Kansas Agricultural Experiment Station Research Reports

Volume 4
Issue 6 *Turfgrass Research*

Article 2

2018

Herbicide and Application Timing Effects on Windmillgrass Control

Nicholas Mitchell

Kansas State University, nmitch2@ksu.edu

Jared Hoyle

Kansas State University, jahoye@ksu.edu

Follow this and additional works at: <https://newprairiepress.org/kaesrr>

Part of the [Horticulture Commons](#), and the [Weed Science Commons](#)

Recommended Citation

Mitchell, Nicholas and Hoyle, Jared (2018) "Herbicide and Application Timing Effects on Windmillgrass Control," *Kansas Agricultural Experiment Station Research Reports*: Vol. 4: Iss. 6. <https://doi.org/10.4148/2378-5977.7592>

This report is brought to you for free and open access by New Prairie Press. It has been accepted for inclusion in Kansas Agricultural Experiment Station Research Reports by an authorized administrator of New Prairie Press. Copyright 2018 the Author(s). Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned. K-State Research and Extension is an equal opportunity provider and employer.

Herbicide and Application Timing Effects on Windmillgrass Control

Cover Page Footnote

Contribution number 18-630-S.

TURFGRASS RESEARCH 2018

JULY 2018

K-STATE
Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

K-State Research and Extension is an equal
opportunity provider and employer.

Herbicide and Application Timing Effects on Windmillgrass Control

Nicholas J. Mitchell and Jared A. Hoyle

Summary

Windmillgrass (*Chloris verticillata* Nutt.) populations commonly infest turfgrass systems in the midwest, which result in aesthetically unacceptable turfgrass stands. Research trials were initiated in 2017 in Onaga and Junction City, KS, to determine windmillgrass control with various single herbicide applications at multiple application timings (spring, summer, and fall). Data collection for research trials consisted of visual percent windmillgrass cover (0–100%), line intersect analysis on four-inch spacing, normalized difference vegetation index (NDVI) (0 to 1 scale), and windmillgrass seedhead counts. Initial observations resulted in greater windmillgrass control with summer applications compared to fall applications. Pylex (topramezone) resulted in 80% windmillgrass control 8 weeks after summer application. Initial results indicate alternative herbicides options for windmillgrass control.

Rationale

Windmillgrass is a problematic perennial grassy weed commonly found in established turfgrass in the midwest. Currently, mesotrione (4-hydroxyphenylpyruvate dioxygenase [HPP] inhibitor) is the only available labeled post-emergent active ingredient for windmillgrass control in cool-season turfgrass systems.

Objective

Identify additional active ingredients and application timing for windmillgrass control in turfgrass with single applications.

View all turfgrass research reports online at: <http://newprairiepress.org/kaesrr>

Study Description

Research trials were initiated in 2017 in Onaga and Junction City, KS, to determine windmillgrass herbicide efficacy as well as application timing on windmillgrass control. Windmillgrass populations consisted of 65-75% cover in a low maintenance tall fescue (*Schedonorus arundinaceus*) system. Research plots were maintained at 2.5 inches. No supplemental irrigation was applied to the research areas throughout the duration of the trials. Treatments were arranged in a 3×10 factorial, randomized complete block design with 4 replications. Factors were the combination of 3 applications timings (spring, summer, and fall) and 10 herbicides. Summer treatments were applied on July 14, 2017 in Junction City and on July 19, 2017 in Onaga. The fall treatments were applied on September 7, 2017 in Junction City, and on September 15, 2017 in Onaga. Spring applications were applied in May 2018. Herbicide treatments consisted of Tenacity (mesotrione) at 8 fl oz/a, Acclaim (fenoxaprop) at 39 fl oz/a, Pylex (topramezone) at 2 fl oz/a, Drive XLR8 (quinclorac) at 64 fl oz/a, Dismiss (sulfentrazone) at 8 fl oz/a, Revolver (foramsulfuron) at 32.5 fl oz/a, Celsius WG (thiencarbazona + iodosulfuron + dicamba) at 4.9 oz/a, Katana (flazasulfuron) at 3 oz/a, Monument 75WG (trifloxysulfuron) at 0.53 oz/a, and a nontreated control. A surfactant was added to each herbicide treatment according to the manufacturer. Herbicide treatments were applied using a CO₂ pressurized backpack boom sprayer calibrated to deliver 43.56 GPA at 37 psi. Data collection for research trials consisted of visual percent windmillgrass cover (0-100%), line intersect analysis on four-inch spacing, NDVI (0 to 1 scale) and windmillgrass seedhead counts. Evaluations were conducted weekly for 4 weeks then biweekly up to 8 weeks after each application. Analysis of variance (ANOVA) was performed in SAS 9.4 (SAS Institute Inc., Cary, NC) and means were separated according to Fisher's protected least significant difference (LSD) level at 0.05.

Results

Initial observations calculated from percent windmillgrass cover resulted in increased windmillgrass control by summer applications compared to fall timings, pooled over all herbicide treatments (data not shown). At 8 weeks after summer application Pylex (topramezone) resulted in effective windmillgrass control (80%) (Figure 1). Acclaim (fenoxaprop) performed similarly to the currently labeled control option, Tenacity (mesotrione), at 8 weeks after summer application. Research is ongoing.

K-STATE
Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

Figure 1. Windmillgrass control by various herbicide treatments following summer application in Junction City, KS, Rolling Meadows Golf Course.

% Control = $[(\text{Initial}-X)/\text{Initial}] * 100$

X = % Windmillgrass cover for that rating date.

WAA = weeks after application.

Means were separated according to Fisher's protected least significant difference (LSD) level at 0.05.

K-STATE
Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service