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A SUSTAINABLE ALTERNATIVE TO PHOSPHINE GAS

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ABSTRACT

The Australian grain industry is worth about \$7 billion per annum, with approximately 80% of production exported. To maintain a competitive edge, the Australian grain industry needs to market a predictably high quality product. There are serious problems caused by both introduced and indigenous insect pests of storage grain, and by the fact that these insect pests have developed resistance to commercial fumigants. Fumigation with phosphine gas is the key component in the management of insect pests in stored grains. These stored-grain pests in Australia now exhibit resistance to phosphine at levels more than 200 times the original lethal dose. Therefore the industry is searching for alternatives.

In this study we have tested different concentrations of eucalyptus oil and its major component, 1,8-cineole against rust-flour beetle (*Tribolium castaneum*) and lesser grain borer (*Rhyzopertha dominica*). The results were evaluated against the discriminating dose of the commercial fumigant -phosphine gas. The preliminary results indicate that 1,8-cineole could be useful in developing an environmentally friendly fumigant to control stored grain pests.