EVALUATION OF THE HERBICIDAL AND NEMATICIDAL ACTIVITIES OF PROPARGYL BROMIDE

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The nematicidal properties of propargyl bromide [PPB] were studied in a greenhouse study with a soil from a cotton field infested with the reniform nematode [*Rotylenchulus reniformis*]. An emulsifiable concentrate was prepared by diluting PPB [Aldrich, Milwaukee, U.S.A.] in acetone containing an emulsogen. An aqueous emulsion containing 0.2% [w/w] PPB was delivered to soil to have rates of 2, 4, 6, 8, 10, and 12 mgs PPB/Kg soil. The treated soil was mixed and transferred to 1L capacity 10-cm diameter cylindrical pots. Pots with untreated control soil and with treated soil were placed on a greenhouse bench in a randomized complete block design. Each treatment was represented by 14 replications [pots], one half of which were left uncovered and the other 7 were covered with polyethylene plastic bags [approx. 1 mil thickness] retained with a rubber around the pots. Soil samples for nematological analysis [salad bowl incubation technique] were collected one week after application of the materials. All rates of the chemical reduced numbers of the reniform nematode in covered and uncovered pots. Covering of the soil improved nematicidal activity in the range of 2-6 mgs PPB/Kg soil but had no effect at higher rates. Maximal suppression of the nematode was obtained with the 12 mgs rate and amounted to an average of 77% of populations in untreated soils. In another greenhouse experiment of identical design the 0.2% PPB emulsion was applied at rates of 2-20 mgs a.i./Kg soil to a soil infested with crab grass [*Digitaria sanguinalis*], purple nutsedge [*Cyperus rotundus*], Jimson weed [*Datura stramonium*] and a variety of other weed species. In the covered pots applications of the chemical resulted in a quasi-linear reduction in the number of weeds/pot in response to increasing PPB rates; however, when soil was not covered there was no consistent herbicidal activity in response to PPB applications. Results indicate that PPB is considerably less nematicidal than other halogenated hydrocarbons and that rates in excess of 20 mgs/Kg soil of the chemical will be required to obtain acceptable nematicidal and herbicidal activity. Covering the soil may improve the pesticidal activities of PPB.