

Uji daya tarik feromon Seks penggerek batang Jagung *Ostrinia furnacalis* guenee (lepidoptera; crambidae)

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Abstrak

ABSTRACT

The Asian corn borer, *Ostrinia furnacalis* (Guenée) (Lepidoptera: Crambidae), is one of the most serious insect pests of maize in Indonesia, Japan, China and other Asian countries. The insect is not easily controlled by insecticides because the larvae develop and hide in the corn stem. The application of pheromone usually aims to control insect pests, to monitor its occurrence, or for mass trapping. Sex pheromone components of this species has been intensively studied in Japan and China. However, in Indonesia this has not been extensively explored yet. Samudra et al. (2006, unpublished) analyzed sex pheromone gland extracts of *O. furnacalis* from Bogor (Indonesia) by gas chromatography (GC) and GC combined with mass spectrometry (GC-MS) and identified as (Z)-12- tetradecenyl acetate and (E)-12- tetradecenyl acetate at ratio of about 62 : 38.

In this research, we studied the attractiveness of (Z)-12- tetradecenyl acetate and (E)-12-tetradecenyl acetate at different ratios and quantities in a laboratory wind-tunnel bioassay and field experiments. The percentages (ratios) of Z-12-tetradecenyl acetate tested were 100, 90, 65, 50, 35, 10 and 0 % in 100 µg mixture of Z- and E-12-tetradecenyl acetate. The quantities of mixture of two components tested were 50, 100, 250, 500, 1000 µg per rubber septum.

An indoor wind-tunnel (30 cm in diam. x 200 cm) was used to test the biological activities of the chemicals, and the experiment was carried out in a scotophase (a dark period). Four criteria were used to judge the behavioral responses of the insect : 1. starting flight, 2. orientation, 3. reaching the source, and 4. landing on the source. Semi-field experiment was carried out in a screen house (20 m x 6 m). One hundred males of one day old moth, were released in screen house and number of males caught in each trap were recorded in three days. Field experiments were conducted in sweet corn fields at Bogor and Bandung, West Java. Number of male(s) caught in each trap were recorded every three days during 54 days. The experiment was arranged in a complete randomize designed and the data were analysed with ANOVA and subjected to HSD test.

The results of wind tunnel bio-assay showed that the mixture of (Z) and (E)-12-tetradecenyl acetate with ratio 65 : 35 was the most attractive, 60 ? 100% of tested males landed on pheromone source. The semi-field experiment, it also showed that the pheromone mixture of (Z)- and (E)-12-tetradecenyl acetate with ratio 65 : 35 caught more males, for both corn borer populations from Bogor and Bandung. The best quantity of pheromone was showed by 500 µg/rubber septum with ratio 65 : 35 (Z : E)-12-tetradecenyl acetate. Field experiment data in Bogor and Bandung showed that binary blend of synthetic (Z)- and (E)-12-tetradecenyl acetate with ratio 65 : 35 was significantly more attractive than 3 virgin females. Insect caught in trap increased with the increase of amount of pheromone sex in a range of 50 to 500 µg/ rubber septum. There was less males caught in the treatment of 1000 µg/rubber septum, both in Bogor and Bandung field experiments.

Based on laboratory and field trap experiments, we conclude that the sex pheromone of *O. furnacalis*,

composed of (Z)-12-tetradecenyl acetate and (E)-12-tetradecenyl acetate at ratio 65 : 35, is the most attractive to the asian corn borer. The binary blend at amount 500 μ g/rubber septum attracted nearly three times more males than did by virgin females