



BERMUDAGRASS CONTROL WITH ARSENAL

John Boyd¹ and Brian N. Rodgers²

IMPACT STATEMENT

Experiments were conducted during 1998-1999 to evaluate the herbicide Arsenal (imazapyr) for bermudagrass control. In the 1998 study, Arsenal controlled bermudagrass ($\geq 93\%$) at either 1.0 or 2.0 qt/acre, with the 2.0 qt/acre rate providing slightly more consistent control. Three applications of Roundup Pro at 2.0 qt/acre were needed to provide equivalent control. Results from the 1999 study were very consistent with the 1998 results. In each experiment, 0.5 qt/acre of Arsenal was insufficient for bermudagrass control. During each year, tank-mixing 2.0 qt/acre Roundup Pro with Arsenal at 0.5, 1.0 and 2.0 qt/acre did not improve control over Arsenal alone, and mixing Finale at 4.0 qt/acre with 1.0 qt/acre Arsenal reduced control by 70% compared with Arsenal alone.

BACKGROUND

Bermudagrass is the most important weed in Arkansas sod production. Eradication of bermudagrass is also a major obstacle at other turfgrass sites in the South that are being converted to another species or a different bermudagrass variety. Previous research with

¹ Both authors are associated with the Pest Management Section, Cooperative Extension Service, Little Rock.

Roundup Pro (Johnson, 1988) showed that three applications of Roundup were required over a single growing season to give complete bermudagrass control. Increasing the rate of Roundup did not reduce the number of applications required for complete control (Johnson, 1988). Earlier research with Arsenal (Boyd, 1991) showed that 1.5, 2.0 and 3.0 qt/acre of Arsenal, applied in September, provided 85%, 89%, and 97% control, respectively, of common bermudagrass 1 year after treatment. Research conducted on a sod farm in Alabama (Griffin, 1994) reported that 1.5 qt/acre of Arsenal gave $\geq 90\%$ control and 2 qt/acre of Arsenal gave 100% control of common bermudagrass. One objective of the current study was to determine whether 'Tifway' bermudagrass could be controlled with a single herbicide application. Because Arsenal has extended residual activity, the other goal was to determine whether the rate of Arsenal required for complete bermudagrass control could be reduced by tank-mixing with other herbicides.

RESEARCH DESCRIPTION

The research sites were on an established 'Tifway' hybrid bermudagrass sod field at Winrock Grass Farm in central Arkansas. Initial herbicide applications were made during late May of 1998 and 1999. The carrier volume was 20 gal/acre, and a nonionic surfactant at 0.5% v/v was added to all treatments. Both studies were arranged in a randomized block design with four replications and a plot size of 6 by 10 ft. The soil texture was a silt loam with 43% sand, 39% silt, and 18% clay, a pH of 4.7, and a cation exchange capacity (CEC) of 6. The site was not irrigated; herbicide applications were timed to coincide with active growth of the bermudagrass. Visual ratings were conducted approximately every 30 days during the growing season. Total rainfall was 42 in. during the 1998-1999 trial and 14 in. during the 5-month evaluation period for the trial initiated in 1999.

FINDINGS

Our results with Arsenal (Table 1) were consistent with those reported earlier (Boyd, 1991, Griffin, et. al., 1994). The 2.0 qt/acre rate of Arsenal was needed to give complete bermudagrass control, but the level of control with 1.0 qt/acre was not statistically different. Adding Roundup (2 qt/acre) to Arsenal did not improve control over Arsenal alone, and tank-mixing 4.0 qt/acre of Finale with Arsenal reduced control severely. Overall control was generally better in this study than our earlier Arsenal work (Boyd, 1987). Possible reasons for this variation are the difference in application timing (spring vs. fall), mowing

height differences between pasture and sod farms, application volume (10 vs. 20 gal/acre), or the relative Arsenal tolerance of common bermudagrass compared with 'Tifway'.

LITERATURE CITED

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Table 1. 'Tifway' hybrid bermudagrass control with Arsenal 1998-1999.

Herbicide	Product rate/acre	Applications	1998-1999 ^y	1999 ^x
			336 DAIT ^w	152 DAIT
			————-% Control ^z ————	
Arsenal	2 qt	1	100 a ^v	100 a
Arsenal + Roundup Pro	2 qt + 2 qt	1	98 a	98 a
Roundup Pro	2 qt	3	96 a	100 a
Arsenal + Roundup Pro	1 qt + 2 qt	1	95 a	92 a
Arsenal	1 qt	1	93 a	91 a
Arsenal + Roundup Pro	1 pt + 2 qt	1	68 b	63 b
Arsenal + Finale	1 qt + 4 qt	1	33 c	33 c

^z Based on a 0 to 100 scale where 0 = no control and 100 = complete control.

^y Application Dates: 29 May 1998, 13 July 1998, and 2 October 1998.

^x Application Dates: and 21 May 1999, 13 July 1999, and 14 September 1999.

^w Days after initial treatment.

^v Means within each column followed by the same letter are not significantly different according to the Duncan's multiple range test ($P \leq 0.05$).