

Safety of Drive and Dimension on Newly Seeded Bermudagrass and Zoysiagrass

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Objective of project

The objective of this project was to identify herbicides for use prior to or after seeding of seeded bermudagrass and zoysiagrass.

Rationale

Zoysia or bermudagrass fairways require less inputs than do most cool-season fairway turfs, and thus are less expensive but more environmentally friendly to maintain. Other studies at Purdue Univ. and Univ. of Kentucky are evaluating establishment techniques and disease control. These grasses can be slow to establish and they may be germinating at the same time as extremely competitive annual weedy grasses. Therefore it is important to evaluate herbicides that can control the annual grasses while not damaging the desirable zoysia and bermudagrass.

How It Was Done

Soil type on the experimental area is a Chalmers silt loam. The experimental area was fumigated in Apr 2000 with methyl bromide to minimize competition from annual grasses and broadleaf weeds that would complicate data measurement. The area was then smoothed and leveled to prepare the seedbed. Treatments were a 2 X 2 X 6 factorial with two species (bermudagrass and zoysiagrass), two herbicides (Drive 75DF at 0.75 lbs ai/A or Dimension 1EC 0.5 lbs ai/A), and 6 application timings (prior to seeding [PRE] and 0, 7, 14, 21, and 28 days after emergence [DAE]). An untreated check and a PRE application of siduron were included for comparison. The experiment was in a split-plot design with species as whole plots and herbicide treatments as sub-plots. There were three replications of whole plots and sub-plot size was 5 ft X 5 ft. 'Zenith' zoysiagrass was seeded at 1.0 lbs PLS/1000 ft² on 1 June, whereas 'Mirage' bermudagrass was seeded at 0.5 lbs PLS/1000 ft² on 8 June. The seeding dates were adjusted to simplify herbicide applications allowing the same treatment to be applied to both grasses on the same day. Actual application dates are listed in Table 1. Applications were made in the equivalent of 2 gals H₂O/1000 ft² at 35 PSI with flat fan nozzles. Plots received 1.0 lb N/1000 ft² with urea every two weeks after germination. The experimental area was irrigated as needed to encourage germination and establishment, and mowed at 1.0 inch as needed. Percent cover of zoysia and bermudagrass was recorded weekly in 2000 and the entire study will be repeated in 2001.

Preliminary Results:

Drive had no negative effects on bermudagrass regardless of application timing (Fig. 1 and 2). However, Dimension applied PRE and 0 DAE dramatically reduced cover of bermudagrass when rated on 21 July. By 8 Aug, bermudagrass recovered and only the PRE application of Dimension caused noticeable reduction in cover. As expected, siduron reduced bermudagrass cover by 21 July. Siduron will selectively control germinating crabgrass in a cool-season seeding. Since bermudagrass is also a warm-season grass, siduron controlled it as it

germinated. However, the bermudagrass in the siduron-treated plots recovered quickly and had reached almost 90% cover by 8 Aug.

By 21 July, Drive caused slight reduction in zoysiagrass applied PRE or 7 DAE (Figure 3). However, by 8 Aug, zoysiagrass had grown out of any damage caused by Drive (Figure 4). When rated 21 July, Dimension applied PRE, and 0 and 28 DAE reduced zoysia cover. By 8 Aug, zoysiagrass cover was reduced only by the PRE and 0 DAE applications of Dimension. Surprisingly, siduron had no effect on zoysiagrass even though it is not labelled for zoysia. This was probably due to the slow germination of zoysiagrass and the relatively short residual of siduron. By the time zoysiagrass germinated, the siduron was most likely dissipated in the soil.

It is difficult to make definite recommendations after a single year of study, but Drive and Dimension have potential of controlling weeds safely and effectively in seeded zoysia and bermudagrass. Additionally, the vigorous recovery of these grasses may enable fairly aggressive herbicide applications shortly after emergence to minimize weed pressure.

Table 1. Application dates of Drive and Dimension on newly seeded zoysia and bermudagrass.

Application	Zoysia	Bermuda
PRE	1 June	8 June
0 DAE	19 June	19 June
7 DAE	27 June	27 June
14 DAE	4 July	4 July
21 DAE	11 July	11 July
28 DAE	18 July	18 July

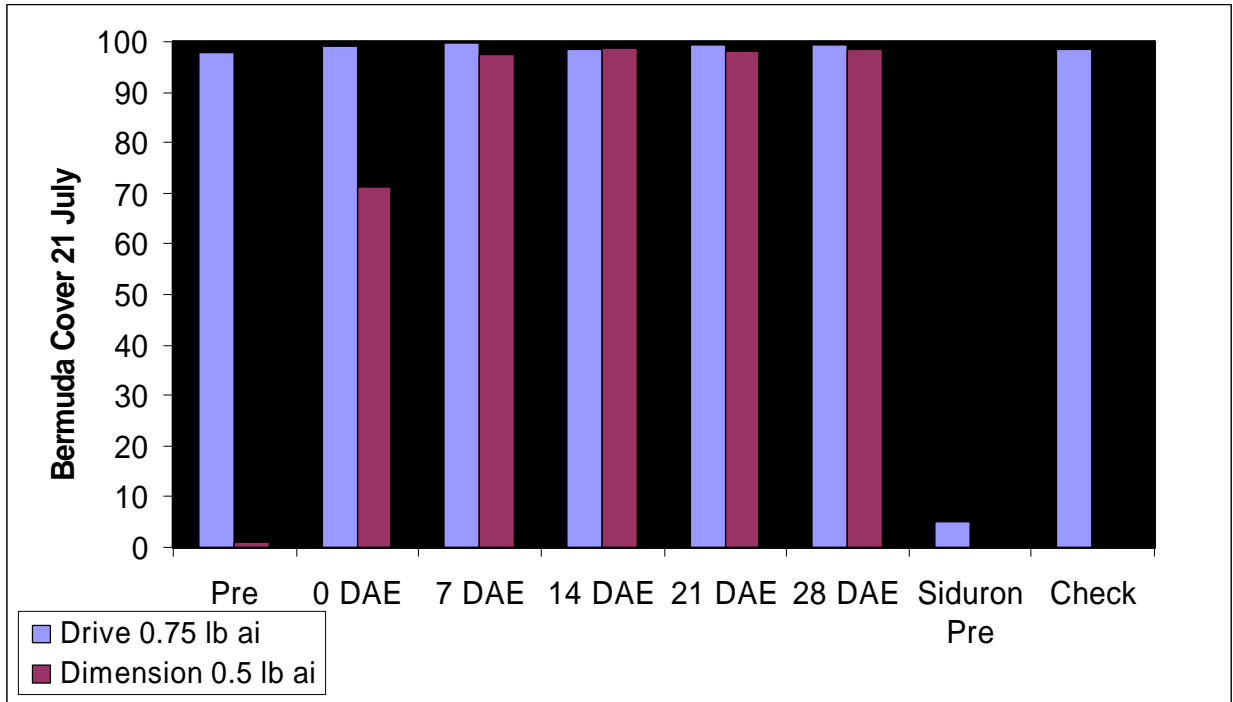


Figure 1. Percent cover rated on 21 July of ‘Mirage’ bermudagrass as affected by herbicides applied at various times before and after seeding.

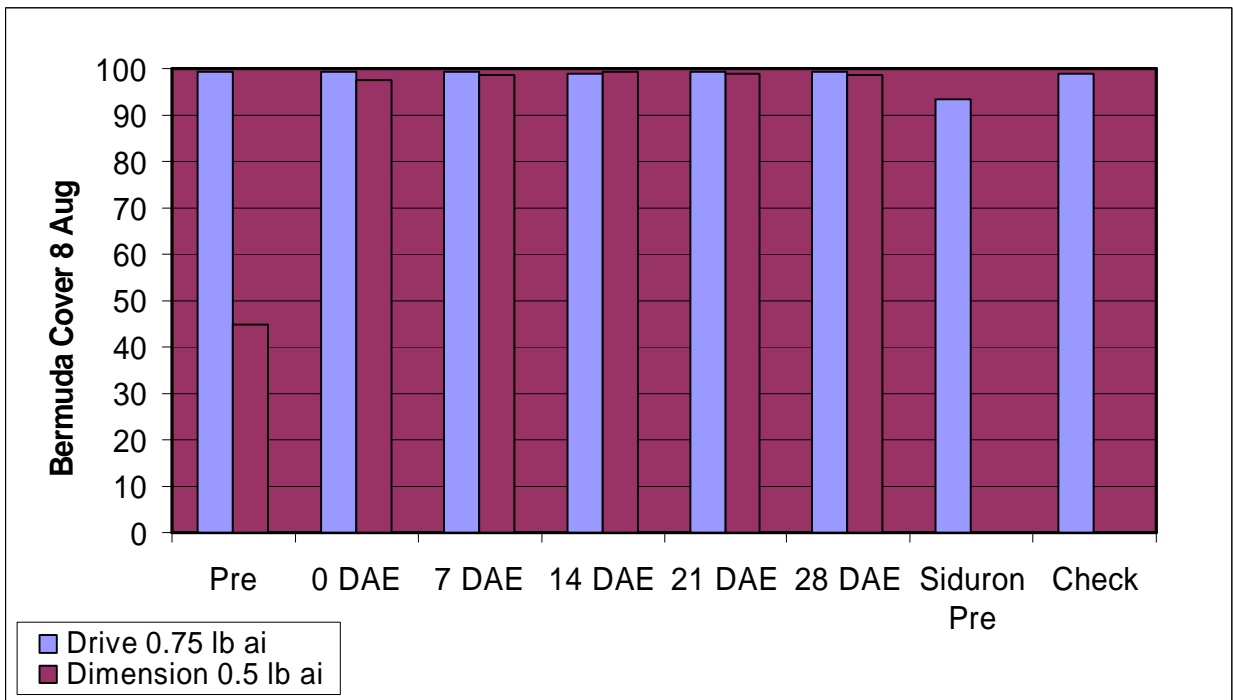


Figure 2. Percent cover rated on 8 Aug of ‘Mirage’ bermudagrass as affected by herbicides applied at various times before and after seeding.

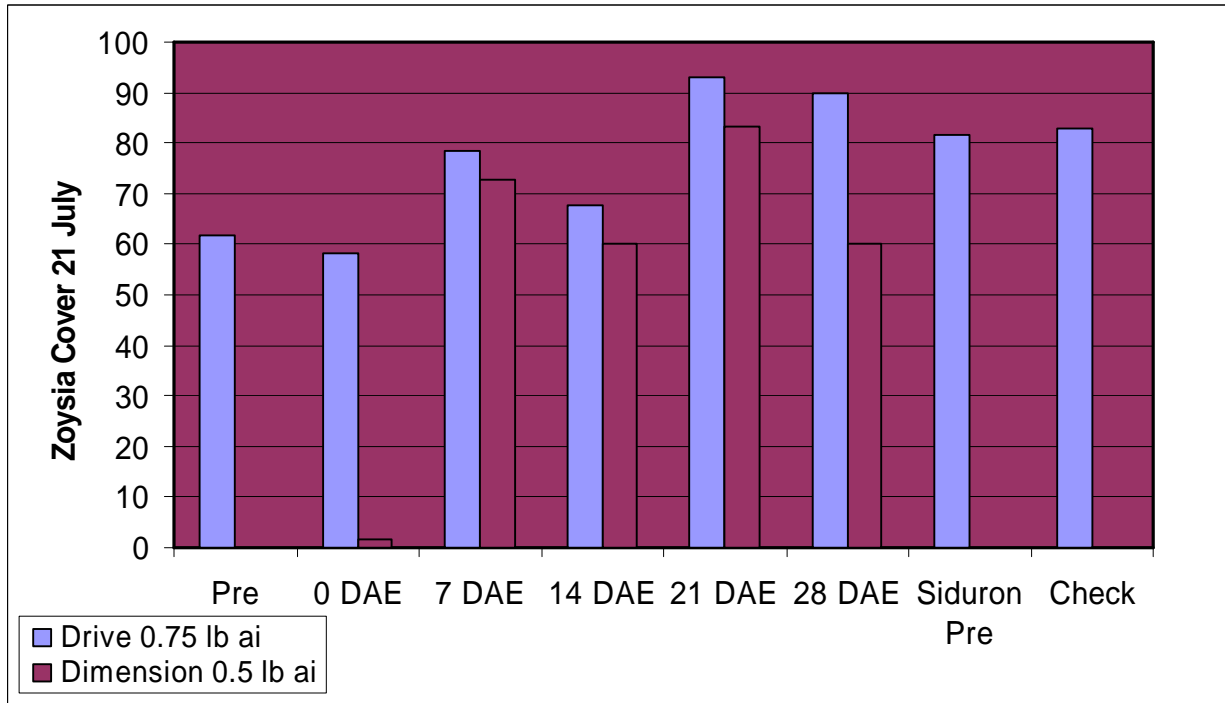


Figure 3. Percent cover rated on 21 July of ‘Zenith’ zoysiagrass as affected by herbicides applied at various times before and after seeding.

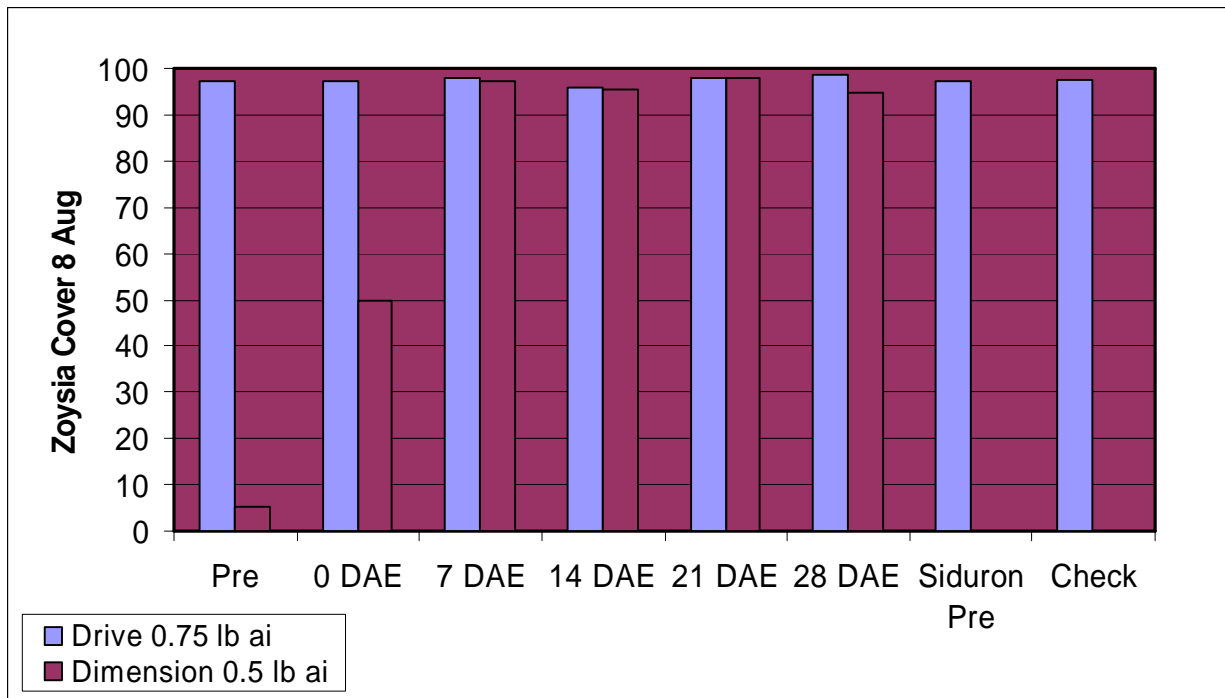


Figure 4. Percent cover rated on 8 Aug of ‘Zenith’ zoysiagrass as affected by herbicides applied at various times before and after seeding