REGISTRATION OF PARENTAL LINES

Registration of B107, B108, and B109
Inbred Lines of Maize

Inbreds B107 (Reg. no. PL-292, PI 597925), B108 (Reg. no. PL-293, PI 597926), and B109 (Reg. no. PL-294, PI 597927) are yellow dent maize (*Zea mays* L.) lines developed cooperatively by the Iowa Agriculture and Home Economics Experiment Station and the USDA-ARS. The lines were released 11 Apr. 1997 because of their potential value as sources of germplasm in pedigree-selection breeding programs.

B107 was derived from Pool 41 (Northern Temperate Region) developed by the International Maize and Wheat Improvement Center (CIMMYT) (1,2). B107 (CIMMYT POOL 41-C15-19-1-1-1-2-1-1) was identified in a cooperative trial with CIMMYT conducted at Ames, IA, in 1986. Above-average entries for grain yield, root and stalk strength, and first-generation European corn borer (Ostrinia nubilalis Hübner) resistance were advanced ear-to-row in the breeding nursery by self pollination and were included in the A632 topcross nursery. Based on testcross performance, the line was included in the crossing nursery to produce single-cross seed with A632, A681, B87, B100, N196, and W570. B107 had consistent performance in single-cross trials conducted at five locations in 1994, 1995, and 1996. Grain yield of single crosses that included B107 as one parent exceeded the experiment mean and was similar to the commercial checks. Grain moisture of B107 at harvest (196 g kg⁻¹) was similar to the grain moisture of the commercial checks (200 g kg⁻¹), but average root lodging was 2.6% less and stalk lodging was 4.0% greater for B107 than for the commercial checks. B107 had similar performance in crosses with lines from both heterotic groups.

B107 has flowering dates similar to A632, A681, and B100. Pollen production is good, and silk emergence coincides with pollen shed. Plant and ear height are similar to A632 and A681. Ears have 10 to 12 rows of yellow, flinty kernels on red cobs. Grain yield of B107 (in quintals: 33.8 q ha⁻¹) itself is similar to A681 (39.0 q ha⁻¹) and B100 (34.4 q ha⁻¹). B107 has average root and stalk strength, and average resistance to first-generation European corn borer, gray leaf spot (caused by *Cercospora zeae-maydis* Tehon & Daniels), and common corn rust (caused by *Puccinia sorghi* Schw.). Maturity classification is AES 500-600.

B108 was developed from Pool 41 (Northern Temperate Region) developed by CIMMYT (1,2). B108 [CIMMYT POOL 41 (IA)-C15-55-1-1-1-1-1-1-1] was identified as one of the superior lines in a cooperative trial with CIMMYT conducted at Ames in 1986. Above-average entries for yield, root and stalk strength, and first-generation European corn borer resistance were advanced ear-to-row in the breeding nursery by self pollination and were have consistent performance in crosses with lines from different heterotic groups (e.g., A632 and A681) and had similar performance in crosses from different heterotic groups (e.g., B108 and A632 and A681).

B108 flowers 2 to 4 d later than A632 and A681. Pollen production is good, and the time of silk emergence coincides with pollen shed. Plant and ear height of B108 are greater than B103 and B107. Ears have 14 rows of yellow dent kernels on red cobs. Grain yield of B108 is similar to A632 and A681. Root and stalk lodging was 4.0% greater for B108 than for the commercial checks. B108 had similar performance in crosses with lines from the same and different heterotic groups. Maturity classification is AES 700-800.

B109 was derived from the cross of B73 and Mo17-1-1. The cross was backcrossed to B73, and plants within the backcross generation were used to develop BIOS (B73 × BS20(S)C1-73-1-1)B73-144-1-1-1-1-1-1-1-1-1-1). This parent, BS20(S)C1-73-1-1, was used because of development and strength. Selections were evaluated with Mo17 as tester. Based on testcross performance, BIOS was included in a crossing nursery to produce single-cross seed with B97, B98, B99, and Mo17. Single-cross trials were distributed (100 seeds per request) by the Committee for Agricultural Development, 117 Curtiss Hall, Iowa State University, Ames, IA 50011-1010.

Breeder seed of B107, B108, and B109 is maintained by the Committee for Agricultural Development, 117 Curtiss Hall, Iowa State University, Ames, IA 50011-1010.

ARNEL R. HALLAUER, KENDALL R. LAMKEY, AND PAUL R. WHITE

Published November, 1998