

‘Yellowstone’ and ‘Decade’ Winter Wheats

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Yellowstone is a white-chaffed hard red winter wheat developed by the Montana Agricultural Experiment Station and released to seed growers in 2005. Yellowstone’s pedigree is ‘Judith’ x ‘Promontory’. Yellowstone is a very high yielding (Table 1) winter hardy variety with medium test weight, maturity, height, and grain protein (Table 2). Yellowstone has good milling and excellent baking quality (Table 3). It is resistant to stripe rust, but susceptible to stem rust. Yellowstone is recommended in Districts 1-5. Montana State University Research Fees due on seed sold. PVP, Title V has been issued (Certificate #200600284).

Decade is a white-chaffed hard red winter wheat developed by the Montana Agricultural Experiment Station and released to seed growers in 2010. Decade is a joint release with the North Dakota Agricultural Experiment Station. Decade was selected from a composite of three closely related F1 populations containing such varieties as a sib line of ‘Wesley’, ‘CDC Clair’, ‘NuWest’, ‘Tiber’, and ‘Redwin’. Decade is a high yielding (Table 1) winter hardy variety well adapted to western North Dakota and eastern Montana with medium to high test weight, early maturity, reduced height, and medium to high grain protein (Table 2). Decade has excellent milling and baking quality (Table 3). It is resistant to stem rust, but susceptible to stripe rust. Relative to CDC Falcon, Decade is equivalent in yield potential and winter survival, with improved test weight, earlier maturity, higher grain protein content, superior milling characteristics and higher water absorption. Montana State University Research Fees due on seed sold. PVP, Title V has been issued (Certificate #201100096).

Table 1. Yield of Yellowstone and Decade, 2012-2017, compared to a set of winter wheat varieties.

| Variety | Districts | | | | | | | All Locations |
|--------------------|----------------|----------------------------|----------------------------|-----------------------------|---------------------------|--------------------------|--------------------------|---------------|
| | 1 Kalispell | 2 Bozeman ^{1/} | 3 Huntley ^{2/} | 4 Moccasin ^{3/} | 5 Conrad ^{4/} | 5 Havre ^{5/} | 6 - Sidney, Williston | |
| location-years | 5 | 7 | 36 | 31 | 25 | 17 | 7 | 128 |
| Yellowstone | 116.9 | 76.3 | 65.4 | 57.3 | 74.7 | 55.7 | 59.2 | 66.9 |
| CDC Falcon | 74.6 | 59.1 | 60.9 | 53.1 | 68.8 | 51.8 | 55.6 | 59.9 |
| Decade | 50.5 | 62.0 | 61.1 | 54.4 | 69.6 | 50.2 | 51.3 | 59.3 |
| Judee | 109.6 | 66.0 | 57.5 | 49.3 | 67.8 | 51.5 | 38.6 | 58.7 |
| Bearpaw | 52.5 | 57.0 | 58.2 | 51.6 | 65.2 | 49.0 | 46.8 | 56.3 |
| LSD (0.05) | 20.4 | 9.2 | 2.8 | 2.2 | 3.2 | 3.4 | 7.9 | 2.1 |

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

1/ includes data from Dry Creek, Willow Creek

2/ includes data from Forsyth, Fort Smith, Hardin area, Hysham, Molt, Rapelje

3/ includes data from Denton, Geraldine, Highway, Winifred, Belt

4/ includes data from The Knees, Shelby, Cut Bank, Choteau

5/ includes data from Loma, Turner, Fort Benton

Table 2. Agronomic characteristics of Yellowstone and Decade, 2012-2017, compared to a set of winter wheat varieties

| Variety | Test weight lb/bu | Winter survival % | Heading date | | Plant height in | Lodging % | Protein % | Sawfly cutting % | Stripe rust % | Coleoptile length in |
|--------------------|----------------------|----------------------|--------------|----------|--------------------|--------------|--------------|---------------------|------------------|-------------------------|
| | | | Julian | Calendar | | | | | | |
| location-years | 128 | 5 | 48 | | 126 | 23 | 125 | 14 | 8 | 2 |
| Bearpaw | 58.8 | 46 | 159.8 | 9-Jun | 30.2 | 27 | 13.1 | 8 | 68 | 3.0 |
| CDC Falcon | 58.8 | 62 | 159.9 | 9-Jun | 29.4 | 20 | 12.8 | 28 | 53 | 2.9 |
| Decade | 59.1 | 59 | 159.3 | 8-Jun | 31.1 | 22 | 13.0 | 24 | 71 | 3.2 |
| Judee | 59.8 | 22 | 160.5 | 10-Jun | 30.8 | 25 | 13.2 | 13 | 17 | 3.8 |
| Yellowstone | 59.1 | 54 | 161.2 | 10-Jun | 32.8 | 21 | 12.7 | 25 | 33 | 2.7 |
| LSD (0.05) | 0.4 | 14 | 0.4 | | 0.3 | ns | 0.2 | 10 | 13 | 0.3 |

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 3. Mill and bake characteristics of Yellowstone and Decade, 2011-2016, compared to a set of winter wheat varieties

| Variety | PPO ^{1/} | Kernel hardness | Flour | | | Mixograph | | | Baking | | |
|--------------------|-------------------|--------------------|-------------|-------------|-------------|------------|------------|-------------|------------|-------------|-------------|
| | | | yield | protein | ash | tolerance | mix time | absorption | mix time | absorption | volume |
| | | | % | % | % | (1-6) | min | % | min | % | cc |
| location-years | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| Bearpaw | 0.282 | 81.9 | 69.2 | 11.2 | 0.42 | 3.5 | 4.3 | 60.2 | 7.2 | 70.3 | 981 |
| Decade | 0.280 | 76.8 | 68.0 | 11.2 | 0.41 | 4.7 | 7.8 | 64.1 | 18.4 | 74.6 | 1026 |
| Judee | 0.277 | 79.9 | 67.5 | 11.5 | 0.41 | 4.0 | 5.4 | 61.4 | 9.3 | 71.4 | 1113 |
| Yellowstone | 0.213 | 78.8 | 68.3 | 10.9 | 0.43 | 4.4 | 8.2 | 63.3 | 15.5 | 74.2 | 1039 |
| LSD (0.05) | 0.026 | 2.6 | 0.6 | 0.3 | 0.01 | 0.4 | 0.7 | 1.0 | 1.7 | 1.1 | 32 |

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

^{1/} low is best for noodles