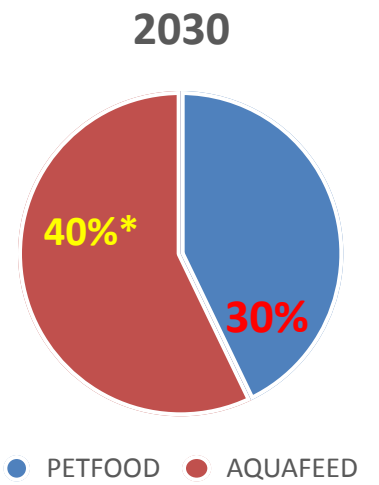
VAN HUIS (2022) Entomological Research, Volume: 52, Issue: 4, Pages: 161-177, First published: 19 April 2022, DOI: (10.1111/1748-5967.12582)

PROTEINE DA INSETTO: QUALE MERCATO/PREZZO???*

120.000 TONN (2020)

500.000 TONN (2030)





3.5 – 5.5 €/TONN (2020)

1.5 – 2.5 €/TONN (2030)

* PARI A 200.000 TONN

*** According to Rabobank (NL) analysis**

Take home message

Large quantities and consistent quality and chemical composition of insect meals are required for use in animal feed.

Nowadays, the insect production is still very limited if compared to possible market share. Indeed, the current **Europe insect protein production is estimated of about 5000 tons**.

Considering a global feed production of 1235.5 million metric tons in 2021, of which aquaculture represents about 4.15%, to include 5% or 10% on insect meals in aquafeeds would require 2.57 and 5.14 million tons of product, respectively.

Those values are far from being achieved even if the productions are booming also thanks to the growth in the number of producers and in their size.

Today, **54% of the insect production** is used by the **pet food market whereas only 17% is devoted to aquaculture**.

However, a recent RaboBank report indicated a proportional increase in the aquafeed share up to 40% of the total by 2030 and an expected European total production capacity of **1 million metric tons**.

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