

The Effect of Citronella Extract (Cymbopogon nardus L) and Eucalyptus Extract (Melaleuca leucadendra L) on the Control of Mealybug Pests (Planococcus citri) on Robusta Coffee

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ABSTRACT

Indonesia is the largest coffee producer in Southeast Asia and the third largest in the world after Brazil and Vietnam. Indonesian coffee production reached 794.8 thousand tons in 2022, increasing by approximately 1.1% compared to the previous year. Low yields are attributed to factors such as environmental suitability for growth, cultivation techniques, varieties, as well as pests and diseases. One of the pests that can damage coffee plants and reduce productivity is the mealybug (Planococcus citri). Pest control can be achieved through chemical pesticides and botanical pesticides. Due to the negative impacts of excessive use of chemical pesticides, there has been a shift towards botanical pesticides. Plants such as citronella and melaleuca can be used to produce botanical pesticides. This research aims to investigate the effects of citronella (Cymbopogon nardus L.) and melaleuca (Melaleuca leucadendra L.) extracts on the control of mealybugs (Planococcus citri) on robusta coffee. The study was conducted from March to April 2024 at the Plant Protection Laboratory of the State Polytechnic of Jember. The research used a Completely Randomized Factorial Design (CRFD) with two factors repeated three times. The first factor was citronella extract pesticide with concentrations of 25%, 50%, and 75%. The second factor was melaleuca extract pesticide with concentrations of 25%, 50%, and 75%. Research data were analyzed using ANOVA, and if treatments showed significantly different effects, they were further analyzed using the Tukey HSD test at a significance level of 5%. Parameters measured included mortality, LT50 (lethal time for 50% mortality), physical changes, and feeding activity. The results showed that citronella and melaleuca extracts were effective against mealybugs (Planococcus citri), achieving the fastest mortality rate of up to 100% in treatment P3K3 (72 hours), with the fastest LT50 value at 25 hours.

Keywords: Robusta, Mealybug, Citronella, Melaleuca