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Disease transmission proficiency of *Deltocephalus menoni* (Hemiptera: Cicadellidae); vector of sugarcane white leaf disease

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Abstract

Sugarcane White Leaf Disease (WLD) is one of the most devastative phytoplasma disease which cause heavy losses to the sugar cane industry in Sri Lanka. Leaf hopper, *Deltocephalus menoni* (Hemiptera: Cicadellidae) is the locally identified vector of WLD. Disease transmission proficiency of the vector is a key factor to consider in disease management. Therefore, this study was conducted to (a) find out the ability of males, females, and nymphs of D. *menoni* in transmitting the WLD and (b) determine the level of persistency of D. *menoni* in WLD phytoplasma (WLDP) transmission. To determine the percentage WLD transmission by virulified D. *menoni* males, females, and nymphs were introduced to one-month-old healthy potted plants in insect proof field cages for a one-week period. Test plants were maintained until WLD symptom development. In estimating the WLD transmission pattern of D. *menoni*, virulified one-day-old adult females were introduced to the healthy sugarcane plants allowing them to feed on healthy plant for 24h period. Then they were recollected and introduced to another set of healthy sugarcane plants. Above procedure was repeated in 24h frequency for 13 days. Test plants were maintained in insect proof field cages for three-month period. Presence of WLDP in the tested plants was confirmed by PCR with phytoplasma specific SPP1/SPP2 primers. Under local conditions, female and male adults, 2nd and 4th instar nymphs were capable of transmitting the WLDP to the healthy plants in a rate of 55.5, 44.5, 22.2 and 33.3%, respectively. Transmission efficiency of females is comparatively high. Adult female of D. *menoni* was capable to transmit the disease from just after acquisition of the WLDP up to maximum of 11 days. Results imply that D. *menoni* is incapable to propagate the WLDP within its body and circulative transmission dose not occurred within the insect. D. *menoni* is an efficient vector in secondary transmission of the WLD and it is a semi-persistent vector. Due to semi-persistent nature of the vector, the management practices are vital to prevent rapid spread of this disease in sugarcane plantations.

Keywords: *Deltocephalus menoni*, Leaf disease, Sugarcane white transmission, Vector

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