REGISTRATION OF AP9(S1)C2 SOYBEAN GERMPLASM
(Reg. No. GP33)

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The soybean germplasm population, AP9(S1)C2, was developed by the Iowa Agriculture and Home Economics Experiment Station and the Puerto Rico Agric. Exp. Stn. It was developed as a genetically diverse population with superior resistance to iron-deficiency chlorosis on calcareous soils.

AP9 was derived from 10 high-yielding cultivars or experimental strains and 10 plant introductions with the best resistance to iron-deficiency chlorosis in Iowa tests. Selection of the parents was based on a replicated test in 1975 on Harps soil with a pH of 7.4 located at the Agronomy Res. Ctr., Ames, Iowa. The high-yielding parents were chosen from an evaluation of entries in the Iowa Soybean Yield Test and the Uniform Soybean Tests, Northern States. The plant introductions were chosen from an evaluation of accessions that had demonstrated some resistance to iron-deficiency chlorosis in tests by the U.S. Regional Soybean Laboratory, Urbana, Ill. Entries were scored for yellowing of the first and second trifoliate leaves, and scores ranged from 1, no yellowing, to 5, severe yellowing. The 20 parents selected did not have a score greater than 2 in any of the three replications. The 10 high-yielding parents were Agripro Ex #12 from Agripro Associates, Carroll, Iowa; IVR Ex5003 from Improved Variety Research, Inc., Adel, Iowa; ‘SRF 200’ from the Soybean Research Foundation, Inc., Mason City, Ia.; M68-94 from the Minnesota Agric. Exp. Stn.; U10917 from the Nebraska Agric. Exp. Stn.; and A73-20059, A75-102024, A75-102028, A75-203001, and A75-204005 from the Iowa Agric. and Home Economics Exp. Stn. The 10 plant introductions were PI 67822, PI 70456, PI 153235, PI 153314, PI 180508, PI 189899, PI 189999, PI 194625, PI 227334, and PI 291320A.

In the development of AP9, each of the high-yielding lines was crossed to one of the plant introductions for the first intermating. The 10 single crosses were intermated in a diadel, and S0 seed from the second intermating was bulked. S0 plants from the second intermating were grown, and plant-to-plant crosses were used for the third intermating.

The S0 seed from the third intermating was used to obtain 100 S1 lines (cycle 0). The lines were evaluated for chlorosis symptoms on calcareous soil in three replications at each of two locations in Iowa during 1977. The 10 lines with the least symptoms were crossed in a diadel, and the S1 plants from the crosses were grown in Puerto Rico to obtain 100 S2 lines (cycle 1). The 100 S2 lines of cycle 1 were evaluated for chlorosis symptoms in the same manner as in 1977, the 10 best lines were crossed in a diadel, and the S2 plants from the crosses were grown in Puerto Rico to obtain 100 S3 lines (cycle 2). In 1979, 100 S3 lines from cycle two were replicated twice on calcareous soil at each of three locations in Iowa. Seventy-one of the lines had an average chlorosis score of 1.2 or better and a score not greater than 1.5 in any of the six replications. ‘Hark,’ a cultivar susceptible to iron-deficiency chlorosis, had an average score of 3.9 in the same tests.

Two replications of each of the 71 lines were harvested. A bulk was prepared for distribution to soybean breeders by mixing equal quantities of S2 seed from each line. The S2 seed of AP9(S1)C2 is available upon request from the Committee for Agric. Dev., Iowa State Univ., Ames, IA 50011.

REGISTRATION OF NC 744 TOBACCO GERMPLASM
(Reg. No. GP18)

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NC 744 is a potato virus Y (PVY) resistant flue-cured tobacco (Nicotiana tabacum L.) developed and released by ASEA-USA and the North Carolina Agric. Exp. Stn. It is a potentially destructive disease of tobacco in the United States and other countries. NC 744 is a doubled haploid from the F1 of ‘Coker 86’ × VY 32. Coker 86 is a disease resistant flue-cured tobacco cultivar that is susceptible to PVY. VY 32 is a PVY-resistant line obtained from NC 744 but lacks many of the attributes necessary for producing a flue-cured tobacco variety such as high yield, chemical characteristics and resistance to other diseases. NC 744 has been incorporated into NC 744. The line was released in 1980 to plant breeders, experiment stations and companies for research and breeding purposes.

The new breeding line was evaluated in replicated tests with the standard check cultivars ‘NC 2326’ and ‘Coker 86’ during 1978 and 1979. The line produced about 21 leaves and flowered in 72 days after transplanting compared to NC 2326 which had 19 leaves and flowered in 72 days after transplanting. The yield and chemical composition of NC 744 compared favorably with the check cultivars. The quality of the cured leaf was as good as the check cultivars. The top leaves of NC 744, have a tendency to become greenish. Cured tobacco from the 1979 farm tests was made into cigarettes and smoked by seven smoke evaluation panels. Two replications of each of the 71 lines were harvested. A bulk was prepared for distribution to tobacco breeders by mixing equal quantities of S2 seed from each line. The S2 seed of AP9(S1)C2 is available upon request from the Committee for Agric. Dev., Iowa State Univ., Ames, IA 50011.