

A treatment can enhance, reduce or have no effect, depending on the chemical and rate.

Residual activity of herbicide treatments on bermudagrass overseeded with ryegrass

By B. J. Johnson¹

Goosegrass (*Eleusine indica* (L.) Gaertn.) is a major problem weed in bermudagrass (*Cynodon dactylon* (L.) Pers.) putting greens throughout the southeastern states. It grows into a large uneven plant which reduces the quality of the putting green turf. Goosegrass can be effectively controlled with postemergence treatments of methazole and metribuzin (2). Also, a combination of MSMA with reduced rates of either methazole or metribuzin controlled goosegrass without injury to bermudagrass (3). The disadvantage of these treatments (2,3) is that goosegrass may germinate and emerge after treatment and additional treatments may be required for consistent control. Bond and Roberts (1) reported that methazole can persist in the soil for a period up to 3 to 4 months. Savage (4) found that metribuzin starts to lose its phytotoxicity within a few weeks of application. Since most bermudagrass greens are overseeded in late summer or early fall with cool-season grasses, the question arises as to the length of time needed between herbicide treatment for goosegrass control and time of overseeding without injuring the newly planted grass. This experiment was conducted on bermudagrass green overseeded with perennial ryegrass to determine the optimum time interval needed from herbicide treatments to

overseeding without affecting the newly planted overseeded grass.

Methods and Materials

This experiment was conducted for 2 years on "Tifway" bermudagrass maintained as a putting green at Experiment, GA. It was overseeded with "Medalist IV" on 10 Oct. 1977 and "Medalist V" perennial ryegrass on 6 Oct. 1978. Herbicides were applied at 0, 1, 2, 4, and 6 weeks before planting. The treatments were MSMA at 2.2 kg/ha in each of two applications, methazole or metribuzin at 0.3 kg/ha in each of two applications or 0.6 kg/ha in one application, and combinations of MSMA at 2.2 kg/ha with either methazole or metribuzin at 0.1 kg/ha in each of two applications. When treatments were applied as a single application it was made at the indicated treatment date. For two applications, the first treatment was made 1 week before the initial treatment date followed by the second treatment 1 week later. Whether treatments were applied in one or two applications, the final applications was made at the indicated time of 0, 1, 2, 4, or 6 weeks before planting ryegrass.

Herbicides were applied broadcast in 376 liter/ha of water and seeding rate for ryegrass was 1,700 kg/ha. After overseeding, the turf was left unmowed for 10 to 14 days and then mowed at 1.0-cm in height for 3 weeks. After this period the cutting height was reduced to 0.8-cm until February and then maintained at a height of 0.64 cm during the remainder of the year. The turf was

mowed twice per week during the winter and three times a week during the rest of the year. The experiment was conducted on a Cecil (Typic Hapludult) sandy loam with a 6.0 pH, 0.8% organic matter, 77% sand, 14% silt, and 9% clay contents. The turf was fertilized with 50 kg N, 22 kg P, and 42 kg K from a complete fertilizer prior to overseeding in October and again in April. After overseeding, 50 kg N as ammonium nitrate was applied at approximately 4-week intervals. Turf growth ratings were visually estimated from 1 to 10 weeks after planting each year. The rate of growth was based on percentage of total ground cover.

The treatments were arranged in a split-plot design with dates of herbicide application as main plots and herbicide treatments as subplots with four replications. All data were analyzed statistically and reported as average from 2 years.

Results and Discussion

Methazole at 0.3 and 0.6 kg/ha were the only herbicide treatments that significantly reduced ryegrass growth when applied at the time of planting. Turf growth was not affected by other treatments when applied at anytime up to and including day of overseeding. Since both metribuzin (4) and methazole (1) persists in the soil for several weeks the newly-planted ryegrass tolerated the treatments as indicated above and maintained a normal turf growth. An exception occurred for metribuzin when applied on the day of overseeding. Seedling vigor of

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ryegrass was lower for several weeks after the metribuzin treatment, but the initial injury was temporary and treatments did not affect turf cover. Similar results occurred when methazole was applied on the day of overseeding and this injury significantly reduced turf growth and cover when compared with growth in plots treated 1 or more weeks before overseeding (Table 1). Metribuzin applied at least 1 week before overseeding did not affect seedling vigor. Combinations of MSMA (2.2 kg/ha) with either methazole or metribuzin at a lower rate (0.1 kg/ha) did not affect seedling vigor at anytime.

In some instances ryegrass population was higher in treated plots than in untreated plots (Table 1). This resulted from initial bermudagrass injury from the herbicide treatments as previously reported (2, 3) and reduced bermudagrass competition during ryegrass establishment.

These results show that combinations of MSMA with either methazole or metribuzin can be applied for goosegrass control at anytime in late summer up to the day of overseeding bermudagrass greens with ryegrass without affecting the stand of newly planted grass.

Literature Cited

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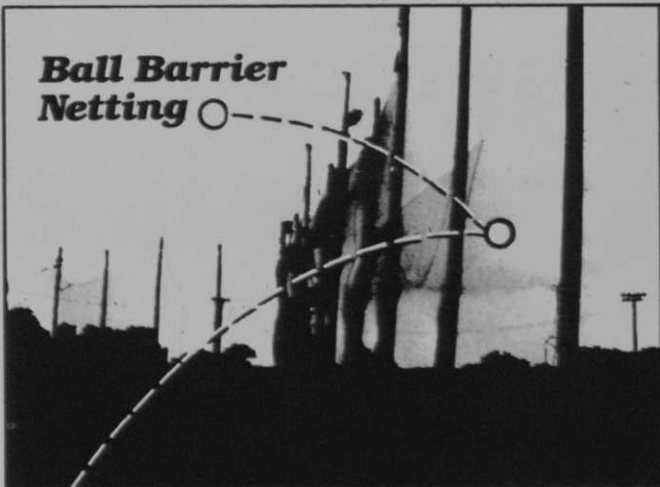


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