

ABSTRACT

Quality and quantity losses of stored paddy are mainly caused by postharvest insect pests, including *Rhyzopertha dominica*, *Oryzaephilus surinamensis*, and *Sitophilus zeamais*. Continuous use of synthetic insecticides may lead to insect resistance, pesticide residues, and environmental pollution. Therefore, environmentally friendly alternatives are needed for sustainable pest management. This study aims to evaluate the effectiveness of *inert dust* derived from rice straw ash and coconut shell ash, applied individually and in combination, for controlling postharvest insect pests on stored paddy. The experiment was conducted at the Plant Pest and Disease Laboratory, Department of Agroecotechnology, Faculty of Agriculture, Universitas Malikussaleh, using a Completely Randomized Design (CRD). Single-toxicity tests were carried out at concentrations of 1.25, 2.5, 5, 10, and 20 g per 100 g of paddy, while mixture toxicity tests used a 1:1 ratio based on the LC_{50} values at 10 days after application. The observed parameters included adult insect mortality for ten days after application and LC_{50} values estimated using probit analysis. The results showed that rice straw ash, coconut shell ash, and their mixture significantly affected the mortality of *R. dominica*, *O. surinamensis*, and *S. zeamais*. Insect mortality increased with increasing concentration and exposure time. Rice straw ash exhibited higher toxicity than coconut shell ash, while the 1:1 mixture of both materials provided high efficacy against all three insect species. Therefore, rice straw ash and coconut shell ash have great potential as effective and environmentally friendly *inert dust* for controlling postharvest insect pests in stored paddy.

Keywords: coconut shell ash, *inert dust*, postharvest insect pests, rice straw ash, stored paddy.