

Abstract

THE CONTROL OF MIGRATORY LOCUST PEST (*Locusta migratoria*) BY UTILIZING ULTRASONIC WAVES IN WEST KALIMANTAN

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The objective of this research is to develop new alternative or method in the process of controlling migratory locust pest by utilizing ultrasonic waves. This research was carried out at beginning with the design of electronic instrument to produce ultrasonic waves generating source up to the implementation of laboratory tests.

Laboratory experiments were done to study the characteristics and behavior patterns of migratory locusts and their response toward ultrasonic waves disturbances targeted on the migratory locust. From this small-scale laboratory experiments, it is to be extended in the future to field application and in turn it would be socialized into farmer community.

This research was implemented with the hypothesis that there is an effect of ultrasonic wave exposure at certain frequency, source distance and exposure time and its interaction toward behavior patterns of migratory locusts. To examine the validity of this hypothesis, experiments were designed to irradiate ultrasonic waves on migratory locusts in which the frequency, distance and exposure time were differently designed.

The data on the observation of response and change of behavior patterns that covered the patterns of passive movement and of passive feeding of the migratory locusts brought about by ultrasonic wave disturbances were analyzed and employed to determine which parameter were the most dominant among variations of frequency, exposure distance and exposure time of the ultrasonic waves.

The result of research gave significant differences ($P < 0.05$) of the effect of ultrasonic wave frequency, source distance and exposure time. At 50 kHz frequency, it already gave effective impact toward behavior patterns that covered the patterns of passive feeding and passive movement of the migratory locusts.

At this 50 kHz frequency, with exposure time of three to four hours at 100 cm distance it has already effective impact toward the behavior patterns of migratory locusts compared to the change of source distance longer than 100 cm at other frequencies towards passive feeding and passive motion pattern of migratory locusts.

Key words: Locusta migratoria, ultrasonic frequency, behavior