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Response of Seven Woody Ornamentals to Turfgrass Herbicide Applications of Arylex, Penoxsulam, and Pyrimisulfan

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Abstract

Continued testing of turf-applied herbicides are being conducted to ensure off-target plant injury does not occur in the landscape. Results indicate high herbicide safety on select landscape ornamentals with new herbicides used to manage weeds in turf.

Keywords

ornamental herbicide tolerance, penoxsulam, pyrimisulfan

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Response of Seven Woody Ornamentals to Turfgrass Herbicide Applications of Arylex, Penoxsulam, and Pyrimisulfan

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Summary. Continued testing of turf-applied herbicides are being conducted to ensure off-target plant injury does not occur in the landscape. Results indicate high herbicide safety on select landscape ornamentals with new herbicides used to manage weeds in turf.

Rationale. With the recent stop-sale and distribution by the U.S. Environmental Protection Agency in 2011 of aminocyclopyrachlor for use in turfgrass systems due to reported tree harm, many newly registered turfgrass herbicides are more intensely tested for ornamental damage. New herbicides that have shown effective weed control in turfgrass systems are arylex, penoxsulam, and pyrimisulfan.

Objective. The objective of this study was to investigate the influence of turfgrass applications of arylex, penoxsulam, and pyrimisulfan herbicides on seven common woody ornamental landscape species.

Study Description. Research trials were initiated in 2015 on a nursery production facility at the Kansas State University Tuttle Forestry Research Center in Manhattan, KS. The seven ornamental species that were tested included blue spruce (*Picea pungens* 'Glauca'), eastern redbud (*Cercis canadensis*), red maple (*Acer rubrum* 'Sun Valley'), elm (*Ulmus parvifolia* 'Frontier'), viburnum (*Viburnum x rhytidophylloides* 'Allegheny'), and limber pine (*Pinus flexilis* 'Vanderwolf's Pyramid'). Individual species were grown in 5 gallon nursery pots. Herbicide treatments included pyrimisulfan (0.16 lb ai/a), pyrimisulfan (0.32 lb ai/a), pyrimisulfan (0.16 lb ai/a) + penoxsulam (0.16 lb ai/a), pyrimisulfan (0.24 lb ai/a) + penoxsulam (0.24 lb ai/a),

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aminocyclopyrachlor (1.35 lb ae/a), arylex (0.017 lb ae/a)+ fluoxypyr (0.29 lb ae/a) + dicamba (0.25 lb ae/a), arylex (0.017 lb ae/a) + fluoxypyr (0.26 lb ae/a) + 2,4-D (1.9 lb ae/a), 2,4-D (2.38 lb ae/a) + MCPP (0.63 lb ae/a) + dicamba (0.21 lb ae/a), and a non-treated control. Treatments were applied August 3, 2015, and arranged as a randomized complete block design with three replications within each species. Liquid herbicide treatments were applied in 0.5 pt of water to the soil surface of each individual species. Granular treatments were applied to soil surface by hand, then watered in with 0.5 pt. All treatments were applied to simulate common turfgrass application. Visual phytotoxicity (0-100% scale) was conducted monthly throughout the experiment. Data were subjected to analysis of variance (ANOVA) 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. No injury was observed on blue spruce, limber pine, and red maple regardless of treatment throughout the experiment. Unacceptable injury was observed by aminocyclopyrachlor applications at 0-57 days after application (DAA) on eastern redbud, elm and viburnum. High rates of pyrimisulfan + penoxsulam at 57 DAA also resulted in slight (<40%) elm phytotoxicity, significantly greater than the non-treated. Results indicate high herbicide safety on select landscape ornamentals with new herbicides used to manage weeds in turf.

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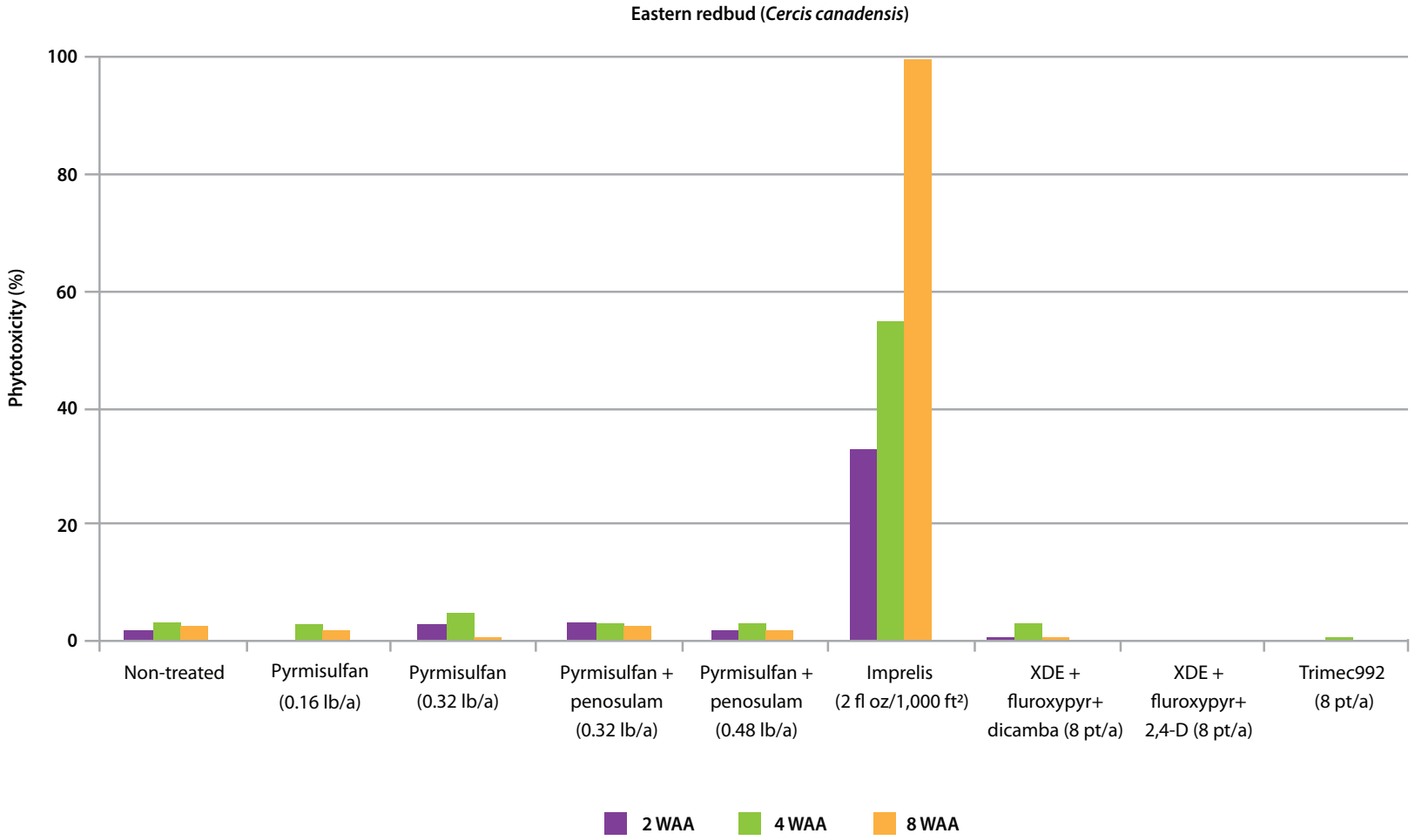

Figure 1. Application of treatment to eastern redbud (*Cercis canadensis*) in Manhattan, KS, August 3, 2015.
WAA = weeks after application.
Means were separated according to Fisher's protected least significant difference (LSD) at 0.05 significance level.
Imprelis was the only significantly different treatment at all ranges.

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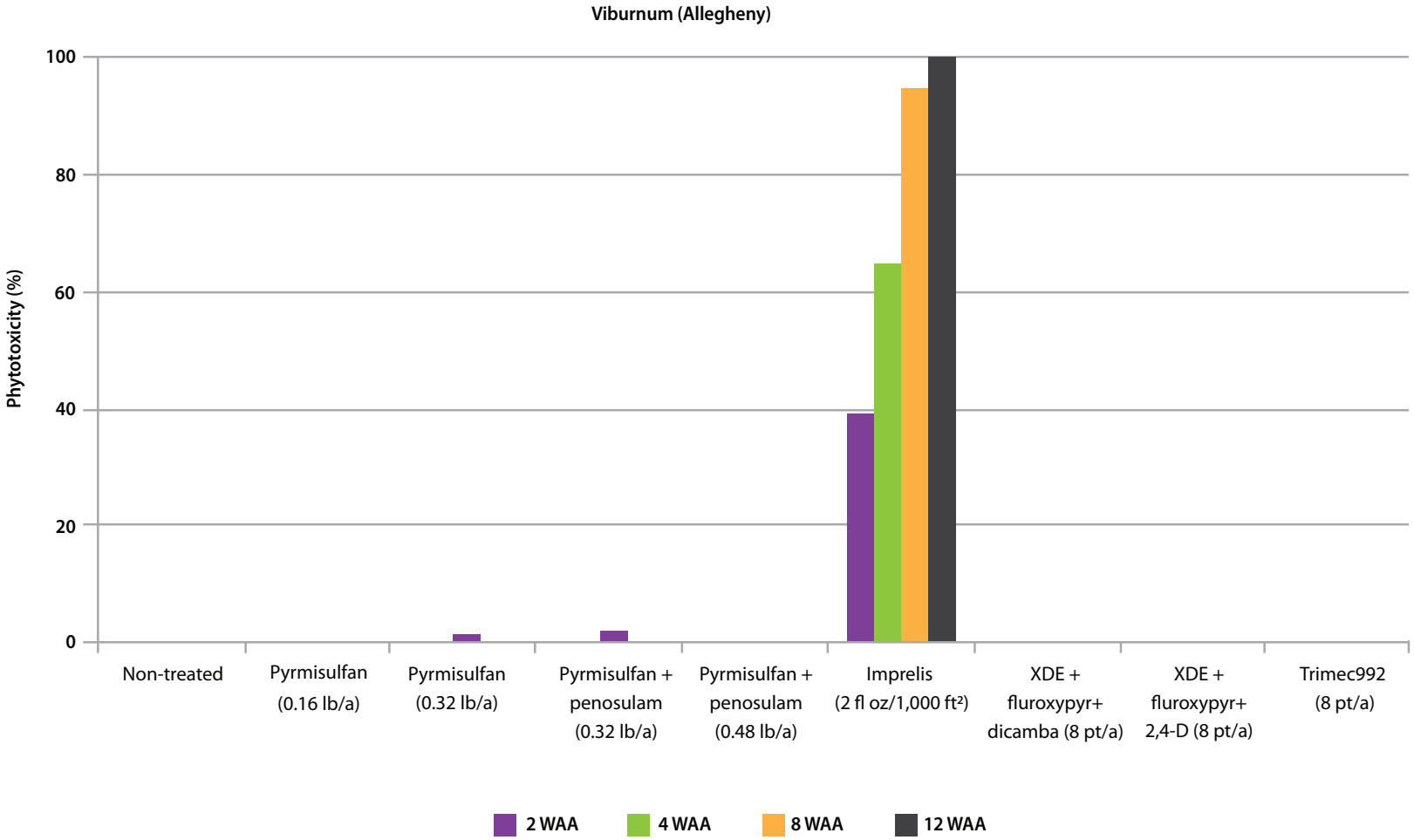

Figure 2. Application of treatment to viburnum (*Viburnum* (Allegheny)) in Manhattan, KS, August 3, 2015.
WAA = weeks after application.
Means were separated according to Fisher's protected least significant difference (LSD) at 0.05 significance level.
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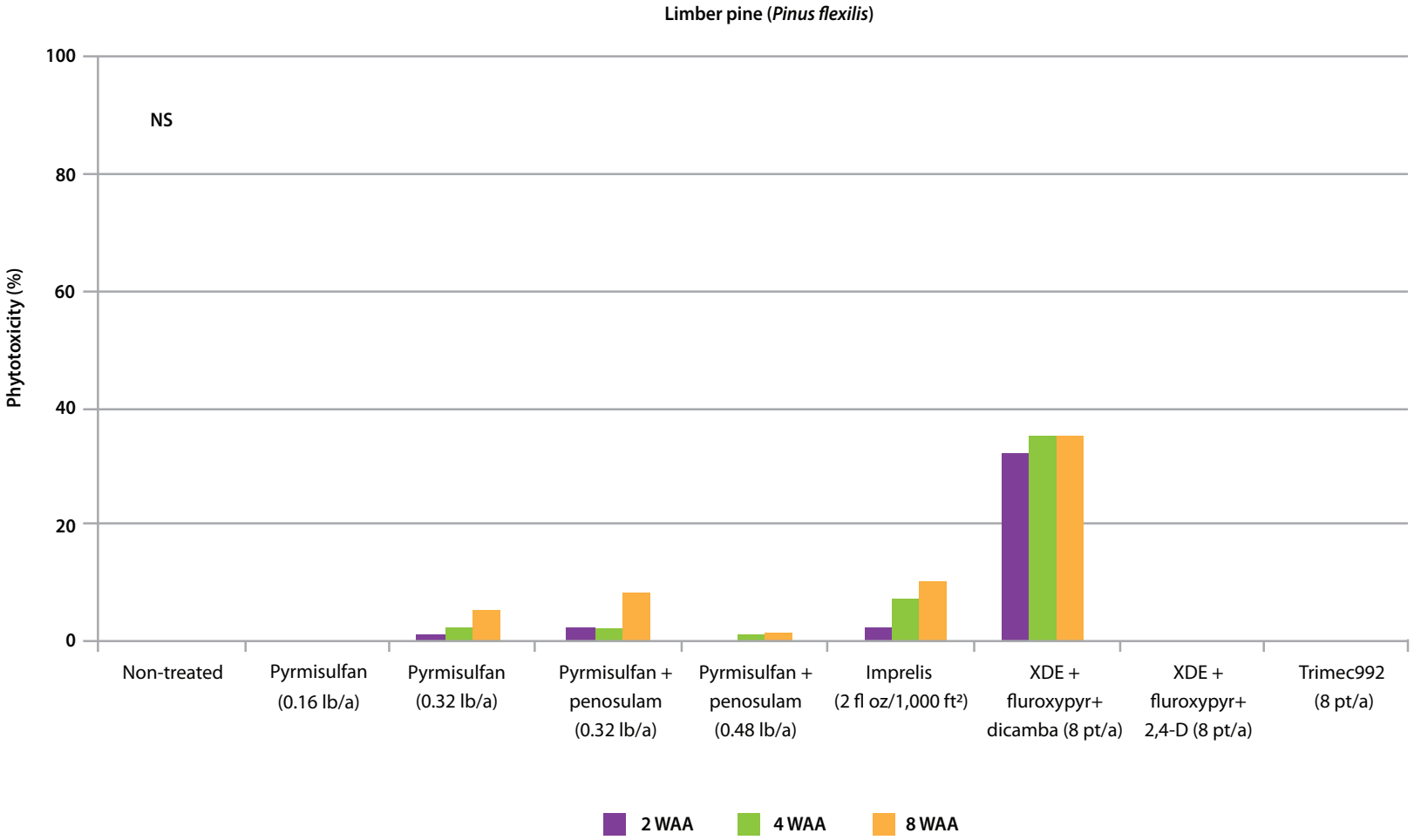

Figure 3. Application of treatment to limber pine (*Pinus flexilis* (Vanderwolf's Pyramid)) in Manhattan, KS, August 3, 2015.
WAA = weeks after application.
Means were separated according to Fisher's protected least significant difference (LSD) at 0.05 significance level.

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