CROP REGISTRATIONS

REGISTRATION OF KS87UP9, A WINTER WHEAT GERMPLASM SEGREGATING FOR A DOMINANT MALE-STERILITY GENE

KS87UP9 (Reg. no. GP-326, PI 535771), a winter wheat (Triticum aestivum L.) population segregating for the dominant male-sterility gene Ms3 (1), was developed cooperatively by the Kansas Agricultural Experiment Station, the USDA-ARS, and the Wheat Genetics Resource Center (WGRC), Kansas State University. It was released as germplasm in 1987.

KS87UP9 was produced by intercrossing wheat genotypes with resistance(s) to one or more of the following: soilborne mosaic virus, spindle-streak mosaic virus, leaf rust (caused by Puccinia recondita Roberge in Desmaz.), stem rust (caused by Puccinia graminis Pers.:Pers.), Hessian fly [Mayetiola destructor (Say)], and septoria leaf blotch (caused by Septoria tritici Roberge in Desmaz.). Many parental genotypes also had high productivity and/or breadmaking quality under the environmental conditions of the southern and central Great Plains of the USA.

The source of male sterility was a euplasmic line derived from the cultivar Len and segregating for EMS-induced allele Ms3. F1 seed was obtained from crosses between Ms3ms3 plants and each of 10 hard red winter wheat cultivars and advanced lines. Three backcrosses to each of the hard red winter parents were made in Kansas, and during fall 1984 the backcrosses and parents were intermated in a modified partial diallel pattern with male-sterile BC1 plants as females and the recurrent parents as males. Male-sterile progeny were crossed in spring 1985 with 39 additional cultivars and breeding lines, 24 of which were well adapted to the southern and central Great Plains and had acceptable to very high milling and breadmaking quality. In fall 1985, male-sterile segregates were crossed with male parents from one of three sources: 30 cultivars and breeding lines, 27 F1 or F2 plants from crosses between other wheat lines and cultivars, and 52 random male-fertile segregates from the previous generation. Many of the male parents used in spring 1985 and all of those used in fall 1985 had exhibited good foliar disease resistance under natural field infection in Manhattan and Hutchinson, Kansas, or carried one or more of the genes H3, H5, H6, H9, H10, H11, H13, H18, or other genes from Aegilops squarrosa [syn. T. tauschii (Coss.) Schmal.] for resistance to Hessian fly. Sources of male parents included the hard red winter, soft red winter, and hard red spring classes of wheat, and experimental lines from the Intermountain × Spring Wheat Screening Nursery; however, the majority of the parents of KS87UP9 were of the hard red winter class.

In spring 1986, 361 intercrosses were made for male-sterile and male-fertile progeny of the previous cycle, using manual pollination of male-sterile heads. Another block of plants was allowed to self-pollinate in the greenhouse, aided by fans and agitation. Forty-five male-sterile plants were tagged at anthesis for the latter crossing block. Approximately equal quantities of seed from each of the resulting 361 full-sib families were bulked and sown in an area isolated from wheat at Manhattan in the fall of 1986. In spring, male-sterile plants were tagged at anthesis, and their seed was bulked to form KS87UP9. This line has undergone no intentional selection. It is expected to segregate for male sterility and fertility in a 1:1 ratio.

Seed of KS87UP9 in 50 g quantities is available upon written request. It is asked that appropriate source be given when this germplasm contributes to research or development of cultivars or breeding lines. Seed stocks are maintained by the WGRC. Write T. S. Cox, USDA-ARS, Dep. of Agronomy, Throckmorton Hall, Kansas State University, Manhattan, KS 66506-5501.

T. S. COX,* R. G. SEARS, AND B. S. GILL (3)

References and Notes

3. T.S. Cox, USDA-ARS, Dep. of Agronomy; R.G. Sears, USDA-ARS; and B.S. Gill, Dep. of Plant Pathology, Kansas State University, Manhattan, KS 66506. Cooperative investigations of the USDA-ARS, the Wheat Genetics Resource Center, and the Kansas Agric. Exp. Stn., Kansas Agric. Exp. Stn., Kansas State Univ., and the Wheat Commission and Improvement Assoc. Registration by CSSA. Accepted by the corresponding author.

Dr. Robert Busch (USDA-ARS, St. Paul, MN) is grateful for providing Len Ms3/hard red winter F1 seed.


REGISTRATION OF PARENTAL LINES

REGISTRATION OF B93 AND B94 PARENTAL INBRED LINES OF MAIZE

Inbred B93 was developed from a backcross population (WGRC), Kansas State University. It was released as germplasm in 1987.

The population was produced by intercrossing maize genotypes with resistance(s) to one or more of the following: ear rust (caused by Puccinia graminis Pers.:Pers.), stem rust (caused by Puccinia sorghi Melass.,) Hessian fly (caused by Mayetiola destructor Say), and B. graminis. The parent lines used in the backcrosses and parents were intermated in a modified partial diallel pattern with male-sterile BC1 plants as females and the recurrent parents as males. Male-sterile progeny were crossed in spring 1985 with 39 additional cultivars and breeding lines, 24 of which were well adapted to the southern and central Great Plains of the USA.

The source of male sterility was a euplasmic line derived from the cultivar Len and segregating for EMS-induced allele Ms3. F1 seed was obtained from crosses between Ms3ms3 plants and each of 10 hard red winter wheat cultivars and advanced lines. Three backcrosses to each of the hard red winter parents were made in Kansas, and during fall 1984 the backcrosses and parents were intermated in a modified partial diallel pattern with male-sterile BC1 plants as females and the recurrent parents as males. Male-sterile progeny were crossed in spring 1985 with 39 additional cultivars and breeding lines, 24 of which were well adapted to the southern and central Great Plains and had acceptable to very high milling and breadmaking quality. In fall 1985, male-sterile segregates were crossed with male parents from one of three sources: 30 cultivars and breeding lines, 27 F1 or F2 plants from crosses between other wheat lines and cultivars, and 52 random male-fertile segregates from the previous generation. Many of the male parents used in spring 1985 and all of those used in fall 1985 had exhibited good foliar disease resistance under natural field infection in Manhattan and Hutchinson, Kansas, or carried one or more of the genes H3, H5, H6, H9, H10, H11, H13, H18, or other genes from Aegilops squarrosa [syn. T. tauschii (Coss.) Schmal.] for resistance to Hessian fly. Sources of male parents included the hard red winter, soft red winter, and hard red spring classes of wheat, and experimental lines from the Intermountain × Spring Wheat Screening Nursery; however, the majority of the parents of KS87UP9 were of the hard red winter class.

In spring 1986, 361 intercrosses were made for male-sterile and male-fertile progeny of the previous cycle, using manual pollination of male-sterile heads. Another block of plants was allowed to self-pollinate in the greenhouse, aided by fans and agitation. Forty-five male-sterile plants were tagged at anthesis for the latter crossing block. Approximately equal quantities of seed from each of the resulting 361 full-sib families were bulked and sown in an area isolated from wheat at Manhattan in the fall of 1986. In spring, male-sterile plants were tagged at anthesis, and their seed was bulked to form KS87UP9. This line has undergone no intentional selection. It is expected to segregate for male sterility and fertility in a 1:1 ratio.

Seed of KS87UP9 in 50 g quantities is available upon written request. It is asked that appropriate source be given when this germplasm contributes to research or development of cultivars or breeding lines. Seed stocks are maintained by the WGRC. Write T. S. Cox, USDA-ARS, Dep. of Agronomy, Throckmorton Hall, Kansas State University, Manhattan, KS 66506-5501.

T. S. COX,* R. G. SEARS, AND B. S. GILL (3)

References and Notes

3. T.S. Cox, USDA-ARS, Dep. of Agronomy; R.G. Sears, USDA-ARS; and B.S. Gill, Dep. of Plant Pathology, Kansas State University, Manhattan, KS 66506. Cooperative investigations of the USDA-ARS, the Wheat Genetics Resource Center, and the Kansas Agric. Exp. Stn., Kansas Agric. Exp. Stn., Kansas State Univ., and the Wheat Commission and Improvement Assoc. Registration by CSSA. Accepted by the corresponding author.

Dr. Robert Busch (USDA-ARS, St. Paul, MN) is grateful for providing Len Ms3/hard red winter F1 seed.