

# Prospects

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## The point of view

### Insects as a source of protein for animal feed

With the global population and demand for proteins growing steadily, insects are considered – notably by the Food and Agriculture Organization of the United Nations (FAO) – a promising future food resource for both humans and livestock. In France, large-scale projects to produce insect flour for use in animal feed are proliferating. Let's try to throw some light on this emerging sector.

#### A new market

Regulatory blocks on the use of insect protein in animal feed are gradually being removed: having initially authorising its use in pet food, in 2017 the European Union approved its use in aquaculture. At the same time, fish stocks are coming under increasing pressure, with 22% of fish catches used in animal feed (source: FAO) and demand for proteins for animal feed set to increase by almost 50% between now and 2050. One of the solutions to meet this additional demand for protein is the use of insect protein. The International Platform of Insects for Food and Feed (IPIFF) estimates that European production could grow from almost zero today to nearly 3 million metric tons by 2030.

#### Virtuous production

One argument for the use of insect protein in animal feed lies in the details of how insect protein is produced. Compared with plant protein (for example soya), insect protein requires considerably less space and water to produce a given quantity of protein. Another factor highlighted by promoters of insect protein is the circular economy; insects are fed with by-products from cereal or the agri-food industry, which means waste can be limited through the use of elements that would otherwise go largely unused. Lastly, insects are used to produce not only protein but also insect oil rich in fatty acid (used in livestock feed) and fertiliser for the agricultural sector.

#### Two models

Protein is mainly produced from two insects, the black soldier fly (*Hermetia illucens*) and the mealworm (*Tenebrio molitor*), with the majority of players preferring the former. These insects have been selected for their high bioconversion rates and ease of rearing. However, it would be a mistake to think they were similar. The mealworm feeds on cereal by-products (wheat bran or rice bran), while the soldier fly feeds on agri-food industry by-products, which are by nature more variable in composition. In fact, the choice of each of these insects corresponds to a different industrial rationale: mealworm tends to be chosen for very large industrial units with centralised supply chains, while the soldier fly lends itself to units of various sizes located very close to a consistent source of inputs.

#### France at the cutting edge

France is the most dynamic country in Europe for insect protein, with an industry that has grown up mainly around two companies, Ynsect and InnovaFeed (both supported by the Crédit Agricole group). Both companies have ambitious goals:

Ynsect, based in the Somme, is building its first industrial-scale vertical farm, which should eventually be able to produce 20,000 metric tons of protein a year.

Meanwhile, in 2021 InnovaFeed has officially opened a new facility in Nesle (Somme) and announced a fresh funding round that should enable it to establish itself in the United States.

Behind these two companies, a dozen or so other players have launched out into the market, one example being Invers (based in the Puy-de-Dôme) which, rather than using large industrial production units, has opted to set up a mealworm production network directly on cereal farms, generating an additional income stream for farmers.

Lastly, further downstream, supermarket chain Auchan last summer launched a range of chickens raised on feed enriched with insect oil; this year, it is set to start selling pork produced by the Le Porcilin group of breeders.

## Managing uncertainty

And yet, the future success of insect protein is not guaranteed. Economically speaking, it will only become fully competitive if the price of currently used fish oil rises. Furthermore, a stable bioconversion rate (which measures the amount of protein obtained for a given amount of food input) will be key to being competitive in this market, where capacity growth will tend to push prices down, whereas input prices are likely to follow an upward trajectory.

Lastly, the ultimate size of the market depends on whether the list of animals that can be fed with insect protein is extended – something the European Commission is currently considering for poultry and the pork industry. Meanwhile, on 13 January the European Food Safety Authority (EFSA) approved the use of mealworm flour in human foods, opening the way to its use in the sports nutrition and health food markets if the European Commission gives its green light.

*The processing of insects for use in animal feed requires substantial investment to move to the industrial production stage, in keeping with its promising market prospects. While the sector is certainly bound to develop, its ultimate size will depend on the removal of regulatory, economic, technical and societal roadblocks.*

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