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COMMERCIAL PRODUCTION OF BLACK SOLDIER FLY LARVAE

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ABSTRACT

Lack Soldier fly (BSF) is getting a lot of attention because it's great for turning of food and waste into useful stuff like animal feed. Insects are more popular as a source of protein in fish and animal feed. The process of production of BSF is not possible on a large scale. This article shows how to produce BSF using animal manure (from pigs, cows, and chickens) in much bigger amounts.

Introduction:

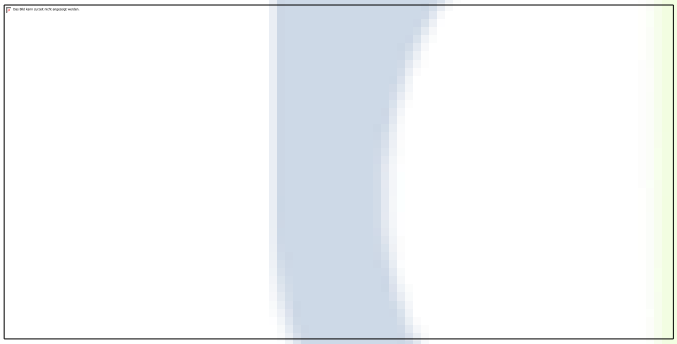
BSF (*Hermetia illucens)* is a sleek-looking fly that may be confused with a wasp. BSF has two wings and does not posses a stinger. It produces a loud buzzing sound when they fly. This species is distributed globally throughout the temperate and tropical regions.

Epidemiology

Asia (Pakistan, India, Bangladesh), Europe (Australia, America). It is believed that BSF originated in South America. BSF larvae can grow in several decaying organic materials, like debris of crops, and feces of humans and animals. During the production phase, temperature, humidity, and food supply are carefully controlled and optimized for the growth of the larvae (3).

Life cycle

Mating can takes place in 2 days after the adult emerges from the pupil case. A female passing in a midair is intercepted by a male (BSF). Eggs are lying in cracks and on organic matter like rubbish, decaying stuff, and dung. A female BSF laying 500 eggs. The eggs take 4 days to change into the larva. The larval stage includes 5 instar stages. Then larva undergoes the pre-pupal stage which takes 10 days. Then changes into the pupal stage and which is non feeding and nonmoving stage. Then larva changes into an adult in 9 days (4).



Figure(1): This diagram shows the explanation of BSF life cycle (8).

Benefits

Black soldier flies can produce unsaturated fatty acids, these unsaturated fatty acids in the field of livestock. BSF larvae are rich in minerals like Ca, Fe, Mg, Na, Zn, and K. These minerals are essential in human and animal diets (5).

Growing areas

BSF are mostly present in outdoor areas and are mostly developed in the area where the organic matter is present. BSF larvae can grow in organic material such as crop debris and feces of humans and animals (6).

Conclusion

By using the process of Bio Conversion of BSF in the cure of organic manure may become a directing product due to its uses. Due to their high production rate due to low cost and their shorter production period, the BSF changes the low-level of inputs that are not useful (7).

References

[1] Chia SY, Tanga CM, Osuga IM, Cheseto X, Ekesi S, Dicke M, van Loon JJ. Nutritional composition of black soldier fly larvae feeding on agro-industrial by-products. Entomologia Experimentalis et Applicata. 2020 Jul;168(6-7):472-81.

[2] Edis.ifas.ufl.edu/publication/IN830

[3] Barrow GI & Feltham RKA (1993) Characters of Gram-positive bacteria. Cowan and Steel's Manual for the Identification of Medical Bacteria (ed. by GI Barrow & RKA Feltham), pp. 66–67. Cambridge University Press, Cambridge, UK.

[4] Liu X, Chen X, Wang H, Yang Q, ur Rehman K, Li W, Cai M, Li Q, Mazza L, Zhang J, Yu Z. Dynamic changes of nutrient composition throughout the entire life cycle of black soldier fly. PLoS One. 2017 Aug 10;12(8):e0182601.

[5] Basri NE, Azman NA, Ahmad IK, Suja F, Jalil NA, Amrul NF. Potential applications of frass derived from black soldier fly larvae treatment of food waste: A review. Foods. 2022 Sep 1;11(17):2664.

[6] da Silva GD, Hesselberg T. A review of the use of black soldier fly larvae, Hermetia illucens (Diptera: Stratiomyidae), to compost organic waste in tropical regions. Neotropical entomology. 2020 Apr;49(2):151-62.

[7] Lievens S, Poma G, De Smet J, Van Campenhout L, Covaci A, Van Der Borght M. Chemical safety of black soldier fly larvae (Hermetia illucens), knowledge gaps and recommendations for future research: A critical review. Journal of Insects as Food and Feed. 2021 Jul 2;7(4):383-96.

[8] Figure: (1) https://www.insectschool.com/uncategorized/understanding-the-life-cycle-of-the-black-soldier-fly/

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