

ONION, YELLOW (*Allium cepa* 'Cortland')
Stemphylium Leaf Blight; *Stemphylium vesicarium*
Purple Blotch; *Alternaria porri*
Botrytis Leaf Blight; *Botrytis squamosa*
Bacterial *spp.*

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Evaluation of fungicide/bactericide treatments for control of foliar and bulb diseases in onion in Wisconsin, 2024.

An onion fungicide efficacy trial was established on 13 April in a commercial field on muck soil in Friendship, Wisconsin using a standard commercial planter. The experimental design consisted of 4 replicates arranged in a randomized complete block design. Each treatment plot consisted of 5-ft-wide beds with four 20-ft-long rows spaced 15 in. apart with 2-ft non-sprayed buffer alleys between plots in the same row. Insect, weed, and fertility management was carried out as per commercial standards for the production region and were applied by the grower cooperator. Naturally occurring inocula was present from nearby agricultural production fields. Fungicide treatments were applied on 2 Jul, 9 Jul, 16 Jul, 23 Jul, 30 Jul, and 7 Aug for a total of 6 applications using a CO₂ backpack sprayer equipped with four TeeJet 8002VS nozzles spaced 19-in. apart and calibrated to deliver 35 gal/A at a boom pressure of 40 psi. The severity of total, combined foliar disease of the two center rows was rated on 15 Jul, 2 Aug, 19 Aug, 28 Aug using the Horsfall-Barratt rating scale (0-11 rating with 0=no disease, 11=100% disease severity). The Area Under the Disease Progress Curve (AUDPC) was determined by trapezoidal integration and then converted into Relative AUDPC (RAUDPC), i.e. percentage of the maximum possible AUDPC for the whole period of the experiment. On 29 Aug, onions in the center five feet of the two center rows were pulled, hand-topped, and weighed. Harvested onion bulbs were then placed in storage at 65 °F and 95% RH to cure. After 2 weeks, onion bulbs were sliced in half and evaluated for the presence of bacterial rot. Data were analyzed using ANOVA ($\alpha=0.05$) and Fisher's LSD at $\alpha=0.05$.

There were no significant differences across treatments for bulb size (data not shown) and plot yield. Disease pressure was relatively low throughout the trial period and no pesticide program was significantly better than the non-treated control for foliar disease management (RAUDPC). Bacterial bulb rot was significantly reduced for programs when compared to the non-treated control. The 2 best performing programs for controlling bulb rot were Kocide 3000 alternating with Dithane 75DF and Badge SC at 6 pt/A alternating with Dithane 75DF without Induce. No phytotoxicity was observed during the growing season.

Fungicide and Rate/A	Application Timing ^x	Yield (ton/A)	RAUDPC ^y	Bacterial Bulb Rot (%)
Non-treated Control	-	26.7	0.265	16.25 c ^z
Badge SC 2 pt/A	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	26.95	0.247	5.00 ab
Badge SC 4 pt/A	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	24.85	0.315	5.00 ab
Badge SC 6 pt/A	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	20.45	0.301	1.25 a
Badge SC 2 pt/A + Induce (NIS) 0.5% v/v	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	24.3	0.317	3.75 ab
Badge SC 4 pt/A + Induce (NIS) 0.5% v/v	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	22.775	0.328	5.00 ab
Badge SC 6 pt/A + Induce (NIS) 0.5% v/v	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	24.775	0.256	5.00 ab
LifeGard 4.5 oz/100gal	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	25.15	0.328	8.75 b
Oxidate 5.0 0.39% v/v	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	25.15	0.249	5.00 ab
Kocide 3000 1.5 lb/A	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	25.4	0.290	0.00 a
Serenade ASO 4 qt/A	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	23.65	0.225	8.75 b
Tanos 50WG 10 oz/A + Badge SC 2.75 pt/A	1,3,5			
Dithane 75DF 2.0 lb	2,4,6	22.25	0.308	2.50 ab

^xFungicide application dates: 1 = 2 Jul, 2 = 9 Jul, 3 = 16 Jul, 4 = 23 Jul, 5 = 30 Jul, and 6 = 7 Aug

^yRAUDPC= Relative Area Under the Disease Progress Curve.

^zColumn numbers followed by the same letter are not significantly different at P=0.05 as determined by Fisher's Least Significant Difference (LSD) test.