

# Controlling squash powdery mildew

*Better materials for control of new tolerant strains of powdery mildew are in the offing.*

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The development of tolerant strains of the powdery mildew cucurbit fungus (*Sphaerotheca fuliginea*) to certain currently available fungicides and problems in registering new fungicides have made control of the disease difficult for California growers. Morestan provided excellent control for many years, but is not now registered. Strains of the mildew fungus tolerant to benomyl fungicide have appeared in the field and control with this fungicide does not equal that obtained in former years.

Phytotoxicity may occur when sulfur is applied during high temperatures and also certain cucurbit varieties are sensitive to this fungicide. Karathane provides fair control, but other fungicides with better control and with longer intervals between applications are needed. Thus trials were initiated to test several new materials for control of the mildew pathogen.

## Zucchini squash

Zucchini squash (*Cucurbita pepo L.*) plants at the 8-leaf stage were selected for a trial in 1976 in a seed field near Oxnard. Mildew was not prevalent in the field before applications of fungicides. Treatments were replicated four times.

All materials were applied to the point of runoff with a Hudson 2-gallon CO<sub>2</sub> pressurized sprayer at 30 psi. Rohm and Haas B-1956 spreader sticker was used in each treatment at the rate of 4 ounces per 100 gallons of water. Applications were made on June 21 and August 6 and 19. Plots were rated on a scale of 0 to 4, with a 4 rating denoting severe mildew completely covering both leaf surfaces.

Bayleton and RH 2161 gave excellent control of the fungus throughout the growing season and were significantly better than other treatments (table 1). Bloc provided intermediate control and Nimrod gave control significantly better than the untreated control, but provided no commercially acceptable control.

## 1977 trials

A fungicide screening trial was established in a Zucchini squash seed field, where mildew was severe before application of the first spray. Fungicides were applied as described in the 1976 trial and treatments were replicated four times. Applications were made on June 24 and August 6.

RH 2161 at the higher dosage and Ciba Geigy 105 provided the best control of squash powdery mildew where the dis-

ease was well established before treatment (table 2). The low rate of RH 2161, DuPont 4423, and Boots 7711 gave intermediate control and all treatments were significantly better than the untreated control.

A second trial in 1977 compared efficacy of several fungicides applied to Zucchini squash plants before powdery mildew appeared in the field. A field was selected with plants in the 10-leaf stage when first applications were made. Plants were sprayed as described in previous trials, and treatments were replicated four times. Fungicides were applied on July 20 and August 1 and 15, and a disease rating was made on August 23.

Ciba Geigy 105 and Rohm-Haas 2161, 1 quart or 0.63 quart, were significantly better than all other treatments for control of powdery mildew (table 3). As in the other 1977 trial, DuPont 4423 provided intermediate control.

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TABLE 1. Effect of Various Fungicides Applied as Foliar Sprays on Control of Powdery Mildew of Squash, Ventura County—1976

Material and rate/ 100 gal water	Disease rating Sept. 2
Bayleton 25W, 8 oz	0.0 a*
Rohm-Haas 2161 (3 lb active), 0.66 qt	0.2 a
Bloc 12.5%, 25ppm	0.9 b
Nimrod 26% EC, 1 pt	2.4 c
No treatment	3.4 d

\*Duncan's multiple range test used at 5 percent level. Treatment means followed by same letter are not significantly different.

TABLE 2. Effect of Various Fungicides Applied as Foliar Sprays on Control of Powdery Mildew of Squash when Disease Was Severe before Application, Ventura County—1977

Material and rate/ 100 gal water	Disease rating July 20
Rohm-Haas 2161 (2 lb gal) EC, 1 qt	1.5 a*
Ciba Geigy 105 21W, 4.2 oz	1.9 a
Rohm-Haas 2161 (2 lb gal) EC, 1 pt	2.4 b
DuPont 4423 (2 lb gal) EC, ¾ pt	2.4 b
Boots 7711 25W, 3 lb	2.4 b
No treatment	3.9 c

TABLE 3. Effect of Various Fungicides Applied as Foliar Sprays on Control of Powdery Mildew of Squash before Onset of Disease, Ventura County—1977

Material and rate/ 100 gal water	Disease rating August 23
Ciba Geigy 105 21W, 4.2 oz	0.0 a*
RH 2161 (2 lb gal) EC, 1 qt	0.2 a
RH 2161 (2 lb gal) EC, 0.63 qt	0.2 a
DuPont 4423 (2 lb gal) EC, 1 pt	0.9 b
Captan 50W, 4 lb + Afugan (2.4 lb gal) EC, 13 oz	1.5 c
No treatment	3.4 d

\*Significant at the 5% level.