

Evaluation and Comparison of Spotlight* Herbicide Combinations for Khakiweed Control in Turf

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Abstract

The combination of Spotlight at 1.0 pt/A plus Speedzone* at 4.0 pt/A gave 90% control of khakiweed at 14 days after treatment (DAT) and continued to offer acceptable control of 85% at 49 DAT. Acceptable control of 87 and 90% control was also observed at 14 DAT when Spotlight* was combined with Powerzone* or Speedzone*, respectively. The combinations of Spotlight* with Powerzone* or Trimec* were similar by marginally controlling khakiweed up to 21 DAT. Spotlight when combined with Turflon Ester* or Speedzone Southern* performed very similarly at all rating dates and did not offer acceptable khakiweed control.*

Introduction

Khakiweed (*Alternanthera pungens*) is a deep-rooted perennial weed and is a prolific seed producer that infests turfgrasses. It is a prostrate weed that spreads and forms a thick mat to crowd out bermudagrass. The synthetic auxins or plant growth regulator herbicides such as 2,4-D and Turflon Ester* (triclopyr) generally offer brief control of the visible foliage and then new seedlings emerge unless a preemergence herbicide is also applied. Spotlight* (fluroxypyr) is a postemergence herbicide in the same family of chemistry as triclopyr. Carfentrazone is a relatively new herbicide that has a very different mode of action and rapidly affects treated plants. It is formulated in various combinations as a pre-mix in Powerzone*, Speedzone*, or Speedzone Southern*. This experiment was conducted to evaluate and compare the relative performance of postemergence applications of herbicide combinations for khakiweed control in bermudagrass.

Materials and Methods

A small plot field experiment was conducted at the Ken McDonald Golf Course in Tempe, AZ to evaluate Spotlight* herbicide in combination with Turflon Ester*, Trimec*, Powerzone*, Speedzone*, and Speedzone Southern* (Table 1) for efficacy against khakiweed. The experiment was established with treatment plots measuring 5 ft x 20 ft and replicated three times in a randomized complete block design. All of the herbicide combination treatments were applied using a CO₂ backpack sprayer equipped with a hand-held boom composed of three 8002 flat fan nozzles spaced 20 inches apart. The sprays were applied in 38 gpa water pressurized to 30 psi. All treatments included a non-ionic surfactant, Latron CS-7 at 0.25% v/v. The experiment was initiated with the single postemergence application date on 06 August 2004 when the air temperature was 84F, rain-threatening clouds were overhead, and with an occasional wind at 5 to 10 mph. The khakiweed infestation was in a rough area with common bermudagrass that was very thin and cut at approximately 1 to 2 inch height approximately once per week. Visual observations of weed control efficacy were evaluated at regular intervals after application.

Results and Discussion

The addition of Trimec, Powerzone, or Speedzone to Spotlight offered control of khakiweed for up to 21 DAT (Table 2). The combination of Spotlight at 1.0 pt/A plus Speedzone at 4.0 pt/A gave 90% control of khakiweed at 14 days after treatment (DAT) and continued to offer acceptable control of 85% at 49 DAT. At 6 DAT, all of the Spotlight combination treatments exhibited activity against khakiweed with control ranging from 72 to 80%. Acceptable control of 87 and 90% control was observed at 14 DAT when Spotlight was combined with Powerzone or Speedzone, respectively. The combinations of Spotlight with Powerzone or Trimec were similar by marginally controlling khakiweed up to 21 DAT and then the degree of control declined. Spotlight when combined with Turflon Ester or Speedzone Southern performed very similarly at all rating dates and did not offer acceptable khakiweed control.

The combinations of pre-mix products with Spotlight were effective in providing varying levels of khakiweed control. Carfentrazone is a component of Powerzone, Speedzone, and Speedzone Southern with recommended application rates of 0.02 to 0.025 lb a.i./A. Speedzone applied at 0.025 lb a.i./A may have been more effective than Speedzone Southern at 0.02 lb a.i./A. Speedzone also contains and applies two times more 2,4-D, mecoprop and dicamba than the Speedzone Southern pre-mix product. Powerzone was very similar to Speedzone up to 21 DAT and was also more active than Speedzone Southern. Powerzone contains slightly less carfentrazone than Speedzone and MCPA replaces 2,4-D. Trimec containing no carfentrazone with 2,4-D, MCPA, and dicamba in combination with Spotlight were similar in performance to Powerzone with Spotlight against khakiweed. Further research is warranted to evaluate each of the pre-mix products and individual active ingredients alone and in combination for efficacy against khakiweed.

Acknowledgement

We thank Tim Pfannenstien, superintendent of Ken McDonald Golf Course, and his staff for providing the site to conduct the experiment and cooperating to maintain the site and provide assistance during the course of the experiment.

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Table 1. Product and pre-mix active ingredients

<u>Product and rate</u>	<u>Active ingredient per gallon</u>	<u>A.I./A</u>
Spotlight 1.0 pt/A	1.5 lb ae/gal fluroxypyr	0.23 lb
Turflon ester 0.75 pt/A	4.0 lb ae/gal triclopyr	0.375 lb
Trimec 2.0 pt/A	2.44 lb ae/gal 2,4-D 1.3 lb ae/gal MCPA 0.22 lb ae/gal dicamba	0.61 lb 0.325 lb 0.055 lb
Powerzone 4.0 pt/A	0.04 lb/gal carfentrazone 2.21 lb ae/gal MCPA 0.44 lb ae/gal mecoprop 0.22 lb ae/gal dicamba	0.02 lb 1.1 lb 0.22 lb 0.11 lb
Speedzone 4.0 pt/A	0.05 lb/gal carfentrazone 1.53 lb ae/gal 2,4-D 0.48 lb ae/gal mecoprop 0.14 lb ae/gal dicamba	0.025 lb 0.765 lb 0.24 lb 0.07 lb
Speedzone Southern 5.0 pt/A	0.04 lb/gal carfentrazone 0.52 lb ae/gal 2,4-D 0.20 lb ae/gal mecoprop 0.05 lb ae/gal dicamba	0.025 lb 0.325 lb 0.125 lb 0.031 lb

Table 2. Combinations of Spotlight herbicide for khakiweed control

<u>Treatment</u>	<u>Rate (prod/A)</u>	<u>Khakiweed Control (%)</u>			
		<u>6 DAT</u>	<u>14 DAT</u>	<u>21 DAT</u>	<u>49 DAT</u>
Untreated check		0	0	0	0
Spotlight + Turflon ester	1.0 pt/A + 0.75 pt/A	72	77	77	50
Spotlight + Trimec	1.0 pt/A + 2.0 pt/A	75	82	85	63
Spotlight + Powerzone	1.0 pt/A + 4.0 pt/A	80	87	83	73
Spotlight + Speedzone	1.0 pt/A + 4.0 pt/A	78	90	91	85
Spotlight + Speedzone South	1.0 pt/A + 5.0 pt/A	78	77	70	50
LSD (p=0.05)		5.4	5.7	7.2	11.7

Treatments applied on 06 August 2004