Dal was named after Mr. Dallas E. Western, the Quaker Oats Co., a vigorous supporter of oat breeding and research in the USA for more than 40 yr.

Brown and Forsberg (1) published a chronological sequence of the development of Dal as a typical example of the use of the pedigree method of breeding. This method is especially effective when the characters of interest to be combined through hybridization are easy to identify and can be readily selected in early generations. In this case, the purpose of the final cross was to combine the crown (leaf) rust \textit{Puccinia coronata} \textit{(Corda) var. avenue} \textit{(W.P. Fraser \\& Ledingham)} resistance of Wisconsin selection X660 with the superior yield and plump kernels of Beedee (3). Selection X660 carried crown rust resistance from Trispernia \textit{(CI 5100), which was detected during a screening of the USDA World Oat Collection at Madison in 1951. Primary selection criteria in the \textit{F1} population (X1289) and among \textit{F2}, \textit{F3}, and \textit{F4} lines were resistance to crown rust and stem rust \textit{(Puccinia graminis Pers. \& Pers. f. sp. avenue} Eriks \\& E. Henn.), stiff straw, agronomic appearance, and high grain quality as measured by kernel filling, groat percentage, groat protein percentage, and size and shape of kernels and groats. In 1965, \textit{F3} line X1289-3 was cut and threshed, and this line ultimately became Dal. X1289-3 was evaluated in a preliminary yield trial at Madison, WI in 1966 and in the main Madison performance trial of 100 entries starting in 1967. It was advanced to the drill plot test at Arlington, WI, in 1969 and was tested statewide starting in 1970. Dal has been an entry in the USDA Uniform Midseason Oat Performance Nursery for 21 consecutive years, initially as a test entry in 1970 and 1971 and for the remaining time as a check cultivar for groat protein percentage and protein yield per hectare.

Dal is a late-maturing cultivar that heads about one-half day later than ‘Lodi’ (4) and about one-half day earlier than ‘Porter’ (2). Dal is intermediate in plant height, i.e., 9 cm shorter than Lodi and 4.5 cm taller than Porter. Fewer than 0.5% taller plants may appear. Dal has tan kernels that have high groat percentage and high test weight. Over 99.5% of the kernels are fluorescent under ultraviolet light, with less than 0.5% nonfluorescent. Yellow kernels may be present in low frequency (less than 0.5%), some being immature secondary or tertiary kernels.

In addition to high grain yields, important reasons for releasing Dal were its high level of leaf rust resistance and its high concentration of groat protein. Screening of Wisconsin parental material, early generation materials, and advanced breeding selections for groat protein concentration was initiated in 1967, and Dal was the first high protein oat cultivar released in the USA. Dal had high protein concentrations ranging from 190 to 220 g kg\(^{-1}\) (19 to 22%) compared with 40 to 150 g kg\(^{-1}\) for other cultivars that were being grown at that time. Even 18 yr after release, groat protein percentage and protein yield values for Dal remain high compared to most other cultivars. The filtration of personnel in the USDA Oat Quality Laboratory, Madison, WI, in protein determination is gratefully acknowledged.

Juvenile plants of Dal are erect. Leaves are glabrous with ligules present. Diffuse, irregular, nonparasitic necrotic areas (spots) develop on leaf blades, usually after heading. Culms are midsized and culm nodes are glabrous. Panicles are equalateral and midlong, with ascending branches during filling but which are spreading at maturity. 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.

Regeneration of ‘Dal’ oat

‘Dal’ spring oat \textit{(Avena sativa L.)} (Reg. no. CV-330, CI 9159, PI 546035) was developed by workers in the Department of Agronomy, College of Agricultural and Life Sciences, University of Wisconsin-Madison, and was released in January 1972. The parentage of Dal is ‘Belar’/‘Trispernia’/2/‘Beedee’. The final cross, X660/Beedee, was made in 1961.