

**THE EFFECT OF FUMIGANT FROM KAFFIR LIME LEAVES AND
CITRONELLA ESSENTIAL OILS ON THE MORTALITY AND
DEVELOPMENT OF THE RED FLOUR BEETLE *Tribolium castaneum***

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ABSTRACT

Pest control in rice flour in storage still uses synthetic pesticides, so alternative control is needed using kaffir lime leaves essential oil and citronella essential oil. This research was carried out to determine the fumigant effect of the essential oil of kaffir lime leaves (*Citrus hystrix* D.C.) and citronella (*Chimbopogon nardus*) on the mortality and development of the red flour beetle *Tribolium castaneum* on stored rice flour. This research was carried out at the Plant Protection Laboratory at the Universitas Pembangunan Nasional "Veteran" Yogyakarta in March-May 2024. The method used was a non-factorial Completely Randomized Design (CRD). The treatments used were control (96% ethanol without essential oils), kaffir lime leaves essential oil with concentrations of 0.2 mL/L, 0.6 mL/L, 1.0 mL /L, Citronella essential oil with concentrations of 3.0 mL/L, 3.25 mL/L, and 3.5 mL/L, with each the treatment was repeated 4 times. The observation results were analyzed using Analysis of Variance (ANOVA) at a 5% level followed by the Scott Knott Test at a 5% level. The results showed that the treatment of kaffir lime leaves essential oil and citronella essential oil was not effective enough in controlling *T. castaneum* in stored rice flour. Still, it could suppress the development of the *T. castaneum* population.

Keywords: Kaffir lime leaves, citronella, essential oil, fumigant, *Tribolium castaneum*