

Abstract

Organic waste accumulation in rapidly urbanising regions represents an environmental pressure and a missed opportunity for resource recovery. Black soldier fly larvae represent a biologically efficient method to convert biodegradable waste into protein-rich biomass, but household residues often are deficient in balanced nutrients for optimal larval performance. The present work aimed to compare the yield and nutritional composition of black soldier fly larvae reared on household organic waste with tofu dreg supplementation in a 1:1 ratio with a commercial chicken feed as a control. BSFL were reared for ten days using standardized larvae (5-DOL), control feeding setup, proximate analyses of feed and larvae, and bioconversion rate calculation. Feed and larvae moisture, ash, and fat, larvae final biomass, and bioconversion efficiency were measured. Tofu dreg-household waste mixture resulted in wetter and fattier mixtures but with a lower ash content compared to the control feed. Larvae reared on this mixture resulted in a higher lipid content while maintaining normal values for moisture and ash and produced consistently greater biomass. Bioconversion efficiency was higher on 1:1 substrate when compared with chicken feed. A tofu dreg-household waste mixture allows for effective BSFL cultivation and is a promising low-cost decentralised waste valorization application.

Keywords: Black soldier fly, BSFL, valorization, organic waste, sustainability