

Evaluation of *Eucalyptus tereticornis*, *Tagetes minuta* and *Carica papaya* as stored maize grain protectants against *Sitophilus zeamais* (Motsch.) (Coleoptera: Curculionidae)

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Abstract

Sitophilus zeamais (Motsch.) is an important storage pest of maize grain in several parts of Africa including Zimbabwe. Although synthetic pesticides are effective at controlling the pest, environmental and health hazards of these chemicals are of increasing concern. The study assessed efficacy of botanical leaf powders of *Eucalyptus tereticornis*, *Tagetes minuta* and *Carica papaya* in controlling *S. zeamais* using rates of 5 g, 10 g and 20 g per 200 g of open pollinated maize grain (variety ZM421). The trial was laid in a completely randomised design (CRD), with 12 treatments replicated three times. The grain was put in a freezer at -40°C for a fortnight, before the botanicals were added, to kill any prior sources of weevil inoculum and eggs which might be already pre-existing in the grain. 200 g maize grain was infested with 200 three week old unsexed pure culture weevils in 750 ml jars. After 14, 28, 42, 56 and 70 days, weevils were sieved and their mortality determined. Percentage grain weight loss was assessed after 35 days post pests introduction. There were significant differences ($p < 0.05$) in number of weevil mortality and grain weight loss among treatments and their application rates. The findings showed that conventional chemical control was most effective than all botanicals used. *E. tereticornis* was the most effective of all the botanical pesticides at an application rate of 20 g as evidenced by high weevil mortality and less grain weight loss. It was concluded that botanicals have storage pesticidal properties to suppress *S. zeamais* in maize grain and could be used as an alternative control option to synthetic pesticides.