REGISTRATION OF 'PORTAL' OAT

'PORTAL' SPRING OAT (Avena sativa L.) (Reg. no. CV-332, CI 8040, PI 546037) was developed by workers in the Department of Agronomy, College of Agricultural and Life Sciences, University of Wisconsin-Madison, and was released in January 1967. The parentage of Portal is: PI 174544/‘Clintland’/2/Garland’. The PI 174544/Clinland cross (X652) was made in 1952. PI 174544 had field resistance to crown rust [Puccinia coronata (Corda) var. avenae (W.P. Fraser & Ledingham)] when the USDA World Oat Collection was screened at Madison, WI, in 1951. In a USDA rust nursery in Puerto Rico in 1958, the late H.C. Murphy collected panicles from a progeny line of X652 that was resistant to crown rust race 264, and he sent the panicles to Madison. One of the resulting lines was crossed later in 1958 to line X643-41, which ultimately became Garland (3).

Portal was developed using the pedigree method of breeding. Primary selection criteria in the F2 population (X957) and among F3 and F4 lines were resistance to crown rust and to stem rust [Puccinia graminis Eriks. & E. Henn.), straw strength, agronomic appearance, and high grain quality as measured by kernel filling and size and shape of kernels. In 1961, F2 line X957-2 was cut and threshed, and this line ultimately became Portal. X957-2 was evaluated in a preliminary yield trial at Madison in 1962, and was advanced to the main Madison nursery trial of 84 entries and to statewide trials in 1963 and to the Madison drill plot test in 1964. It was tested in the USDA Uniform Midseason Oat Performance Nursery (UMOPN) from 1964 to 1967.

Portal is midseason in maturity, heading about the same time as 'Holden' (1) and about 4 d earlier than 'Lodi' (2). Portal is intermediate in plant height, i.e., 5 to 7 cm taller than Garland and Holden but 6 to 7 cm shorter than Lodi. Straw strength of Portal is slightly less than that of Garland or Holden. Test weight of Portal is intermediate between the Garland-Holden level (higher) and the Garry-Lodi level (lower). Portal has yellow kernels that taper from the middle to the tip and that have high groat to hull ratios (730 to 740 g kg\(^{-1}\)). The kernels are nonfluorescent under ultraviolet light. Grain yields in 22 Wisconsin tests from 1963 through 1965 were intermediate between Holden (higher) and Garland-Lodi level (lower).

Juvenile plants of Portal are erect. Leaves are glabrous with ligules present. Culms are mid-sized and culm nodes are glabrous. Panicles are equilateral and mid-long with spreading branches. The rachis is erect. Spikelets separate from their pedicels by fracture, and florets separate by disarticulation of their rachilla segments which are hairless. Glumes are glabrous. Lemmas are glabrous and awns are absent or infrequent.

An important reason for releasing Portal was its resistance to prevalent races of crown rust. At the time of release, Portal was resistant to crown rust races 203, 216, 232, 236, and 326. Although Portal was scored as susceptible to race 264 in seedling tests at Ames, IA, as an entry in the UMOPN during 1964 to 1967, it ranked in the top five for low coeff- of susceptibility to race 264 in seedling tests at Ames, IA, as an entry in the UMOPN during 1964 to 1967, and this adult-plant resistance was also evident in response to crown rust races prevalent at several locations in southern Brazil. Portal was tolerant to Al toxicity at the older Experimental Farm at Passo Fundo, Rio Grande do Sul, Brazil. Portal has the AB genes for stem-rust resistance. Using earlier race terminology, Portal was resistant to races 6F, 7A, 7AF, and 12A and susceptible to races 6A, 6AF, 6AH, 8AF, 10A, 13A, and 13AF. Using current nomenclature, Portal has an avirulence/virulence genotype of 2,4/1,3,8,9. It is resistant to current races NA 8 and NA 16 but susceptible to races NA 25, NA 26, NA 27, and NA 28. Portal was resistant to prevalent races of loose smut [Ustilago avenae (Pers.) Rostr.] and susceptible to the barley yellow dwarf virus.

Designated classes of certified seed of Portal were breeder, foundation, registered, and certified. Breeder seed has been maintained by the Department of Agronomy, University of Wisconsin-Madison.

H. L. SHANDS AND R. A. FORSBERG* (4)

References and Notes


Published in Crop Sci. 31:1083 (1991).

REGISTRATION OF 'FROKER' OAT

'FROKER' SPRING OAT (Avena sativa L.) (Reg. no. CV-331, CI 8444, PI 546036) was developed by workers in the Department of Agronomy, College of Agricultural and Life Sciences, University of Wisconsin-Madison, and was released in January 1970. The parentage of Froker is 'Beacon'2/‘Hawkeye’/‘Victoria’/3/CI 1970/4/‘Clintland’/3/Garry’/2/ 'Hawkeye’/Victoria. The final cross, made in 1959, was PEP 34-39-1-2/X643-33. Selection PEP 34-39-1-2, a product of the Ph.D. thesis research of P.E. Pawlisch (3), arose from a cross between X436-8 [a sister line of 'Beedee’ (4)] and CI 5190, an introduction that was unadapted, weak-stawed, and suscep-tible to prevalent diseases in Wisconsin. Line X436-33 was a sister selection of 'Goodfield'(8), 'Dodge'(5), 'Garland'(7), and 'Holden'(1). Important reasons for distributing Froker were its high grain yield, high test weight, and crown rust resistance.

Froker was developed using the pedigree method of breeding. Primary selection criteria in the F1 population (X1181) and among F2, F3, and F4 lines were resistance to crown rust [Puccinia coronata (Corda) var. avenae (W.P. Fraser & Led-ingham)], straw strength, agronomic appearance, and high grain quality as measured by kernel filling and size and shape of kernels. In 1964, F1 line X1181-2 was cut and threshed, and this line ultimately became Froker. X1181-2 was evaluated in a preliminary yield trial at Madison, WI, in 1965, and was advanced to the main Madison nursery trial of 84 entries in 1966, to statewide trials in 1967, and to the Madison drill plot test in 1968. It was tested in the USDA Uniform Midseason Oat Performance Nursery from 1968 to 1971.

Froker is a later-maturing cultivar that heads and ripens at about the same time as Lodi (6). Froker is intermediate in plant height, i.e., about 5 to 6 cm taller than Holden and...