

## OVERWINTER COVER CROPS AND ROOT-KNOT NEMATODE POPULATIONS IN WATERMELON FIELDS

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Root knot nematode (RKN, *Meloidogyne incognita*) is one of the major pest problems of watermelon; in severe cases, entire fields can be destroyed. In the past, methyl bromide has been used to control RKN, but because it is being phased out, alternative management options are urgently needed. Watermelon is grown in the sandy soils of southern Indiana that require winter cover crops to prevent wind and water erosion. Rye and wheat are commonly used as cover crops. Previous studies have shown that these plants do not reduce populations of RKN in soil below the threshold levels that damage watermelon plants. However, resistant cover crops such as oilseed radish may reduce RKN populations and provide a viable management alternative to methyl bromide. In this study in large plots in a commercial watermelon field, four treatments were compared: (I) non-treated; (II) oilseed radish fall cover crop; (III) 1,3-dichloropropane - chloropicrin (1,3-D) mixture applied at 330 L/ha as Telone C35; and (IV) methyl bromide - chloropicrin mixture applied at 390 kg/ha. Treatments I, III, IV received a rye cover crop during winter. Both fumigants were applied as bed treatments of 56 cm width in early spring. After winter, prior to the application of the fumigation treatments, numbers of RKN juveniles in soil were significantly less in the radish treatment compared to all other plots. Early in the season, vine length of watermelon was reduced in the 1,3-D treatment compared to the non-treated

control and the methyl bromide treatment. At harvest, the numbers of RKN galls on the watermelon root systems were counted and compared for each of the treatments versus the non-treated control. The reduction of RKN compared to the control was greatest for the 1,3-D treatment followed by the methyl bromide treatment. There were fewer galls on plants of the radish cover crop treatment compared to the non-treated control, but the difference was not significant. A resistant host winter cover crop may help to reduce the levels of RKN, but a more effective management option may be the use of the nematicide 1,3-D following a radish cover crop during winter when proper conditions for fumigation exist.