

# 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.

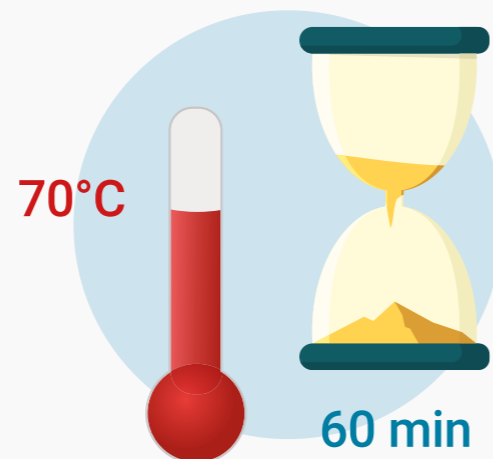
*'61. 'frass' means a mixture of excrements derived from farmed insects, the feeding substrate, parts of farmed insects, dead eggs and with a content of dead farmed insects of not more than 5% in volume and not more than 3% in weight.*

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).

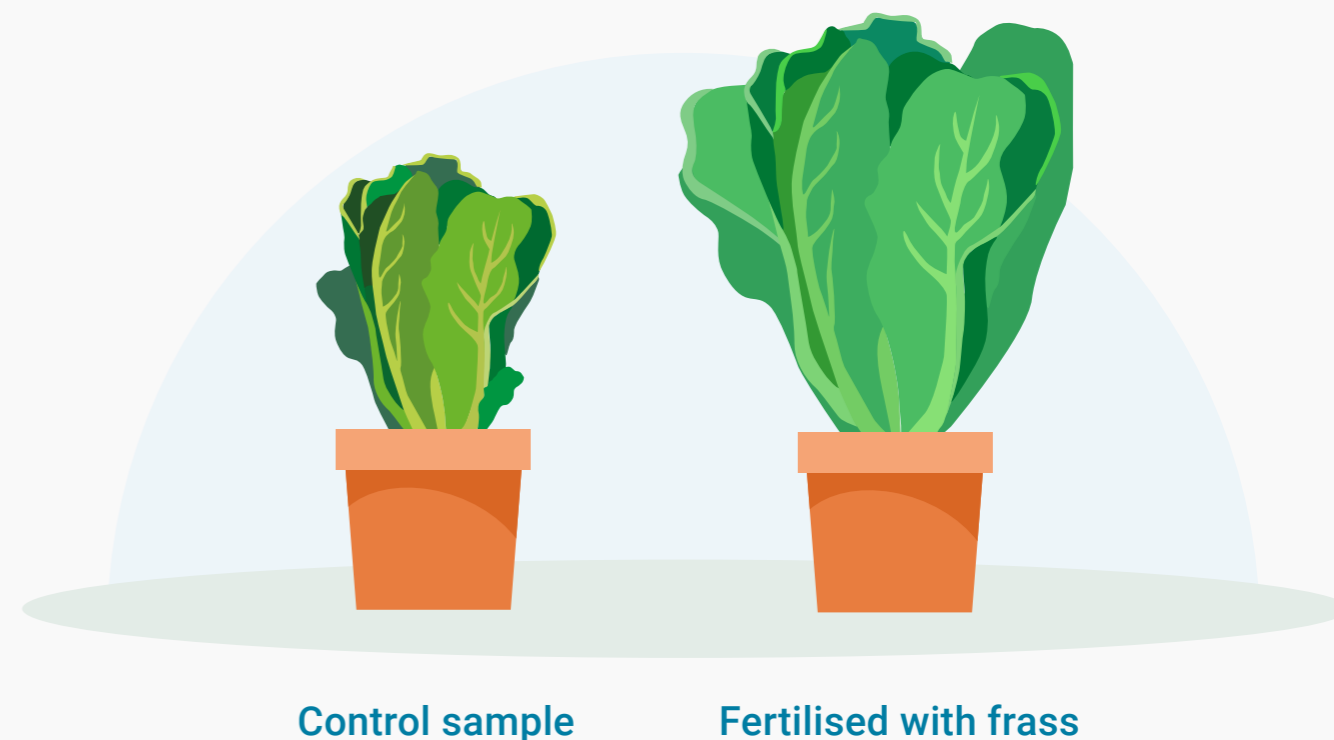
## 2. What are the benefits of insect frass?

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 product 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 **speciality 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 wireworm populations.



### 3. Implications of the latest regulatory reform

**01** The creation of EU standards for insect frass plays a key role in harmonising the processing standards in the Member States. While in the past some national competent authorities adopted more stringent thermal treatment measures (e.g. pressure sterilisation) or specific separation steps, operators from across the EU shall now comply with the time/temperature norms, as well as with the EU definition put forward by Regulation (EU) 2021/1925 (e.g. complying with the dead insects threshold on mass and volume and the microbiological threshold).

**02** While the entry into force of these standards is immediate in all the Member States of the EU, operators registered as frass producers at national level may also be subject to a 'transitional measure' until November 2022 (annex XI, chapter I, section II (c.) of Regulation (EU) No 142/2011) – benefiting from the possibility to adapt to the new norms in case the Member States relied on national measures so far. More concretely, national competent authorities may apply 'tailor-made' methods to comply with the parameters (e.g. a different time/temperature combination may be applied, if the safety of the end-product is guaranteed).

#### Who can place frass on the market?

Similar to the process relevant for producers of other types of organic fertilisers, frass producers shall be approved by their local/national authorities (source: IPIFF Guide on Good Hygiene Practices). This step is necessary in ensuring compliance with the legislation – while also allowing both established and new operators to demonstrate alignment with the norms (e.g. the end-product is in conformity with the microbiological criteria or hygiene standards).

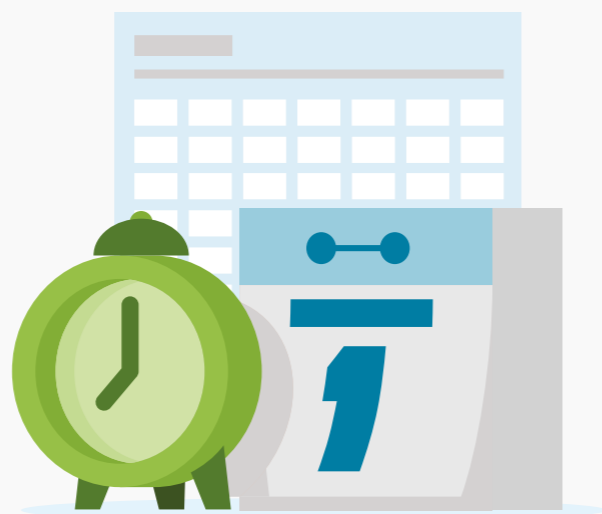
#### Opportunities in the field of organic agriculture



Additionally, frass processed in line with the new norms mentioned in the 'animal by-products' legislation may also be used in EU organic agriculture – following the entry into force of the new organic Regulation (i.e. 1st of January 2022). While frass was already allowed in organic production by certain EU MS, the Regulation (EU) 2021/1165 clarified that processed frass may be applied as fertilising product in EU organic agriculture.

#### What comes next?

IPIFF acknowledges that the recent regulatory changes are of key relevance as they pave the way for the creation of a level-playing field for the processing of insect frass at EU level. Building on the good practices implemented at farm level, while taking into consideration latest scientific knowledge on other processing methods for insect frass, the European insect sector is committed to working on further optimising these techniques. IPIFF remains equally interested to explore the possibilities of creating more tailored standards (the so-called end point 'in the manufacturing chain' for insect frass) than the 70° C for one-hour treatment. Such a step would indeed allow enlisting insect frass under the Component Material Category (CMC) 10 included in Regulation (EU) 2019/1009 (i.e. the creation of EU 'generic' standards/category for insect frass under the EU fertilising products legislation would contribute to smoothen national authorisation procedures and allow free trade across the European Union).

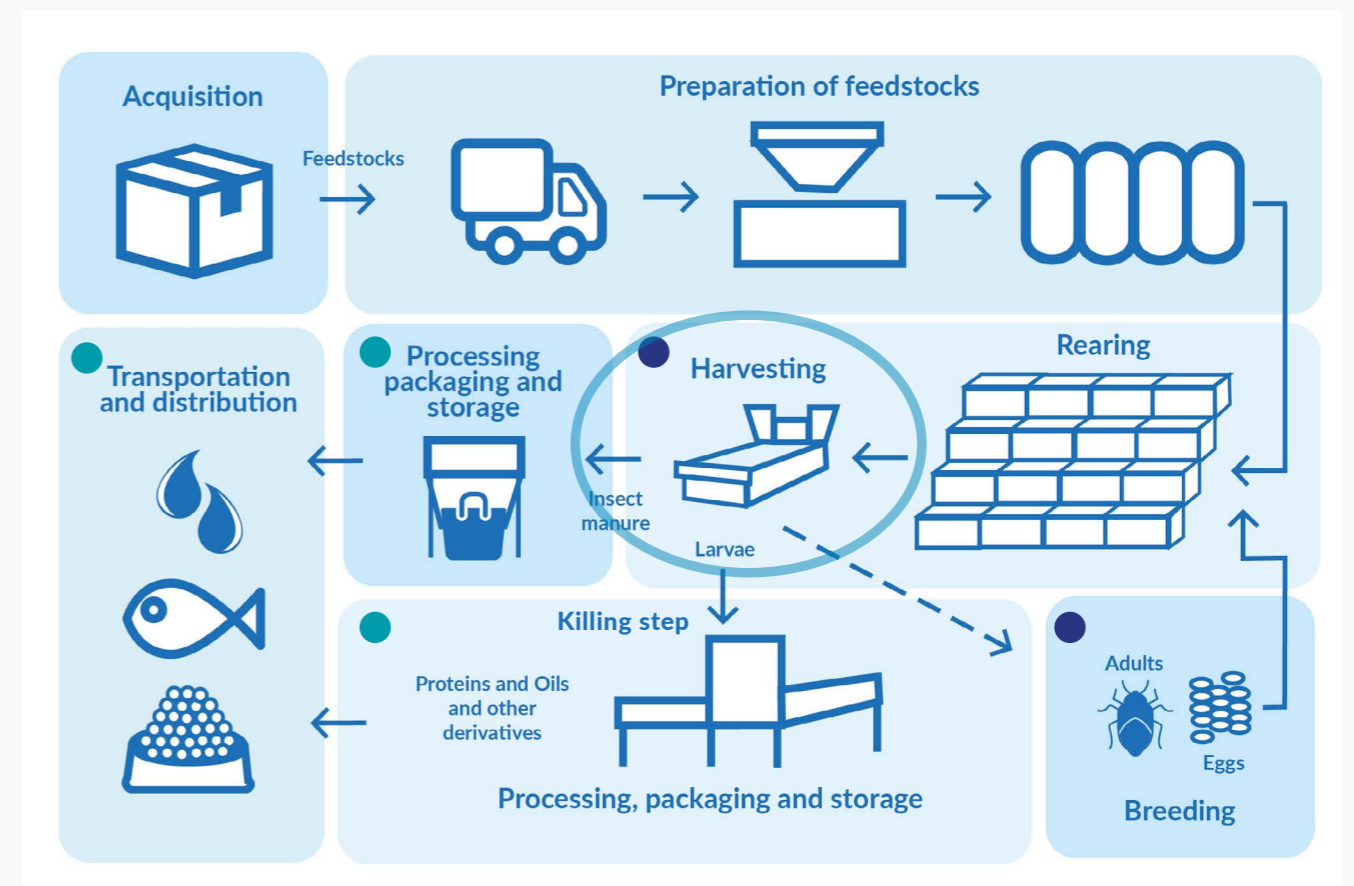


### Standards applying for the composting of insect frass and biogas production (annex V, chapter III of Regulation (EU) No 142/2011)

In addition to thermal treatment, the EU legislation also foresees the possibility to process animal by-products through composting or via their transformation into biogas. Such processing method is covered by a different section of the legislation on animal by-products – that gives the national competent authority the possibility to rely on a derogatory regime (i.e. relying on parameters that substitute the 70 degrees/one-hour time/temperature combination). Yet, such a mechanism should be compliant with microbiological limits, guaranteeing the safety of the end product. Discussions on possible alternatives to the above-mentioned time/temperature combination for the use of frass in composting or biogas processes are also currently ongoing (e.g. such possibilities may be enforced after a consultation of the European Food Safety Authority).

#### 4. Quick overview of Manufacturing Practices

As part of the harvesting step, insect operators use various techniques (sieving, float/sink separation) with the view to obtaining the separation of whole insects (which are used as whole or processed into e.g. proteins and fats) from insect frass. As displayed in the visual below, the harvesting step precedes the processing step (e.g. heat-treatment of insect frass).



● Primary production ● Processing activities

source: IPIFF Guide on Good Hygiene Practices.

Insect frass mostly comprises insect excrements derived from insect larvae. To ensure that the product is aligned with the microbiological standards, a heat-treatment method is applied in view of its sterilisation. This step leads to the destruction of possible pathogenic microorganisms.

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