Factors Affecting Polystyrene Foam Consuming Rate of Superworms (Zophobas morio)

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Massive waste disposal is one of the crises found in Thailand. More alarming, the waste's decomposing process takes approximately 100 years to be degenerated in landfill. Many studies have shown that the mealworms and super worms can eat plastic wastes. Their gut bacteria can degenerate plastic wastes into smaller molecular components. The rate of the worm consumption is also reported for different types of plastic wastes. However, the aspects of feeding conditions and rearing environments have rarely been studied. In this study, the factors of polystyrene consumption by the super worms are investigated. While the different ratios of the natural worm feeds to the polystyrene are fed to the worms, the rate of polystyrene consumption and the worms' health are investigated. The condition of rearing the worms in groups and individuals is also investigated. The different shapes of the polystyrene chunks are also tested to explore the most optimal shape of polystyrene that can be decomposed by the worms. The lighting, humidity, temperature conditions, and the worm ages affecting the consumption rate are examined. The composition of the worms' excretion is investigated through thin-layer chromatography. Our preliminary studies show that to make the worms eat more polystyrene, merely polystyrene should be fed because worms seem to prefer natural feeds to the polystyrene. The health of worms fed by merely polystyrene seems to be similar to those fed by natural feeds; however, the period before pupate is 15 days extended from the normal one.

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