co 222 gave control equivalent to wettable sulfur. BAY MEB 6447 also gave good control, but the rate used probably was too low for best results, because the degree of control improved with each additional application. Mildew control with Kocide 404S also improved with additional applications, probably reflecting an increase in the amount of sulfur with each application.

Systemic fungicides

Another possible method of controlling powdery mildew on sugar beets would be the application of a systemic fungicide to seed, soil, or foliage.

In tests at Davis, treatment of seed with three systemic fungicides at optimum dosages controlled mildew for up to two months in the greenhouse, but in the field, seed treatment had no effect on the level of disease or yield. Apparently, by the time the mildew appeared (60 to 75 days after seeding) the sugar beets were too large for the amount of chemical applied to the seed to provide internal protection.

Table 4 shows that the most effective systemic fungicide tested, BAY MEB 6447 (triadimefon), applied in granular form at 1 pound active ingredient per acre 3 inches below the seed at planting time or sidedressed eight weeks later, protected against mildew during most of the season. BAY MEB 6447-treated plots yielded about the same as plots treated with one sulfur spray (10 pounds per acre). Plots that received the fungicide below the seed and were later sprayed once with sulfur yielded as well as plots sprayed three times with sulfur.

At the present time, most of the fungicides we have tested are not registered for the control of sugar beet powdery mildew. Sulfur is registered and is recommended. Questions concerning the use of sulfur in a particular area should be directed to the local Cooperative Extension office.

F. Jack Hills is Extension Agronomist; Dennis H. Hall is Extension Plant Pathologist; Lysle D. Leach is Emeritus Professor of Plant Pathology; and Carol A. Frate is Research Assistant—all at University of California, Davis. Robert T. Lewellen is Geneticist, Agricultural Research Service, U.S. Department of Agriculture, Salinas, California, and Luigi Chiarappa is Senior Plant Pathologist, FAO, Rome, Italy.

Powdery mildew on wheat cultivar Cocorit 71–on leaf blade (left) and on awns and glumes of a wheat head (right).

Wheat varieties susceptible to powdery mildew

Demetrios G. Kontaxis

During the last few years emphasis has been placed on wheat production in the Imperial Valley. In 1975-76 about 115,000 acres were planted to durum and another 35,000 acres to "bread" wheat.

REACTION OF WHEAT CULTIVARS TO POWDERY MILDEW IN IMPERIAL VALLEY, CALIFORNIA–1976

Type and cultivar	Disease index*
Bread:	
Anza	1.0 c
Cajeme 71	1.2 c
INIA 66R	1.2 c
Yecora Rojo	1.5 c
Durum:	
Mexicali 75	1.5 c
Cocorit 71†	6.0 b
Produra	7.7 a
Crane "s"	9.5 a
Modoc	9.5 a

* Disease index (average of four replications): 1 = 10 percent of foliage covered with fungal growth; 10 = 100 percent of foliage covered with fungal growth. Means with different letters are significantly different at the 5 percent level on Duncan's multiple range test. Means with the same letter are not significantly different.

† Numerous cleistothecia were observed on infected leaves of Cocorit 71 cultivar in a local field.

Powdery mildew caused by *Erysiphe graminis* DC was present in 1976 in several wheat fields. The disease also appeared in a variety trial at the University of California Imperial Valley Field Station near El Centro to the extent that evaluations of relative susceptibility of the cultivars could be made. The plots were seeded January 15, 1976, at the equivalent of 90 pounds per acre in a randomized complete block design and were replicated four times. Disease status was evaluated visually on May 18, 1976 (see table).

The incidence of severe powdery mildew on wheat is erratic in the Valley. This test was designed to study the performance of the cultivars in the desert environment rather than their reaction to powdery mildew. The experiment design did not provide extra plots for possible chemical control of the disease and the study of its effect upon yield. Yield data in this context, therefore, were not taken.

Cultivars Anza, INIA 66R, Cajeme 71, Mexicali 75, and Yecora Rojo were resistant to powdery mildew. The remainder of the cultivars exhibited varying degrees of susceptibility to the disease.

Demetrios G. Kontaxis is Farm Advisor (Plant Pathology), Imperial County. William F. Lehman is Professor of Agronomy and Range Science, and Agronomist at the Imperial Valley Field Station, El Centro.