SODIUM AZIDE FOR CONTROL OF THE ROOT KNOT - FUSARIUM WILT COMPLEX IN COTTON.

R. Rodriguez-Kabana, Department of Entomology and Plant Pathology, Auburn University, Auburn, Alabama 36849.

The value of NaN_3 for suppression of the cotton wilt complex [*Fusarium oxysporum f. sp. vasinfectum* x *Meloidogyne incognita*] was studied in a greenhouse experiment with soil from a field with severe wilt problem. The soil was apportioned in one kg amounts in 4L plastic bags and was treated with an aqueous formulation [Agrizide^{TM}] of NaN_3 to have rates of : 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100 mgs a.i./kg soil. After thorough mixing, the content of a bag was poured into 1 L capacity, 10-cm-diam cylindrical plastic pots and the pots were covered with standard polyethylene [1ml]. Each rate and the no treatment control was represented by 7 replications [pots] arranged in a randomized complete block design. Ten days after application of the chemical, the pots were uncovered and 5 seed of "Rowden" cotton [*Gossypium hirsutum*] were planted in each pot. The resulting plants were grown for 8 weeks when they were removed and soil samples were collected for nematological analyses. The shoots and roots of the plants were weighed and the root systems were examined and indexed for disease severity symptoms. Following examination, the roots were incubated to determine nematode populations. All NaN_3 dosages eliminated populations of plant parasitic nematodes in the soil and roots. Sharp increases in weights of shoots and roots were recorded in response to NaN_3 application rates in the range 10-60 mgs/kg soil with no additional weight increments being obtained with rates $\geq$70 mgs/kg soil. Cotton root health [root condition index] was markedly improved in response to all NaN_3 dosages; root systems of plants from pots with the 10 mg-rate were as healthy looking as those from pots treated with all other dosages of the compound. Results indicate that NaN_3 may be useful for suppression of Fusarium wilt complex and that rates required for wilt control are below those needed for broad-spectrum herbicidal activity.