

REGISTRATIONS OF CULTIVARS

Registration of 'Aquila' Spring Barley

'Aquila' spring barley (*Hordeum vulgare* L.) (Reg. no. CV-319, PI 635120) was developed at the Utah Agricultural Experiment Station and released in 2003. Aquila has been tested as the breeding line UT97B1480-1632 and is a six-rowed spring feed barley. Its main characteristics are an early heading date, a low propensity for lodging, and a test-weight equal or superior to that of two-rowed cultivars.

Aquila was named after the genus name of several eagle species, including the golden eagle (*Aquila chrysaetos* L.). This species is found in mountainous regions, steppes, and high elevation deserts of most of the northern hemisphere.

Aquila has the pedigree UT-S.D.B1-1009/M72-395/3/Utah Short#2//ID633019/'Woodvale'/4/'Steptoe'/M27//'Westbred Gustoe' (Dewey, 1972; Muir and Nilan, 1973). UT-S.B1-1009 is a sib to 'Bracken' (Albrechtsen, 1993). Utah Short #2 is a six-rowed, semidwarf line selected at Logan, UT, from the cross S.D.S.S (a South Dakota breeding line)/'Primus' (Price, 1969) made by Dr. Phil B. Price at South Dakota State University. M27 is a short stature breeding line involving the parents 'Jotun' (PI539136), 'Kindred' (PI6969), and 'Vantage' (Johnston, 1965).

F₁ plants were grown in the greenhouse during the winter of 1992–1993. Segregating generations (F₂–F₅) were grown at Logan, UT, as space-planted modified bulk populations. Desirable plants (for spike size, stiff straw, vigor) were selected each year between 1993 and 1996, and seeds were bulked. Individual spikes from F₅ plants were selected in the summer of 1996 and their seeds were sown as head rows in 1997. Head row number UT97B1480-1632 was selected for vigor, stiff straw, spike appearance, and threshing ability. Seed increase and limited performance trials were performed in 1998 and 1999 at Logan, UT. Aquila has been further performance-tested annually in three to four Utah locations from 2000 through 2003. It was tested under the same number in the Western Regional Irrigated Spring Barley Nursery from 2001 through 2003. In the summer of 2002, 100 heads were selected among F₅₋₁₁ progenies at Logan, UT. These 100 head spikes were grown in a 2002–2003 winter increase at Yuma, AZ, where off types were rogued. Retained rows were harvested in bulk to constitute the Breeder seed. Foundation seed was produced at Cache Junction (USU Farm) in the summer of 2003. Registered Class seed will be produced in 2004 and made available for further commercial increase.

Aquila is a six-rowed, early-heading spring feed barley. It has a lax spike with limited overlapping of upper lateral spikelets. The peduncle is slightly curved. The rachis has short hairs on its edges. At the bottom of the spike, the collar is of closed type or V-shaped. The basal rachis internode has a short straight to curved shape. The length of the rachis internodes is relatively constant from top to bottom of the spike. Glumes are hairy on dorsal surfaces and edges. Glume awns are longer than the glumes. No hairs or only a few are visible on the ventral surface of glumes. The awns are long, and of the fully rough type. The seed is covered, midlong to long with a depressed crease at the lemma base. Lemma teeth are few and confined to nerves, the rachilla is of the short-haired type, hulls are slightly wrinkled, and the aleurone color is white.

Aquila is recommended for growing under irrigation in the intermountain region of the USA. In three years (2001–2003,

37 site-years) of Western Regional Irrigated Spring Barley tests, Aquila's yield (5588 kg ha⁻¹) was not statistically different ($P \leq 0.05$) from that of Steptoe (5575 kg ha⁻¹) or Baronesse (5445 kg ha⁻¹). Average test weight of Aquila for these trials (672.2 kg m⁻³) was equal to that of Baronesse (673.0 kg m⁻³) and significantly higher ($P \leq 0.05$) than that of Steptoe (626.7 kg m⁻³). Average heading date (30 site-years) for Aquila (175 Julian days) is one day and six days earlier than those of Steptoe and Baronesse, respectively. For two years (2001, 2002), it was the earliest heading barley line among a field of 39 and 37 breeding lines and checks, respectively. Average percentage of lodged plants for Aquila (18 site-years, 9%) was lower than those of Baronesse (34%) and Steptoe (36%). Average height of Aquila (76.2 cm) was similar to that of Steptoe (75.4 cm) but significantly greater than that of Baronesse (70.7 cm) ($P \leq 0.05$). In 2002 to 2003 (5 site-years), average percentage protein of grain for Aquila (12.3%) was lower than that of Baronesse (13.5%) but higher than that of Steptoe (11.1%) ($P \leq 0.05$).

Aquila has been tested for four consecutive years (2000–2003) in several locations in the state of Utah (15 site-years). Aquila's yield (5380 kg ha⁻¹) is not significantly different from those of Steptoe (5465 kg ha⁻¹) and Baronesse (5520 kg ha⁻¹) ($P \leq 0.05$). In these Utah trials, test weight for Aquila (680.0 kg m⁻³) is similar to that of Baronesse (679.5 kg m⁻³) and significantly higher than that of Steptoe (653.8 kg m⁻³) ($P \leq 0.05$). Aquila's performance in rainfed conditions is still under testing.

Aquila has shown field resistance to barley loose smut [caused by *Ustilago nuda* (Jens.) Rostr.] and covered smut [caused by *U. hordei* (Pers.) Lagerh.]. Preliminary tests have shown Aquila to be susceptible to barley stripe rust (caused by *Puccinia striiformis* Westend.).

The generation sequence of seed production of Aquila is Breeder, Foundation, Registered, and Certified. Breeder seed is maintained by the Utah Agricultural Experiment Station, Department of Plants, Soils, and Biometeorology, Utah State University, Logan, UT 84322-4820. Foundation Seed is available from the Utah Crop Improvement Association, Utah State University, Logan, UT 84322-4820. U.S. Plant Variety Protection of Aquila has been applied for.

D. ROCHE,* D.J. HOLE, R.S. ALBRECHTSEN,
S.M. CLAWSON, AND S.A. YOUNG

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