TECHNICAL BULLETIN

# Breton

## 6-rowed, tall, smooth-awned, hulled, general purpose barley

Field Crop Development Centre, March 2012

Breton was developed by the Field Crop Development Centre. Breton is six-rowed, smooth-awned, hulled general purpose barley. This barley is tall with strong straw and good lodging resistance, surface-borne smut resistance and has plumper seed than the current feed checks Vivar and AC Ranger. It has good forage yields, 105% of Vivar.

Breton has a better than average combination of disease resistance reactions. These traits could make Breton a good grain and forage barley that fits in well for a crop production system that is keen on taking advantage of cost saving genetic attributes to manage crop diseases.

Breton has the good attributes of stable grain yields across Western Canada agro-ecological zones. Grain yield stability across agro-ecological zones is a desirable trait.

Although Breton grain yield is slightly lower compared with Vivar, Breton has a 5% forage yield and 6% plump advantage over Vivar. These advantages and the excellent resistance to major diseases could make Breton a good feed grain and forage barley in Western Canada. Other traits including smooth awns and good lodging resistance make Breton a robust feed and forage barley variety.

| | |
|---|---|
| **End Use** | • Breton is a promising general purpose barley with good potential for grain and forage production; attributes supported by its good grain yield, plump seed, forage yield, resistance to diseases and lodging. |
| **Strengths** | • Grain yields exceed malting checks 'CDC Mayfair' and 'Celebration'.<br>• Heading and maturity earlier (>1d) than the feed Checks.<br>• Taller than both feed and malting checks with good lodging resistance that is better than 'AC Ranger' and not significantly different than 'Vivar'.<br>• Percent plumps are better than AC Ranger and Vivar, similar to the malting checks. Test weight and 1000K wt equal to check Vivar and better than AC Ranger.<br>• Excellent disease package with moderate to good resistance to a range of key diseases. Meets or exceeds the Priority 1 diseases: resistant to stem rust; moderately resistant to spot-form of net blotch, spot blotch and the surface-borne smuts; MRMS to net-form of net blotch, scald and common root rot. |
| **Neutral Traits** | • Crude protein similar to the check Vivar.<br>• Yield is not significantly different than the feed check AC Ranger. Meets minimum requirement for resistance of moderate resistance to spot-form net, net-form net, scald and surface-borne smuts. |
| **Weaknesses** | • Susceptible to FHB and DON, similar to AC Ranger and Vivar.<br>• Yields 5% lower than Vivar. |

**Table 1. Summary of 12 FCDC sites from 2010 and 2011.**

| Variety | Yield (kg/ha) | 1000 Kernel Wt. | Test Wt. (kg/hL) | Plump (%) | Anthesis (Days) | Maturity (Days) | Height (cm) | Lodging Stage (/%) | WUEBIO (kg/mm /ha) | WUE (kg/mm /ha) | Forage Yield (kg/ha) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Breton** | **8135.5** | **45.9** | **61.3** | **89.4** | **57.4** | **107.2** | **91.4** | **302.5** | **59.3** | **24.6** | **14568.7** |
| AC Ranger | 8419.0 | 43.0 | 59.5 | 78.7 | 57.9 | 108.7 | 87.6 | 281.4 | 64.4 | 26.9 | 14262.6 |
| Chigwell | 8440.9 | 40.0 | 61.2 | 79.3 | 59.0 | 107.1 | 87.6 | 240.1 | 53.8 | 23.1 | 13597.5 |
| Vivar | 9034.5 | 44.1 | 61.1 | 82.1 | 59.1 | 107.5 | 81.1 | 261.4 | 58.6 | 23.7 | 13856.9 |
| **Avg** | **8597.7** | **42.2** | **61.2** | **82.6** | **57.8** | **107.6** | **86.1** | **271.1** | **60.4** | **24.5** | **13955.5** |
| LSD | 1553.3 | 2.1 | 2.0 | 6.6 | 2.9 | 7.1 | 7.0 | 162.6 | 22.9 | 18.7 | 3457.5 |
| StdErr | 190.2 | 0.3 | 0.3 | 0.9 | 0.4 | 0.8 | 1.0 | 18.7 | 2.0 | 1.6 | 286.7 |

**Table 2. NIRS determined grain quality from 12 sites grown in 2010 and 2011 FCDC sites.**

| Variety | Digestible Energy Content kcal/kg | Lipid % | Starch % | Protein % | Lysine %*10 | Protein Digestibility % | Beta-Glucan % | Pentosan % | Soluble Fibre % | Ash | Total Fibre |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Breton** | **2950.0** | **2.2** | **60.3** | **12.2** | **0.5** | **82.4** | **3.4** | **5.2** | **5.1** | **2.3** | **20.3** |
| AC Ranger | 2932.1 | 2.2 | 59.1 | 11.9 | 0.4 | 79.6 | 3.8 | 4.7 | 5.5 | 2.4 | 20.9 |
| Chigwell | 3042.8 | 2.4 | 60.3 | 12.3 | 0.5 | 72.6 | 3.9 | 4.8 | 4.5 | 2.2 | 19.3 |
| Vivar | 3016.0 | 2.2 | 59.2 | 11.8 | 0.4 | 72.1 | 3.4 | 5.2 | 4.6 | 2.4 | 20.4 |
| **Avg** | **2974.0** | **2.2** | **59.5** | **12.3** | **0.4** | **75.8** | **3.7** | **5.1** | **5.0** | **2.4** | **20.5** |
| LSD | 47.3 | 0.1 | 1.4 | 0.9 | 0.0 | 3.0 | 0.3 | 0.3 | 0.4 | 0.2 | 0.5 |
| StdErr | 7.6 | 0.0 | 0.2 | 0.1 | 0.0 | 0.6 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 |

**Table 3. Agronomic data of Breton and check cultivars from 2010 and 2011 Western Six-Row Cooperative Trials.**

| Variety | Heading (days) | Height (cm) | Lodging (1-9) | Maturity (days) | Yield (kg/ha) | Yield % of AC Ranger | Yield % of CDC Mayfair | 1000K Wt g | Test Wt (g/hL) | Plumps % | Thins % | Visual Score 1-9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Breton** | **56.4** | **82.0** | **3.9** | **95.6** | **6456** | **97** | **107** | **44.9** | **62.2** | **88.5** | **5.7** | **6.9** |
| AC Ranger | 57.3 | 77.4 | 4.9 | 97.0 | 6629 | 100 | 110 | 41.7 | 61.2 | 77.0 | 10.9 | 6.2 |
| Vivar | 58.0 | 73.3 | 3.1 | 96.7 | 6730 | 102 | 111 | 42.0 | 62.5 | 82.4 | 8.7 | 6.4 |
| CDC Mayfair | 56.0 | 80.0 | 2.9 | 95.0 | 6047 | 91 | 100 | 40.0 | 61.8 | 90.9 | 2.0 | 7.0 |
| Celebration | 55.8 | 79.6 | 2.8 | 93.7 | 6040 | 91 | 100 | 38.0 | 63.4 | 88.8 | 4.9 | 7.3 |
| **Mean** | **56.3** | **78.2** | **3.2** | **95.3** | **6316** | | | **41.1** | **62.6** | **87.6** | **8.2** | **6.9** |
| LSD0.05 | 0.5 | 1.5 | 0.8 | 1.0 | 262 | | | 1.1 | 0.6 | 2.7 | 4.0 | 0.9 |
| CV | 1.6 | 5.3 | 37.5 | 1.7 | 9.6 | | | 4.7 | 1.8 | 4.7 | 52.1 | 12.0 |
| Sites | 31 | 35 | 11 | 23 | 32 | | | 25 | 26 | 21 | 10 | 4 |

**Table 4. Disease Rating for BT589 – Prairie Recommending Committee for Oat and Barley**

| Disease | Rating | Disease | Rating |
|---|---|---|---|
| Stem rust | R | Septoria, FHB, BYDV | S |
| Loose smut | I | Scald, common root rot, net-form et blotch | MRMS |
| General disease rating | Meets or exceeds Priority 1 disease resistance requirements | Spot-form net blotch, spot blotch, surface-borne smuts | MR |