and *Ma.* Saluda contains the *Pm3a* gene (3) and was susceptible in all greenhouse and evaluations conducted in the development of the germplasms.

The direct diploid to hexaploid transfer methodology followed during backcrossing was similar to that outlined by Gill and Raupp (1). We utilized *A*-genome diploids as donor parents in place of the *D*-genome diploids described in that study. The hexaploid × diploid cross, *F*₁ embryo rescue, and development of *BC₁F₁, BC₁F₂*, and *BC₂F₃* seed were conducted during the 1988 to 1991 winter greenhouse seasons. Field selection using the pedigree breeding method was initiated with *BC₁F₁* bulk populations in the 1991–1992 season. Natural powdery mildew epidemics occurred each year. Selection was primarily for mildew resistance during Feekes (2) Growth Stages 8 to 10.5, but whenever possible additional selection for heading date, plant height, and straw strength was conducted using the Saluda phenotype as the benchmark. Each germplasm line traces to a single headrow harvested in 1996.

Laboratory evaluations for powdery mildew resistance using the detached leaf technique were conducted during development of these germplasms and again just prior to release. Laboratory evaluations were completed with 2-cm pieces of the primary leaves floated on 0.5% water agar amended with 50 mg L⁻¹ benzimidazole and evaluated as summarized elsewhere (3). Each line was tested for homogeneity by inoculating two replicate leaf pieces from 16 plants with four distinct isolates. Line NC96BGTA4 had 3.8% susceptible offtypes, whereas NC96BGTA4 and NC96BGTA5 were homogeneous. In addition, the three germplasms were inoculated with 30 isolates of the powdery mildew fungus with distinct differences in virulence formula and aggressiveness. These isolates had virulence to all previously identified alleles for powdery mildew resistance, with the possible exception of *Pm18_. NC96BGTA4, NC96BGTA5, and NC96BGTA6 showed susceptible reactions to the 6, 0, and 1 isolates, respectively. None exhibited a susceptible reaction to commonly occurring isolates. Data and pedigree analysis showed that these germplasms contained at least one resistance gene in addition to *Pm3a_.*

Small quantities of seed (2 g) of each germplasm line are available upon written request to the corresponding author. Appropriate recognition of source should be given if this germplasm contributes to research or development of new cultivars.

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References and Notes


