

low fungus inoculum levels, or possibly environmental conditions were unfavorable for the development of the fungus during the test.

A tomato grower adjacent to the Stanislaus County research plot sprayed Bayleton 50W at a rate of 4 ounces on September 10 and 27 using 40 gallons of water per acre. Unsprayed rows were given a disease rating of 4 on October 18, while the Bayleton plots were rated 0.2 with excellent control (scale of 0 to 10).

1984 trials

In 1984, we began a trial on the west side of Merced County with the cultivar Royal Flush, applying fungicides on September 14 and 28 in 100 gallons of water. Powdery mildew lesions were present on the lower leaves at the time of the first fungicide application, when fruit in the plots were 1 to 1.5 inches in diameter.

Bayleton 50W at 2 or 4 ounces and Topas (penconazole) were equally effective for the control of powdery mildew of tomato (table 3). The level of control by NuStar (fusilazol) suggests the rate may have been too low. All fungicide treatments were significantly better than no treatment.

In the same year, we conducted a trial at the University of California South Coast Field Station in Orange County, using the susceptible cultivar Campbell CX8101. Fungicides were applied on October 5, 19, and November 2.

Spotless, NuStar, Summit (triadimenol), Systhane (myclobutanil), Bayleton, and Topas provided excellent control of powdery mildew, and all treatments were significantly better than no treatment (table 4).

1985 trials

One fungicide trial in the fall of 1985 was on the west side of Merced County with the cultivar Royal Flush. Materials were applied on September 10 and 24.

Powdery mildew was prevalent on the lower half of tomato plants but, in the plot area, did not develop to the plant tops by the end of the crop season. Systhane, Summit, and Topas provided significant control of powdery mildew. NuStar gave some control but was not significantly different from no treatment.

Another trial, in San Diego County, used the tomato cultivar Casino Royale in a staked tomato field. Plants were 2 feet high when the first fungicide application

was made on September 13. Subsequent sprays were applied on September 27 and October 11 and 25.

Powdery mildew did not appear in the plot until after the second fungicide application. All four fungicides tested effectively controlled powdery mildew of tomato (table 6).

Conclusions

A number of the fungicides tested gave effective control of tomato powdery mildew. Current registration is limited to sulfur and Bayleton (the latter has temporary registration until January 1, 1987). The other fungicides tested are not registered at present for this use in California.

Cultivars differ in their susceptibility to tomato powdery mildew and growers should look for those that are tolerant of the disease.

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Managing powdery mildew and rust on sunflower

Demetrios G. Kontaxis

Several farmers in northern California's Brentwood area grow sunflower, primarily for seed production. About 1,000 acres are cultivated each year.

Two fungal diseases are common on sunflower (*Helianthus annuus* L.): rust, caused by *Puccinia helianthi* Schw., and powdery mildew, caused by *Erysiphe cichoracearum* D.C. Rust and mildew, alone or in combination, occur on many crops and can reduce yield considerably.

Field test, 1982

In a field test to evaluate fungicides for rust and mildew control, plots 25 feet long and 36 inches wide, with one plant row per bed, were sprayed with either Bayleton (triadimefon) 50W, Tilt (propiconazole) 3.6E, or mancozeb 80WP on July 7 and 27. Similar, nontreated plots served as controls, and two beds between plots were left nontreated as a buffer. The plants were sprayed to runoff with a pressurized sprayer. The plot design was a randomized complete block with four replications.

At the time of the first application, the plants were free of rust or powdery mildew and were about 3 feet tall. On September 10, 46 days after the second appli-

cation, 10 leaves taken at random from each plot were evaluated for the presence and severity of disease.

Results

Rust was present in all treated and nontreated plots but was significantly reduced by Tilt (table 1). Visually, but not statistically, Bayleton appeared to be somewhat more effective against powdery mildew than Tilt.

When the plots were reexamined on September 15 (51 days after the last application) the Bayleton-treated plants were still free of powdery mildew. None of the

TABLE 1. Effect of fungicides on powdery mildew and rust of sunflower

Fungicide, rate/100 gal water	Disease rating*	
	Powdery mildew†	Rust‡
Bayleton 50W, 10 oz.	0.0 b	88.7 a
Tilt 3.6E, 10.6 fl. oz.	1.2 b	34.7 b
mancozeb 80WP, 4 lb.	5.0 a	224.5 c
nontreated control	5.5 a	243.2 c

* Evaluated 46 days after last application. Treatments followed by the same letter are not significantly different at the 5% level, Duncan's multiple range test. The statistical analysis for rust was done using the log transformation of the number of pustules.

† Mildew ratings on a scale of 0 to 10, where 1 = 10% foliage infected; 10 = 100% foliage infected.

‡ Average number of rust pustules per leaf.



Powdery mildew on sunflower leaf.

chemicals used caused any apparent damage to the plants.

Conclusions

In this field test, both Bayleton and Tilt controlled powdery mildew on sunflower. Tilt controlled rust, but Bayleton did not. Mancozeb 80WP, as used in this test, was not effective against either powdery mildew or rust. None of the fungicides tested is currently registered in California for use on sunflower.

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