

Greenhouse Herbicide Safety on Seedling 'Zenith' Zoysiagrass Grown in the Greenhouse

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Objective

Identify herbicides for control of annual grass weeds in turf that are safe for use on zoysiagrass seedlings.

Rationale

Zoysiagrass is slow to germinate and slow to establish. Zoysiagrass is often seeded at the same time that extremely competitive annual grassy weeds are germinating. Therefore it is important to evaluate herbicides for the control of annual grassy weeds while not damaging zoysiagrass seedlings. Previous work at Purdue has established that quinclorac and dithiopyr are safe for use on zoysiagrass shortly after seeding. Even though both of these products will control crabgrass, neither will control goosegrass applied postemergent. Since goosegrass is a major annual grassy weed in the areas which zoysiagrass can be grown, this project focuses on the use of herbicides labeled for postemergence control of goosegrass as well as herbicide combinations for extended control.

How it was done

This study was performed in the greenhouse in the fall of 2001. Treatments were a 4 x 4 factorial with four herbicide combinations and four application timings. Herbicide treatments were Acclaim Extra (fenoxaprop-ethyl) 0.57WE at 0.125 lbs ai/A, MSMA (monosodium acid methanearsenate) 6.6EC at 1.9 lbs ai/A, Acclaim Extra 0.57WE + Dimension (dithiopyr) 1EC at 0.125 lbs ai/A and 0.5 lbs. ai/A, respectively and MSMA 6.6EC + Dimension 1EC at 1.9 lbs ai/A and 0.5 lbs ai/A, respectively. Application timings were 7, 14, 21, and 28 days after emergence (DAE) with six replications. An untreated check was included for comparison. Temperature in the greenhouse was regulated to encourage the growth of warm-season grasses. 6-inch pots filled with certain soil type to a height of 0.5 inches from the top and seeded with 'Zenith' zoysiagrass. Herbicide treatments were applied in the spray chamber with a calibration of 37 gallons per acre. Clippings were harvested by mowing at 0.5 inches every 7 days after first treatment, and then clippings were collected, dried and weighed. Final data was taken at 63 DAE as total shoot biomass.

Results

MSMA and MSMA + Dimension was much safer than Acclaim Extra or Acclaim Extra + Dimension at 7 and 14 DAE (Figure 1). Although Acclaim Extra and Acclaim Extra + Dimension were phytotoxic at all application dates, there was no decrease in final above ground plant weight for the 21 and 28 DAE treatments despite a reduction in growth (Table 1). MSMA is recommended for control of annual grassy weeds and appears safe as early as 7 DAE. MSMA + Dimension is safe on seedlings but the preemergence herbicidal activity of Dimension may prevent germination of any seeds with a dormancy factor. Future field tests performed in 2002 will help to establish more firm recommendations.

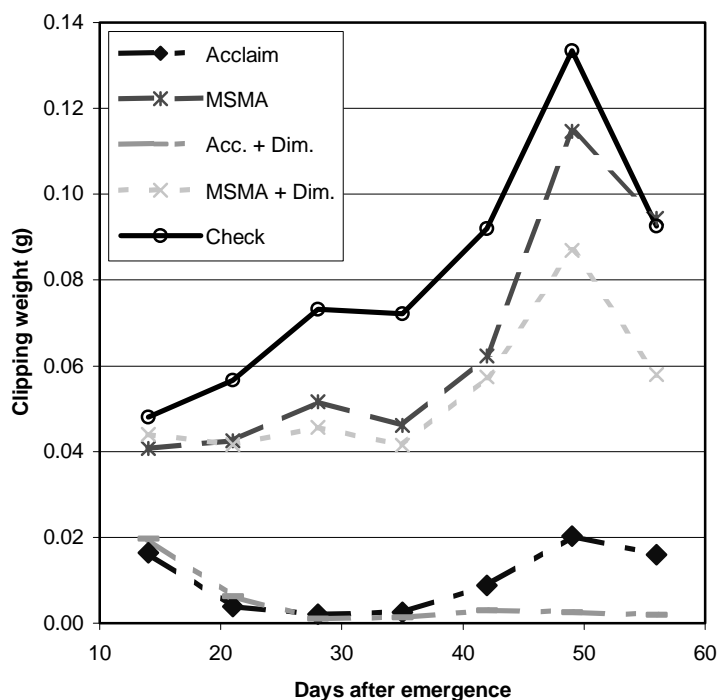


Figure 1. Safety of herbicide treatments at 7 DAE.

Table 1. Final (63 DAE) about ground plant weight of zoysia treated with various herbicides shortly after emergence.

Herbicide	Application timing	Above ground plant weight (g)
1Acclaim Extra	7 DAE	0.19
2Acclaim Extra	14 DAE	0.23
3Acclaim Extra	21 DAE	0.50
4Acclaim Extra	28 DAE	0.56
5MSMA	7 DAE	0.51
6MSMA	14 DAE	0.59
7MSMA	21 DAE	0.57
8MSMA	28 DAE	0.55
9Acclaim Extra + Dimension	7 DAE	0.06
10Acclaim Extra + Dimension	14 DAE	0.14
11Acclaim Extra + Dimension	21 DAE	0.42
12Acclaim Extra + Dimension	28 DAE	0.50
13MSMA + Dimension	7 DAE	0.59
14MSMA + Dimension	14 DAE	0.52
15MSMA + Dimension	21 DAE	0.73
16MSMA + Dimension	28 DAE	0.59
17Check ^b	--	0.62

^a Days after emergence.