Registration of ‘Hyalite’ Wheat


‘Hyalite’ (Reg. No. CV-1014, PI 643978) hard white winter wheat (Triticum aestivum L.) was developed by the Montana Agricultural Experiment Station and released in September 2005. Hyalite is a Clearfield wheat that is licensed for production with Beyond herbicide [active ingredient imazamox (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-(methoxymethyl)-3-pyridinecarboxylic acid); BASF Corp., Research Triangle Park, NC]. Hyalite was released on the basis of its tolerance to imazamox, its adaptation to dryland winter wheat production in Montana, and improved yield potential relative to available Clearfield winter wheat cultivars.

Hyalite was selected as an F₃-derived F₄ headrow from the composite cross 98X78c, a composite of F₂ seed of three related populations, MTW9727/FS2/‘NuWest’, MTW9722/3/NuWest/ TX12588-120*4/FS2, and ‘NuSky’/‘TAM 110’*4/FS2/3/N95S004. NuSky (Pl. 619167; Berg et al., 2003), NuWest (Pl. 586806; Bruckner et al., 1996), MTW9722 (‘Redwin’/‘Rio Blanco’/NuWest), and MTW9727 (‘Norwin’/‘Froid’/SD1287/3/NuWest) are adapted, high-quality hard white winter wheat lines developed by the Montana Agricultural Experiment Station. The wheat germplasm line FS2 (syn. FS4) was developed by the BASF Corp. (formerly American Cyanamid) 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 synthesis, which conveys tolerance to imidazolinone herbicides. Hyalite was released after being tested in the multilocation Montana Intrastate trial since 2003. Hyalite was tested in the multilocation Montana Intrastate trial since 2003.

Hyalite is a medium-maturity, conventional-height Clearfield hard white winter wheat. Average heading date of Hyalite (159.6 d) was earlier (LSD0.05 = 0.6 d) than that of ‘Above’ (Haley et al., 2003; 156.5). Hyalite (94 cm, ± 28) is taller (LSD0.05 = 2 cm) than MT1159CL (89 cm) and later from herbicide-resistant F3 plants were selected from the population. Resistant F2 plants were selected and bulked to generate the F3 population, and 100 individual heads from herbicide-resistant F3 plants were selected at harvest maturity. F3-derived F4 headrow planting was done at Fort Ellis, MT, in 2001 and sprayed with imazamox herbicide to remove susceptible segregants. A composite cross of F2 seed of the three related populations was made and planted as an F3 bulk population (98X78c) at Kalispell, MT, in 2000. F2 and F3 bulk populations were sprayed with imazamox herbicide to remove susceptible segregants. Resistant F2 plants were selected and bulked to generate the F3 population, and 100 individual heads from herbicide-resistant F3 plants were selected at harvest maturity. F3–derived F4 headrows were planted at Fort Ellis, MT, in 2001 and sprayed with imazamox herbicide at the 0X, 1X, and 2X label rates. Herbicide-tolerant headrow 98X78c was selected based on visual criteria for herbicide tolerance, uniformity, and acceptable agronomic type and bulk. 98X78c was subsequently tested in sprayed and non-sprayed plots of the 2002 Single Rep Clearfield Nursery grown at Bozeman, Havre, and Miles City. In 2004 MTCL0306 was planted in the non-sprayed Montana Advanced nursery screening nursery at six sites (two sprayed, four non-sprayed). In 2004 MTCL0306 was planted in the non-sprayed Montana Advanced nursery screening nursery at six sites (two sprayed, four non-sprayed).