

Examination of fungicides for managing powdery mildew of lettuce, 2016.

This study was conducted at the Yuma Valley Agricultural Center. The soil was a silty clay loam (7-56-37 sand-silt-clay, pH 7.2, O.M. 0.7%). Lettuce 'Winter King' was seeded on 19 Nov 15 in double rows 12 in. apart on beds with 42 in. between bed centers, then sprinkler-irrigated to germinate seed. All other water was supplied by furrow irrigations or rainfall. Treatments were replicated five times in a randomized complete block design. Each replicate consisted of 25 ft of bed, which contained two 25 ft rows of lettuce. Plants were thinned 11 Jan 16 at the 3-4 leaf stage to a 12 in. spacing. Treatment beds were separated by single nontreated beds. Treatments were applied with a tractor-mounted boom sprayer that delivered 50 gal/acre at 100 psi to flat-fan nozzles spaced 12 in. apart. Foliar applications of treatments were applied twice, 2 and 19 Feb. Powdery mildew was first observed in plots on 19 Feb, after the second application of products. Maximum and minimum ranges (°F) of air temperature were as follows: 58-78, 29-47 during Dec; 56-80, 33-47 during Jan; 60-89, 32-60 during Feb; 65-92, 44-53 during 1 to 18 Mar. Maximum and minimum ranges (%) for relative humidity were as follows: 62-97, 9-50 during Dec; 39-100, 10-78 during Jan; 41-90, 8-23 during Feb; 57-89, 6-33 during 1 to 18 Mar. Monthly rainfall in inches was as follows: Dec, 0.10; Jan, 0.61; Feb, 0.00; Mar 1 to 18, 0.00. Disease severity was determined 14 to 18 Mar by rating 10 plants within each of the five replicate plots per treatment using the following rating system: 0 = no powdery mildew present; 1 = powdery mildew present on bottom leaves of plant; 2 = powdery mildew present on bottom leaves and lower wrapper leaves; 3 = powdery mildew present on bottom leaves and all wrapper leaves; 4 = powdery mildew present on bottom leaves, wrapper leaves, and cap leaf; 5 = powdery mildew present on entire head. Yield loss due to rejected lettuce heads would likely begin to occur on plants with a powdery mildew rating above 2.0.

Among treatments, the mean reduction in powdery mildew disease rating values compared to untreated plots ranged from 16 to 100%. All treatments significantly decreased powdery mildew, with disease reduction of at least 80% recorded on lettuce plants treated with Rally, Fontelis, Rhyme, Quintec, and Merivon + Kinetic. It should be noted that a time period of about 4 wk elapsed from the last application of fungicides until rating of disease severity. Due to irrigations and several multiday periods of windy conditions, additional treatment applications could not be made. The final degree of disease control for most treatments may have been higher if additional treatment applications had occurred; therefore, these data reflect disease control under a much less than optimal application scenario. Phytotoxicity symptoms were not noted for any treatments.

Treatment and rate of product/A	Days after first application ^z	Disease rating ^y
Rally 40W 5.0 oz	0, 17	0.0
Fontelis 1.67SC 20.0 fl oz	0, 17	0.0
Rhyme 2.08SC 5.0 fl oz	0, 17	0.1
Rhyme 2.08SC 7.0 fl oz	0, 17	0.2
Quintec 2.08 SC 5.0 fl oz	0, 17	0.4
Merivon 500SC 11.0 fl oz	0, 17	0.5
Kinetic 8.0 fl oz		
Merivon 500SC 9.0 fl oz	0, 17	1.0
Kinetic 8.0 fl oz	0, 17	
Quadris 2.08SC 15.4 fl oz	0, 17	1.0
Dyne-Amic 8.0 fl oz	0, 17	
Merivon 500SC 7.0 fl oz	0, 17	1.2
Kinetic 8.0 fl oz	0, 17	
GC Pro 4.0 lb	0, 17	2.1
Luna Sensation 4.0 fl oz	0, 17	2.3
Dyne-Amic 16.0 fl oz	0, 17	
GC Pro 2.0 lb	0, 17	2.6
ISR-2000 16.0 fl oz	0, 17	2.7
Serenade Soil 2.0 qt	0, 17	3.6
Dyne-Amic 16.0 fl oz	0, 17	
Nontreated control	-----	4.3
LSD ($P = 0.05$) ^x		0.1

^z Foliar applications of treatments were applied 2 and 19 Feb.

^y Disease rating was performed 14 to 18 Mar by rating 10 plants within each of the five replicate plots per treatment using the following rating system: 0 = no powdery mildew present; 1 = powdery mildew present on bottom leaves of plant; 2 = powdery mildew present on bottom leaves and lower wrapper leaves; 3 = powdery mildew present on bottom leaves and all wrapper leaves; 4 = powdery mildew present on bottom leaves, wrapper leaves and cap leaf; 5 = powdery mildew present on entire head.

^x Least Significant Difference at $P = 0.05$. Values differing by more than the least significant difference are significantly different from each other according to Fisher's Protected LSD test.