REGISTRATION OF GERmplasm

IOWA STIFF STALK SYNTHETIC No. 2 (REG. NO. GP 10)—Developed from a cross of two strains of Iowa Stiff Stalk Synthetic, each developed after several cycles of recurrent selection for yield. The Iowa Stiff Stalk Synthetic No. 1 was derived after four cycles in a general recurrent selection program, and the second strain after six cycles in a recurrent selection program for general combining ability. This synthetic was developed for studies of the effect of recurrent selection on mean yields and genetic variability.

IOWA SUPER STIFF STALK SYNTHETIC (REG. NO. GP 11)—Developed by recombining 10 inbred lines selected from the original Iowa Stiff Stalk Synthetic. These inbred lines are: B10, B14, B37, B39, B40, B45, B48, R101, (B11 × B15)-1-8, and S8831-2. They have among them germplasm for high general combining ability.

IOWA TWO-EAR SYNTHETIC No. 1 (REG. NO. GP 12)—A 10-line synthetic developed to provide a heterogenous population that would be a source of two-ear lines with good combining ability. All lines used in this synthetic develop two ears per plant under favorable growth conditions. These lines are: R71, I TET01, HD2158, HD2244, HD2418, B38, B60, (N32 × B14)-1-30-4, (Ohy 143 × B35)-139, and Krug 792. HD2158 and HD2244 were developed from Iowa Stiff Stalk Synthetic, and HD2418 was developed from Iowa Stiff Stalk Synthetic × W22.

IOWA LONG EAR SYNTHETIC (REG. NO. GP 13)—Developed by combining 12 inbred lines that have above-average ear length and maintain good ear length to hybrid progeny. All lines used in this synthetic had above-average combining ability. The lines are: B30, B55, B66, B217 (B217 — waxy endosperm), C37, N22A, N295, N405, W37-9, (B15 × B16)-10, (Lanc. Comp.)-34, and (L317 × 187)-21-1-9.

IOWA SYNTHETIC AA (REG. NO. GP 14)—This synthetic includes a large number of lines selected to represent a sampling of the best material available from Corn Belt breeding programs. It was developed to provide a broad genetic base of improved germplasm to be used in quantitative genetic studies. The lines are: A223, A257, A264, A265, A295, B6, B7, B94, B42, B104, B105, B35, B56, B57, B60, B76, H40, L197, H19, H40, H51, K148, R50, M63, M66, M10, M6453, M65-1, M105, M111, N6, N9, N15, N22A, N23, N29, N30, N38, Oh46, Oh103, Oh104, Oh105, Oh107, Oh108, Oh109, R109B, R109, R151, R154, R181, W634, L17A, Oh526, and W59.

IOWA SYNTHETIC BB (REG. NO. GP 15)—This synthetic also includes a large number of lines selected to represent a sampling of the best lines available from Corn Belt breeding programs. It was developed to provide a broad genetic base of improved germplasm to be used in quantitative genetic studies. The lines are: A223, A257, A264, A265, A295, B6, B7, B94, B42, B104, B105, B35, B56, B57, B60, B76, H40, L197, H19, H40, H51, K148, R50, M63, M66, M10, M6453, M65-1, M105, M111, N6, N9, N15, N22A, N23, N29, N30, N38, Oh46, Oh103, Oh104, Oh105, Oh107, Oh108, Oh109, R109B, R109, R151, R154, R181, W634, L17A, Oh526, and W59.

IOWA CORN BORER SYNTHETIC No. 3 (REG. NO. GP 16)—A 16-line synthetic developed to provide a source of germplasm for resistance to first brood of the European corn borer, Ostrinia nubilalis (Hubner). All parent lines have intermediate-to-resistant resistance to first brood of O. nubilalis. The lines are: B49, B53, B55, C31, M1, S112, (B33 × Oh43)-67-3, (Pa. Int. Syn.)-22-4-1, (Synthetic A)-97-4-2, (Midland)-8-1-2, (M14 × A360) × Oh43)-33-2, (3-35-2-2 (selection of multiple cross), (W9 × 458-1) sel., (Pa. Sel.)-75-228, HD225 (selection from multiple cross), and (Minn. Syn.)-1-24.

IOWA CORN BORER SYNTHETIC No. 4 (REG. NO. GP 17)—This synthetic was developed after three cycles of recurrent selection in A.E.S. Synthetic A for resistance to first brood of O. nubilalis. (See Iowa High Oil Synthetic No. 1 for inbred lines in A.E.S. Synthetic A.)

IOWA CORN BORER SYNTHETIC No. 5 (REG. NO. GP 18)—This synthetic was developed after three cycles of recurrent selection in A.E.S. Synthetic B for resistance to first brood of O. nubilalis. (See Iowa High Oil Synthetic No. 2 for inbred lines in A.E.S. Synthetic B.)

IOWA CORN BORER SYNTHETIC No. 6 (REG. NO. GP 19), No. 7 (REG. NO. GP 20), and No. 8 (REG. NO. GP 21)—These synthetics were developed after three cycles of recurrent selection for resistance to first brood of O. nubilalis in Pennsylvania Early Synthetic, Pennsylvania Intermediate Synthetic, and Pennsylvania Late Synthetic, respectively. The Pennsylvania synthetics were developed by Dr. W. Barr, Pennsylvania State University, in a program of selection for resistance to northern corn leaf blight, Helminthosporium turcicum Pas. Originally, they were one synthetic, and some selection for maturity resulted in three synthetics. Information on the pedigree is not complete, but the following lines were included: A, A71, C103, R106, 1072B, 1092B, 1093B, 1096B, 1205, 1317, 1401B, W9, and M14.

REGISTRATION OF THREE GERmplasm LINES OF SOYBEANs (REG. NO. GP 9 to GP 11)


The following lines of soybeans (Glycine max (L.) Merrill) originated as selections from the indicated backcross combinations. They are homoyzous for the transferred genes and have been selected for similarity to the recurrent parents, 'Kent,' 'Lindarin,' and 'Shelby,' for other traits.

These lines were developed in a cooperative program of the U. S. Regional Soybean Laboratory and the Illinois and Purdue University Agricultural Experiment Stations by backcrossing to transfer the following genes.

Resistant to Phyllophthora megasperma Drechs. var. sojense A. H. Hildebr., from the resistant variety Mukden.

Resistant to bacterial pustule leaf spot, caused by Xanthomonas phaseli (E. F. Sm.) var. sojense (Hedges) Starr and Burkli., from the resistant variety CNS (CNS is a parent of Lee). The bacterial pustule resistance was transferred to the three commercial varieties at Illinois and the phytophthora root resistance at Purdue. Crosses to combine resistance to the two diseases and final selection were done at Illinois for the Lindarin backcrosses and at Purdue for the Kent and Shelby backcrosses. A packet of 30 seeds of each line will be available for breeding and other research purposes upon request to the U. S. Regional Soybean Laboratory, Urbana, Illinois 61801.


2 Research Geneticist and Research Agronomist, Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture, and Associate Professor and Professor of Agronomy, Illinois and Purdue University, respectively.

3 Professor and Assistant Professor of Plant Pathology, Purdue University, respectively.

REGISTRATION OF HIGH PROTEIN WHEAT GERmplasm (REG. Nos. GP 2 to GP 27)

V. A. Johnson, J. W. Schmidt, and P. J. Mattern

Twenty-six advanced experimental lines of wheat, Triticum aestivum L., C.I. numbers 13989 to 13992, 14014 to 14017, and 14057 to 14074 inclusive, trace to crosses made at Lincoln, Nebraska, in 1953. They were developed cooperatively by the Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture and the Nebraska Agricultural Experiment Station. 'Atlas 66,' C.I. 12561, a soft red winter wheat developed by the North Carolina Agricultural Experiment Station, was utilized as the genetic source of high grain protein. The lines are being released to plant breeders as elite germplasm in 1970. Registration numbers GP 2 to GP 27 are identified with the germplasm lines in Table 1.

All lines have the winter habit of growth and were selected in early generations by F1 to F2 for high grain protein. Limited additional selection was practiced. High protein as used herein does not denote a fixed high protein level. Rather, it is based...