

Crop Registration

Registration of 'Bruehl' Wheat

1. S.S. Jones ^{*a},
2. T.D. Murray ^a,
3. S.R. Lyon ^a,
4. C.F. Morris ^b and
5. R.F. Line ^c

+ Author Affiliations

1. ^aDep. of Plant Pathology, Washington State Univ., Pullman, WA 99164-6420
^bUSDA-ARS Western Wheat Quality Laboratory
^cUSDA-ARS Wheat Genetics, Quality, Physiology Research Unit, Washington State Univ., Pullman, WA 99164-6420

'Bruehl' (Reg. no. CV-912, PI 606764) is a club soft white winter (SWW) wheat (*Triticum aestivum* L.) developed by the Agricultural Research Center of Washington State University (WSU) in cooperation with the Agricultural Experiment Station of the University of Idaho and the United States Department of Agriculture-Agricultural Research Service (USDA-ARS). Bruehl was named in honor of George (Bill) W. Bruehl, retired plant pathologist from WSU, Pullman, WA, and released for areas of the Pacific Northwest (PNW) that have severe speckled snow mold (caused by *Typhula idahoensis* Rems and *T. ishikariensis* Imai) disease problems.

Bruehl (WA007833, VO95435) was derived from the 1988 cross UNA(NS1971)/5/'Oasis'/4/'Luke'/'Itana'/Citr1343(WA6362)/3/Luke Mutant 14(WA6242)/6/'Tres'/'Eltan'. Luke (Peterson et al., 1974) and Eltan (Peterson et al., 1991) are SWW common, Itana (Hehn and Klages, 1966) is a hard red winter, Oasis (Patterson et al., 1975) is a soft red winter and Tres (Allan et al., 1986) is a SWW club. The F₁ through F₅ generations were grown in Pullman and advanced by a modified pedigree-bulk breeding method, in which initial selections were based on general adaptive characteristics. It was selected as an F₆ head row from a snow mold observation nursery at Waterville, WA.

Bruehl is a semidwarf that matures 2 to 3 d earlier than Eltan, but under snow mold pressure will mature up to 7 d earlier. Spikes of Bruehl are awned, elliptical, middense and erect. Glumes are glabrous, white, midlong, midwide; shoulders oblique to rounded; and beaks midwide, acuminate, 0.5 to 1.5 mm in length. Kernels of Bruehl have club characteristics: white, soft, midlong, ovate; germ small; crease midwide, middeep; cheeks rounded; and brush midsized and midlong.

Based on natural field infections from 1995 to 1999 of races that are common (CDL-17, CDL-20, CDL-37, CDL-43, CDL-44, and CDL-45) to Washington, Bruehl expresses adult plant resistance to stripe rust (caused by *Puccinia striiformis* Westend.). It is moderately susceptible to leaf rust (race MBCL: virulent on *Lr1*, *Lr3*, *Lr108*, and *Lr26*) (caused by *Puccinia triticina* Eriks; syn *Puccinia recondita* Roberge ex Desmaz. f. sp. *tritici* Eriks. and E. Henn.) and moderately susceptible to natural field infections of stem rust (caused by *P. graminis* Pers.:Pers.). It is moderately susceptible to eyespot (caused by *Pseudocercospora herpotrichoides* (Fron.) Deighton) and Cephalosporium stripe (caused by *Cephalosporium gramineum* Nis. & Ika.). Bruehl has a high level of resistance to speckled snow mold. Its average snow mold rating (scale ranges from 0-8, with 0 equaling no recovery and 8 equaling complete recovery) from 1995 to 1997 (years with severe natural field infection of snow mold at Waterville, WA) was 5.2. 'Sprague' (Bruehl et al., 1978) (highly resistant) had an average snow mold rating of 5.8 and Eltan (moderately resistant) was 3.6 (Murray et al., 1999). Bruehl also exhibited resistance to dwarf bunt (caused by *Tilletia controversa* Kühn) in inoculated field tests.

In 58 replicated field trials over 4 years in Washington State, Bruehl produced on average 3.1 and 4.3% more grain per hectare than Eltan (5200 kg ha⁻¹) and 'Hiller' (Peterson et al., 1999) (5140 kg ha⁻¹), respectively. Grain volume weight was similar to Eltan (745 g L⁻¹) and 2.1% greater than Hiller (729 g L⁻¹). The average plant height of Bruehl is similar to Eltan and Hiller (89 cm), but the straw strength (moderately stiff) is superior to Eltan (moderately weak). It is comparable to Eltan for emergence, but inferior to the tall club wheat cultivar 'Edwin' (Jones et al., 2000). Bruehl is similar to Hiller for cold hardiness and shattering.

On the basis of tests ($n = 26$) conducted by the USDA-ARS Western Wheat Quality Laboratory using grain produced in Washington from 1996 to 1998, Bruehl has excellent overall club SWW quality traits. Bruehl is similar to Hiller ($n = 5$ comparisons) for grain protein (9.6%), flour protein (8.2%), cookie diameter (9.6 cm), break flour yield (53.8%), sponge cake score (73), sponge cake volume (1280 cm³), mixograph water absorption (52.8%), and top grain score (7.2).

U.S. plant variety protection for Bruehl will be applied for. Seed of Bruehl will be maintained by the Washington State Crop Improvement Association under supervision of the Department of Crop and Soil Sciences and the Washington State Agricultural Research Center, and may be obtained by contacting the corresponding author or through the National Plant Germplasm System ([http://www.ars-grin.gov/npgs/\[homepage\]](http://www.ars-grin.gov/npgs/[homepage])).

References

1. [↵](#)
Allan, R.E., C.J. Peterson, G.L. Rubenthaler, R.F. Line, K.J. Morrison. 1986. Registration of 'Tres' wheat. *Crop Sci.* 26:203..
[\[View Abstract\]](#)
2. [↵](#)
Bruehl, G.W., M. Nagamitsu, W.L. Nelson, C.J. Peterson, G.L. Rubenthaler. 1978. Registration of 'Sprague' wheat. *Crop Sci.* 18:695..
[\[View Abstract\]](#)
3. [↵](#)
Hehn, E.R., H.K. Klages. 1966. Registration of 'Itana' wheat. *Crop Sci.* 6:306..
[\[View Abstract\]](#)
4. [↵](#)
Jones, S.S., E. Donaldson, S.R. Lyon, C.F. Morris, R.F. Line, R. Hoffman. 2000. Registration of 'Edwin' Wheat. *Crop Sci.* 40:1198..
5. [↵](#)
Murray, TD, SS Jones, and E Adams 1999 Snow mold diseases of winter wheat in Washington Washington State University Coop Ext EB1880.
6. [↵](#)
Patterson, F.L., J.J. Roberts, R.E. Finney, G.E. Shaner, R.L. Gallun, H.W. Ohm. 1975. Registration of 'Oasis' wheat. *Crop Sci.* 15:736..
[\[View Abstract\]](#)
7. [↵](#)
Peterson, C.J., O.A. Vogel, D.W. George, R.J. Metzger. 1974. Registration of 'Luke' wheat. *Crop Sci.* 14:129..
[\[View Abstract\]](#)
8. [↵](#)
Peterson, C.J., Jr., R.E. Allan, G.L. Rubenthaler, R.F. Line. 1991. Registration of 'Eltan' wheat. *Crop Sci.* 31:1704..
[\[View Abstract\]](#)
9. [↵](#)
Peterson, C.J., Jr., C.F. Morris, R.F. Line, E. Donaldson, S.S. Jones, R.E. Allan. 1999. Registration of 'Hiller' Wheat. *Crop Sci.* 39:1531..

Footnotes

- Registration by CSSA.
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