

## Control of Leaf Streak on Daylilies with Fungicides

### Authors

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### Introduction

Leaf streak is a fungal disease caused by *Aureobasidium microstictum* that can hinder production of healthy, attractive daylilies for the floriculture industry. Fungicides may be able to help control the disease. The disease may occur after injury to the plant; injury may be required for infection to take place. Symptoms include reddish-brown spots that coalesce to form yellow streaks along the central leaf vein, followed by browning. The damaged areas spread along the leaf and infected leaves may eventually die. (See related photo on page A-3.) A variety of fungicides were investigated for their efficacy in controlling disease development when applied as foliar applications to the susceptible daylily cultivar, 'Stella d'Oro.'

### Material and methods

Daylily tubers were planted into a 0.5 A plot at the Michigan State University Muck Soils Research Farm, Laingsburg, MI on a coarse mineral soil in November 2001. Ten-plant plots were planted into beds with 1 ft between plants and 3 ft between rows and replicated three times in a randomized complete block design. Plots were irrigated as needed with sprinklers and were cultivated immediately before sprays began. All fungicides in this trial were applied on a 14-day interval from July 1, 2002 to August 21, 2002 (4 applications) with a spray boom delivering 25 gal/A (40 p.s.i.) and using one nozzle per row. Fungicides and biological control agents were applied on June 26, July 10, July 24 and August 7, 2002.

Weeds were controlled by hilling and with Dual 8E (1.5 pt/A) on June 7, June 20, July 15 and July 27, 2002 and Poast (1.0 pt/A) on June 20 and July 27, 2002.

Plots were rated visually for percentage foliar area affected by leaf streak on August 5 and August 27, 2002. Leaf streak was evaluated on a scale from 0 to 5, where: 0 = no symptoms; 1 = less than 5 percent of the foliage affected, 2 = 5 – 10 percent foliage affected; 3 = 10 – 20 percent foliage affected; 4 = 20 – 50 percent foliage affected; 5 = 50 – 100 percent of the foliage affected. Maximum and minimum air temperatures and soil temperatures for June-September were calculated. Precipitation was 0.32" in June, 1.14" in July, 0.41" in August and 0.0" to September 7. Plots were irrigated to supplement precipitation to about 1"/A/4 day period with overhead sprinkle irrigation. An electrified deer fence was erected around the plot.

### Results and discussion


Leaf streak developed throughout the season. By late August, plants in untreated plots had an average leaf streak rating of 3.67 (on a scale of 0-5) (Table 1 on page 24). On August 5, only Cleary's 3336 50WP (4 lb) and Systhane 40WP (0.143 lb) treatments had significantly less leaf streak affected foliage than the untreated control. All other treatments were not significantly different from the untreated control. By August 27th, Daconil 82.5WDG (1.5 lb), Headline 2WP (0.2 lb), Terraguard 50WP (0.25 lb), Cygnus 50WDG (0.125 lb), Headsup 100WDG (0.25 lb), Cleary's 3336 50WP (4 lb) and Systhane 40WP (0.143 lb) had significantly less leaf streak affected foliage than the untreated control. All other treatments were not significantly different from the untreated control. The number of fungicide programs without significant efficacy against leaf streak may be due to two factors: 1) lack of efficacy against the pathogen; and 2) injury to the leaf cuticle from application of fungicides and biological control products, which may allow the pathogen to infect the foliage. See Table 1 on page 24. 

Table 1. Efficacy of foliar fungicide applications for control of leaf streak in daylily cv. 'Stella d'Oro.' Treatments in bold were significantly different from the control.

	Treatment and rate/acre <sup>1</sup>	Leaf Streak Index <sup>2</sup>			
		5 Aug		27 Aug	
1	Heritage 50WDG 0.5 lb (A,B,C,D) <sup>3</sup>	1.67	cdef <sup>4</sup>	2.33	bcdef
2	<b>Daconil 82.5WDG 1.5 lb (A,B,C,D)</b>	1.67	cdef	<b>2.00</b>	<b>def</b>
3	Medallion 50WDG 0.625 lb	3.00	abc	3.33	abc
4	Heritage 50WDG 0.5 lb (A,C)				
	Daconil 82.5WDG 1.5 lb (B,D)	2.00	bcde	3.33	abc
5	<b>Sythane 40WP 0.143 lb (A,B,C,D)</b>	<b>0.33</b>	<b>f</b>	<b>1.33</b>	<b>ef</b>
6	<b>Headline 2WP 0.2 lb (A,B,C,D)</b>	2.33	abcde	<b>2.00</b>	<b>cdef</b>
7	Contrast 70WP 0.19 lb (A,B,C,D)	2.00	bcde	3.00	abc
8	Contrast 70WP 0.38 lb (A,B,C,D)	2.67	abc	2.67	bcde
9	Terraguard 50WP 0.125 lb (A,B,C,D)	2.67	abcd	3.67	ab
10	<b>Terraguard 50WP 0.25 lb (A,B,C,D)</b>	1.33	def	<b>1.67</b>	<b>ef</b>
11	Terraguard 50WP 0.5 lb (A,B,C,D)	2.33	abcde	2.67	bcde
12	<b>Cygnus 50WDG 0.125 lb (A,B,C,D)</b>	1.00	ef	<b>1.33</b>	<b>ef</b>
13	Cygnus 50WDG 0.225 lb (A,B,C,D)	2.00	bcde	3.00	abc
14	Myconate 100WP 0.11 lb <sup>5</sup> (A,B,C,D)	1.67	cdef	2.33	bcdef
15	Summerdale EXP 5SC 0.42 pt <sup>5</sup> (A,B,C,D)	2.00	bcde	2.33	bcdef
16	Zerotol 27SC 0.78 pt (A,B,C,D)	2.00	bcde	2.33	bcdef
17	Banner Maxx 14.3SC 0.5 pt (A,B,C,D)	2.33	abcde	3.00	abcd
18	<b>Headsup 100WDG 0.25 lb<sup>5</sup> (A,B,C,D)</b>	1.33	def	<b>1.67</b>	<b>def</b>
19	Messenger 5WP 0.42 lb <sup>5</sup> (A,B,C,D)	1.67	cdef	2.33	bcdef
20	Manzate 75WP 2 lb (A,B,C,D)	3.67	a	4.33	a
21	<b>Cleary's 3336 50WP 4 lb (A,B,C,D)</b>	<b>0.33</b>	<b>f</b>	<b>1.00</b>	<b>f</b>
22	Contrast 70WP 0.19 lb (A,C)				
	Cygnus 50WDG 0.125 lb (B,D)	2.00	bcde	2.67	bcde
23	Contrast 70WP 0.19 lb (A,C)				
	Headline 2WP 0.2 lb (B,D)	1.33	ef	2.33	bcdef
24	Contrast 70WP 0.19 lb (A,C)				
	Cygnus 50WDG 0.125 lb (B,D)	3.33	ab	4.33	a
25	Untreated	2.33	abcde	3.67	ab

<sup>1</sup> Fungicides and biological control agents were applied in 25 gal water/A at 40 p.s.i..

<sup>2</sup> Leaf streak was evaluated on a scale from 0 to 5; where 0 = no symptoms; 1 = less than 5%; 2 = 5 - 10%; 3 = 10 - 20%; 4 = 20 - 50%; 5 = 50 - 100% of the foliage affected.

<sup>3</sup> Application dates A = 26 Jun; B= 10 Jul; C= 24 Jul; D= 7 Aug.

<sup>4</sup> Values within a column followed by the same letter are not significantly different at P = 0.05 (Tukey Multiple Comparison).

<sup>5</sup> Biological control agents.