

Evaluation of fungicide treatments on foliar blight of carrot, 2018.

A carrot field trial was conducted at the Hancock Research Station in Hancock, WI, to evaluate fungicides for control of *Alternaria* leaf blight and *Cercospora* leaf spot, common foliar diseases of carrot in the Midwestern United States. 'Enterprise' seeds were sown at approximately 250,000 seed/A with a standard commercial planter on 24 May. The experimental design consisted of 4 replicates arranged in a randomized complete block design. Each treatment plot consisted of 4.5-ft-wide beds with three 18-ft-long seeding rows, 19 in. between rows on bed with 17 in. from row edge to bed edge. Twelve-ft fallow breaks were maintained between plots in the same row. Insecticide, herbicide, and fertilizer applications were made according to standard production practices for the region. Naturally occurring inocula of pathogens were present from nearby agricultural production fields and a neighboring carrot variety trial with no fungicides applied. Experimental plots were treated with fungicides using a CO₂-pressurized backpack sprayer equipped with four Tee Jet 8002VS nozzles spaced 19-in. apart and calibrated to deliver 35 gal/A at a boom pressure of 40 psi. All treatments were applied at a rate with a calculated equivalence to 20 gal/A. Fungicide applications were applied approximately every week beginning on 15 Aug with subsequent applications on 22 Aug, 29 Aug, 5 Sep, 12 Sep, and 19 Sep. Disease assessments took place on 8 Aug, 22 Aug, 29 Aug, 6 Sep, 13 Sep, and 3 Oct, using the Horsfall-Barratt scale (1-11) to assess foliar symptoms in the center row of each experimental plot. Foliar disease severity was combined for all pathogens present at each rating. 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 5 Oct, a center 10-ft section was hand-harvested from each plot, carrot tops were removed, and carrots (roots) were weighed to determine yield. Precipitation in Hancock during the production season was 24.1 in. Supplemental irrigation was applied 38 times during the production season for an additional 16.3 in. All data were analyzed using ANOVA ($\alpha=0.05$) and Fisher's LSD at $\alpha=0.05$ (SAS Version 9.2).

Disease pressure was average for the production season, but initiated in August later than typical for the growing region. Foliar disease was significantly reduced for the following treatments compared to the non-treated control: Kocide applied in treatments 1-6, MasterCop + Bravo Weather Stik applied in treatments 1-6, Kocide + Bravo Weather Stik applied in treatments 1-6, Quadris applied in treatments 1, 3, and 5 with Bravo Weather Stik 6F 1.5 pt applied in treatments 1-6, and Bravo Weather Stik applied in treatments 1-6. There were no significant differences in yield among the treatments. No phytotoxic symptoms were observed with any of the fungicide programs throughout the duration of the trial.

Treatment and Rate/A	Application Timing ^z	Yield (t/A) ^y	RAUDPC ^x	
Non-treated Control	-	15.3	0.454	d ^w
MasterCop 24.0 fl oz	1-6	12.9	0.437	d
Kocide 3000 24 oz	1-6	16.7	0.374	c
MasterCop 24.0 fl oz + Bravo Weather Stik 6F 1.5 pt	1-6	19.2	0.342	bc
Kocide 3000 24 oz + Bravo Weather Stik 6F 1.5 pt	1-6	18.7	0.301	b
Quadris 2.08F 12.0 fl oz	1,3,5			
+ Bravo Weather Stik 6F 1.5 pt	1-6	23.7	0.234	a
Bravo Weather Stik 6F 1.5 pt	1-6	15.9	0.301	b

^zFungicides were applied every week for a total of 6 applications. Applications were made on 1: 15 Aug; 2: 22 Aug; 3: 29 Aug; 4: 5 Sep; 5: 12 Sep; and 6: 19 Sep.

^yOne 10-ft-long section of row was hand-harvested from the center of each plot and yield was converted to t/A.

^xThe area under the disease progress curve (AUDPC) was determined by trapezoidal integration and then converted into relative AUDPC (RAUDPC).

^wColumn means with a letter in common or with no letter are not significantly different (Fisher's LSD, $P=0.05$).