International Platform of Insects for Food & Feed (IPIFF)

59 avenue Adolphe Lacomblé, B.8

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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.

Yet, the use of these materials has **not** been **specifically regulated by the EU legislator**: like live insects which remain subject to a 'national authorisation regime'[1], the feeding of farmed animals (e.g. poultry animals) with whole dried insect larvae has been commonly accepted in several EU countries (e.g. France and the Netherlands). Considering that the latter possibility may have indeed been perceived as a 'grey area' under EU law, it *de facto* allowed the development of a customary practice under national legislation.

2. Current EU legislative framework

By creating the entry 9.16.2 *'Terrestrial invertebrates, dead'* in Regulation (EU) No 68/2013 in the Catalogue of feed materials, the EU legislator acknowledged the possibility to use whole (treated) larvae in animal feed.

[1] Live insects do not fall within the remit of the EU animal by-products legislation.

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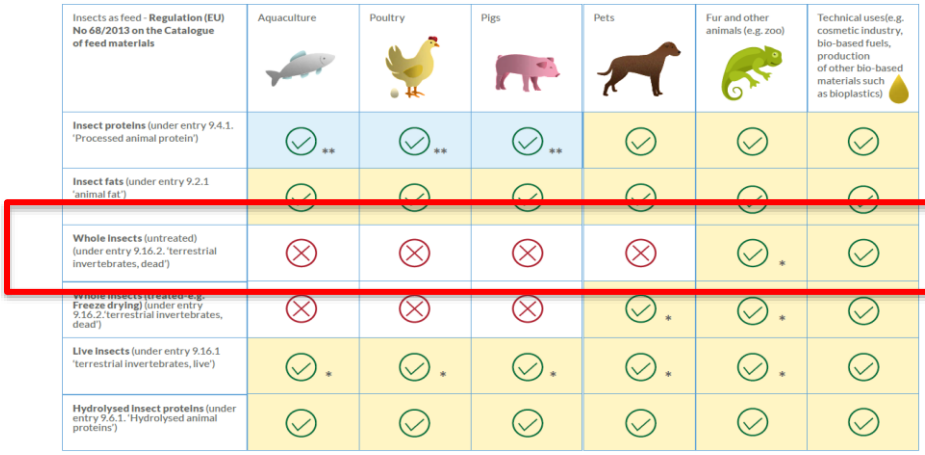

Insects as feed - **Regulation (EU) No 68/2013 on the Catalogue of feed materials**	Aquaculture	Poultry	Pigs	Pets	Fur and other animals (e.g. zoo)	Technical uses(e.g. cosmetic industry, bio-based fuels, production of other bio-based materials such as bioplastics)
Insect proteins (under entry 9.4.1. 'Processed animal protein')	✓ **	✓ **	✓ **	✓	✓	✓
Insect fats (under entry 9.2.1 'animal fat')	✓	✓	✓	✓	✓	✓
Whole insects (untreated) (under entry 9.16.2. 'terrestrial invertebrates, dead')	✗	✗	✗	✗	✓ *	✓
Whole insects (treated e.g. Freeze drying) (under entry 9.16.2.'terrestrial invertebrates, dead')	✗	✗	✗	✓ *	✓ *	✓
Live insects (under entry 9.16.1 'terrestrial invertebrates, live')	✓ *	✓ *	✓ *	✓ *	✓ *	✓
Hydrolysed insect proteins (under entry 9.6.1. 'Hydrolysed animal proteins')	✓	✓	✓	✓	✓	✓

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)

Being 'slightly' transformed (e.g. drying or freeze drying) without changing the shape and/or the structure of the product, whole dead insects have a different regulatory status than **'processed' materials** (i.e. insect oil or meal) under the EU animal by-products legislation (Regulation 1069/2009)[2]. These are indeed **not eligible as feed for farmed animals** (excluding fur animals). However, such products remain eligible for use as feed for pet food if destined to a pet food manufacturing plant or are intended to feed other non-farmed animals, e.g. zoo animals, reptiles, birds of prey (if 'authorised at national level' under article 18 of Reg. 1069/2009).

In the recent past, the **European competent authorities** (i.e. European Commission services) **have clarified the 'regulatory status' of these products** accordingly (i.e. prohibition of use as feed for farmed animals), which incentivised the above-mentioned EU countries (i.e. that previously admitted their use) to reconsider their initial position[3].

The creation of EU standards for whole insect larvae is instrumental towards unleashing the potential of insect farming

1. A complementary solution with the view to addressing challenges faced by the European livestock producers

While insect larvae (e.g. alive or dead) are a **natural component** of carnivorous fish and several monogastric animals' diets (e.g. poultry animals), these are particularly **suited for certain production segments**, including free range and/or organically produced laying hens.

Yet, the **absence of EU standards** regulating their use (i.e. their use remains subject to 'national authorisation' in the case of live insects while the use of whole treated larvae is prohibited when intended as feed for farmed animals) does hinder their **possible use by European farmers**.
In that context, the extension of the current EU possibilities (e.g. use of insect PAPs and oil as feed for aquaculture and monogastric animals) to whole (treated) insect larvae **will offer additional locally-available solutions** for livestock producers who are in seek of **complementary and** (innovative) **nutritious protein-rich feed ingredients/products**.

[2] Drying is not considered as a 'processing method' according to the ABP legislation.
[3] Information note from the FR authorities published on 4 December 2019).

More generally, the development of **new local** feed sources is consistent with the principles of **the Circular Economy** and can present an **upgrade** for the use of **former foodstuffs** and other **underused materials**. It can also contribute to boosting livestock farmers and feed chain partners' efforts towards fostering better **protein self-sufficiency** in Europe.

2. Insect larvae have beneficial effects on animal health and welfare

Available scientific literature is showing **promising results** regarding the beneficial effects of whole (dead) insect larvae on animal **health** and **welfare**, notably thanks to their satisfactory nutritional profile (e.g. amino acid, fatty acids).

- Firstly, several studies[4] have found that the substitution of soy bean meal by whole dried insects does **not** negatively impact on the **overall performance** of free-range laying hens (i.e. no negative impact on body weight, feed intake, feed conversion ratio or egg production were reported).

- Rich in chitin[5], lauric acid and antimicrobial proteins (AMPs), insect larvae also have a positive impact on the **health** of the targeted animals (by reinforcing animals' natural defence and gut microbiota)[6], thereby **contributing to antibiotic reduction in husbandry**. These properties make them particularly suited for use in organic farming, where the use of antibiotics is prohibited;
- The use of these products has also proven to bring **substantial improvement** on the **welfare of farmed poultry animals**, allowing for natural foraging behaviour and contributing to reduce stress and cannibalism in husbandry[7], thereby forming a **suitable environmental enrichment material** (birds reared indoors, laying hens to avoid/limit pecking)[8].

3. Whole (treated) insect larvae must adhere to stringent safety standards

Unlike live insects, whole insect larvae which were previously authorised (by certain EU countries) for use in the feed ratio of farmed poultry animals had to undergo a specific treatment - although not 'processed' in accordance with ABP - which make them very suitable as animal feed material. Notably, these treatment methods (e.g. micro wave, pasteurisation, drying, blanching …) have proven **to reduce the risks of microbial contamination significantly** compared to non-treated insects[9], so these products have **a 'comparable 'safety status' as of processed animal proteins (PAPs)** derived from insects - the latter being subject to specific processing methods and/or microbiological criteria as provided in Regulation (EU) No 142/2011.

IPIFF proposals for reforming the current EU regulatory framework

IPIFF pleads for the **establishment of EU tailored rules** - the framework of the EU ABP legislation – in order to regulate the use of whole (treated) insect larvae in feed for farmed animals.
To this end, we suggest that their **regulatory status** is aligned with the rules applying to **insect PAPs intended for aquaculture animals**. This option would materialise as follows:

- The establishment of an **EU standard/processing method** for the 'drying' and other treatments used to sterilise whole dead insects prior its subsequent feeding to farmed animals (e.g. in annex IV of Regulation (EU) No 142/2011.). The main parameters of such method would be based on criteria

[4] E.g. Ruhnke et al., 2018
[5] Notably, chitin stimulates the immune system with antioxidant and antimicrobial effects and attention to digestibility (Jozefiak, 2016; Gasco *et al.*, 2018, Lee *et al.*, 2018)
[6] Józefiak and Engberg, 2017; Gasco *et al.*, 2018)
[7] Jozefiak, 2*016.*
[8] Ruis*et al.*, 2018
[9] Wang, 2017

foreseen for the existing method 7 (i.e. setting of microbiological criteria for *Salmonella*, *Enterobacteriaceae* and *Clostridium perfringens*).

- 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**[10] in feed for aquaculture animals, pursuant to Annex X, section 1 2. Regulation (EU) No 142/2011: 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*).

[10] This list of 'authorised species' should soon be enlarged (by the end of 2021) and include silkworm.