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Food waste recycling using black soldier fly larvae

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Black Soldier Fly (BSF) larvae have received growing attention recently for their potential in converting food waste into valuable biomass protein. However, the heterogeneous nature of genuine food wastes remains a challenge to its application in food waste recycling. The study examined the capacity of BSF in handling food wastes. The objectives were to evaluate the effect of different food substrates on the growth of BSF larvae and to assess the conversion rate of various food wastes by BSF larvae for their usefulness and efficiency in food waste management. When BSF larvae were fed with different food substrates, a balanced diet was essential to larval growth and hence prepupal production. Highest prepupal yield was obtained from diet low in protein, medium in fat or starch and high in dietary fiber which corresponded to a protein to dietary fiber ratio of 1.86 to 2.53, with the optimal fat content at 21.1-29.4%. When BSF larvae were reared on genuine food wastes collected from different sources, they supported reasonably good survival (>80%). Hotel food waste gave the fastest larval development, while hotel food waste, canteen food waste and mixture of coarse food wastes had the greatest prepupal weight and total yield. Canteen food waste and food waste mixtures had the highest waste reduction rate and food conversion ratio but gave contrastingly lower efficiency in conversion to insect biomass. Nevertheless, this study demonstrated the feasibility and efficiency of applying BSF larvae to food waste management.

Biography

L M Chu is an Applied Ecologist by training and has diverse research interest on environmental pollution, ecological restoration, waste recycling and urban ecology. His earlier work focused on waste recycling, water pollution and landfill leachate management. He switched to rehabilitation of degraded land such as landfills and quarries and then to slope and vertical greening. He publishes extensively in environmental pollution and restoration ecology.

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