

LEWELLEN, R. T.*, and JULIA K. SCHRANDT, USDA, Agricultural Research Service, 1636 E. Alisal Street, Salinas, CA 93905. **Inheritance of resistance to powdery mildew in sugarbeet derived from *Beta maritima*.**

Powdery mildew of sugarbeet (*Beta vulgaris* L.) caused by *Erysiphe polygoni* DC. was introduced into N. America in 1974. Since, it has remained a persistent problem. Traditional American germplasm, e.g., curly top resistant breeding lines, were largely susceptible. Chemical control and partial resistance are used to help control losses. High resistance was observed at Salinas in *B. vulgaris* spp. *maritima* accessions WB 97 and WB 242. In a preliminary investigation, this wild beet resistance was backcrossed into sugarbeet where reaction to *E. polygoni* among individual plants was expressed in more-or-less discrete resistant:susceptible classes. Plants from these backcross derived lines were used in controlled crossing designs to obtain testcross and selfed families for genetic analysis. In 1997 these families were scored for reaction to powdery mildew under natural field conditions at Salinas. Their segregation fit the pattern expected for a single, dominant gene for resistance to powdery mildew. The gene symbol *Pm* is proposed for this resistance factor. In field tests in 1998, the identical testcross families showed different segregation patterns. The possible reasons for these differences will be discussed.