diDti (determinate stem termination) and Au86-2397I is genotype DtiDti (indeterminate). These are descended from a single heterozygous F2 plant from the cross 'Johnston' (4) × Ga80-2205. Ga80-2205 is from the cross Ga76-18 [from 'Ransom' (3) × Columbus (6)] × Ga76-57 [from 'Bragg' (5) × 'Kent' (8)] and is an advanced experimental indeterminate genotype from the breeding program of the University of Georgia at Athens to develop cultivars especially for production in late-planted cropping systems. Parents were crossed in the field during the summer of 1983 in Tallassae, AL. The F1 generation was grown in Belize, Central America, during the winter of 1984. The F2 was grown in Tallassae during the summer of 1984, the F3 and F4 generations were grown in Belize during winter 1985, and the F5 generation grown at Tallassae during the summer of 1985. Progenies were advanced from F3 through F5 generations by single-seed descent. In 1986, 275 F5 rows from this cross were grown at Tallassae. Fourteen lines were observed to be segregating for stem termination, and thus were descended from heterozygous (DiDi) F2 plants. At harvest two short (di di) and six tall (DtiDti) plants were harvested individually and threshed from these segregating rows. Single plant progeny rows were planted in 1987 and those that were homogeneous for stem termination were bulked to form near-isogenic pairs. Au86-2397D and Au86-2397I were selected from this group based on superior yield and agronomic performance. Additional data on performance of these lines as a group have been published (7).

Au86-2397D and Au86-2397I are approximately Maturity Group VIII, have white flowers, gray pubescence, and tan pod walls. Seeds are yellow with buff hila and dull seed coats. Yield of Au86-2397D and Au86-2397ID were equal in five late-planted environments (7) and averaged 4% greater than 'Colquitt' (2). Au86-2397I is 2 d later in maturity than Au86-2397D and 9 d later than Colquitt, and 28 cm taller and lodges less than 'Colquitt'. (2). Additional data on performance of these lines as a group have been published (7).

Registration of Mo45, Mo46, and Mo47 Maize Germplasm Lines with Resistance to European Corn Borer

Maize (Zea mays L.) germplasm lines Mo45, Mo46, and Mo47 germplasm lines Mo45 (Reg. no GP-298, PI 583350), Mo46 (Reg. no. GP-299, PI 583351), and Mo47 (Reg. no. GP-300, PI 583352) are yellow endosperm, dent inbred lines developed for European corn borer (ECB, Ostrinia nubilalis Hübnner) resistance by the Plant Genetics Research Unit of the USDA-ARS in cooperation with the Missouri Agricultural Experiment Station, University of Missouri-Columbia. The lines were released on 22 Feb. 1994.

The sources for these inbreds were races Negro de Tierra Caliente (collection GUA III, from Guatemala for Mo45), Cravo Paulista (collection SP II from Brazil for Mo46), and Candela (collection ECU 344 from Ecuador for Mo47), assembled by M.M. Goodman of North Carolina State University, Raleigh (1). These collections were among 600 assembled by Goodman and crossed to a D2 tester (2) for domestication purposes by C.W. Stuber (USDA-ARS, Raleigh) (3, 4). All plant materials were provided to regional scientists as part of a Regional Exotic Testcross Disease and Insect Evaluation Program. At Columbia and Portageville, MO, ECB resistance was the screen used to develop resistant plant material. Each year, from 1976 to 1978, 200 collections were evaluated in manually infested plots with ~ 100 ECB plant-1 in nonreplicated trials for first-generation (whorl-leaf feeding damage) and second-generation (sheath and collar feeding damage) ECB resistance. Collections indicating resistance for second-generation ECB were reevaluated two to four times, including replicated tests in the later evaluations. The three source collections were among 13 initially selected that rated 5 or less on a scale of 1 to 9 (5) for first-generation ECB whorl-leaf feeding damage. For selection purposes among the 600 collections, the criteria for acceptability were a whorl-leaf feeding damage rating of less than 5.0, and ≤ 0.5 cm tunneling plant-1. Negroid Tierra Caliente, Cravo Paulista, and Candela initially averaged 31.5, 25.7, and 12.2 cm, respectively, of tunneling from second-generation ECB, but within plots of each of these, several individual plants (apparent segregates) had very little tunneling, and these were selected for recombination to form the next generation. These values can be contrasted with the intermediate level of resistance shown by Pioneer Brand 3369A, which had first-generation ECB ratings of 5 to 6 and average second-generation tunneling of 32.0 cm plant-1. The resistant hybrid, Pioneer Brand 3184, had an average whorl-leaf feeding damage rating of 1.8 and 12.0 cm of tunneling.

Thirteen resistant collections selected from the original 600 were crossed to Pioneer Brand 3184, and the resulting F1's were used to develop a single composite population that was improved by using modified half-sib recurrent selection for six cycles (2 seasons cycle-1). During each cycle, the first season was used for genetic recombination in the Puerto Rico winter nursery (starting with F1's) with three ears (planted ear-to-row) of each of the F1's from selected cultivars contributing 10 kernels for use as male plants for bulked pollen. Attempts were made to bulk pollen from at least 12 to 14 plants and usually 20 to 40 were used. Each of the three female rows (each from a separate ear) in the winter nursery had eight pollinations made in it, from which the best three ears were selected for ear-to-row planting. These plots were not meeting the selection criteria, or the poorer plots

References and Notes