ASH is late-maturing, with silking date averaging 1 week later than that of 'Jubilee' in the Minnesota environment (lat. 45°N). Kernel color is yellow and cob color white. The population has not been improved for culinary traits. Resistance to ear and kernel damage from European corn borer is present at only a low to moderate level, ~5 to 6 on the 0 to 9 scale, which is similar to 'Jubilee', a hybrid that, although considered to be susceptible, consistently has rank in the more resistant half of the many hybrids evaluated for corn borer resistance in our program.

The rust resistance of AS11 is conditioned by the dominant allele R_{p}^{A}, one of a series at the R_{p} locus (3). Resistance to strains A and B of maize dwarf mosaic virus also is conditioned primarily by three qualitative or major genes in PA405 (4). Both diseases have at times caused significant loss to the sweet corn industry (2, 6).

Potential Use

The use of AS11 as a source of inbreds for direct commercial use will require at least one hybridization with germplasm already well-adapted to the rigid quality and agronomic standards of the sweet corn industry. Thereafter, selection and recombination, or backcrossing, would be logical procedures. In genetic studies, AS11, because it has dual resistance, provides opportunity for investigation of the effects of the two diseases, singly and in combination on the host, as well as the impact of one disease on symptom expression by the second.
Sugary (su) and sugary enhancer (se) Sweet Corn Inbreds with Resistance to Maize Dwarf Mosaic Virus

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Maize dwarf mosaic virus (MDMV), an economically serious viral disease of sweet corn (Zea mays L.) in the United States and other countries of the world, is transmitted primarily by aphid vectors. Early infection by the virus in sweet corn can cause stunted growth, delayed maturity, reduced yield, and poor ear quality (11). To provide public and private breeders with germplasm to help alleviate this problem, the Illinois Agricultural Experiment Station announces the release of nine sugary (su) sweet corn inbreds with improved resistance to maize dwarf mosaic virus. These newly developed inbreds have been designated IL793a, IL794a, IL795a, IL796a, IL796b, IL797a, IL798a, IL799b, and IL800a.

On the basis of elevated sucrose and maltose content in mature dry kernels, four of these inbreds appear to be homozygous for the sugary enhancer (se) gene. The se gene is a recessive modifier of su (3), and results in increased kernel sugar content, sweetness, and tenderness (4). The se gene was derived originally from the three-way cross [IL14a (su x Bolivia 1035) x IL442a]. This three-way cross produced the first su se inbred, IL677a (5), which has been used as a source of the se allele in the Illinois sweet corn breeding program (8, 12). Kernels with the su se genotype contain sugar contents (primarily sucrose) 60% to 100% greater than do genotypes homozygous for only su. These levels are comparable to those of sweet corn homozygous for the shrunk-en (sh2) endosperm mutation, but without a concomitant reduction in phytoglycogen (water-soluble polysaccharides) content (6). The high level of phytoglycogen in su and su se cultivars contributes to their tender, creamy texture.

Origin
Pa405, an inbred dent corn, was found to be highly resistant to MDMV (9). Genetic analysis of segregating populations created from crosses between Pa405 and several MDMV-susceptible sweet corn inbreds indicated that resistance to the virus was controlled through the action of three genes (9). A breeding program was initiated to introgress the MDMV resistance alleles from Pa405 into elite sweet corn germplasm. All nine inbreds have been selfed eight or nine generations, assuring near-homozygous lines. IL793a resulted from S9 seed of the cross Pa405 and 59170F1, where 59710 was derived from the four-way cross of (IL676a x IL677a)S3 x (IL671a x IL677a)S4. IL794a resulted from S9 seed created from the four-way cross of (B5283 x IL677a)S x (Pa405 x ‘Gold Cup!’), where B5282 was an S9 selection developed from the triple cross (IL14h x IL11a x Lenha, a ‘soft’ flint accession from Rio Grande de Sul, Brazil. Eight generations of selfing of selections from the four-