

beds, no phytotoxicity was observed on any varieties.

The following varieties were treated: Goldstar, Deep Ridge, Illini Trophy, Pink Champagne, Malabar, Dramatic, Mt. Sun, Yellow Mandalay, Sunny Mandalay, Glowing Mandalay, Mt. Snow, Bronze Gold Ann, Golden Gate, Gay Ann, Margarita #773, Indianapolis Golden Yellow, Indianapolis Yellow #4, Indianapolis White #3, Cr. Yellow Princess Ann, Cr. 48 Dark Red Star, Fuji MEFO, Yellow Spider #48, Goldburst MEFO, and Puritan.

In an experiment to determine the phytotoxicity of test insecticides on

carnations, plots were treated throughout the year with at least one application each month; a total of 15 applications were made on the same plots between April 1974 and April 1975. The compounds tested were Orthene 75S (4 and 8 ounces AI/100 gallons), Pirimor 50W (2 and 4 ounces AI/100 gallons), Lannate 90S (3.6 ounces AI/100 gallons), and Lannate L 1.8E (3.6 ounces AI/100 gallons). In addition, plots were sprayed three times during December and January with Pentac (6 ounces AI/100 gallons) to control an infestation of mites. No phytotoxic responses were observed on any of the varieties from any of the treatments

during the test period. The carnation varieties treated were: White Sim, Pink Sim, S. Arthur Sim, Scania, Dusty, Portraits, Orchid Beauty, and Elegans-Miniature.

R.D. Oetting is Assistant Professor and Assistant Entomologist, F.S. Morishita is Staff Research Associate, R.N. Jefferson is Professor Emeritus, Department of Entomology, University of California, Riverside. W.A. Humphrey is Farm Advisor for Orange County, and S.T. Besemer is Farm Advisor for San Diego County.

Downy mildew of lettuce controlled by systemic fungicide

Albert O. Paulus ■ Jerry Nelson ■ Marvin Snyder ■ Judy Gafney

Downy mildew of lettuce, caused by the fungus *Bremia lactucae*, can cause considerable damage especially to early spring and late fall crops in coastal areas. It is favored by cool, moist weather and may occasionally cause economic damage in the Imperial Valley during the winter lettuce season. Trials were initiated in the summer and fall of 1976 to compare new systemic fungicides from Ciba Geigy with commonly used materials.

1976 trials

The Calmar variety was used in the first trial and plots were conducted in the Santa Maria Valley. Fungicide treatments were started immediately after thinning and applied on August 24 and September 13. Sprays were applied with a Hudson 2 gallon CO₂ pressurized sprayer at 30 psi and rates of materials are per 100 gallons of water per acre. Plots were 25 feet long and replicated four times. Downy mildew was present in a light infestation before application of the first spray. Results are shown in table 1.

Both Ciba Geigy materials gave excellent commercial control of lettuce downy mildew to harvest, although CG 48988 gave significantly better control

than CG 38140. Maneb provided intermediate control.

Second trial

The Moran Gold variety was used in this trial and plots were again conducted in the Santa Maria Valley. Fungicide treatments were started immediately after thinning and applied on September 13 and October 4. Procedure was the same as in the previous trial. Plots were 25 feet long and replicated four times. Results are shown in table 2.

Ciba Geigy 48988 gave better control of downy mildew than Ciba Geigy 31840, as in the previous trial. Addition of mane b to Copper Count N improved control over Copper Count N used alone, but after 2 sprays, plots containing Copper Count N + mane b showed yellowing of wrapper leaves. Light brown necrotic areas were noted on leaf and leaf blades where Copper Count N was used alone.

Albert O. Paulus is Plant Pathologist and Jerry Nelson is Staff Research Associate; both of Cooperative Extension, University of California, Riverside. Marvin Snyder is Farm Advisor and Judy Gafney is Extension Assistant, Santa Barbara County.

TABLE 1. Comparison of Fungicides For the Control of Downy Mildew of Lettuce, Calmar Variety

Treatment*	Disease Rating† Sept. 28
Ciba Geigy 48988 50W, 8oz	0.12 a
Ciba Geigy 38140 50W, 8 oz	0.87 b
Maneb 80W, 2 lb	1.62 c
Copper Count-N 8%, ½ gal	2.62 d
Control (No treatment)	2.75 d

*Significant at the 5% level. Treatments with same letter are not significantly different from each other.

†Disease incidence was rated on a scale of 0 to 4. 4 = a plant severely diseased with downy mildew.

TABLE 2. Comparison of Fungicides for the Control of Downy Mildew of Lettuce, Moran Gold Variety

Treatment*	Disease rating† Oct. 18
Ciba Geigy 48988 50W, 8 oz	0.25 a
Ciba Geigy 38140 50W, 8 oz	1.1 b
Maneb 80W, 2 lb + Copper Count N 8%, ½ gal	1.7 b
Copper Count N 8%, ½ gal	2.6 c
Control (No treatment)	2.8 c

*Significant at the 5% level. Treatments with same letter are not significantly different from each other.

†Disease incidence was rated on a scale of 0 to 4. 4 = a plant severely diseased with downy mildew.