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All the news on ASX-listed agriculture and veterinary companies

Freezem BSF-Titan Black Soldier Flies For Feed, Waste Reduction

Freezem says it has developed BSF-Titan, an “enhanced genetic line of black soldier flies” to increase alternative protein production capacity for livestock and reduce waste.

The Nachshonim, Central Israel-based Freezem said that it used clustered regularly interspaced short palindromic repeats-associated protein-9 (Crispr-Cas-9) to genetically modify black soldier fly, or Hermetia illucens, for protein production.

The company said that BSF-Titan would “reduce industry costs, substantially improve feed conversion rates and provide a sustainable, efficient and accessible way to increase protein production capacity for livestock”.

Freezem said the gene-edited line could be produced using traditional methods, the BSF-Titan had up-to 50 percent larger larvae, and one tonne of black soldier fly protein used 0.67 percent of farmland compared to one tonne of crops.

Freezem said that black soldier flies were “the ultimate recycling machines made by nature, [but] they require adaptation and optimization for large-scale production”.

The company said that the larvae fed on organic waste streams, which could cost up-to EUR40.00 ($A65.22) per tonne in parts of Europe, with a typical insect protein factory needing 15 tonne to produce one tonne of insect meal, costing up-to EUR600, while BSF-Titan could reduce the cost to EUR450 and the increased larvae size reduced production costs by shortening the cycle time with a higher protein yield.

Freezem said it had raised EUR6.3 million in European Innovation Council funding for its genetics team to develop the technology, supported by Israel’s Innovation Authority, with work from Haifa’s Technion and Rehovot’s Weizmann Institute of Science.

The company said it had submitted a patent application for the BSF-Titan and planned validation experiments with partners in 2023 prior to commercialization.

Freezem co-founder and chief executive officer Dr Yuval Gilad told Ag & Vet Weekly that black soldier fly protein was “aimed to feed all farm animals and pets, however, EU regulation currently restricts the use in ruminant feed, where only insect fat and hydrolysed insect protein are permitted”.

“Most of the insect protein produced today is going to the pet food industry - dogs and cats’ food as a sustainable and healthy alternative,” Dr Gilad said. “Dozens of companies have launched [black soldier fly] pet food in the last two years alone.”

Dr Gilad said the insect larvae was used for aquaculture and the use for poultry and pigs was “rising slowly as it is more sensitive to price”.

A table of European Union regulations provided by Freezem said that insect protein was allowed for all categories except ruminants - cattle, sheep, goats and deer - while insect fats were approved for all categories; whole insects were not approved for any farmed animals, but live insects were allowed for aquaculture poultry and pigs, while “hydrolyzed insect protein” was allowed for all categories.

Dr Gilad said there was “limited knowledge” about the health impact on ruminants but black soldier fly protein was “expected to have a positive effect like in other farm animals … [and contained] anti-microbial peptides and lauric acid that improves immunity and the microbiome”.

“It was shown to increase the survival rate in juvenile shrimps, improve poultry growth and egg yield for laying hens, and to have anti-inflammatory effects on farm animals and pets,” Dr Gilad said.

He said black soldier flies had “a clear environmental impact as it grows on organic waste, reducing [greenhouse gas] emissions from untreated waste, requires much less land and water compared to traditional protein sources and helps to reduce fish meal in animal feed, which is a non-sustainable source of animal protein, produced by massive fishing”.

Freezem is a private company.