

SIDURON FOR CONTROL OF
BERMUDAGRASS IN TALL FESCUE
by
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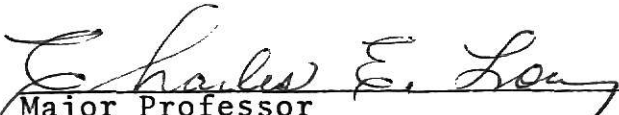
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INTRODUCTION

Tall fescue (Festuca arundinacea Schreb. 'Kentucky 31') is a popular turfgrass for the transition zone (9) in Kansas. Tall fescue requires less maintenance than other cool-season grasses because it is a naturalized eastern Kansas grass. (Figure 1) (1). Bermudagrass (Cynodon dactylon L.), another naturalized Kansas grass (Figure 2) (15) and a potential problem weed in tall fescue turf, can establish by seed, sprigs or stolons (16) carried into the turf. Because of its fine texture, prostrate growth habit, and dormancy during cool weather, bermudagrass disrupts the uniformity of a tall fescue turf.

This disruption is augmented by certain tall fescue turf management requirements: taller mowing heights which allow rapid invasion by bermudagrass, and late-spring fertilization which enhances the growth of bermudagrass (12). In the past, elimination of bermudagrass necessitated a total kill of the invaded turf. A more desirable method for controlling invasion would be to use a selective herbicide that would not harm the tall fescue but would eliminate the bermudagrass. Research (5) has indicated that such a chemical might be siduron.

Siduron, 1-(2-methylcyclohexyl)-3-phenylurea, is a herbicide registered for preemergence control of certain annual grassy weeds in newly seeded or established plantings of some cool-season grasses (7) at rates of 2.2 to 6.7 kg/ha for new seedlings and 10 to 13.4 kg/ha for established turf. Kerr (10) reported that tall fescue was not adversely affected by siduron at 13.4 kg/ha. Although tall fescue shoot growth decreased from its maximum at 2.8 kg/ha with increasing siduron dose, tolerance was great even at the high dose of 11.2 kg/ha. Yields still exceeded untreated lots possibly because of reduced nutrient loss by microbial growth. In sod studies (4) siduron at 22 kg/ha produced no significant injury on tall fescue. Furthermore, field studies in California confirmed bermudagrass injury at rates of 20.2 to 33.6 kg/ha.

Seed is the most prevalent source of common bermudagrass contamination of cool-season grasses (16). In one study (11) common bermudagrass seed did not germinate when 4.5 kg/ha of siduron was applied. But in California field tests (16) when siduron was applied to 7.6 kg/ha in March, May and July and common bermudagrass was seeded following the July application, a few weak bermudagrass plants survived. With application rates of 22.9 kg/ha of siduron and higher, no bermudagrass plants were present.

However, control of vegetative growth is more difficult. Common bermudagrass sprigs were not killed by a single application of siduron at 13.4 kg/ha although many did not root within four weeks and roots that did form were stunted with darkened tips (16). In another variety, Tifgreen 328 bermudagrass, stolons did not root at 10.1 kg/ha. They had a few lateral branches but a longer main stolon at 60 days (3) which would indicate the possible attempt to grow out of the siduron treated turf. The total growth of Tifgreen 328 was retarded even at 4.8 kg/ha up to three months.

In other studies on bermudagrass, siduron reduced shoot growth more than root growth (3,7,13,16). Vegetative losses up to 96% on bermudagrass sod were shown (6,8). According to Table 1 (6) maximum sod loss is apparent three weeks after date of application. Bermudagrass recovery was taking place four weeks later which indicates that further applications would be necessary. With repeated applications of siduron 100% control of bermudagrass may be obtained (8,14).

Bermudagrass cultivars vary in susceptibility to siduron. For example, Tiffine-127 and common bermudagrass are the most tolerant and show the least injury (8) from siduron application. Santa Ana (7), Tifgreen 328 (4,7,11), and Tifdwarf (14) show increasing susceptibility, respectively. Cultivars with less tolerance to siduron are darker green, have a higher shoot density, minimal seed head formation, and are more prone to smog