Registration of ‘MT1159CL’ Wheat

‘MT1159CL’ (Reg. no. CV-992, PI 641221) hard red winter wheat (Triticum aestivum L.) was developed by the Montana Agricultural Experiment Station and released in September 2004. MT1159CL is a Clearfield wheat that is licensed for production with Beyond herbicide (active ingredient imazamox (2-[4,5-dihydro-4-methyl-4-(1-methylthyl)-5-oxo-1H-imidazol-2-yl]-5-(methoxymethyl)-3-pyridinecarboxylic acid) (BASF Corp., Research Triangle Park, NC). MT1159CL was released on the basis of its tolerance to imazamox herbicide, its adaptation to dryland production in central and south-central Montana, and improved bread baking quality relative to available Clearfield winter wheat cultivars.

MT1159CL is a doubled-haploid line developed using the wheat × maize (Zea mays L.) hybridization method (Laurie and Bennett, 1988) from the cross FS2/‘Tiber’ (PI 517194, Kisha et al., 1992) made in 1997. Tiber is a hard red winter wheat cultivar released by Montana State University in 1988. The wheat germplasm line FS2 (syn. FS4) was developed by the BASF Corporation using sodium azide–induced mutagenesis of the French wheat cultivar Fidel (Newhouse et al., 1992) and contains a single gene at the als1 locus for acetolactate synthase, which conveys tolerance to imidazolinone herbicides. Twenty-six doubled haploids were generated from the F1 generation of this single cross in the greenhouse and growth chambers at Bozeman, MT, in 1998. Progeny harvested from the doubled haploid plants were evaluated for herbicide tolerance by spraying five plants per line with 67.7 μL L⁻¹ of imazamox herbicide in the greenhouse in 1999. Resistant lines and check cultivars were subsequently planted in nonreplicated standard yield plots (3 m²) at Fort Ellis, MT, in the fall of 1999 and sprayed with imazamox herbicide (labeled rate, 52.5 g a.i. ha⁻¹) in May 2000. On the basis of herbicide tolerance, agronomic appearance, and milling and baking quality, the line subsequently denoted as MT1159CL was selected and bulk harvested in 2000. Ten heads were also taken from the line before harvest to initiate seed increase.

MT1159CL was grown in preliminary yield trials at Bozeman in 2001; in WestBred, LLC yield trials at four Montana locations in 2003 and 2004; and in multilocation Montana State University Intrastate, off-station, and herbicide-tolerance trials in 2004 and 2005. Seed increase of MT1159CL was initiated by harvesting a 10-member headrow family in bulk in 2001. In 2002, seed was further increased at Bozeman in a four-row, 60-m strip increase treated with imazamox herbicide (105 g a.i. ha⁻¹). The strip increase was rogued carefully to remove phenotypic variants. Breeder seed was produced in 2003 in Yuma, AZ, and further increased at various MT locations in 2004 by Westbred, LLC.

MT1159CL is a medium-early maturing, semidwarf hard red winter wheat. Average heading date of MT1159CL (162.4 d from 1 January, n = 19) is similar to Rampart (PI 593889), but 1.9 and 1.5 d earlier (P < 0.05) than ‘Neeley’ (CI 17860) and Tiber, respectively. Plant height of MT1159CL is medium to short. MT1159CL contains a single gene at the locus for acetolactate synthase (ALS1) which confers tolerance to imidazolinone herbicides. MT1159CL is medium-early maturing, semidwarf, uniform with exception that it contains a white-chaffed, imidazolinone tolerant variant at the frequency of 1 per 10000 plants.

MT1159CL was tested at 43 trials in Montana in 2005. In these trials, average grain yield of MT1159CL (2004, MT1159CL was released on the basis of its tolerance to imazamox herbicide, its adaptation to dryland production in central and south-central Montana, and improved bread baking quality relative to available Clearfield winter wheat cultivars.

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