Herbicide Effects on Kurapia (*Lippia nodiflora*)

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Abstract

The purpose of this experiment was to examine the immediate effects of 12 different postemergence herbicides and 8 different preemergence herbicides on kurapia (*Lippia nodiflora*). Experimental results will help to indicate which herbicides could be used in kurapia to safely provide weed control. Data showed that 3 out of the 8 preemergence herbicides were safe and 2 out of the 12 postemergence herbicides were safe.

Introduction

Kurapia (*Lippia nodiflora*) is a non-invasive groundcover cultivar from Japan. It is a groundcover with a dense canopy, and a deep root system helps increase drought tolerance and prevent soil erosion. It is also effective when growing on steep slopes and in different soil conditions, but grows best in sandy soils. Because kurapia only grows to about 3 inches tall, it does not require to be mowed constantly. Just recently introduced to the United States, success was found in California experimental field plots. Due to Arizona's drought problem, kurapia is a hopeful alternative to bermudagrass wherever it is removed in attempts to reduce watering needs. As for climate and temperature requirements, kurapia can survive in temperatures as low as 13℉; however, it grows best in temperatures above 45℉ but not yet determined in extremely hot temperatures. At planting, previous studies have shown that if spaced 18 inches apart, the area should be covered in approximately three months. Preemergence herbicide testing was conducted at a Camelback Golf Club in Scottsdale, AZ and herbicides were identified to be safe or injurious to kurapia. Postemergence herbicide testing was conducted to determine which herbicides caused phytotoxicity and are potentially safe.

Materials and Methods

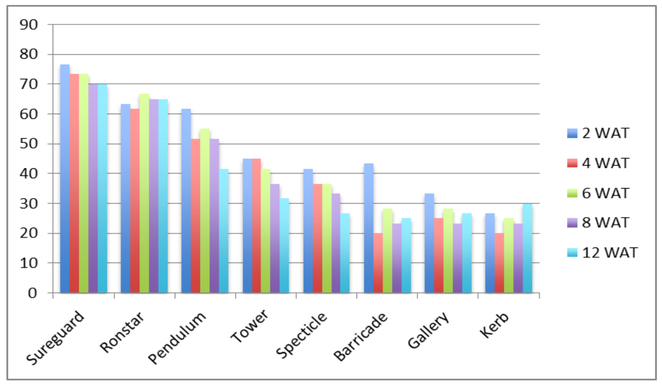
This experiment tested 12 postemergence herbicides and 8 preemergence herbicides (Table 1). At the Camelback Golf Club field plots, 5 'x 5' plots were measured and replicated 3 times for testing. Each plot had 7-9 plants. Before spraying, personal protective equipment included wearing a spacesuit, rubber boots, gloves and eyewear to be protected against herbicides. Herbicides were applied through 2 flat fan 8003LP nozzles spaced 20'' apart on a hand-held boom, pressurized at 35 psi and delivered in 96 gallons/A of water. During application, the weather was clear skies with temperature at 89℉, soil was 85℉ and the wind was less than 1 mph. Kurapia injury data was observed, analyzed, and organized into mean comparisons for all pairs using Tukey-Kramer HSD.

Table 1: Herbicide Name and Rates

Brand Name	A.I. Name	Product Rate	A.I. Rate
Fusilade II	fluazifop	24 oz/A	0.37 lb/A
Sedgehammer	halosulfuron	1.3 oz/A	0.062 lb/A
Certainty	sulfosulfuron	2.0 oz/A	0.062 lb/A
Tenacity	mesotrione	8 oz/A	0.2 lb/A
Tribute Total	halosulfuron + foramsulfuron + thiencarbazone	6.4 oz/A	0.16 lb/A
Celsius	iodosulfuron + dicamba + thiencarbazone	7.4 oz/A	0.26 lb/A
Drive XLR8	quinclorac	64 oz/A	0.5lb/A
Lontrel	clopyralid	1.33 pt/A	0.5 lb/A
Dismiss	sulfentrazone	12 oz/A	.375 lb/A
Vista	fluroxypyr	22 oz/A	0.625 lb/A
SpeedZone Southern	carfentrazone + 2,4-D + MCPP + dicamba	6 pt/A	0.4 lb/A
Trimec 1000	2,4-D + MCPP + dicamba	4 pt/A	1.63 lb/A
Sureguard	flumioxazin	8 oz/A	0.26 lb/A
Ronstar 2G	oxadiazon	200 lb/A	4 lb/A
Pendulum	pendimethalin	4.2 qrt/A	4 lb/A
Tower	dimethenamid	32 oz/A	1.5 lb/A
Specticle 20% WP	indaziflam	3.5 oz/A	0.044 lb/A
Barricade 65WG	prodiamine	2.3 lb/A	1.5 lb/A
Gallery 75DF	isoxaben	1.3 lb/A	1 lb/A
Kerb SC	pronamide	3.5 pt/A	1.25 lb/A

Results

Figure 1: Preemergence Herbicide Injury on Kurapia



Blooming Kurapia

Spraying Herbicides on 7/7/15

Fluazifop injury on kurapia after 1 WAT

Sulfentrazone injury on kurapia after 1 WAT

Table 2: Kurapia Injury Caused by Postemergence Injury

Treatment	Average Percent Injury (1 WAT**)	Average Percent Injury (2 WAT)	Observations (1 WAT)	Observations (2 WAT)
Fusilade II	12 B*	27 B	some burning, little injury	more injury than previous week
Sedgehammer	18 B	18 B	little leaf symptoms, inhibits flowering	no changes
Certainty	27 B	18 B	chlorosis, little leafing	recovering from chlorosis
Tenacity	15 B	23 B	chlorosis, mild bleaching	few flowers growing
Tribute Total	27 B	25 B	chlorosis	no changes
Celsius	27 B	23 B	burned leaves, little leafing	recovering from little leaf symptoms
Drive XLR8	25 B	32 B	little leafing, burned flowers	recovering from little leaf, still burned
Lontrel	13 B	27 B	chlorosis	some plants showed signs of recovery
Dismiss	92 A	96 A	severely burned	severely burned
Vista	43 AB	76 A	chlorosis, burning	much worse, severely burned
SpeedZone Southern	23 B	38 B	chlorosis, burning	more burned
Trimec 1000	42 B	78 A	chlorosis, burning, some bleaching	much worse, severely burned

*Levels not connected by the same letter are significantly different. **Weeks after treatment

Conclusion

Preemergence test. After 12 weeks of data collections, Kerb, Gallery and Barricade were the least injurious preemergence herbicides to spray on kurapia, ranging from 20%-25% injury (Figure 1).

Postemergence test. While Sedgehammer and Certainty appear to be the safest postemergence herbicides to spray; they both averaged below 20% injury after 2 weeks (Table 2). Dismiss caused significant damage to kurapia. Many of the postemergence herbicides showed progressive injury and percent injury went up after a week. Vista and Trimec caused 43% injury and 42% injury, respectively, after the first week; however, after the second week, Vista increased to 76% and Trimec increased to 78% injury. Kurapia treated with Drive XLR8 and Celsius showed recovery from little leaf symptoms but still continued to burn; therefore, their injury worsened. Kurapia was slightly injured by some herbicides and significantly damaged by others.

Acknowledgements

I would like to thank Kai Umeda and Worku Burayu for teaching me all about turf grass by taking me on field trips and allowing me to experience what it is like to work at Maricopa Extension. Also, I would like to thank Marshall Logvin for giving me this learning opportunity and selecting me to be apart of this incredible program.

This project was supported by Agriculture and Food Research Initiative Competitive Grant no. 2011-38422-30955 from the USDA National Institute of Food and Agriculture.