

# Control of Strawberry Powdery Mildew

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Morestan gave outstanding control of strawberry powdery mildew in three years of trials at South Coast Field Station, Santa Ana. Morocide and sulfur were erratic in control. Neither Morestan nor Morocide can be recommended by University of California at this time for the control of strawberry powdery mildew. Morocide is not yet registered for use on strawberries, and Morestan is registered for use only on nonbearing plants (cannot be used after first blooms appear).

**S**TRAWBERRY POWDERY MILDEW, caused by the fungus, *Sphaerotheca humuli*, is a serious disease in southern California strawberries. The disease may be found on susceptible plants during most of the picking season; but is most severe during the months of May, June, and July. Infected fruit show a white powdery film over the surface of the berry.

Studies were initiated in 1964 to determine if some of the newer fungicides might have promise in the control of the disease. Sulfur and Karathane have been recommended in past years. Sulfur has usually given adequate control, but the strawberry plant is sensitive to this material under the high temperature conditions that may occur during the harvest season. Karathane cannot be used within 21 days of harvest, making this material impossible to use during the picking season, since strawberries must be picked as often as every two or three days.

Preliminary observational trials were established at the University of California South Coast Field Station near Santa Ana in the spring of 1964. Wettable sulfur at 2 lbs 95% and Morestan at 2 lbs of 25% wettable powder per 100 gallons of water showed promise of controlling powdery mildew. Morestan appeared to be particularly outstanding in this test. Other materials which were tried included Morocide EC at ½ pint and 1

pint; Karathane EC, ½ pint; Hercules 11220, 2 lbs 50% WP; and DAC 2787, 2 lbs 50% WP. All rates quoted were per 100 gallons of water; 200 gallons of each mixture were applied per acre. These plots were sprayed on May 4, 13, and 21.

Further trials established in 1965 at South Coast Field Station included tests with Morocide, at 2 lbs 50% WP; sulfur wettable, 2 lbs 95%; Morestan, ½ lb 25% WP; and the check. All above rates were per 100 gallons of water and applied at the rate of 200 gallons per acre. Spraying dates were May 7, 19, 28, June 7 and 15. The Tioga variety was used in these

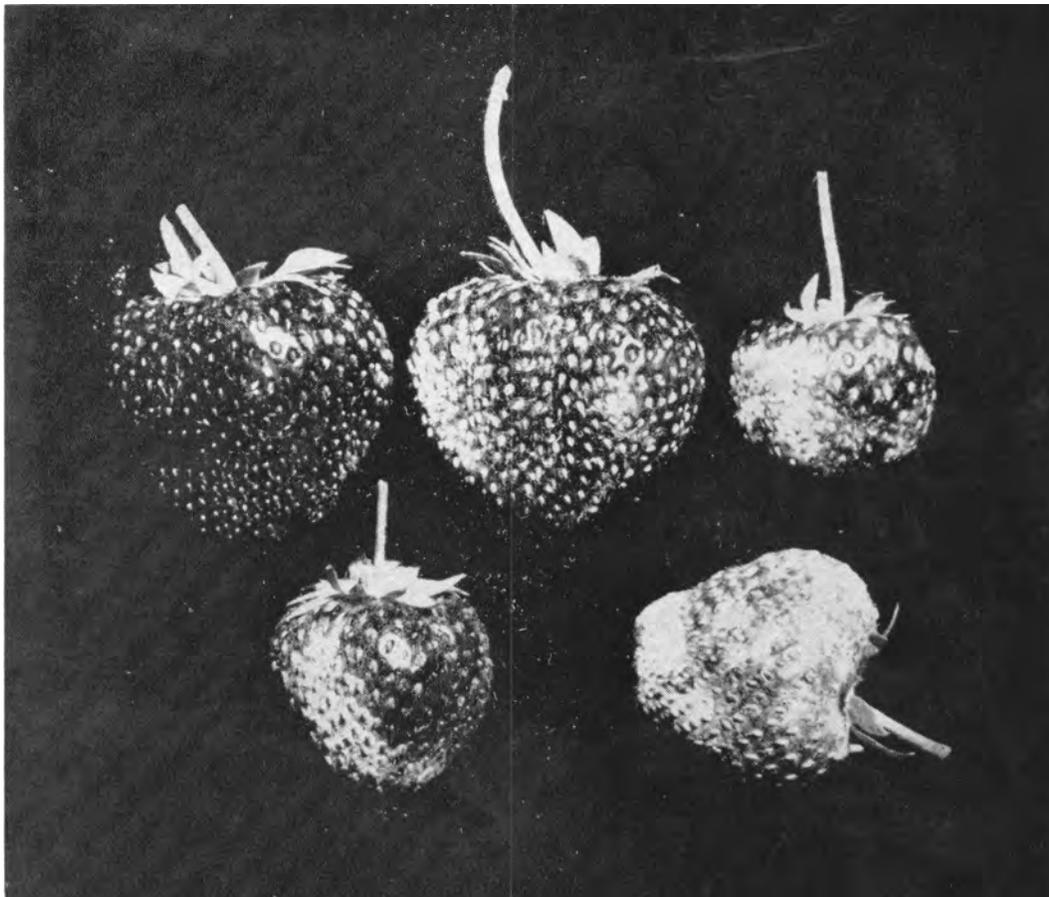
trials. Notes were taken on June 15 and 21 on the number of berries free from mildew and those infected. The results were as follows:

Spray material	Berries with mildew	
	June 15	June 21
	%	%
Morestan ½ lb. 25% WP . . . . .	2.9 <sup>a</sup>	8.5 <sup>a</sup>
Sulfur wettable 2 lbs. 95% . . . . .	3.6 <sup>a</sup>	16.8 <sup>a</sup>
Morocide 2 lbs. 50% WP . . . . .	34.4 <sup>b</sup>	82.5 <sup>b</sup>
Check . . . . .	86.5 <sup>c</sup>	96.5 <sup>b</sup>

Duncan's Multiple Range Test used at 1% level. Treatments with same letter are not significantly different.

On June 15 there was no significant difference in powdery mildew control be-

Clean strawberry at upper left in photo below, as compared with four others covered with strawberry powdery mildew.



C. F. Kelly

Director

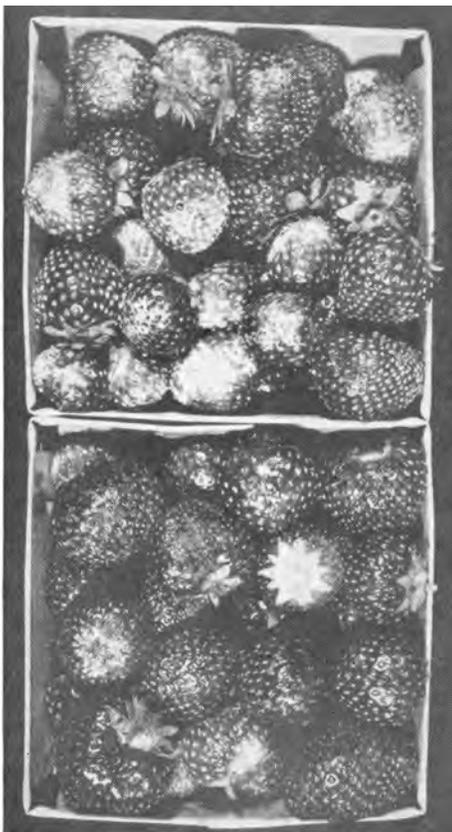
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tween sulfur and Morestan. Morocide was significantly better than the check. Morestan and sulfur were significantly better than the other treatments on June 21.

Quality, sheen, and overall appearance of the berries treated with Morestan were outstanding. Disinterested observers would always pick out the Morestan-treated berries as those with the best appearance. Morocide was erratic in mildew control and produced some toxicity to the Tioga strawberry in the form of a yellowing of some of the leaves. Morocide produced these same toxicity symptoms on an experimental strawberry (No. 57-916).

Observations of the Morestan treatment during the 1965 season suggested that this material had a fairly long residual life. Consequently, trials in 1966 at the South Coast Field Station were planned to study this problem. Morestan at 1/2 lb 25% WP and wettable sulfur, 2 lbs 95% were applied as two early sprays only, on March 11 and 25. These two plots did not receive any other material during the ensuing season. Morestan at 1/2 lb 25% WP was also sprayed once every four weeks and included applications on March 11, April 7, May 9, and

Untreated check tray at top of photo below, showing strawberry powdery mildew, as compared with mildew-free Morestan-treated berries in bottom tray.



June 7. The other plots in the experiment were sprayed on April 25, May 9, May 23, and June 7, and consisted of Morestan, 1/2 lb 25% WP; Morocide, 2 lbs 50% WP; Geigy GS 17470, 2 lbs 50% WP; wettable sulfur, 2 lbs 95%; and a check plot. All rates were per 100 gallons of water and 200 gallons of the fungicidal mixture per acre. The results were as follows:

Material	1966 STRAWBERRY POWDERY MILDEW TRIALS	
	Berries with mildew	
	June 7	June 21
Two early sprays only:	%	%
Morestan 1/2 lb. 25% WP .....	47.0	59.6
Sulfur—wettable 2 lbs. 95% ....	32.1	44.6
Every 4 weeks only—1st spray		
April 25:		
Morestan 1/2 lb. 25% WP .....	21.4	17.1
Every 14 days beginning on April 25:		
Morestan 1/2 lb. 25% WP .....	2.9**	7.2**
Morocide 2 lbs. 50% WP .....	6.6**	6.1**
Check .....	59.6	44.4
Geigy GS 17470 2 lbs. 50% .....	57.1	48.7
Sulfur—wettable 2 lbs. 95% .....	34.6	35.6

\*\* Significant at 1% level.

Morestan and Morocide applied every 14 days were significantly better (1% level) than any of the other treatments. Eight times as much active ingredient of Morocide was necessary to give control equal to Morestan. Morestan and sulfur applied as two early sprays did not significantly reduce powdery mildew during the season.

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