

## Fungicidal Control of Cercospora Beticola of Sugar Beets

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In the past, efforts to control Cercospora leaf spot in Willcox have resulted in varying degrees of success. These inconsistencies are mainly due to two factors: Time of chemical application and changes in disease pressure.

Cercospora infections and pressure varied from light to moderate with the heaviest occurring in early October in the test plot area. Short intermittent reoccurrence of Cercospora was not unusual.

Historically, commercial fungicidal control has begun automatically in mid-July. Generally, there are leaf spot conditions appearing in this time period.

Previously all leaf spotting symptoms have been grouped into one common disease, leaf spot. Three different leaf spot diseases have now been identified as occurring at approximately the same time. Symptoms of Alternaria sp. and Phoma sp. are present singularly and often in combination with Cercospora. This increases the difficulty to visually rate for Cercospora. Consequently, previous chemical evaluations for Cercospora have not been critical of other leaf spot diseases.

Dr. Earl Ruppel, U.S.D.A., A.R.S., Fort Collins, Colorado, has monitored the Willcox Cercospora Benomyl tolerant strain for the second year. All isolates from all chemical treatments were found to be of the tolerant strain. Two probable conclusions from such a test are: (A) Have we selected for a tolerant strain by using Benomyl? or (B) Are the different strains occurring at slightly different time periods within the disease season? Future monitoring should be designed to answer these and other critical questions.

The effectiveness of six fungicides were evaluated at the Threshler Farm using USH-9B seed. Six replications for each treatment consisting of four 40 inch double row beds 50 feet long were arranged in a random block design.

Five applications were applied through a hand sprayer with 8003 nozzles at 30 psi.

Objective evaluations of leaf symptoms were given an index number of 1 to 10 (10=complete defoliation).

Duter, Benlate, Topsin M. and Bay Meb 6447 were each applied at a rate of 8 ounces per acre while Kocide and Polyram were applied at 3 pounds per acre. Historically, a 16 day interval between applications has been desirable. It is very difficult to maintain a rigid spraying regime because of fluctuation weather conditions.

All treatments were also evaluated for powdery mildew control (Erysiphe polygoni). Because of inconsistent disease pressures, powdery mildew symptoms were varied throughout the plot and even within a single replication (Table I).

Until the last month, each replication of Bay Meb 6447 was visually identifiable by exaggerated top growth and greener leaves. Bay Meb 6447 had the only significant increase in total sugar per acre over the untreated check. Again, as evidenced in the 1975 Willcox test, Duter yielded greater than Benlate, but to a lesser percent.

In 1977, fungicide evaluations will be limited to Benlate, Duter, Bay Meb 6447, and Bupirimate. An important objective will be to determine a practical, economical threshold at which *Cercospora* can be controlled with Bay Meb 6447.

Effectiveness of the six fungicides for powdery mildew is expressed in Table I. After August 17, the variability within treatments caused by rapid changes in disease pressure was too great for legitimate comparisons. There was also a tendency for rain to wash off some mycelium, making indexing difficult. For example, on September 30, most of the test would have averaged 1.5 on a scale of 1 to 5 (5 = high intensity with 90%+ of leaves covered with mycelium). Bay Meb 6447 illustrated outstanding powdery mildew control for the first two indexings.

TABLE I

1976 CERCOSPORA CHEMICAL EVALUATIONS - WILLCOX

Materials	Index Ratings					Harvest Data		
	Cercospora			Powdery Mildew		TS/A	TB/A	% S
	8/17	9/15	9/30	8/10	8/17			
Bay Meb 6447	1.0	0.6	1.6	0.0	0.0	5.08	34.6	14.6
Duter	1.5	0.3	1.0	1.3	2.3	4.65	31.1	15.0
Benlate	2.2	1.2	3.5	1.1	1.5	4.40	31.0	14.2
Topsin M	2.5	1.1	3.5	1.4	1.7	4.61	32.0	14.3
Kocide	1.8	0.8	2.7	2.3	2.3	4.57	31.2	14.6
Polyram	2.0	0.7	1.8	2.1	2.3	4.27	30.4	14.0
Check	1.7	0.7	3.3	2.0	2.0	4.11	29.4	14.0
LSD @ P = .05						NS*	2.98	NS*

\* Significant at 1.0 level.