

EFFICACY OF ESSENTIAL OILS FROM BARK AND LEAF OF *CINNAMOMUM ZEYLANICUM* ON ROOT KNOT NEMATODE, *MELOIDOGYNE GRAMINICOLA* IN RICE SEEDLINGS AND YOUNG RICE PLANTS

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ABSTRACT

The present study was conducted to evaluate the efficacy of essential oils from leaf and bark of cinnamon, *Cinnamomum zeylanicum* in controlling *Meloidogyne graminicola* and their effects on rice seedlings and young rice plants. This study was done; to determine the LC₅₀ of essential oils of the extracts of cinnamon leaf and bark to kill 50% of second stage juveniles (J₂) of *Meloidogyne graminicola* in rice root galls; to determine the efficacy of essential oils of cinnamon; in controlling J₂ in rice seedlings and young rice plants; and on the growth of rice plants.

Cinnamon bark oil sample used in the current study contained about 72% cinnamaldehyde and the leaf sample contained about 86% eugenol. LC₅₀ for cinnamon leaf oil and cinnamon bark oil for killing 50% of juveniles of *M. graminicola* in rice root galls after three days of the treatment was 0.326 ppm and 0.454 ppm respectively. Number of galls in the root system of nematode infested rice seedlings was significantly reduced when they were treated with 0.9 ppm of cinnamon leaf oil and bark oil compared to untreated controls. However, the nematicidal activity between the cinnamon leaf oil and bark oil was not significantly different. The root gall index of infested young rice plants was significantly lowered when they were treated with either cinnamon leaf oil or bark oil compared to untreated controls. It was revealed that the mean plant height and the mean number of roots of essential oil treated plants were positively correlated with the number of root galls whereas, the number of dead plants and the mean percentage chlorosis were negatively correlated. Nevertheless, the mean root length did not show any significant correlation with number of root galls. This study concludes that essential oils of cinnamon