REGISTRATION OF PENNLINE 40 WINTER OAT GERMPLASM

PENNLINE 40 (Reg. no. GP-55, PI 555726) a winter oat 
(Avena sativa L.) germplasm, was released by the USDA-
ARS and the Pennsylvania Agricultural Experiment Station
in November 1991. The purpose of the release is to provide
breeders with a source of superior winterhardiness. Devel-
opment of oat cultivars with improved winterhardiness has
depended on the detection and utilization of transgressive
segregation for that trait. Therefore, new transgressive
genotypes are useful as parents for combining elite winter-
hardiness with other agronomic traits to develop winter oat
cultivars. Based on performance in national tests, Pennline
40 has a level of winterhardiness which is a major improve-
ment for that trait.

Pennline 40 was previously evaluated as PA 8115-40.
The pedigree of Pennline 40 is PA 822-7538*3/CI8447. PA
822-7538 was selected from the cross ‘Milford’/‘Wintok’
Selection/‘Hairy Culberson’/3/‘Nyse’/Wintok Selection/
Hairy Culberson, and CI8447 is a semidwarf mutant line
selected at North Carolina State University from the cross
of ‘Carolee’/‘Fulgrain’.

Pennline 40 was selected from a composite population
constituted by bulking seed of 115 F₂ populations from the
last cycle of backcrossing. These populations were grown
in 1973 at the Eastern Virginia Research Station near War-
saw, VA, and the composite was grown under natural se-
lection near University Park, PA, from 1974 to 1978.

Surviving plants were harvested in bulk each year and ran-
dom seed samples were used to sow plots in succeeding
years.

In 1979, 324 plants from the composite were grown,
hardened, and frozen using a crown freezing technique
(Marshall and Kolb, 1982); 43 surviving plant crowns were
transplanted in the greenhouse. Seeds harvested from these
F₂ plants were grown in single-row observation plots in
1981 at Warsaw, VA. Thirteen lines were saved for further
evaluation; all but Pennline 40 were discarded in 1985 be-
cause of undesirable characteristics.

Pennline 40 was tested in the Uniform Winterhardiness
In 1986, Pennline 40 exceeded the winterhardiness of Win-
tok, ‘Walken’, ‘Norline’, and ‘Pennwin’, the most winter-
hardy winter oat cultivars; it exceeded the winterhardiness
of Wintok by the largest margin in the history of the UWHN.
The average hardiness of Pennline 40 over the 3-yr period
was significantly (P = 0.05) greater than that of Wintok and
Norline (Walken and Pennwin were not included in the
1990 and 1991 UWHN).

References and Notes
resistance to freezing stress in winter oats. Crop Sci. 22:
236, PI 558498) developed by the cooperat-
ing research projects conducted by the Iowa Agri-
Home Economics Experiment Station, and the distribu-
tion of 500-seed samples of BS27 is by the Committee for
Grino, USDA-ARS Oat Research, 23 Curtiss Hall, Iowa State
University, Ames, IA 50011. Date of release was 20 Mar.

Samples of 500 seeds of Antigua Grupo 2 were provided by Mario Gutierrez G. of the Interna-
tional Maize and Wheat Improvement Center (CIM-
MYT) in 1975 from seed produced at Tlaltizapan, Morelos,
Mexico, in 1965. Antigua collections of Grupo 1 and
Grupo 2 were made by the Committee for Agricultura Devel-
opment, 23 Curtiss Hall, Iowa State Home Economics Experi-
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REGISTRATION OF BS27 MAIZE GERMPLASM

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