Insect Alliance: A Study of Dermestid Beetles (Dermestes maculatus) and the Effect They Have on Soil Micro-Biomass

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Rising fertilizer costs have increased interest in sustainable methods for improving soil fertility. This project investigated whether Dermestid beetles could increase soil microbiomass by accelerating the decomposition of organic material. Dermestid beetles are natural decomposers that convert animal remains into bioavailable nutrients for plants. Three soil containers were prepared, and baseline microbiomass readings were collected using a MicroBiometer. Dermestid beetles were then introduced, along with a bison head to simulate carcass decomposition. Soil microbiomass measurements were taken weekly over eight weeks. Each bison head required approximately four weeks for complete decomposition, after which a second head was added. Although minor fluctuations occurred, all containers showed a substantial overall increase in microbiomass. Average soil microbiomass increased from 27.7 µg/ml to 73.9 µg/ml, representing a 166.8% increase. These results support the hypothesis that introducing Dermestid beetles can significantly enhance soil microbiomass and suggest a potential low-input, environmentally friendly alternative for improving soil health in regenerative agricultural systems.

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