

## INTISARI

### Dampak Buprofezin Terhadap *Anagyrus lopezi* (Hymenoptera: Encyrtidae) Parasitoid Kutu Putih Singkong *Phenacoccus manihoti* (Hemiptera: Pseudococcidae)

*Anagyrus lopezi* De Santis (Hymenoptera: Encyrtidae) merupakan endoparasitoid dan paling menyukai nimfa instar ketiga kutu putih singkong *Phenacoccus manihoti* (Hemiptera: Pseudococcidae) sebagai inang meskipun parasitoid lebih menyukai kutu putih dewasa untuk bertelur. Dalam kondisi eksplosif, kutu putih singkong dikendalikan dengan insektisida buprofezin yang dikhawatirkan dapat menurunkan kinerja parasitoid. Penelitian ini bertujuan untuk mengetahui konsentrasi lapangan efektif insektisida buprofezin yang aman terhadap parasitoid *A. lopezi*. Penelitian menggunakan pengenceran buprofezin dalam air dengan tingkat konsentrasi 500 (rekomendasi lapangan), 250, 125, 62,50, 31,25, 15,62, dan 7,81 mg/L. Percobaan pertama adalah mumi kutu putih yang diparasit dicelupkan selama 10 detik ke dalam konsentrasi buprofezin. Eksperimen ini diulang tiga kali dan menggunakan 10 mumi per ulangan. Penelitian kedua parasitoid imago dipaparkan langsung dengan residu insektisida dalam tabung gelas. Percobaan ini diulang tiga kali dan menggunakan lima parasitoid betina dan lima parasitoid jantan per ulangan. Penelitian ketiga, parasitoid imago dipaparkan pada daun singkong yang telah disemprot buprofezin dengan ulangan dua kali dan menggunakan lima parasitoid betina dan lima parasitoid jantan per ulangan. Hasil penelitian menunjukkan bahwa kadar buprofezin yang dipaparkan pada mumi parasitoid tidak berpengaruh nyata baik pada larva maupun pupa parasitoid. Ini berarti bahwa buprofezin pada tingkat konsentrasi yang dianjurkan aman bagi parasitoid di dalam tubuh kutu putih singkong. Namun, parasitoid imago sensitif terhadap buprofezin. Temuan kami menunjukkan bahwa pada tingkat konsentrasi 31,25 hingga 500 mg/L, parasitoid betina hanya bertahan selama 6,0 hingga 3,6 HSP, sedangkan pada kontrol selama 18,6 hari, dan parasitoid jantan hanya bertahan selama 8,4 hingga 5,8 HSP, sedangkan pada kontrol selama 16,2 HSP hari. Progeni parasitoid juga berkurang secara nyata akibat pengaruh buprofezin, pada perlakuan 15,62 hingga 500 mg/L progeni berkisar antara 25 hingga 14 parasitoid baru sedangkan pada kontrol sebanyak 57 parasitoid. Selain itu, paparan parasitoid imago pada daun singkong dengan residu buprofezin menemukan bahwa pada konsentrasi lapangan secara signifikan mengurangi kelangsungan hidup *A. lopezi* imago dan keturunannya dibandingkan dengan kontrol. Temuan ini tampaknya berbeda dengan International Organization for Biological Control (IOBC) yang mengatakan bahwa kategori toksisitas buprofezin dikategorikan tidak berbahaya pada stadium pradewasa dan sedikit berbahaya bagi parasitoid imago.

**Kata Kunci:** *Anagyrus lopezi*, buprofezin, kutu putih singkong, kemunculan, kelangsungan hidup

## ABSTRACT

### **Impact of Buprofezin on *Anagyrus lopezi* (Hymenoptera: Encyrtidae) the Parasitoid of Cassava Mealybug *Phenacoccus manihoti* (Hemiptera: Pseudococcidae)**

*Anagyrus lopezi* De Santis (Hymenoptera: Encyrtidae) is the endoparasitoid and most prefers third instar nymph of cassava mealybug *Phenacoccus manihoti* (Hemiptera: Pseudococcidae) as a host although the parasitoid prefers the adult mealybug for oviposition. Under explosive conditions, the CMB was controlled with the buprofezin insecticide which was feared to reduce the performance of the parasitoid. This study aimed to determine the effective field concentration of buprofezin insecticide which be safe against the parasitoid *A. lopezi*. The experiment used dilution of the buprofezin within water with concentration rates of 500 (field recommendation), 250, 125, 62.50, 31.25, 15.62, and 7.81 mg/L. The first experiment was mummies of parasitized mealybugs were dipped into the buprofezin concentrations. This experiment was replicated three times and using 10 mummied per replication. The second experiment was the adult parasitoids were directly contacted to insecticide residues in a glass-tube. This experiment was replicated three times and using five females and five males per replication. The third experiment, adult parasitoids were exposed to contaminated leaves and host with replicated two times and using five females and five males per replication. Results showed that the buprofezin concentration rates which treated on parasitoid mummies had no significant effects either on parasitoid larvae or pupae. It means that the buprofezin at recommended concentration rate is safe to the parasitized mealybug. However, the adult parasitoids were sensitive to the buprofezin. Our findings show that on concentration rates of 31.25 to 500 mg/L, the female parasitoids survived only for 6.0 to 3.6 DAT, while on control for 18.6 days, and the male parasitoids survived only for 8.4 to 5.8 DAT, while on control for 16.2 days. The parasitoid progeny was also significantly reduced due to effect the buprofezin, on treatments of 15.62 to 500 mg/L the progeny ranged from 25 to 14 new parasitoids while on control as many as 57 parasitoids. Furthermore, exposing adult parasitoids to contaminated cassava leaves and host found that at the field concentration significantly reduced the survivorship of adult *A. lopezi* and progeny compared to control. This finding seems to be different with International Organization for Biological Control (IOBC) which saying that toxicity categories buprofezin is categorized as harmless to the immature stage and slightly harmful to adult parasitoids.

**Keywords:** *Anagyrus lopezi*, buprofezin, cassava mealybug, emergence, survivorship