

# ENSURING HIGH STANDARDS OF ANIMAL WELFARE IN INSECT PRODUCTION



With the world population expected to top 10 billion by 2050<sup>1</sup>, food production needs to increase by 70% and demand for animal products is expected to double. Insects provide a solution to the demand for sustainable and high-quality protein to feed both this growing population, livestock and aquaculture. As production initiatives flourish across Europe, we believe it's our role to encourage good practices for the ethical production of insects.

IPIFF, the [International Platform of Insects for Food and Feed](#), and its members are taking animal welfare very seriously. We are committed to promoting good welfare practices in husbandry, transport and at the point of death, caring for insects' well-being.

## PROMOTING ANIMAL WELFARE FOR THE SECTOR IN EUROPE

We believe Brambell's 5 degrees of freedom<sup>2</sup> constitute a good basis for the establishment of good welfare practices provided that these take into account insect production specificities and invertebrates characteristics. We, therefore, encourage all insect producers to embrace the following principles and commit to:



<sup>1</sup> [The future of food and agriculture, Trends and challenges, Food and Agriculture Organization of the United Nations, Rome, 2017.](#)  
<sup>2</sup> [Report of the Technical Committee to Enquire into the Welfare of Animals kept under Intensive Livestock Husbandry Systems, the Brambell Report, December 1965 \(HMSO London, ISBN 0 10 850286 4\).](#) Brambell's 5 degrees of freedom (created by the Farm Animal Welfare Council (FAWC) based on Brambell first work) are taken into consideration as a EU shared methodology for farmed animals. Even though insects as invertebrates do not share the same biological characteristics of livestock animals, the scientific evidence regarding insect welfare is still too little for the creation of 'their own' freedoms.  
<sup>4</sup> See Chapter 5 of the [IPIFF Guide on Good Hygiene Practices](#) - Overview of processing methods applied to insects intended for human consumption and animal nutrition/5.2 Killing methods.

## 01 | FREEDOM FROM HUNGER AND THIRST:

- Provide sufficient food and water during transport and housing<sup>3</sup>.
- Provide adequate temperature and ventilation conditions.
- Ensure an adequate environment and the application of tailor-made techniques that take into account their particular characteristics.

Source: [IPIFF Guide on Good Hygiene Practices page 60.](#)

## 02 | FREEDOM FROM DISCOMFORT:

- Respect the physiological needs of the insects, providing them with the most adequate environment to foster their optimal growth such as through climate control.
- Work towards optimal transport conditions; whenever possible, limiting transport time, and ensuring adequate temperature and ventilation during transport remains within the bandwidth of natural habitat.

## 03 | FREEDOM FROM PAIN, INJURY OR DISEASE:

- Refrain from using materials that are likely to injure the insects by managing optimal and adequate space, in accordance with each species' needs and only use killing methods that ensure the rapid death of the insect so as to reduce the potential pain risk.
- Ensure that the substrate used in insect farming does not pose risks for the animals (e.g. pathogens) through gatekeeping procedures. In addition, between batches, the equipment used in the farming process (e.g. crates where the insects develop/are reared) should be thoroughly cleaned, if needed. These processes are practical for environmental and economic considerations – without having to rely on agrochemicals such as antibiotics (e.g. should a pathogen/an infection occur) or disinfectants<sup>4</sup>.
- In the exceptional case of a pathogen is identified in an insect population, contaminated populations should be isolated or, if necessary, killed to preserve the healthy livestock from its spread. Yet, such cases are very rare and their occurrence is also prevented by good hygiene and farming practices.

Source: [IPIFF Guide on Good Hygiene Practices – Chapter 2](#)

## 04 | FREEDOM TO EXPRESS NORMAL BEHAVIOUR:

- Only use housing or husbandry practices that allow for a normal behavioural pattern providing optimal temperature, light, humidity and density levels according to each species' needs and different life cycles.
- Optimise and tailor the rearing conditions according to the specific insect species to ensure that these risks are minimised.

Source and more information: [IPIFF Guide on Good Hygiene Practices – Chapter 4](#)

## 05 | FREEDOM FROM FEAR AND DISTRESS:

- Keep abreast of the latest science regarding the potential experiences of fear or distress in insects.
- Ensure an adequate environment and the application of tailor-made techniques that take into account their particular characteristics.

Source: [IPIFF Guide on Good Hygiene Practices page 60](#)



## ANIMAL WELFARE RULES MUST ADAPT TO THE SPECIFIC REALITIES OF INSECT PRODUCTION

It's critical that welfare standards are adapted to the specificities of insect production. Vertebrates and invertebrates are fundamentally different and it's our mission to respect each species' physiological needs.

- Contrary to vertebrates, some insect species thrive when bred in a densely populated environment – growing conditions must be set for each specie individually, to provide them with the most adequate environment (e.g. temperature, light), close to their natural habitat.
- Insect producers have to overcome very specific challenges linked to some species' natural instincts, cannibalism being one of them – special attention is required to allow normal behavioural patterns while limiting injuries and unintended deaths.
- Exsanguination with prior sedation, stunning or anaesthetic, is often used to ensure the least suffering as possible during the killing process of animals. However, this is not applicable for insects for which other methods should be applied (e.g. freezing, heating or mincing) in order to ensure a quick death and reduce potential pain risk.
- Insect producers should follow good agricultural practices that are developed taking into consideration the biological characteristics of the farmed insect species. For example, as mentioned in the [IPIFF Guide on Good Hygiene Practices](#), 'the insect colony must be enclosed and secured to facilitate pest control and prevent livestock escape. It is common to use multiple self-contained spaces, each with its own population, water supply food sources, and space maximisers'.



Credits to Ynsect

## FURTHER RESEARCH ACTIVITIES SHOULD BE DEVOTED TO THE SUBJECT OF INSECT WELFARE

There are knowledge gaps on whether invertebrates experience well-being or pain, and whether those sensations apply to all insect species equally, and at which physiological stage.

There are also common misconceptions related to the relation between nociception (the sensory nervous system's response to potentially harmful stimuli) and pain<sup>5</sup> (an unpleasant sensory or emotional experience) which require a clear distinction. The current lack of scientific evidence around invertebrates' welfare makes it very difficult to develop science-based welfare rules for insect production. IPIFF is therefore calling for more thorough investigations in this field.



Credits to Micronutris

## OUR CALL FOR ACTION

IPIFF is calling for:

1. All insect producers to abide by high standards of animal welfare and care for insect well-being;
2. Any new policy or legislation in this area to be science-based and take into account the specificities of insect species and the technical realities of insect industrial production;
3. More funding to be made available for research on insect welfare;
4. A continuous dialogue with EU decision-makers and non-institutional partners to maximise fair solutions for insect producers while promoting best practices in production activities.

<sup>5</sup> Some studies have been conducted on insect reflexes to pain such as '[Is it pain if it does not hurt? On the unlikelihood of insect pain](#)' (Shelley A. Adamo, 2019), '[Toelatingsprocedure voor insecten als mini-vee. Voor het plaatsen van nieuwe insectensoorten](#)' (Hakman, A.; Peters, M.; Huis, A. van, 2013), '[Welfare of farmed insects](#)' (Huis, A. van, 2020), '[Wouldn't hurt a fly? A review of insect cognition and sentience in relation to their use as food and feed](#)' (H. Lambert, A. Elwin, N. D'Cruze, 2021) and '[Neural Design Principles for Subjective Experience: Implications for Insects](#)' (B. Key et al., 2021).

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