SEP 100 (Sodium Azide) Efficacy Against Hybrid and Common Bermudagrass

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The elimination of methyl bromide as a fumigant poses management issues for sod growers and other turfgrass managers. Typically used as a broad-spectrum fumigant prior to planting sod fields or putting greens, methyl bromide eliminates common bermudagrass (*Cynodon dactylon*) and pernicious weeds such as nutsedge (*Cyperus* spp.). Currently available alternatives to methyl bromide do not offer widespread control of bermudagrasses and weeds. As a result, sodium (Na) azide is being evaluated as an alternative for use in sod fields.

Research studies were conducted in container microplots and in the field to determine optimal rates and placement methods for Na azide. In the microplots (2002), Na azide was applied at 112 kg a.i ha^{-1} to established common bermudagrass. Treatments were: 1) clear plastic cover or none, 2) incorporation of Na azide (tilled to 10 cm) or surface application, and, 3) azide leached with 2.0 cm of irrigation immediately after application, or no additional water applied. A zero azide control was also included. Treatments were arranged in a 2 x 2 x 2 factorial with 6 replications of each treatment combination. Percent kill of bermudagrass was rated weekly, and differences due to treatment were apparent one week after application. There was significantly greater kill when microplots were covered with plastic, and uncovered plots had significant bermudagrass regrowth after 4 weeks. Tillage also increased bermudagrass eradication, with significantly less live bermudagrass in plots that had been tilled. Leaching did not affect the degree of bermudagrass eradication. None of the treatments removed all the bermudagrass, and by four weeks after treatment every plot had at least some bermudagrass regrowth. This indicated that additional rate and application method studies were needed.

In the field (spring, 2003) Na azide was surface applied at rates of 84, 112, 140 and 168 kg a.i. ha^{-1} to soil from which Tifway hybrid bermudagrass (*C. dactylon x C. transvaalensis*) had been harvested three months previously. The experiment was arranged as a 4 x 2 factorial of Na azide rate and cover (clear plastic cover or none). Plots were rated weekly for percent bermudagrass regrowth. Additionally, plugs of centipedegrass sod and watermelon seed were planted weekly in each plot, providing an indication of the replant interval for the succeeding sod crop, a concern of sod growers. Bermudagrass control was most effective at the two highest rates of Na azide, and was not effective at 84 and 112 kg a.i. ha^{-1}. Control of sedge was not successful, and yellow nutsedge emerged in several plots over a six week rating period. Evaluation of centipedegrass and watermelon regrowth indicated that, in this one experiment, seedling and sod plug damage occurred for three weeks after Na azide application.

Preliminary results on the use of Na azide for bermudagrass eradication suggest that rates greater than 112 kg a.i. ha^{-1} are likely required, and that the material is most effective when applied under plastic. Good short-term control of bermudagrass regrowth in a clean-tilled sod field was obtained at higher rates of Na azide application, when applied under plastic. Additional research will needed to test Na azide under a wide range of soil types and application techniques. Additionally, long-term (bermudagrass eradication rated beyond 8 weeks) evaluation is needed, as sod fields require bermudagrass eradication for several years.