What are Black Soldier Flies? Some mythbusters

Key Points:

- The Black Solider Fly is one of the most beneficial flies in existence
- Black Soldier Fly larvae break down waste with high efficiency
- Black Soldier Fly farming can produce by-products that can serve as a feed source for animals or as crop fertilisers

Entomology (fly habits)

Black Soldier Flies are native to Australia. FALSE!

Black Soldier Fly (or *Hermetia illucens*) is an introduced species to Australia. It is found close to human habitation, Australia wide. It is less common in cool southern areas.

Black Soldier Flies are a pest. FALSE!

Although the Black Soldier Fly is an introduced species, it is non-invasive and considered one of the most beneficial flies in existence. They are considered non pests and, as they do not have mouth parts, they cannot bite. They are not known to spread disease.

Black Soldier Flies control pest flies. TRUE!

Unlike house flies, Black Soldier Flies lay their eggs next to the feed source not directly on it. The Black Soldier Fly larvae found in organic matter can actually reduce pest fly numbers by consuming the house fly eggs laid on the waste/organic material.

Black Soldier Flies look more like a wasp than a fly. TRUE!

Black Soldier Fly are wasp-like in appearance and behaviour but they do not bite or sting. They are known as a mimic fly and belong to the fly family *Stratiomydiae*. They are elongated in the body and grow to a maximum length of 2cm.

Adult Black Soldier Flies feed on waste. FALSE!

Adult Black Soldier Fly do not feed at all (no mouth part). It is actually the larvae that feed on organic wastes such as compost, cropping and vegetable wastes, carrion, and manure.

Environmental and waste benefits

Black Soldier Fly larvae can reduce the volume of waste by up to 80%. TRUE!

Black Soldier Fly larvae have a high waste degradation efficiency (50% reduction in 24 hours) and can reduce the volume of waste by more than 80% depending on the waste substrate. Reducing the volume of waste will help reduce odour, storage and handling costs, pathogens and pest emergence, whilst diverting waste products from landfill.

Figure 1: Black Soldier Fly larvae feasting on waste

Black Solider Flies can make a good fertiliser. TRUE!

A by-product of Black Soldier Fly farming called 'frass' can be used as a soil amendment and can be an effective, slow-release fertiliser for nitrogen (see fact sheet *Creating fertilisers from agricultural wastes using Black Soldier Fly - mixing frass with solid fatty acids*). Using frass may have the benefit of reducing conventional fertiliser use, saving energy, and reducing greenhouse gas emissions association with fertiliser production.

Closing the loop: Black Soldier Fly technology to convert agriculture waste is a research project under the Rural Research and Development for Profit (RnD4P) program funded by the Australian Government and multiple industry partners.

Australian Government
Department of Agriculture, Fisheries and Forestry

Feed source for animals

Black Soldier Fly larvae are a good feed source for animals. TRUE!

Black Soldier Fly larvae can be harvested and converted into high value protein, calcium and oil sources, suitable for as feed for aquaculture, pets and some livestock such as poultry (see fact sheet *Nutrition of animal feed products produced from Black Solider Fly larvae*).

Black Soldier Fly larvae are used in animal feeds in Australia. TRUE!

Black Soldier Fly larvae are currently found in some states in pelleted poultry feed or in extruded feed for aquaculture. There are still some regulatory requirements in place limiting which animals can be fed Black Soldier Fly larvae.

Black Soldier Fly larvae are natural filters for mycotoxins and pesticides. TRUE!

Black Soldier Fly larvae possess enzymes that reduce the concentration of mycotoxins (produced by some moulds) in both the larvae and frass. Studies have also demonstrated that pesticides do not accumulate in the larvae and that the pesticide concentrations in the frass are lower than the amounts in the substrates fed to the larvae.

Black Soldier Fly larvae do not accumulate heavy metals. Partly TRUE!

While a greater percentage of many heavy metals remain in the frass rather than accumulating in the larvae body, larvae heavy metal levels can still reach high levels especially after processing steps such as desiccation. It is advised larvae and insect feed stocks, fertilisers and land application areas are tested for heavy metal levels to show they are safe for animal feed and to ensure sustainable agronomic levels.

References

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Further reading

For more information and access to reports and publications, visit the website or contact a research team member.

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