

Effect of horticultural mineral oil on Huanglongbing transmission by *Diaphorina citri* Kuwayama (Hemiptera: Psyllidae) population in a commercial citrus orchard in Sarawak, Malaysia, Northern Borneo

ABSTRACT

Diaphorina citri Kuwayama transmits a destructive citrus disease caused by a fastidious bacterium 'Candidatus Liberibacter asiaticus' (CLas) designated as Huanglongbing (HLB) which posed a risk of detrimental threat to the Malaysian citrus industry. All *D. citri* life stages show a lumped habit on young flushes and its population fluctuations was closely related to accessibility of young flushes. The study aimed to investigate if the appearance of young flush shoots on citrus influences ACP population fluctuation and if horticultural mineral oil (HMO) could reduce spread of HLB transmission by ACP in a commercial healthy orchard. Field research was carried out from 1 April 2011 to 1 December 2014 in a 2-year-old 1 ha citrus farm that consisted of 200 PCR-certified disease-free grafted non-bearing honey tangerine (*Citrus reticulata* L.) in southwestern Sarawak, Malaysia. The experiment had two treatments namely control (unsprayed) and nC24 HMO with four replications arranged in a simple randomized block design. ACP eggs, nymphs, and adults per flush shoot was assessed and HLB incidence was monitored for visual inspection of the citrus trees for the current existence of usual signs of characteristic symptoms of HLB such as yellowing shoots, leaf mottling, and corky or enlarged veins on leaves. HLB-specific primer was employed in 16S rDNA polymerase chain reaction to detect the CLas gene in diseased trees. Increase in abundance of *D. citri* is mainly affected by the citrus flushing cycles and their life stages are completed on these flush shoots. Relative degree of aggregation index for *D. citri* adults increased during periods of cyclic production of new flush. HMO-treated plots produced a significantly lower percentage up to 11.43% of diseased trees against 42.20% in untreated control plots. HMO is effective against *D. citri* and recommended to be incorporated in the IPM program to prevent infection and reduce the spread of HLB.

Keyword: *Diaphorina citri*; Huanglongbing disease; Rutaceae; Flush shoot; Horticultural mineral oil