COMBINATIONS OF SODIUM AZIDE AND COMMERCIALLY AVAILABLE HERBICIDES FOR WEED CONTROL

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Sodium azide in its SEP 100^{R} (American Pacific Corporation, Lass Vegas, U.S.A.) formulation controls plant pathogenic nematodes and fungi when applied to soil at rates < 44.8 kg ai/ha (< 40 lbs. ai/A). These rates are not adequate for control of nutsedges [*Cyperus* spp.] and other hard-to-kill weeds which require applications in the range of 67 - 134 kg ai/ha (60 - 120 lbs ai/A). A number of registered herbicides are available with specific activities against these weed species. A greenhouse study was initiated to determine the feasibility of combining applications of SEP 100 and three of these herbicides EPTC (Eptam^{R}); *s*-metholachlor (Dual Magnum^{R}); and halosulfuron-methyl (Sandea^{R}) to reduce rates of Na azide needed to replace methyl bromide for control of weeds and soil-borne pests. Soil for the study was a sandy loam infested with yellow nutsedge [*Cyperus esculentus*], large crabgrass [*Digitaria sanguinalis*], hybrid pigweed [*Amaranthus* spp], annual morningglory [*Ipomoea* spp.] and other annual weeds. In a first experiment SEP 100 was applied by drenching at 0 to 33.6 kg ai/ha (0 to 30 lb ai/A) alone and in combination with EPTC at 6.72 kgs/ha (6 lb ai/A). Weed counts over a 50-day period after treatment indicated that combinations of EPTC with SEP 100 resulted in excellent control of yellow nutsedge and the other weeds to a degree generally superior to the control obtained with either compound alone. In a second experiment *s*-metholachlor was applied at rates of 1.12 to 5.6 kg ai/ha (1 to 5 lb ai/A) alone and in combination with SEP 100 at 0 and 44.8 kg/ha (0 and 40 lb a.i./A). Data obtained over 28 days after treatment showed that while SEP 100 alone at the 44.8 kg/ha rate was ineffective in controlling nutsedge, all combinations of SEP 100 with *s*-metholachlor resulted in excellent control of nutsedge and other weed species. In a third experiment, SEP 100 was applied at 0 and 44.8 kg ai./ha alone and in combination with halosulfuron-methyl at 10.2, 25.4, 50.8, 88.9, and 101.6 g ai/ha (9.1, 22.7, 45.4, 79.4, and 90.7 g ai/A). Results from this experiment over a 32-day observation period again demonstrated that the combination treatments of SEP 100 with halosulfuron-methyl resulted in excellent nutsedge control and the best overall herbicidal activity. Data from this study indicate that low rates of Na azide, <56 kg/ha (<50 lbs/A), effective against plant pathogenic nematodes and fungi, can be used in combination with appropriate commercially available herbicides to control nutsedge and other weeds.