

**(098)****Effect of Poultry Offal as a Substrate for Black Soldier Fly Larvae Production****Satheeskumar, K.<sup>1</sup>, Thiviyalan, Y.<sup>1\*</sup>, Fernando, L.B.<sup>2</sup>, Atapattu, N.S.B.M.<sup>1</sup>**<sup>1</sup>*Department of Animal Science, Faculty of Agriculture, University of Ruhuna, Matara, Sri Lanka*<sup>2</sup>*New Bernards Animal Feeds, Udubaddawa, Sri Lanka**\*[hi2thivi@gmail.com](mailto:hi2thivi@gmail.com)***Abstract**

Feed is the largest expense in poultry production. *Black soldier fly larvae (BSFL)* can replace soybean and fish meal, lower costs, and offer environmental benefits. Their growth and nutrition depend on the substrate, and broiler processing generates about 25% inedible offal that must be managed to avoid negative impacts. This study investigated the suitability of broiler offal, either alone or in mixtures with manna grass (*Cymbopogon nardus*), as a substrate for *BSFL* rearing. A completely randomized design was used with six treatments: Six days old *BSFL* were introduced into substrates having either food waste (*FW*) as the control, 100% poultry offal (*P100M0*), 75% poultry offal+25% manna grass (*P75M25*), 50% poultry offal+50% manna grass (*P50M50*), 25% poultry offal+75% manna grass (*P25M75*), and 100% manna grass (*P0M100*). Larvae grown on *FW*, *P50M50*, and *P25M75* reached the prepupal stage within 13 days. Survival rate of *BSFL* grown on *FW* (86%) was not significantly different from those on *P50M50* (81%), *P25M75* (83%), and *M100* (88%). Survival rate on Poultry offal alone (3.7%) or even high offal level, *P75M25* (40%) was extremely low. However, day 13 weight of larvae on *P75M25* (109 g) was similar to those on *FW* (110 g). Manna alone (14 g) or offal alone (56 g) did not support for good larval growth. Among the offal manna combinations, the best larval weight was reported on *P50M50*. Larval crude protein content was similar on *FW* and *P0M100*. Interestingly, all manna and offal combinations as substrates resulted in higher *CP* contents (46%-49%). Substrate reduction rate, waste reduction index, bioconversion ratio, and N conversion ratio of larvae on *P50M50* were statistically similar to those on *FW*. The study concludes that broiler offal or Manna grass alone is not a suitable substrate for *BSFL* production. The *P50M50* mixture showed higher *CP* and similar waste conversion, but further studies are needed to improve survival and growth.

**Keywords:** *BSF, Poultry offal, Substrate, Growth, Composition*