the single gene characters of short stature and smooth hull, we were able to obtain sets of genotypes differing mostly by single genes. Such genotypes, known as "near-isogenics," are excellent materials for testing the effects of a single gene on yield and other important characters.

The four types of near-isogenics noted have been used to determine the effect of short stature on yield and lodging resistance. Short lines are much more lodging resistant (fig. 1) and hence yield more at high fertility levels (unpublished data). The near-isogenics have also been used to determine the effect of smooth hulls on yield. No significant differences in yield between smooth and rough hull near-isogenics have been observed (unpublished data).

Early and late maturing near-isogenics are currently being developed from the processes outlined in fig. 3. When the development is completed, we will be able to determine whether early maturity affects yield when all other characters are essentially identical.

Another way of obtaining short stature (and hence lodging resistance) is through using the short tropical variety IR8 from the International Rice Research Institute in the Philippines. While preliminary studies indicate that the gene for short stature in D7 may be the same as the gene for short stature in IR8, a major difference in the two sources is that the D7 gene is already in the California japonica germplasm, whereas the IR8 gene is the tropical indica background. Thus, attempts to transfer the IR8 gene into California germplasm have been complicated by sterility in early generations and by cold susceptibility and unacceptable grain and cooking quality from the IR8 parent. Since the D7 mutant is already in the California germplasm, it has the definite advantages of possessing suitable cold tolerance and good cooking quality. In California, therefore, it has been easier to utilize the D7 source of short stature than the IR8 source.

A possible disadvantage of D7 is that lines developed from it rely on the germplasm base characteristic of older California rice varieties. After the difficulties of the cold susceptibility and poor grain quality of the IR8 source are overcome, lines developed from IR8, by introducing new genetic variability, may show greater long-term advantages.

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Fungicides for Control of Sugarbeet Powdery Mildew

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Powdery mildew of sugarbeet, caused by *Erysiphe polygoni*, was first found in California in 1934, but did not become prevalent statewide until the 1974 season. Results of trials in 1974 indicated sulfur dust (40 pounds per acre) or wettable sulfur provided excellent control of sugarbeet powdery mildew. Trials were initiated in 1975 to compare 20 pounds of sulfur dust per acre, wettable sulfur, Benlate + oil, and various other combinations.

1975 trial

Seeds of the sugarbeet, cultivar US H9, were planted on February 26, 1975 at the University of California, South Coast Field Station near Santa Ana. Plots consisted of single rows, 30 inches wide and 25 feet long, for the fungicide spray portion of the experiment. Dust plots were six single row beds. The plot was replicated five times. Sprays were applied with a 2 gallon Hudson CO_2 pressurized sprayer at 30 psi. Dusts were applied with a small hand duster. Rates of the sprays are per 100 gallons of water and complete coverage of the foliage was obtained. Sprays and dusts were applied on June 25 shortly after mildew appeared in the field and again on August 15. Disease rating was made on August 4 on a scale of 0 to 4, leaves completely covered by powdery mildew rating 4. Sugarbeet root yields were taken from 15 feet of row on August 11.

CONTROL OF POWDERY MILDEW OF SUGARBEET WITH APPLICATIONS OF FUNGICIDE SPRAYS AND DUSTS, SANTA ANA, CALIFORNIA, 1975.

Treatment	Dis. rating	Tons, fresh wt./acre
Sulfur dust, 20 lb./acre	0.3*a	31.4
DPX 110, 4 lb.	1.0 a	30.8
Thiolux wettable sulfur 80%, 5 lb.	1.7 b	29.2
Benlate 50W, 8 oz.	2.4 bc	28.2
Benlate 50W, 4 oz. + Agrodex 2 pt.	2.8 c	28.7
No treatment	3.7 d	24.9
		NS

*Treatment means followed by no letter in common are significant at the 5% level.

Results

Sulfur dust or DPX 110 provided excellent control of sugarbeet powdery mildew. DPX 110 is an experimental product of DuPont and contains a high amount of sulfur. Five pounds of wettable sulfur per acre provided intermediate control. The addition of Agrodex oil to Benlate did not enhance control of mildew.

A 20.7 percent loss in sugarbeet root yield was sustained when comparing no treatment with the sulfur dust treatment.

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