

Registration of 'Century' Barley

'Century' spring barley (*Hordeum vulgare* L.) (Reg. no. CV-281, PI 603073) was developed at the Utah Agricultural Experiment Station and released in 1997. It was initially selected at Logan, UT, in 1987, as an F₅ line derived from a single F₅ head selected in 1986, from a cross of WA641566/'Bracken', made in 1982. WA641566 (a sib to 'Steptoe') is a six-row breeding line from the cross WA Selection 3564/'Unitan'. The breeding history of Bracken has been described (1). F₁ plants were grown in the greenhouse during the winter of 1982-1983. Segregating generations (F₂-F₅) were grown at Logan, UT, as space-planted modified bulk populations, and agronomically desirable plants were selected each year from 1983 through 1986. Individual heads from 265 F₅ plants were selected in 1986, based on agronomic appearance, and were evaluated as head rows in 1987. The original F₅-derived line from which Century originated was yield-tested in Utah as UT87B604-1705 beginning in 1988 and in the Western Regional Spring Barley Nursery in 1990 and 1991 as UT1705. It was reselected in 1991 for both lax and dense head types. The reselections resulted in the development and release of two cultivars (Century and 'Statehood') from the same original UT87B604-1705 line (2). Two-hundred lax-type heads (from which Century originated) were selected from the original line and were produced as F₁₀-derived head rows in the greenhouse during the winter of 1991-1992. Off-type rows were rogued out and remaining rows were harvested in bulk. The reselected line was yield-tested at four irrigated sites and two nonirrigated sites annually in Utah as UT87B604-1705-L beginning in 1992 and in the Western Regional Spring Barley Nursery (1993-1995) as UT1705L. Breeder seed was produced in a 1994-1995 winter increase at Yuma, AZ, from 250 F₁₃-derived head rows selected in 1994. Off-type rows were rogued out and remaining rows were harvested in bulk. Foundation seed was produced at Logan, UT, in 1995. Registered and Certified seed were produced in 1996 and 1997, respectively.

Century is a six-rowed, midseason, erect-growing, spring feed barley. It has a strap shaped, lax head with little overlap of lateral kernels at the tip of the head and short hairs on the rachis edges. It has waxy leaves and heads. Glumes are long, with short hairs confined to a band, and have medium-length, semi-smooth glume awns. Lemma awns are long and rough. Stigmas are heavily feathered. The seed is covered, midlong-to-long, semi-wrinkled, with numerous long rachilla hairs, and a transverse crease at the base. Aleurone color is white and

1000-kernel weight averages 42 g. The base of most spikes is marked by a closed collar.

Century is recommended for growing under irrigation or where annual precipitation is 400 mm or more. In 5 yr (1992–1996, $n = 80$) of Utah irrigated tests, average yield of Century (7231 kg ha⁻¹) exceeded ($P < 0.05$) that of Steptoe (6387 kg ha⁻¹), 'Rollo' (6793 kg ha⁻¹), and 'Walker' (6777 kg ha⁻¹), by 13.2, 6.4, and 6.7%, respectively. It was not significantly different from that of Statehood (7316 kg ha⁻¹). In 3 yr (1993–1995, $n = 42$) of Western Regional Spring Barley tests, Century's yield (6390 kg ha⁻¹) was superior ($P < 0.05$) to that of Steptoe (5824 kg ha⁻¹), by 9.7%. It was not significantly different from that of Statehood (6238 kg ha⁻¹).

Century heads the same time as Steptoe (166 d after 1 January in Utah tests and 175 d in regional tests). It heads 1 d earlier than Statehood (175 vs. 176 d) in regional tests ($P < 0.05$) and (166 vs. 167 d) in Utah tests. Century averaged 2.1 cm taller (94.0) than Steptoe (91.9) and 5.6 cm taller than Statehood (88.4) in 5 yr of Utah tests; it averaged 5.4 cm taller (86.1) than Steptoe (80.7) and 7.1 cm taller than Statehood (79.0) in 3 yr of Western Regional Spring Barley tests ($P < 0.05$). Average lodging readings for Century were 20.3 percentage points lower than those for Steptoe (17.7 vs. 38.0%) and 6.3 percentage points higher than those for Statehood (11.4%) in Utah irrigated tests ($P < 0.05$). Average test weight for Century was 14.1 kg m⁻³ higher than that of Steptoe (629.5 vs. 615.4 kg m⁻³) in Western Regional Spring Barley tests ($P < 0.05$) and 16.0 kg m⁻³ higher (672.6 vs. 656.6) in Utah tests. Century had 21.6 and 15.3 kg m⁻³ higher test weight than Statehood in Utah tests (672.6 vs. 651.0 kg m⁻³) and in regional barley tests (629.5 vs. 614.2 kg m⁻³), respectively ($P < 0.05$). Average percentage protein for Century (13.7) was higher ($P < 0.05$) than that for Steptoe, Walker, or Rollo in Utah tests. It was not significantly different from that of Statehood.

Century has shown field resistance to covered smut [caused by *Ustilago hordei* (Pers.) Lagerh.], but has shown less resistance to loose smut [caused by *Ustilago nuda* (Jens.) Rostr.], than have Steptoe, Rollo, Walker, or Statehood. Century has shown moderate resistance to powdery mildew (caused by *Erysiphe graminis* DC. f. sp. *hordei* Em. marchal). Preliminary tests have shown Century to be susceptible to barley stripe rust (caused by *Puccinia striiformis* Westend). Its reaction to other diseases is not known.

The generation sequence of seed production of Century 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 84322-4855. U.S. plant variety protection of Century has been applied for (PVP Certificate no. 9800158).

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References and Notes

- Albrechtsen, R.S. 1993. Registration of 'Bracken' Barley. *Crop Sci.* 33:1413–1414.
- Albrechtsen, R.S., and D.J. Hole. 2000. Registration of 'Statehood' barley. *Crop Sci.* 40:1518–1519 (this issue).
- Dep. of Plants, Soils, and Biometeorology, Utah State University, Logan, UT 84322-4820. Research supported by the Utah Agricultural Experiment Station, Journal Paper no. 7134. Registration by CSSA. Accepted 29 Feb. 1999. *Corresponding author (ralbr@mendel.usu.edu).

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Registration of 'Statehood' Barley

'Statehood' spring barley (*Hordeum vulgare* L.) (Reg. no. CV-282, PI 603074) was developed at the Utah Agricultural Experiment Station and released in 1997. It was initially selected at Logan, UT, in 1987, as an F₅ line derived from a single F₅ head selected in 1986, from a cross of WA641566/'Bracken', made in 1982. WA641566 (a sib to 'Steptoe') is a six-row breeding line from the cross WA Selection 3564/'Unitan'. The breeding history of Bracken has been described (1). F₁ plants were grown in the greenhouse during the winter of 1982–1983. Segregating generations (F₂–F₅) were grown at Logan, UT, as space-planted modified bulk populations, and agronomically desirable plants were selected each year from 1983 through 1986. Individual heads from 265 F₅ plants were selected in 1986, based on agronomic appearance, and were evaluated as head rows in 1987. The original F₅-derived line from which Statehood originated was yield-tested in Utah as UT87B604-1705 beginning in 1988 and in the Western Regional Spring Barley Nursery in 1990 and 1991 as UT1705. It was reselected in 1991 for both dense and lax head types. The reselections resulted in the development and release of two cultivars (Statehood and 'Century') from the same original UT87B604-1705 line (2). Two-hundred dense-type heads (from which statehood originated) were selected from the original line and were produced as F₁₀-derived head rows in the greenhouse during the winter of 1991–1992. Off-type rows were rogued out and remaining rows were harvested in bulk. The reselected line was yield-tested at four irrigated sites and two nonirrigated sites annually in Utah as UT87B604-1705-D beginning in 1992 and in the Western Regional Spring Barley Nursery (1993–1995) as UT1705D. Breeder seed was produced in a 1994–1995 winter increase at Yuma, AZ, from 250 F₁₃-derived head rows selected in 1994. Off-type rows were rogued out and remaining rows were harvested in bulk. Foundation seed was produced at Logan, UT, in 1995. Registered and Certified seed were produced in 1996 and 1997, respectively.

Statehood is a six-rowed, midseason, erect-growing, spring feed barley. It has a tapering, dense head with no overlap of lateral kernels, and short hairs on the rachis edges. It has waxy leaves and heads. Glumes are long, with short hairs restricted to the middle, and have long, semi-smooth glume awns. Lemma awns are long and rough. Stigmas are heavily feathered. The seed is covered, midlong-to-long, semi-wrinkled, with numerous long rachilla hairs, and a transverse crease at the base. Aleurone color is white, and 1000-kernel weight averages 43 g. The base of most spikes is marked by a closed collar.

Statehood is recommended for growing under irrigation or where annual precipitation is 400 mm or more. In 5 yr (1992–1996, $n = 80$) of Utah irrigated tests, average yield of Statehood (7316 kg ha⁻¹) exceeded ($P < 0.05$) that of Steptoe (6387 kg ha⁻¹), 'Rollo' (6793 kg ha⁻¹), and 'Walker' (6777 kg ha⁻¹), by 14.5, 7.7, and 8.0%, respectively. It was not significantly different from that of Century (7231 kg ha⁻¹). In 3 yr (1993–1995, $n = 42$) of Western Regional Spring Barley tests, Statehood's yield (6238 kg ha⁻¹) was superior ($P < 0.05$) to that of Steptoe (5824 kg ha⁻¹), by 7.1%. It was not significantly different from that of Century (6390 kg ha⁻¹).

Statehood heads 1 d later than Steptoe and Century (176 vs. 175 d after 1 January) in regional tests ($P < 0.05$) and (167 vs. 166 d) in Utah tests. Statehood averaged 3.5 cm shorter (88.4) than Steptoe (91.9) and 5.6 cm shorter than Century (94.0) in 5 yr of Utah tests; it averaged 1.7 cm shorter (79.0) than Steptoe (80.7) and 7.1 cm shorter than Century (86.1) in

three years of Western Regional Spring Barley tests ($P < 0.05$). Average lodging readings for Statehood were 26.6 and 11.4 percentage points lower than those for Steptoe and Century (11.4 vs. 38.0 and 17.7%), respectively, in Utah irrigated tests ($P < 0.05$). Average test weight for Statehood was not significantly different from that of Steptoe in Utah tests (651.0 vs. 656.6 kg m⁻³) or in Western Regional Spring Barley tests (614.2 vs. 615.4 kg m⁻³). Statehood had 21.6 and 15.3 kg m⁻³ lower test weight than Century in Utah tests (651.0 vs. 672.6 kg m⁻³) and in regional barley tests (614.2 vs. 629.5 kg m⁻³), respectively ($P < 0.05$). Average percentage protein for Statehood (13.5) was higher ($P < 0.05$) than that for Steptoe, Walker, or Rollo in Utah tests. It was not significantly different from that of Century.

Statehood has shown field resistance to barley loose smut [caused by *Ustilago nuda* (Jens.) Rostr.] and covered smut [caused by *Ustilago hordei* (Pers.) Lagerh.], and moderate resistance to powdery mildew (caused by *Erysiphe graminis* DC. f. sp. *hordei* Em. marchal). Preliminary tests have shown Statehood to be susceptible to barley stripe rust (caused by *Puccinia striiformis* Westend). Its reaction to other diseases is not known.

The generation sequence of seed production of Statehood 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 84322-4855. U.S. plant variety protection of Statehood has been applied for (PVP Certificate no. 9800159).

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References and Notes

1. Albrechtsen, R.S. 1993. Registration of 'Bracken' Barley. *Crop Sci.* 33:1413–1414.
2. Albrechtsen, R.S. and J.D. Hole. 2000. Registration of 'Century' barley. *Crop Sci.* 40:1518 (this issue).
3. Dep. of Plants, Soils, and Biometeorology, Utah State University, Logan, UT 84322–4820. Research supported by the Utah Agricultural Experiment Station, Journal Paper no. 7135. Registration by CSSA. Accepted 29 Feb. 2000. *Corresponding author (ralbr@mendel.usu.edu).

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