

Nematicidal activity of aqueous extracts and dry matter of *Tithonia diversifolia*, *Gliricidia sepium* and *Tagetes erecta* against root-knot nematode, *Meloidogyne incognita* (Kofoid and White) on tomato (*Lycopersicon esculentum* Mill.)

N W Premachandra and L D Amarasinghe

Department of Zoology and Environmental Management, University of Kelaniya, Kelaniya, Sri Lanka

A study was conducted to determine the nematicidal effect of aqueous extracts of *Tithonia diversifolia*, *Gliricidia sepium* and *Tagetes erecta* on juveniles of *Meloidogyne incognita* (Kofoid and White) and to determine the effect of dry leaves of *T. diversifolia*, *G. sepium* and dry whole plant parts of *T. erecta* on the growth of potted tomato, *Lycopersicon esculentum* (Mill.) infected with *Meloidogyne incognita*. Nematicidal effects of aqueous extracts of; *T. diversifolia*, *G. sepium* and *T. erecta* (20 g/ 100 mL w/v) were evaluated at 0.05 g/mL, 0.1 g/mL and 0.2 g/mL concentrations in the laboratory bioassay. Results revealed that all concentrations of the extracts caused juvenile mortality in the laboratory within 48 hours. 0.1 g/ mL and 0.2 g/ mL concentration of *Tagetes erecta* and 0.2 g/mL concentration of *Tithonia diversifolia* were very effective in juvenile mortality by over 50% within 48 hours. *Tagetes erecta* plant parts were the most efficacious causing above 70% juvenile mortality in 48 hours. According to the one-way ANOVA test, the potted tomato plants infected with *M. incognita* in the *Tagetes erecta* dry plant parts (2% w/w) treatment showed significantly higher number of green healthy leaves and significantly lower number of yellow leaves. Significantly higher plant height, stem diameter, root length and root weight were also found in this treatment. Significantly lower number of root galls, gall index and significantly lower population of *M. incognita* in soil were also recorded in the same compared to other treatments. Results also revealed that the addition of botanicals; *T. diversifolia*, *G. sepium* and *T. erecta* were found to increase the plant growth of tomato. The infested plants in untreated control showed a significant reduction of plant growth and significantly higher number of galls, gall index and significantly higher population of *M. incognita* in soil. Overall, it can be concluded that the aqueous dry leaf extracts of *T. diversifolia*, *G. sepium* and aqueous extracts of dry plant parts of *T. erecta* showed nematicidal activity against root-knot nematodes. Addition of *Tithonia diversifolia*, *Gliricidia sepium* and *Tagetes erecta* botanicals enhanced the plant growth and significantly reduced the root-knot nematode infestation on tomato, *Lycopersicon esculentum*.