

Evaluation of Raw Diatomaceous Earth and Plant Powders in the Control of *Callosobruchus subinnotatus* (Pic.) on Stored Bambara Groundnut (*Vigna subterranea* (L.) (Verdc.) Seeds

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Abstract : Bambara groundnut is an important grain legume and the seeds in storage suffer infestation by *Callosobruchus subinnotatus*. Laboratory study was conducted to evaluate the efficacy of raw diatomaceous earth (RDE) and plant powders (*Jatropha curcas* (L.), *Eucalyptus camaldulensis* (Dehnh.) and *Melia azedarach* (L.) against *C. subinnotatus* infesting stored bambara groundnut seeds. Rearing of the insects and the experiments were conducted in Agricultural Biology Laboratory of the Usmanu Danfodiyo University, Sokoto - Nigeria under ambient conditions (29-33°C and a relative humidity of 44-56%). Four treatments at three levels: RDE at 0.5, 1.0 and 1.5 g while plant powders at 0.5, 1.0 and 2.0 g, standard/check (2.0 g of Actellic dust), and a control. These were separately admixed with 100 g of sterilized seeds in glass jars. Each jar was later infested with thirty, 1-2-days old *C. subinnotatus* of mixed sexes. Adult mortality was assessed 24, 48, 72 and 96 hours, F1 and F2 progenies, seed damage, weight loss and viability were also assessed after 90 days. Eighty-nine (89%) percent adult mortality was recorded in the highest dose of RDE after 96 hours of exposure. These treatments significantly ($P < 0.05$) suppressed F1 and F2 progenies emergence in relation to the control. The control suffered significantly ($P < 0.05$) higher seed damage (51.0 %) and weight loss (40.8%) thereby recording lower seed germination. Therefore, RDE and plant powders could be used against *C. subinnotatus* on stored bambara groundnut seeds.

Keywords : bambara, *callosobruchus subinnotatus*, plant powders, raw diatomaceous earth,

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