Using Zophobas morio to Build a Biodigester for Polymers Decomposition

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Polymers are the main residues that cause numerous environmental impacts, such as, death of animals, mainly marine life. Since one of the main properties of these polymers is durability, it generates great accumulation causing environmental problems, mainly in large urban centers, since they are not reused or recycled, in many cases. So we looked for a way to reduce this environmental problem. Through research and testing we started to work with the Zophobas morio caterpillar. At first, a hunger test was carried out with 15 caterpillars to stimulate their feeding before the test itself. Then we carried out polymer degradation tests, using two treatments (T), T1 polyethylene, T2 expanded polystyrene. Five larvae of Z. morio were assigned to each treatment. Quantitative data on diet consumption were weighed with a precision scale. Dietary intake was assessed at three-time intervals:- 4, 8 and 16 days. The results indicated the following consumption rates, in which T1 was 0.47%, 0.63% and 0.69%, and T2 showed 1.32%, 1.62% and 1.93% respectively. Treatments 1 and 2, highlighted the potential of Z. morio in implementing waste disposal programs. With that we conclude that the Z. morio has the fascinating capacity to degrade polymers without causing any problem in their organism, proving to be a possible solution to these environmental problems. From that, we built a biodigester capable of coupling the caterpillars and respecting their life cycle.

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