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Effect of the Leaf Trichome Types, Density and Length on Selected Behavioural and Physiological Characteristics of *Deltocephalus menoni* (Hemiptera: Cicadellidae); Vector of Sugarcane White Leaf Disease

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Abstract

Trichome act as physical deterrents to insects on the plants and it is important for the resistance against insect herbivores. This study was conducted at the Sugarcane Research Institute (SRI), Uda Walawe with the objective of determining the effect of trichome type, density, and length on selected behavioural and physiological characteristics of *Deltocephalus menoni*, the vector of sugarcane White Leaf Disease (WLD) in Sri Lanka. Trichome types, density and morphology on leaf blade and midrib of ten sugarcane varieties/ accessions were studied with the behavioural characteristics of *D. Menoni*: aggregation, amount of feeding, and physiological characteristics namely, fecundity, nymphal development, and adult longevity on the same varieties/ accessions. Morphologically different four trichome types were recorded on test sugarcane varieties/ accessions and trichome density and lengths were significantly varied with the sugarcane variety on both leaf blade and the mid rib. Behavioural and physiological characters were also varied with the variety. Significantly positive correlations were observed between trichome density and length with study characteristics at 5% probability. Significant and positive correlations observed for nymphal period with trichome density on leaf lamina ($r = 0.47$, $n = 90$) and the mid rib ($r = 0.45$, $n = 90$) showing retarded development of nymphs on varieties with high trichome densities. Trichome length on leaf lamina showed positive and significant correlations with amount of feeding ($r = 0.62$, $n = 90$), adult conversion rate ($r = 0.54$, $n = 90$) and adult longevity ($r = 0.66$, $n = 90$). Trichome length on mid rib also showed similar type of relationship with amount of feeding ($r = 0.55$, $n = 90$), adult conversion rate ($r = 0.55$, $n = 90$) and adult longevity ($r = 0.64$, $n = 90$) illustrating that sugarcane varieties consist with higher trichome lengths enhances the studied characteristics of the vector on the leaf. The results imply that the feeding, survival, and longevity of *D. menoni* increases on sugarcane varieties with higher trichome lengths and densities providing higher opportunities for the vector to transmit the disease.

Keywords: *Deltocephalus menoni*, Leaf trichome, Sugarcane white leaf disease, Vector

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