

Screening Herbicide for Turfgrass Safety on Saltgrass (Distichlis spicata) under Low Desert Conditions

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Objective:

To evaluate saltgrass (*Distichlis spicata*) for tolerance to select herbicides commonly used in turf.

Start Date: 2008

Project Duration: two years

Total Funding: \$9,996

Inland saltgrass is a native warm-season grass which has excellent tolerance to water and soil salinity, drought, submersion, and sodic soils. As part of the domestication process, it is necessary with any new species to determine a plant-pest profile.

Since all turfgrasses are susceptible to weed invasion by annual and perennial plant competitors, herbicide tolerance is an important issue for proper turfgrass management. Typical responses of turfgrasses to herbicides can include leaf tip burning, leaf bronzing, and general loss of color, yellowing (chlorosis), leaf necrosis, loss of stand density, or other plant growth regulator effects.

A six-year-old stand of 'A49' and 'A50' saltgrass was used for this test. The turf was mowed at 3.0 inches two to three times weekly, and irrigated to prevent drought stress. Twenty different compounds were selected representing different chemical families which are typically used for post-emergence grass, sedge, and broadleaf removal in warm-season turfgrasses.

These products were applied at their 1X maximum single application label rate, and also as a 2X spray solution application rate, which occurs in field spray overlaps. Methylated seed oil (MSO) or a 90% non-ionic surfactant were included

with herbicides only when recommended by the product label.

Saltgrass plots were scored weekly for the percent of the total plot surface that produced necrotic leaves/shoots (percent plot straw) and the intensity of necrosis itself (degree of expression). All plots were also rated for overall turfgrass color, quality, and on one occasion, visual density using the NTEP rating visual assessment scoring system (1 = dead, 6 = acceptable, 9 = best possible).

Negative response to a particular herbicide usually occurred in the form of an enhancement of necrotic straw production, which usually reduced turf plot color, but always affected turfgrass quality. A notable exception was Banvel (dicamba), which slightly decreased the overall color of the turf (at 21 DAT), but otherwise did not affect overall quality and did not show an enhanced amount of canopy straw.

Note that saltgrass has the tendency on its own, to retain lower leaves on its stems as part of the "natural" senescence process. This is noted even on the non-treated controls, which themselves always had some "straw" present. The overall effect on straw was reflected in the overall visual quality scores of the turf, which was used as the deciding factor in herbicide safety.

Both the non-ionic surfactant (applied alone at 0.5% v/v and at 1.0%) and MSO (applied at 1% and 2% applications) were safe. These treatments will be applied again in 2010 in order to determine consistency of response.



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Summary Points

● Commonly used turfgrass herbicides were screened on saltgrass (*Distichlis spicata*) for tolerance at 1X and 2X label rates.

● Herbicide product treatments which were generally regarded as safe for saltgrass at rates/volumes applied here included:

Corsair	(1X and 2X)
Manor	(1X and 2X)
Drive XLR8	(1X)
Certainty	(1X and 2X)
Velocity	(1X and 2X)
Quicksilver	(1X and 2X)
Dismiss	(1X and 2X)
2,4-D amine	(1X)
Banvel	(1X)
Image	(1X and 2X)
Illoxon	(1X)
Buctrill	(1X and 2X)
Spotlight	(1X)
Sedgehammer	(1X and 2X)
MSMA	(1X and 2X)
NIS	(1X and 2X)
MSO	(1X and 2X)
Revolver	(1X)

● Treatments which caused a slight decrease in quality for either a brief period of time or had marginal performance for at least two of the five rating events included:

Drive XLR8	(2X)
Revolver	(2X)
Banvel	(2X)
Illoxon	(2X)
Spotlight	(2X)
2-4,D	(2x)

● Treatments which caused an extreme loss of color, an enhanced straw condition, and subsequent loss of quality to below acceptable levels for at least two rating periods (over a 14-day period) included:

Monument	(1X and 2X)
Katana	(1X and 2X)
Tranxit	(1X and 2X)
Plateau	(1x and 2x)