SEP-100^{R} A NEW FORMULATION OF NaN_3 FOR CONTROL OF NUTSEDGES AND OTHER WEEDS

R. Rodriguez-Kabana* and D. G. Robertson. College of Agriculture, Auburn University, Auburn, Alabama 36849, U.S.A.

The herbicidal activity of SEP-100 [American Pacific Corporation, Las Vegas, Nevada] was studied in greenhouse and field experiments in soils heavily infested with purple [*Cyperus rotundus*] and yellow [*C. sculentum*] nutsedges, and other important weeds controlled with methyl bromide fumigation in high-value horticultural crops. In a greenhouse experiment with soil containing approximately 15-20 yellow nutsedge tubers/Kg soil drench applications of SEP-100 at rates of 20, 40, 60, and 80 mgs NaN_3/Kg soil controlled nutsedge at all rates applied; however, the most efficacious long-term [67 days] control was obtained with the two highest rates equivalent to 120 and 160 Kgs. NaN_3/Ha. In another greenhouse pot experiment post-emergence drench applications of SEP-100 at rates of 20, 40, 60, 80, and 160 mgs a.i./Kg soil to soil infested with purple nutsedge, crabgrass [*Digitaria sanguinalis*], pigweed [*Amaranthus* spp.], and other weed species, resulted in evident plant mortality 24 hrs after application in response to all rates; the three highest rates killed all plants and maintained the pots weed-free till the end of the experiment 35 days after initiation. In an additional pot experiment of identical design but with yellow nutsedge infestation post emergence drench applications of SEP-100 resulted in the same pattern of herbicidal activity observed with the purple nutsedge experiment. A field experiment was initiated to compare the efficacy of SEP-100 with that of a standard application of methyl bromide [27 gm/m^2]. The experiment was established at the E.V. Smith Experiment Station, near Auburn, in a field with heavy infestation [32 plants/m^2] of purple nutsedge. SEP-100 was delivered through 2 drip irrigation lines laid over a plastic covered 1-meter-wide bed using 190,000 L water/Ha [approx. 2 cm-Ha].The rates were: 56, 84,112, 168, and 224 Kgs.NaN_3/Ha. One month after application, rates of $\geq$ 84 Kgs NaN_3 resulted in significantly fewer nutsedge plants/m^2 than the methyl bromide treatment Nutsedge populations were related in a negative exponential manner to NaN_3 rates. There were no weeds present in plots treated with the highest rate of SEP-100 and populations in the 112 and 168 Kg rates were < 7 plants/m^2. Results indicate that SEP-100 can be an excellent alternative to methyl bromide for control of nutsedges and other weeds.