Registration of OhS3(C5) Maize Germplasm

OhS3(C5) is a maize (Zea mays L.) synthetic population (Reg. no GP-251, PI 570662) developed by the Ohio Agricultural Research and Development Center, The Ohio State University, and the USDA-ARS Corn and Soybean Research Unit, Wooster, OH. OhS3(C5) is a broad-based synthetic population derived from BS3 (1) with selection for multiple-trait (2) and was released on 30 May 1991.

Seed of BS3 (OhS3(C0)) was planted in isolation at the USDA-ARS Tropical Agriculture Research Station, Mayaguez, PR, in the winter nursery of 1972-1973. Wind-pollinated half-sib (HS) ears were produced. In 1973, 400 HS progenies were tested for resistance to natural infection by the maize virus complex (maize dwarf mosaic virus [MDMV] and maize chlorotic dwarf virus [MCDV]) near Portsmouth, OH, and for resistance to leaf-whorl feeding by first-generation European corn borer (ECB) (Ostrinia nubilalis [Hübner]) at the USDA-ARS Corn Insects Laboratory, Ankeny, IA. The HS progenies were self-pollinated in 1973. In 1974, 121 S progenies derived from selected HS progenies were evaluated for yield in replicated tests at two locations in Ohio, and one location in Iowa. The S progenies were also evaluated at one location in Ohio for resistance to northern leaf blight (NLB) [caused by Exserohilum turcicum (Pass.) Leonard & Suggs]. A balanced composite of 20 selected S progenies was intermated through wind pollination, and 138 HS progenies were harvested. A hand-pollinated, full-sib seed increase was produced in Ohio in 1975. A composite of the full-sib crosses was designated OhS3(C1) and was released on 11 Nov. 1975.

Beginning in 1977, three additional cycles of S progeny selection were conducted using 96 to 116 progenies per cycle. Evaluations for yield, stalk and root lodging, and grain moisture were conducted in replicated tests at two locations in Ohio. Evaluations of resistance to first-generation ECB leaf-whorl feeding and second-generation ECB leaf sheath and collar feeding, resistance to NLB, and the virus disease complex were conducted at Ankeny, IA, Wooster, OH, and Portsmouth, OH, respectively. In the third cycle of selection, controlled inoculation with MDMV, strain B, was initiated near Wooster, OH.

An evaluation of selection progress was initiated in 1985. Sixty S progenies were produced from the initial BS3 population and from cycles one to four of OhS3. Replicated evaluations of the progenies were conducted for all traits listed above except first-generation ECB leaf-whorl feeding from 1986 to 1988.

Population means improved for all traits, and changes were highly significant for all traits except resistance to second-generation ECB leaf sheath and collar feeding and NLB. Four cycles of selection resulted in the following changes in performance of the population: yield increased from 4.1 to 5.0 Mg ha\(^{-1}\); stalk lodging was reduced from 35 to 24%; grain moisture decreased from 270 to 230 g kg\(^{-1}\); days to mid-silk decreased from 82.7 to 80.2 d; disease incidence in response to controlled inoculation with MDMV-A and MDMV-B decreased from 58 and 66% to 36 and 46%, respectively; NLB percent leaf area infected decreased from 30 to 26%; and second-generation ECB ratings (1-9 scale) for leaf sheath and collar feeding decreased from 4.8 to 4.3.

Based on superior rankings for multiple traits and yield in the evaluations, 20 progenies from Cycle 4 were recombined in 1989 using the bulk-entry method. The composite was planted in isolation near Wooster, OH and allowed to wind pollinate in isolation in 1990. A balanced composite was made from 500 random-mated ears to form OhS3(C5). OhS3(C5) displays a vigorous plant type, intermediate height, and ears at mid-plant height with yellow dent kernals. It has maturity in the range AEST700 to AEST800. Preliminary tests have demonstrated that selected S progenies displayed somewhat better combining ability with a Lancaster single-cross tester (Mo17 × Va58) than with a Stiff-Stalk tester (B73 × B89). OhS3(C5) is suitable for breeding purposes in the Central and Eastern U.S. Corn Belt.

Breeder seed (500 kernel lots) of OhS3(C5) is available from the Maize Germplasm Service, Department of Agronomy, OSU-OARDC, 1680 Madison Ave., Wooster, OH 44691.

References and Notes
3. R.C. Pratt, Dep. of Agronomy, and W.R. Findley (retired) and M.W. Jones, Dep. of Agronomy and USDA-ARS, Ohio Agric. Res. and Develop.-ment Ctr., The Ohio State Univ., 1680 Madison Ave. Wooster, OH 44691; W.D. Guthrie (retired), Dep. of Agronomy and USDA-ARS, Iowa State University, Ames, IA 50011. OARDC Journal Article no. 165-93. Salaries and research support provided by state and federal funds appropriated to the OARDC. The Ohio State Univ., and the USDA-ARS. Registration by CSSA. Accepted 31 Dec. 1993. *Corresponding author.

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Registration of VGP 9 Peanut Germplasm

VGP 9 (Reg. no. GP-66, PI 561567) peanut (Arachis hypogaea L.) germplasm was developed and released cooperatively by the USDA-ARS and the Virginia Agricultural Experiment Station in 1993. VGP 9 was released because of its high level of resistance to the soilborne diseases, sclerotinia blight, caused by Sclerotinia minor Jagger and cymbidiocladium black rot (CBR) [caused by Cymbidiocladium crotalariae (C.A. Loos) D.K. Bell & Sober]. It was tested experimentally as TRC 020571-1.

VGP 9 was developed from a single plant selected in the F1 generation from a cross between Argentine (PI 300855) (2) and NC 3033 (PI 565460) (1). Subsequent generations through F5 have been maintained by bulking seed from several random plants. Plants are intermediate to erect in growth habit with green stems and some flowers on the main stem. Pods are a typical runner market type with no to slight constriction, slight to moderate reticulation, and mostly two-seeded pod. Seed have pink testa color and weigh about 0.56 g per seed. VGP 9 is unacceptable for commercial production due to low yield potential (8 to 37% less than currently available cultivars). Maturity is similar to Floriginant.

Five-year test averages in S. minor-infested fields have shown VGP 9 to have the highest level of resistance to sclerotinia blight identified within subsp. hypogaea and equal to that of germplasm from subsp. fastigiate Waldron (3). VGP 9 had 78% less sclerotinia blight than the resistant cultivar VA 81B and 80% less than the susceptible cultivars Floriginant, NCd. 7, NC 9, and NC 8C. VGP 9 had >80% less CBR than all cultivars, including the resistant cultivars NC 8C and NC 10C. The resistance in VGP 9 should be of value to breeders trying to...