

**Evaluation of the Efficacy of Diatomaceous Earth on Bean Bruchids,
Acanthoscelides obtectus in Stored Beans**

Loise Mbeke Wambua

A100/10435/2013

Supervisor: Dr. Phyllis Muturi,

Abstract

Production of beans in many parts of the world is affected by several challenges. Insect pests are injurious during production and postharvest. The bean bruchid, *Acanthoscelides obtectus* is a major storage pest of beans. Farmers have over the years relied on synthetic sprays to control bean bruchids. However, the chemicals have led to environmental pollution and insect resistance. Biological control methods can be used as an alternative to these chemicals in an attempt to promote environmental sustainability. The objective of this study was to explore and evaluate the effectiveness of diatomaceous earth on bean bruchids on stored beans. The effectiveness of diatomaceous earth on bean bruchids was measured in terms of adult mortality and weight loss. Bean variety 'Mwitmania' was subjected to diatomaceous earth treatment after introducing five bean bruchids to 50g of beans in each jar and replicated thrice. The treatment rates of diatomaceous earth were 0g which was the control experiment, 0.125g, 0.25g and 0.5g. The experimental layout was completely randomized design (CRD) in the research laboratory in University of Embu. The measured amounts of beans i.e. 50g was first introduced into all the plastic jars followed by the treatments and then the bean bruchids. Data on bruchid mortality rate was collected after 24hrs, 48hrs, 7days, 14 days and 28 days. After the 28th day, bean weight loss was collected. Results showed significant differences ($P < 0.05$) among the different diatomaceous earth concentrations. The highest bruchid mortality rate was achieved with 0.5g of diatomaceous earth. This study concluded that diatomaceous earth has potential in managing bean bruchids during storage. It is recommended that the study be repeated for another season using a larger sample of beans since the current experiment evaluated 50gm of beans.