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The Effects of Botanical Extracts on Cercospora Leaf Spot Disease in Okra

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Abstract

Okra (*Abelmoschus esculentus* L.) is a heat-tolerant vegetable crop cultivated in many parts of Sri Lanka, facing significant challenges from Cercospora Leaf Spot (CLS) disease caused by *Cercospora* sp. This study aimed to evaluate the effects of some botanicals applied in controlling CLS of okra under field conditions. The experiment consisted of three treatments laid out in a randomized complete block design with four replications at Horticultural Crop Research and Development Institute (HORDI), Gannoruwa. CLS susceptible MI5 variety of okra was used as planting material and artificially inoculated with the cercospora pathogen after reaching growth stage. About two weeks after inoculation of spore suspension of pathogen and when cercospora leaf spot symptoms were appeared, started the application of aqueous *Azadirachta indica*, aqueous *Coscinium fenestratum*, and Mancozeb 80% WP fungicide as treatments at 10% concentration, and untreated plants were kept as control. Over three spray regimes were assessed with a ten-day interval, and disease evaluation and measurements of percentage disease severity index (DSI%) of CLS on plants were performed and recorded. Microscopic observations confirmed that the causal agent of cercospora leaf spot of okra was *Cercospora* sp. Results of DSI% of CLS in the experiment showed that all treatments significantly suppressed the disease severity of CLS with spray regimes over control. The lowest disease severity was observed in plants treated with Mancozeb 80% WP, recording a DSI% of $2.92 \pm 0.21\%$, compared to a significantly higher DSI% of $59.95 \pm 2.55\%$ in untreated plants. No statistically significant difference ($P > 0.05$) was shown between *Coscinium fenestratum* ($9.14 \pm 0.52\%$) and *Azadirachta indica* ($6.66 \pm 0.43\%$). The application of three sprays demonstrated superior efficacy in controlling the disease than one or two applications. Results revealed that the performance of plant extracts is comparable to the synthetic fungicide Mancozeb 80% WP, has remarkable ability to control CLS, and provides an ample opportunity to produce an eco-friendly control tool protecting okra plants from CLS devastating disease.

Keywords: Okra, *Cercospora* leaf spot disease, Plant extracts, Severity