Registration of HDSSS(FG)C1 and HDSCB(FG)C1 Yellow Endosperm Food-Grade Maize Germplasm

Maize (*Zea mays* L.) synthetic populations HDSSS(FG)C1 (Reg. no. GP-324, PI 587036) and HDSCB(FG)C1 (Reg. no. GP-325, PI 587037) were developed by the Purdue University Agricultural Research Programs, West Lafayette, IN. HDSSS(FG)C1 and HDSCB(FG)C1 were released in March 1995 for their potential as germplasm sources in development of yellow endosperm food-grade corn with improved grain quality, hybrid yield, and agronomic value.

HDSSS(FG)C1 and HDSCB(FG)C1 were developed by crossing unreleased inbred lines selected for hard endosperm kernels with the synthetic populations BSSS(R)C11 and BSCB1(R)C11. Thirteen lines (inbreeding levels S4 to S6) were chosen for endosperm hardness based on visual ratings of kernel translucence when viewed on a light box. High translucence was associated with an increased degree of endosperm hardness. Lines with smaller than normal kernel size were not selected, regardless of degree of translucence. All lines were developed through self-pollination and ear-to-row selection for decreased starch cap on the kernels. Six of the 13 selected lines were derived from H Synthetic 73, an unregistered synthetic population released by the Purdue Agricultural Experiment Station (AES), West Lafayette, IN, with parentage of Breeding Group B (Stiff Stalk Synthetic). Six of the selected lines were derived from H Synthetic 99, an unregistered synthetic population released by Purdue AES with parentage of Breeding Group A (non-Stiff Stalk Synthetic). One selected line was derived from HCBSA, an unregistered synthetic population released by Purdue AES with parentage of Breeding Group A. BSSS(R)C11 and BSCB1(R)C11 were developed by the Iowa Agriculture and Home Economics Experiment Station and the USDA-ARS (1). These synthetics are improved versions of Iowa Stiff Stalk Synthetic and Iowa Corn Borer Synthetic No. 1, respectively, that have undergone long-term recurrent selection for agronomic performance and hybrid yield.

Synthetic HDSSS was initiated by crossing pollen bulked from 125 plants of BSSS(R)C11 onto 8 ears from each of the H Synthetic 73 derived lines chosen for endosperm hardness. Similarly, synthetic HDSCB was initiated by crossing pollen bulked from 125 plants of BSCB1(R)C11 onto 8 ears from each

5. B.E. Zehr and G.F. Tragesser, Dep. of Agronomy, B.R. Hamaker, Dep. of Food Science, and J.E. Grogan and D.H. Scott, Dep. of Botany and Plant Pathology, Purdue Univ., West Lafayette, IN 47907-1150. Journal Paper no. 14575 of the Purdue Univ. Agric. Res. Programs. Registration by CSSA. Accepted 31 July 1995. *Corresponding author (Email: bzehr@dept.agry.purdue.edu).