Mealworms: The Solution to Mounting Plastic Waste

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Mealworms have the unique ability to break down plastic due to unknown bacteria in their gut. Plastic pollution and buildup is an issue that plagues society. This project aims to discover if mealworms have the ability to break down different types of plastic and if the colors played a role in how fast they were digested by the mealworms. The plastics tested were polystyrene (Styrofoam), high-density polyethylene (HDPE) and polypropylene (commonly found in straws). In this experiment, the eating habits of the plastic-eating mealworms were monitored through biweekly weighing and observations. With this procedure, we were able to determine the mass change over time from each of the containers and compared them to find differences in the rate pertaining to color and type of plastic given. These results find evidence that the coloration of the plastic altered how much the mealworms digested. Containers with yellow or orange-dyed plastic decreased in weight due to the mealworm familiarity with these colors, as they are similar to the typical mealworm diet of vegetables and grains. These results can provide support for integrating mealworms into the process of breaking down plastic. This experiment provided us with that data to produce a model that would allow for consumers to dispose of their plastic in a mealworm live recycling unit, decreasing the amount of plastic that is left floating in gyres and on the ground. Furthermore, this research can be used to help government leaders draft laws that prevent less-digestible plastics from being produced.

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