Registration of ‘Dallas’ Oat

‘Dallas’ winter oat (Avena sativa L.) (Reg. no. CV-346, PI 596631) was developed by the Texas Agricultural Experiment Station (TAES) and released in 1995. The pedigree of Dallas is ‘Coker 84-27’/‘H422’/‘H833’. Coker 84-27 has the pedigree ‘Coker 69-26’/‘Coker 70-12’/‘Coker 76-19’/3’/‘Coker 76-16’/‘Coker 77-81’/‘Clav 3031’ and was a breeding line of the Coker Pedigreed Seed Company. The cultivar H422 was released by Coker in 1978 and was also known as ‘Coker 422’ and ‘Four-Twenty-Two’. The pedigree of H422 is not known. H833 was released by Coker in 1982 and has the pedigree Coker 69-26/Coker 70-12/Coker 76-16. The experimental designation for Dallas was TX89D7213. The final cross that produced Dallas was made in 1986.

Seedlings were advanced by single-seed descent from the F2 through F4 generations with selection in each generation for resistance to an ice-nucleation-active strain of Pseudomonas syringae Van Hall and for tolerance to subsequent freezing at −12°C. Freeze-tolerant plants were grown in the field at Dallas, TX, and then tested in replicated trials at Dallas and Prosper, TX, for yield, agronomic characteristics, and disease resistance. One of the selections, designated TX89D7213, was entered into uniform, intrastate nurseries beginning in 1991. TX89D7213 was also tested in the USDA Uniform Winter Oat Yield Trial from 1993 to 1995. Approximately 100 F5 panicles were selected for purity and seed increase in the spring of 1990, grown as single rows in 1990–1991, and visually evaluated for uniformity. In 1991, 89 of the uniform rows were bulked to form breeder seed of Dallas.

The juvenile growth habit of Dallas is semi prostrate to erect. Stem diameter is medium and stems are yellow in color at maturity. Leaves are erect to semierect, blue-green in color, and have slightly ciliate margins. Ligules are present. The panicles are equilateral in shape and medium in size. The rachis is somewhat recurved, and spikelet separation is by semiabscession. Dallas reaches 50% flowering about the same time as H833 and ‘Ozark’, and about 5 days later than ‘Bob’. Dallas is about 8 cm shorter than ‘Nora’, 8 cm taller than ‘Florida 501’, and about the same height as H833. Based on 30 location-years of testing in Texas, grain yield of Dallas was 390 kg ha−1 greater than H833, 459 kg ha−1 greater than Ozark, 649 kg ha−1 greater than ‘Okay’, 960 kg ha−1 greater than ‘Coker 716’, and 1043 kg ha−1 greater than ‘Cimarron’. The volume weight of Dallas grain averaged 435 kg m−3 over 4 yr of testing in Texas. Forage yield for Dallas averaged 5795 kg ha−1 of total dry matter when planted in early September and clipped four times with a final clipping in mid-March. This forage yield is similar to H833.

From 1991 to 1994, winter-hardiness data from replicated trials showed that Dallas had a percent plant survival numerically higher than the check cultivars, yet within the same statistical group as the winter-hardy cultivars Cimarron, Coker 716, H833, ‘Norline’, ‘Ozark’, and ‘Walken’. In the laboratory under controlled conditions, the LT50 (temperature at which 50% of the leaves froze, as calculated from the arcsine-square root of leaves frozen vs. freezing temperature curve) for Dallas was significantly lower than the three most freeze-tolerant cultivars (Coker 716, Norline, and Walken), meaning that leaves of Dallas can withstand colder temperatures before freezing than can leaves of Coker 716, Norline, and Walken.

Dallas is moderately susceptible to crown rust (caused by Puccinia coronata Corda f. sp. avenae W.P. Fraser & Ledingham) and stem rust (caused by P. graminis Pers.:Pers. f. sp. avenae Eriks. & E. Henn.). This level of susceptibility is similar to H833 and is unacceptable in areas where the rust diseases are determining factors in winter oat production, such as southern Texas. Dallas has exhibited a good level of tolerance to barley yellow dwarf virus (BYDV), similar to ‘TAMO 386’, H422, and H833 and better than ‘Big Mac’, Cimarron, and Ozark.

U.S. plant variety protection for Dallas is pending (Certificate no. 9700244). The Foundation Seed Service of TAES will produce the foundation seed. Foundation, registered, and certified seed classes will be produced. Seed of Dallas can be sold by cultivar name only as a class of certified seed. Small quantities of seed for research purposes may be obtained from the corresponding author. Recipients of seed are asked to make appropriate recognition of the source of Dallas if it is used in the development of a new cultivar, germplasm, parental line, or genetic stock.

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References and Notes

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Registration of ‘Classic’ Oat

Classic spring oat (Avena sativa L.) (Reg. no. CV-347, PI 591611) was developed cooperatively by the Purdue University Agricultural Research Programs and the USDA-ARS and was released in 1996. Classic originated from the cross ‘Ogle’/‘INO9201’/P8221RB1-44-6. The cross was made and subsequent selection was done to combine resistance–tolerance to barley yellow dwarf virus (BYDV) from all three parent lines, and resistance of INO9201 and P8221RB1-44-6 to crown rust (caused by Puccinia coronata Corda var. avenae W.P. Fraser & Ledingham). The parentage of P8221RB1-44-6 is ‘Noble’/Accession 1575/3’/Jaycee’/‘Clintford’/IowaX434-II. A BYDV resistant–tolerant line from a Noble/Accession 1575 cross was crossed to a line carrying resistance–tolerance to BYDV and resistance to P. coronata from the multiple cross Jaycee/Clintford/IowaX434-II. Accession 1575 (kindly provided by R.H. McKenzie, Agriculture Canada, Winnipeg, MB) is a semidwarf line with resistance–tolerance to BYDV and has the parentage ‘Avon’/‘Rodney’/‘Milford’. The line IowaX434-II (kindly provided by K.J. Frey, Iowa State University) carries resistance to P. coronata derived from A. stellitis Clav 8079.

Classic was developed using the pedigree method of breeding. Plant selections were made in F2 and F3 for resistance to crown rust determined by tests in the greenhouse, and in F4 and F5 determined by tests in the field. Progeny from 100 F10 plants selected at Lafayette, IN, in 1994 were grown as F31 head rows in New Zealand, October to March, 1994–1995, and tested in the F31 in a replicated performance nursery at Lafayette in 1995. Seed of the highest-yielding 10% of the lines, uniform for plant type, were bulked as breeder seed. The F31 was increased in Argentina, October to March, 1995–1996, and the F14 was grown at Lafayette in 1996. Classic has been uniform and true-breeding during development of breeder seed. Classic was tested as an F6 plant-derived line designated P88122E 1-4-5-l-X-5 in nursery plots at Lafayette from 1992 to 1995; Indiana Performance Trials from 1992 to 1995; and the Uniform Midseason Oat Performance Nursery in 1994 and 1995.