

**Evaluation of fungicide programs for control of Stemphylium leaf blight of onion, 2018.**

This study was conducted at a grower cooperator's farm located in Hamilton, MI. Onion 'Bradley' seeds were sown 21 Apr on raised beds that were 6 in. tall and 60 in. wide at the top and were spaced 80 in. apart at the row center. Each bed consisted of eight rows of planting spaced 6 in. apart and seeds spaced 2 in. within a row. A completely randomized block design with four replicates was established in an area 100 ft long by seven beds. Each treatment was 20 ft long with a 2-ft buffer section between replicates within a row. Fertilization, weeds and insects were managed by the grower cooperator and were to commercial production standards. Treatments were applied as a foliar spray on 22 and 27 Jun; 3, 10, 17, and 25 Jul; and 1, 9, and 15 Aug. Treatments were applied using a CO<sub>2</sub> backpack sprayer and a broadcast boom equipped with three XR8003 flat-fan nozzles spaced 18 in. apart, calibrated at 50 psi and delivering 50 gal/A. Disease incidence was assessed based on visual estimation of foliage with disease (0 to 100%) on 26 Jul, 6 and 14, and 21 Aug from the center 5 ft of the six center rows of the treatment plots. Onions were harvested from 6 ft of the center four rows of the treatment plots and weighed with dried tops attached on 10 Sep. The bulbs were allowed to dry, topped, sorted into small (<2 in.), medium (2-3 in.) and large (>3 in.) sizes and weighed on 8 Oct. Data were analyzed using an analysis of variance, with means separation performed using Fisher's protected least significant difference (LSD).

On the first evaluation, 26 Jul, all treatments had significantly lower foliar disease ( $\leq 6.8\%$ ) than the untreated control (16.8%). The untreated control reached 100% disease incidence by the third evaluation date of 14 Aug whereas treatments including Luna Tranquility SC (5, 6, 10, 11 and 14), Luna Experience SC (7), or Miravis Prime (12 and 13) had foliar disease levels of  $\leq 35\%$  incidence. All other treatments (2,3,4, 8 and 9) ranged from 82.5 to 98.8% disease incidence on 14 Aug. On the final rating of 21 Aug, the lowest levels of disease incidence, 57.5 to 67.5%, were obtained with the treatments 7, 11, 12, 13 and 14. Treatments 2, 3, 4, 8, and 9 were similar to the untreated control by the final rating. On 21 Aug, three treatment programs limited foliar disease to  $\leq 60\%$  and included Bravo WeatherStik SC alternated with either Luna Tranquility SC (11, 14) or Miravis Prime SC (12, 13).

Several treatments resulted in a total bulb yield significantly greater than the untreated control and included the high rate of Luna Tranquility SC alternated with either Bravo WeatherStik SC (6, 14) or Dithane SC (10), Luna Experience alternated with Bravo WeatherStik SC (7), Approach SC + Fontelis SC alternated with Dithane SC + Tanos WG, or Miravis Prime SC alternated with Bravo WeatherStik SC (13). Significant differences in yield among the bulb sizes were noted among the treatments. Treatments 2, 6, 8, 10 and 14 yielded fewer small bulbs than the untreated control. Treatments 2, 5, 6, 7, 8, 10 and 14 yielded more medium-sized bulbs than the untreated control. Only Luna Tranquility SC alternated with Bravo WeatherStik SC (14) resulted in significantly higher yield of large bulbs than the untreated control.

Treatment and rate/A, application schedule, applied at 7- to 10-day intervals	Disease incidence*			
	7/26	8/6	8/14	8/21
1 Untreated control	16.8 a**	85.0 a	100.0 a	100.0 a
2 KFD-271-02 SC 72 fl oz, apps A,C,E,G,I -alt- Elixir DF 3.6 lb, apps B,D,F,H	4.5 bc	57.5 bc	95.0 ab	100.0 a
3 KFD-271-02 SC 72 fl oz, apps A,C,E,G,I -alt- Manzate Max FL 2.4 qt, apps B,D,F,H	6.8 bc	70.0 ab	96.3 ab	100.0 a
4 KFD-271-02 SC 72 fl oz, apps A,C,E,G,I -alt- Oranil FL 3 pt, app B -alt- Ridomil Gold MZ WG 2.5 lb, apps D,F,H	4.0 bc	65.0 bc	98.8 a	100.0 a
5 Luna Tranquility SC 12 fl oz + Activator 90 SL, apps A,C,E,G,I -alt- Bravo WeatherStik SC 24 fl oz + Activator 90 SL, apps B,D,F,H	1.0 c	22.5 f	27.5 de	76.3 bc
6 Luna Tranquility SC 16 fl oz + Activator 90 SL, apps A,C,E,G,I -alt- Bravo WeatherStik SC 24 fl oz + Activator 90 SL, apps B,D,F,H	1.0 c	20.0 f	35.0 d	78.8 b
7 Luna Experience SC 10 fl oz + Activator 90 SL, apps A,C,E,G,I -alt- Bravo WeatherStik SC 24 fl oz + Activator 90 SL, apps B,D,F,H	1.0 c	22.5 f	27.5 de	67.5 cd
8 Approach SC 6 fl oz + Fontelis SC 16 fl oz + MSO EC, apps A,C,E,G,I -alt- Dithane SC 2 qt + Tanos WG 8 oz, apps B,D,F,H	2.5 c	41.3 de	82.5 c	98.8 a
9 Approach SC 6 fl oz + Fontelis SC 16 fl oz + MSO EC, apps A,C,E,G,I -alt- Dithane SC 2.4 qt, apps B,D,F,H	3.5 bc	52.5 cd	87.5 bc	98.8 a
10 Luna Tranquility SC 16 fl oz + MSO EC, apps A,C,E,G,I -alt- Dithane SC 2.4 qt, apps B,D,F,H	1.0 c	25.0 f	28.8 de	75.0 bc
11 Bravo WeatherStik SC 24 fl oz, apps A-D Luna Tranquility SC 22 fl oz + Activator 90 SL, apps E-I	4.0 bc	26.3 ef	27.5 de	60.0 d
12 Bravo WeatherStik SC 24 fl oz, apps A-D	9.5 b	35.0 ef	28.8 de	57.5 d

Treatment and rate/A, <i>application schedule</i> , applied at 7- to 10-day intervals	Disease incidence*			
	7/26	8/6	8/14	8/21
Miravis Prime SC 10.3 fl oz + Activator 90 SL, <i>apps E-I</i>				
13 Bravo WeatherStik SC 24 fl oz, <i>apps A-D</i>				
Miravis Prime SC 11.4 fl oz + Activator 90 SL, <i>apps E-I</i>	7.0 bc	32.5 ef	26.3 de	57.5 d
14 Luna Tranquility SC 16 fl oz + MSO EC, <i>apps A,B,E,F,I</i>				
-alt- Bravo WeatherStik SC 2 pt, <i>apps C,D,G,H</i>	1.0 c	20.0 f	23.8 e	60.0 d

\*Disease incidence based on a visual estimation of percent of foliage diseased.

\*\*Column means with a letter in common are not significantly different (t Test LSD;  $P=0.05$ ).

Treatment and rate/A, <i>application schedule</i> , applied at 7- to 10-day intervals	Yield (lb)				
	Harvested total* (9/10)	Small (<2 in.)	Medium (2-3 in.)	Large (>3 in.)	Total
1 Untreated control	28.4 d**	8.91 a	17.0 d	0.4 b	26.3 d
2 KFD-271-02 SC 72 fl oz, <i>apps A,C,E,G,I</i>					
-alt- Elixir DF 3.6 lb, <i>apps B,D,F,H</i>	33.8 b-d	6.45 b-d	23.6 a-c	1.3 b	31.3 bc
3 KFD-271-02 SC 72 fl oz, <i>apps A,C,E,G,I</i>					
-alt- Manzate Max FL 2.4 qt, <i>apps B,D,F,H</i>	29.9 cd	6.63 a-d	20.5 b-d	0.9 b	28.0 cd
4 KFD-271-02 SC 72 fl oz, <i>apps A,C,E,G,I</i>					
-alt- Oranil FL 3 pt, <i>app B</i>					
-alt- Ridomil Gold MZ WG 2.5 lb, <i>apps D,F,H</i>	29.7 cd	6.51 a-d	19.5 cd	1.8 b	27.8 cd
5 Luna Tranquility SC 12 fl oz + Activator 90 SL, <i>apps A,C,E,G,I</i>					
-alt- Bravo WeatherStik SC 24 fl oz + Activator 90 SL, <i>apps B,D,F,H</i>	34.2 b-d	6.51 a-d	24.0 a-c	1.5 b	32.0 bc
6 Luna Tranquility SC 16 fl oz + Activator 90 SL, <i>apps A,C,E,G,I</i>					
-alt- Bravo WeatherStik SC 24 fl oz + Activator 90 SL, <i>apps B,D,F,H</i>	36.0 ab	6.45 b-d	24.9 a-c	2.0 b	33.4 ab
7 Luna Experience SC 10 fl oz + Activator 90 SL, <i>apps A,C,E,G,I</i>					
-alt- Bravo WeatherStik SC 24 fl oz + Activator 90 SL, <i>apps B,D,F,H</i>	36.1 ab	7.31 a-d	25.4 a-c	0.8 b	33.4 ab
8 Approach SC 6 fl oz + Fontelis SC 16 fl oz + MSO EC, <i>apps A,C,E,G,I</i>					
-alt- Dithane SC 2 qt + Tanos WG 8 oz, <i>apps B,D,F,H</i>	36.2 ab	5.94 cd	25.3 a-c	2.3 b	33.6 ab
9 Approach SC 6 fl oz + Fontelis SC 16 fl oz + MSO EC, <i>apps A,C,E,G,I</i>					
-alt- Dithane SC 2.4 qt, <i>apps B,D,F,H</i>	33.7 b-d	7.56 a-d	21.7 b-d	2.0 b	31.3 bcd
10 Luna Tranquility SC 16 fl oz + MSO EC, <i>apps A,C,E,G,I</i>					
-alt- Dithane SC 2.4 qt, <i>apps B,D,F,H</i>	40.7 a	6.09 cd	29.3 a	2.9 b	38.3 a
11 Bravo WeatherStik SC 24 fl oz, <i>apps A-D</i>					
Luna Tranquility SC 22 fl oz + Activator 90 SL, <i>apps E-I</i>	33.4 b-d	8.16 a-c	20.4 b-d	1.1 b	29.6 bcd
12 Bravo WeatherStik SC 24 fl oz, <i>apps A-D</i>					
Miravis Prime SC 10.3 fl oz + Activator 90 SL, <i>apps E-I</i>	31.6 b-d	7.64 a-c	19.9 cd	1.5 b	29.0 bcd
13 Bravo WeatherStik SC 24 fl oz, <i>apps A-D</i>					
Miravis Prime SC 11.4 fl oz + Activator 90 SL, <i>apps E-I</i>	34.9 a-c	8.58 ab	21.9 b-d	1.6 b	32.1 bc
14 Luna Tranquility SC 16 fl oz + MSO EC, <i>apps A,B,E,F,I</i>					
-alt- Bravo WeatherStik SC 2 pt, <i>apps C,D,G,H</i>	40.4 a	5.16 d	26.0 ab	6.8 a	38.0 a

\*Harvested total yield=weight of bulbs with dried tops intact at harvest.

\*\*Column means with a letter in common are not significantly different (t Test LSD;  $P=0.05$ ).