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The effects of soil amendments and neem extract with and without NPK fertilization on the rice root-knot nematode, *Meloidogyne graminicola* in young rice plants

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The study was carried out to find out the effect of soil amendments and neem extract with and without NPK fertilization on the root-knot nematode *Meloidogyne graminicola* in young rice plants. This was done in three separate experiments; *experiment I*, to find out the threshold concentration of neem extract to kill infective juveniles of *M. graminicola*; *experiment II*, to test the efficacy of poultry manure, cow-dung and hay material each with and without NPK fertilization on *M. graminicola* in young rice plants, maintained in soil pots with the ratio of soil: amendment at 2:1 v/v; *experiment III*, to test the efficacy of soil amendments tested in *experiment II* with threshold concentration of neem in controlling the *M. graminicola*.

Results revealed that 1000 ppm of neem extract was the threshold concentration in killing infective juveniles of *M. graminicola* in petri dish assay. Use of soil amendments, poultry manure, cow-dung and hay material had significantly reduced the nematode population, the total of percentage yellow leaves and dead leaves of the host plant. Among these amendments, poultry manure had significantly reduced the nematode population than the other two amendments. There was generally a higher plant growth with soil amendments than the treatments without amendments. There was no significant difference in the plant growth between the NPK treated and untreated pairs of amended treatments. Similar to the *experiment II*, all amended treatments in *experiment III* had shown significantly lower nematode population and the total percentage of yellow leaves and dead leaves and significantly higher growth than all the other treatments. Cow-dung treatments (with and without NPK) had shown the highest plant growth, lowest nematode population and lowest chlorosis in *experiment III*.

Thus, this study showed that the poultry manure can be used as a nematicide cum fertilizer to reduce nematode infestation level and to improve soil fertility in rice plants.