

## [4060] PLANT EXTRACTS AS POTENTIAL INSECTICIDE TO CONTROL STORED GRAIN PESTS

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The damage caused by stored grain insects in Brazil is estimated to be around 8 % of production. Insects responsible for such loss are among others *Sitophilus zeamais*, *Sitophilus oryzae*, *Rhizopertha dominica* and *Tribolium castaneum*. Synthetic insecticides are the conventional way to control these insect pests. However, natural products from plants have been studied as an ecologically more effective alternative in protecting stored grains. A screening program of plant substances extracted from Brazilian flora was initiated against those insects. Bioassays to determine the insecticide activity consisted of tests for fumigation, contact, and contact and/or ingestion. In all assays, twenty individual adults of each insect were used in each of three replicate assays. A control test was prepared the same way but no impregnating substance was used. All tests were carried out at the temperature of 26±1 °C *Azadirachta indica* and *Annona squamosa*, respectively. Observations on the survival rate of insects were made 24 h after contact and efficacy (%) was calculated using Abbott procedure. Results have shown that cineole, limonene and *Eucalyptus globulus* and *E. camaldulensis* essential oils showed toxic effect to all insects through cuticle (contact test) and/or by ingestion (contact and or ingestion test) and fumigation activity. *S. zeamais* revealed preference for grains without the presence of essential oil or leaves of *E. citriodora*. Finally, plant extracts obtained from *Annona crassiflora*, *A. squamosa*, *A. indica*, *Piptadenia colubrina*, *Baccharis genistelloides* were also tested against *S. zeamais*. The observations on the survival rate of insects has shown mortality varying from 46.66% to 96.66% with *A. indica* and *A. squamosa*, respectively. Surviving insects (13 females and 2 males) from the most active extracts were evaluated for the biological potential. The average number of F1 generation *A. indica* and *A. squamosa*, respectively insects per surviving female was 0.7 (insects/female) and 3.0 for *A. indica* and *A. squamosa*, respectively. Results confirmed the insecticide activity.

Index terms: *Sitophilus zeamais*, *S. oryzae*, *Rhizopertha dominica*, *Tribolium castaneum*, biocides