The germplasms were developed in an abbreviated backcross program. Reciprocal F1 crosses were made between each yellow inbred and Ky201. One or two backcrosses to the yellow-endosperm recurrent parent were made before selfing, and pedigree selection was applied for agronomically desirable plants with appropriate white endosperm color, white cob, and kernel hardness qualities. Desirable segregates were saved from either reciprocal F1 maternal source; thus, cytoplasm origin may trace to either Ky201 or the yellow recurrent or both. Dosage effects of the yellow-endosperm allele allowed detection of white-endosperm alleles in the backcrosses or early selfing generations by selection of light yellow kernels. White kernels, or those with least discoloration, were selected for advancement in selfing generations. A subset of the BC1,S4 and BC2,S3 selections were crossed with inbred FR802W and the sister line cross K55 × CI66. The testcross yield data were used to eliminate selections with inferior combining abilities and to provide some information about heterotic patterns. Both testers identified selections with good combining ability in each RP selection group, but only those selections with Mo17 as the RP (KyWS3) had a higher mean yield with (K55 × CI66) than with FR802W. Based primarily on kernel and cob color and the partial testcross data, seed from desirable BC1,S4 and BC2,S3 lines were composited and sib-mated for recombination. The number of selections recombined to produce the Syn 1 for each germplasm was: KyWS1, 40 selections; KyWS2, 44 selections; KyWS3, 53 selections; KyWS4, 21 selections; KyWS5, 21 selections; KyWS6, 22 selections. Since some red-cob selections were included in the synthesis of Syn1, about 500 plants in each of the Syn 1 populations were self-pollinated and resolicited for white cobs and desirable kernel color and type. For KyWS1, KyWS2, KyWS3, KyWS4, KyWS5, and KyWS6, equal quantities of seed from 132, 224, 234, 79, 275, and 186 ears, respectively, were composited to form Syn 2. The Syn 2 population was bulk-sibbed to form Syn 3. Relative harvest maturity of each germplasm corresponds to the ranks of the recurrent yellow inbred parents. Flowering dates are less diverse, in that KyWS1, KyWS2, KyWS3, KyWS4, KyWS5, and KyWS6 required 1530, 1584, 1557, 1584, 1557, and 1502 growing degree days, respectively, to reach mean flowering date in the 1987 growing season when Syn 3 pollinations were made.

Seed of each germplasm is available in 200-seed quantities on request from the Department of Agronomy, University of Kentucky, Lexington, KY 40546-00914.

C.G. Poneleit,* K.O. Evans and R.C. Green (2)

References and Notes