



EVALUATION OF TRAP DESIGNS AND ATTRACTANTS FOR MONITORING THE ASIAN CITRUS PSYLLID (*Diaphorina citri*) AND DEVELOPMENT OF A MAXTENT MODEL TO PREDICT THE POTENTIAL DISTRIBUTION OF ACP IN INDONESIA

Haris Setyaningrum
20/470201/SPN/00681

Abstract

Diaphorina citri, known as the Asian Citrus Psyllid (ACP), is a significant pest that poses a considerable threat to citrus growers worldwide, including those in Indonesia. In most regions, the bacterium *Candidatus liberibacter asiaticus* (CLas) is the causative agent of HLB. This factor is a primary rationale for the present study, as it exerts a substantial impact on Indonesian citrus production. Presently, ACP populations in Indonesia remain low, while HLB remains a significant citrus disease. Insufficient tools exist for ACP field monitoring. This research has been conducted in three coherent sets of studies: The first set entailed testing the efficacy of yellow sticky traps (YST) with different lures, namely commercial products/alpha scents, acetic acid, formic acid, and propionic acid. The second set of studies involved monitoring ACP populations at different citrus hub sites and alternative hosts. The third set of studies entailed developing a model using MaxEnt to map the potential distribution of ACP that could occur in Indonesia's territory. The study's results indicated that the incorporation of lures into YSTs led to an increase in the capture of ACPs compared with the control group that did not contain bait. In controlled environments, the use of lures in isolation offers a promising avenue for capturing ACP, with formic acid demonstrating the most significant potential in this regard. Conversely, in natural conditions involving the simultaneous use of lures, acetic acid has been demonstrated to be the most effective agent in capturing ACP. The monitoring of the ACP population in citrus-growing regions across Indonesia revealed its presence in specific areas, including West Kalimantan (Sambas), Bengkulu (cities of Bengkulu and Curup), East Java (Banyuwangi), and West Java. The total number of validated ACP population points was 35, dispersed across various regions. The MaxEnt models indicate that the current and future ACP population is highly suitable (close to one) for the islands of Java, Bali, South Sumatra, and Nusa Tenggara, while the ACP potential for Kalimantan, most of Sumatra, Sulawesi, Maluku, and Papua is at a medium level.

Keywords: *Diaphorina citri*, Yellow Sticky trap, Lures, Surveillance, Modelling, MaxEnt