Performance trials for small grain varieties are conducted each year at several locations throughout Wisconsin (table 1). Trials include released varieties, experimental lines from Wisconsin and neighboring states, and lines from private seed companies. The primary objective of these trials is to obtain data on how varieties perform in different locations and years. Growers use these data to help them in their choice of varieties to plant, and breeders use performance data to determine whether or not to release a new variety.

New varieties developed and released in Wisconsin are entered in the Wisconsin Certification Program. These varieties have demonstrated superior production qualities. In addition, superior varieties from other states may be recommended and/or certified in the state. As new varieties are released to the public, older varieties with inferior qualities are removed from the recommended list and eventually dropped from the certified list as seed production declines.

Occasionally, varieties are certified without being recommended to Wisconsin growers. Varieties in this category may include commercial varieties developed by private seed companies or varieties where there is a substantial market for Wisconsin-produced seed. Thus, in Wisconsin, recommendation and certification do not mean the same thing. Recommended varieties are those with superior in-state production performance records, while certification provides the assurance of seed purity and seed quality.

### VARIETY SELECTION

Factors to consider when selecting small grain varieties include grain or forage yield, maturity, straw strength (or resistance to lodging), disease resistance, and winterhardiness. Disease ratings are performed by the Department of Agronomy for oats and barley. Barley growers should consider whether or not a variety is acceptable for malting. Several varieties are now being evaluated for forage yield (tables 4 and 7).

Table 1. Location and agronomics of small grain variety trials in Wisconsin

<table>
<thead>
<tr>
<th>Location</th>
<th>Cooperators</th>
<th>Soil type</th>
<th>Row spacing (inches)</th>
<th>Average nitrogen applied (lb/a)</th>
<th>Planting date</th>
<th>Harvest date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arlington (wheat)</td>
<td>M. Martinka, J. Gaska</td>
<td>silt loam</td>
<td>7.5</td>
<td>90</td>
<td>Sept. 29</td>
<td>July 29</td>
</tr>
<tr>
<td>Arlington (barley, oat)</td>
<td>P. Ehrhardt, J. Albertson</td>
<td>silt loam</td>
<td>6.0</td>
<td>50</td>
<td>April 11</td>
<td>Aug. 15</td>
</tr>
<tr>
<td>Chilton (wheat)</td>
<td>Kolbe Seeds, M. Glewen</td>
<td>red clay</td>
<td>7.5</td>
<td>90</td>
<td>Sept. 28</td>
<td>July 25</td>
</tr>
<tr>
<td>Chilton (barley, oat)</td>
<td>Kolbe Seeds, M. Glewen</td>
<td>red clay</td>
<td>12.0</td>
<td>75</td>
<td>May 3</td>
<td>Aug. 24</td>
</tr>
<tr>
<td>Janesville</td>
<td>Rock Co. Farm, J. Stute</td>
<td>silt loam</td>
<td>7.5</td>
<td>60</td>
<td>Oct. 12</td>
<td>July 17</td>
</tr>
<tr>
<td>Lancaster</td>
<td>T. Wood</td>
<td>silt loam</td>
<td>7.5</td>
<td>0*</td>
<td>April 18</td>
<td>July 28</td>
</tr>
<tr>
<td>Madison</td>
<td>J. Mochon</td>
<td>silt loam</td>
<td>6.0</td>
<td>0*</td>
<td>April 16</td>
<td>Aug. 1</td>
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<tr>
<td>Marshfield</td>
<td>M. Bertram</td>
<td>silt loam</td>
<td>6.0</td>
<td>21</td>
<td>April 14</td>
<td>July 22</td>
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<tr>
<td>Racine</td>
<td>Henderson Seeds</td>
<td>silt loam</td>
<td>7.5</td>
<td>60</td>
<td>Oct. 5</td>
<td>July 19</td>
</tr>
<tr>
<td>Spooner (barley, oat)</td>
<td>P. Holman</td>
<td>sandy loam</td>
<td>7.5</td>
<td>50</td>
<td>April 14</td>
<td>Aug. 11</td>
</tr>
<tr>
<td>Sturgeon Bay</td>
<td>R. Weidman</td>
<td>silt loam</td>
<td>12.0</td>
<td>69</td>
<td>May 3</td>
<td>Aug. 1</td>
</tr>
</tbody>
</table>

*Nitrogen credited from previous alfalfa or soybean.
**Growing conditions**

**2005 Season.** Growing conditions in fall 2004 were good in most areas of Wisconsin, allowing excellent stand and early growth of small grains. Warm weather in February melted snow into sheets of ice. In many places, the ice was buried in snow and remained frozen for several days or weeks causing significant stand losses. Fair weather in March and April provided plenty of opportunities for nitrogen application. Dry weather in May, June, and July reduced disease pressure. Grain size varied widely across region and varieties. Seed health was excellent and yield was higher than expected in most fields.

Winter wheat averaged 57 bushels per acre (up 1 bushel from 2004). However, only 175,000 acres were harvested in 2005, down 50,000 from the previous year. The large decrease in winter wheat acreage may be partially explained by an epidemic of wheat scab and the late soybean harvest in 2004.

Oats yielded 64 bushel per acre, down 1 bushel from 2004. Harvested acres increased from 210,000 acres in 2004 to 215,000 acres. Wisconsin is the second largest producer of oats in the nation following North Dakota state.

Barley yielded 53 bushels per acre (down 2 bushels from 2004). Thirty thousand acres were harvested in 2005 (same as in 2004). Production in 2005 was 1.59 million bushels, down from the 1.65 million bushels produced in 2004.

**2004 Season.** Growing conditions in 2003 were excellent for winter wheat and other small grains in Wisconsin. Surprising to many, winter survival was adequate despite the cold and open winter conditions. A cool spring helped small grains tiller while the dry summer minimized the incidence of most fungal and bacterial diseases common to small grains. Grain yield and test weights were well above historical averages throughout the state.

The record yield average set for Wisconsin in 2003 was 68.3 bushels per acre, a 12% increase over 2002. The number of harvested wheat acres increased slightly to 180,000 acres. Winter and spring wheat accounted for 175,000 and 5,000 acres respectively.

Oat yields averaged 67 bushels to the acre. The increase of 7 bushels per acre over 2002 production was mostly offset by a reduction in the total acreage planted to oats (down by 50,000 acres). The state fell from second to fourth place ranking in the nation.

Barley yields were 55 bushels per acre, up 10 bushels per acre over last year. Total barley production in Wisconsin increased from 1.8 to 1.93 million bushels. Acreage was reduced to 55,000 acres planted and 35,000 harvested as grain.

**Licensed varieties**

The Wisconsin Agricultural Experiment Station has granted sole authority to the Wisconsin Crop Improvement Association to issue formal licenses for the production of certified seed of Chilton and Kewaunee barley; Bay, Belle, Dane, ForagePlus, Gem, Horicon, Prairie, and Vista oats; Spooner rye; and Glacier winter wheat. The Wisconsin Alumni Research Foundation has granted sole authority to the Wisconsin Crop Improvement Association to issue formal licenses for the production of certified seed of Moraine, Drumlin, Esker, and Kame oats. These procedures are intended to reinforce Plant Variety Protection regulations and to generate research and development funds for the Wisconsin small-grain breeding program. These varieties are “protected” and “licensed” and can be marketed only as certified seed. Each bag of seed will have a special red and white Licensed Variety tag attached or preprinted on the bag.

**Testing agencies**

The small grain variety tests were conducted by the Department of Agronomy, College of Agricultural and Life Sciences and the University of Wisconsin-Extension in cooperation and with support from the Wisconsin Crop Improvement Association.
Table 2. Oat variety descriptions

<table>
<thead>
<tr>
<th>Variety</th>
<th>Origin</th>
<th>Year released</th>
<th>Kernel color</th>
<th>Maturitya</th>
<th>Test wt b</th>
<th>Disease resistanced</th>
<th>Leaf rust</th>
<th>Stem rust</th>
<th>Septoria</th>
<th>Smut</th>
<th>BYDV e</th>
<th>PVPf cert.</th>
<th>Wis. cert.</th>
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<td><strong>Recommended varieties</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dane</td>
<td>Wisconsin</td>
<td>1990</td>
<td>yellow</td>
<td>6-19</td>
<td>38</td>
<td>med</td>
<td>I</td>
<td>I</td>
<td>S</td>
<td>R</td>
<td>I</td>
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<td>yes</td>
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<td>6-26</td>
<td>39</td>
<td>weak</td>
<td>R</td>
<td>I</td>
<td>-</td>
<td>R</td>
<td>R</td>
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<td>yes</td>
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<tr>
<td>Esker</td>
<td>Wisconsin</td>
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<td>6-23</td>
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<td>med</td>
<td>R</td>
<td>I</td>
<td>-</td>
<td>R</td>
<td>R</td>
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<td>yes</td>
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<td>R</td>
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<td>yes</td>
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<td>Kame</td>
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<td>yellow</td>
<td>6-22</td>
<td>38</td>
<td>strong</td>
<td>R</td>
<td>I</td>
<td>-</td>
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<td>R</td>
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<td>white</td>
<td>6-24</td>
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<td>R</td>
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<td>-</td>
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<td>R</td>
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<td>yes</td>
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<td>Winona</td>
<td>Minnesota</td>
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<td>yellow</td>
<td>6-19</td>
<td>39</td>
<td>strong</td>
<td>R</td>
<td>I</td>
<td>-</td>
<td>R</td>
<td>I</td>
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<td>no</td>
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<td><strong>Other varieties</strong></td>
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<td>Belle</td>
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<td>med</td>
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<td>med</td>
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<td>R</td>
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<td>yes</td>
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<td>med</td>
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<td>med</td>
<td>med</td>
<td>med</td>
<td>I</td>
<td>I</td>
<td>S</td>
<td>R</td>
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<td>Jim</td>
<td>Minnesota</td>
<td>1996</td>
<td>yellow</td>
<td>med</td>
<td>med</td>
<td>med</td>
<td>med</td>
<td>I</td>
<td>I</td>
<td>-</td>
<td>-</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Ogle</td>
<td>Illinois</td>
<td>1981</td>
<td>yellow</td>
<td>early</td>
<td>med</td>
<td>med</td>
<td>med</td>
<td>high</td>
<td>S</td>
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<td>S</td>
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<td>Prairie</td>
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<td>1992</td>
<td>tan</td>
<td>med</td>
<td>med</td>
<td>med</td>
<td>low</td>
<td>S</td>
<td>I</td>
<td>R</td>
<td>I</td>
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<td>no</td>
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<td>Sesqui</td>
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<td>2001</td>
<td>yellow</td>
<td>late</td>
<td>tall</td>
<td>med</td>
<td>high</td>
<td>med</td>
<td>I</td>
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<td>-</td>
<td>yes</td>
<td>no</td>
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<tr>
<td>Troy</td>
<td>S. Dakota</td>
<td>1991</td>
<td>white</td>
<td>med</td>
<td>med</td>
<td>high</td>
<td>med</td>
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<td>R</td>
<td>-</td>
<td>R</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

a Maturity (month-day) as indicated by heading date in 16 Wisconsin tests conducted 2003–2005. Varieties with generalized ratings indicate the following: early = before June 25, med = June 25–28, late = after June 28.

b Height (inches) at maturity in 19 Wisconsin tests conducted 2003–2005. Varieties with generalized ratings indicate the following: short = <33 inches, med = 33–40 inches, tall = >40 inches.


d Disease resistance: R = resistant or moderately resistant, I = intermediate or some tolerance, S = moderately susceptible or susceptible.

e BYDV=Barley yellow dwarf virus or red leaf disease.

f PVP=Plant Variety Protection. A “yes” indicates that these varieties cannot be reproduced and sold as seed by variety name without certification.

— = information not available.

ADDITIONAL INFORMATION

Check the following publications for additional information on small grain production and seed availability. They are available at your county Extension office or at soybean.uwex.edu/library/grain/ and are updated annually.

Pest Management in Wisconsin Field Crops (A3646)
The Wisconsin Certified Seed Directory

For information on seed availability of public varieties, contact the Wisconsin Crop Improvement Association, 554 Moore Hall, 1575 Linden Drive, Madison, WI 53706, (608) 262-1341, www.wisc.edu/wcia/.
Table 3. Oat variety grain yield comparisons in Wisconsin

<table>
<thead>
<tr>
<th>Variety</th>
<th>Mean</th>
<th>Arlington</th>
<th>Lancaster</th>
<th>Madison</th>
<th>Chilton</th>
<th>Spooner</th>
<th>Sturgeon Bay</th>
<th>Marshfield</th>
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<tbody>
<tr>
<td><strong>2005 YIELDS</strong></td>
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</tr>
<tr>
<td>Dane</td>
<td>88</td>
<td>122</td>
<td>62</td>
<td>130</td>
<td>49*</td>
<td>65</td>
<td>70</td>
<td>117*</td>
</tr>
<tr>
<td>Kame</td>
<td>88</td>
<td>122</td>
<td>56</td>
<td>128</td>
<td>51*</td>
<td>85*</td>
<td>69</td>
<td>107</td>
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<td>Moraine</td>
<td>86</td>
<td>122</td>
<td>53</td>
<td>120</td>
<td>46*</td>
<td>65</td>
<td>84*</td>
<td>114*</td>
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<tr>
<td>Winona</td>
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<td>52</td>
<td>131</td>
<td>55*</td>
<td>90*</td>
<td>78*</td>
<td>114*</td>
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<td>Midseason</td>
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<tr>
<td>Esker</td>
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<td>132*</td>
<td>80*</td>
<td>149*</td>
<td>53*</td>
<td>89*</td>
<td>80*</td>
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<td>Gem</td>
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<td>153*</td>
<td>47*</td>
<td>69</td>
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<td>Mid- to late-season</td>
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<td>Drumlin</td>
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<td>157*</td>
<td>44*</td>
<td>84*</td>
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<td>122*</td>
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<td>Vista</td>
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<td>133*</td>
<td>79*</td>
<td>136</td>
<td>53*</td>
<td>60</td>
<td>93*</td>
<td>96</td>
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<td>Late maturing</td>
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<td>Leonard</td>
<td>89</td>
<td>129*</td>
<td>58</td>
<td>124</td>
<td>45*</td>
<td>85*</td>
<td>87*</td>
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<tr>
<td>Mean</td>
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<td>124</td>
<td>68</td>
<td>134</td>
<td>48</td>
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<td>Early maturing</td>
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<td>107</td>
<td>149</td>
<td>93</td>
<td>122</td>
<td>93*</td>
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<td>Kame</td>
<td>116</td>
<td>159*</td>
<td>104</td>
<td>138</td>
<td>92</td>
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<td>111</td>
<td>143</td>
<td>100</td>
<td>137</td>
<td>87</td>
</tr>
<tr>
<td>Ogle</td>
<td>116</td>
<td>144</td>
<td>121*</td>
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<td>93*</td>
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<td>141</td>
<td>100</td>
<td>126</td>
<td>88</td>
</tr>
<tr>
<td>Wabasha</td>
<td>110</td>
<td>137</td>
<td>115*</td>
<td>129</td>
<td>83</td>
</tr>
<tr>
<td>Mid- to late-season</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drumlin</td>
<td>126*</td>
<td>163*</td>
<td>125*</td>
<td>145*</td>
<td>99*</td>
</tr>
<tr>
<td>Vista</td>
<td>112</td>
<td>147</td>
<td>118*</td>
<td>132</td>
<td>87</td>
</tr>
<tr>
<td>Late maturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Leonard</td>
<td>112</td>
<td>142</td>
<td>111</td>
<td>128</td>
<td>88</td>
</tr>
<tr>
<td>Mean</td>
<td>113</td>
<td>149</td>
<td>109</td>
<td>133</td>
<td>91</td>
</tr>
<tr>
<td>LSD (0.05)a</td>
<td>3</td>
<td>6</td>
<td>11</td>
<td>9</td>
<td>6</td>
</tr>
</tbody>
</table>

*Varieties not significantly different from the highest yielding variety in the trial.

aThe LSD (least significant difference) figures listed under the yield columns are a statistical measure of variation within the trial. If the difference in yield of two varieties is equal to or greater than LSD, the yields are significantly different. If the difference is less than the LSD, the yield difference may have been due to environmental factors.
### Table 4. Forage dry matter yield of spring oat varieties harvested at late boot/early heading

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield (t/a)</th>
<th>Harvest date (June)</th>
<th>Crude protein (%)</th>
<th>RFV*</th>
<th>Yield (t/a)</th>
<th>Harvest date (June)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Madison</td>
<td>Arlington</td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belle</td>
<td>2.03</td>
<td>1.78*</td>
<td>1.91</td>
<td>16</td>
<td>9.9</td>
<td>106.1*</td>
</tr>
<tr>
<td>Dane</td>
<td>1.41</td>
<td>1.21</td>
<td>1.31</td>
<td>10</td>
<td>11.0*</td>
<td>99.7</td>
</tr>
<tr>
<td>Drumlin</td>
<td>1.78</td>
<td>2.09*</td>
<td>1.94</td>
<td>15</td>
<td>10.7</td>
<td>99.7</td>
</tr>
<tr>
<td>Esker</td>
<td>1.84</td>
<td>1.36</td>
<td>1.60</td>
<td>13</td>
<td>11.0*</td>
<td>100.8</td>
</tr>
<tr>
<td>Forage Plus</td>
<td>2.82</td>
<td>2.08*</td>
<td>2.45</td>
<td>23</td>
<td>9.5</td>
<td>100.8</td>
</tr>
<tr>
<td>Gem</td>
<td>1.65</td>
<td>1.75*</td>
<td>1.70</td>
<td>14</td>
<td>10.8*</td>
<td>101.3</td>
</tr>
<tr>
<td>Kame</td>
<td>1.59</td>
<td>1.30</td>
<td>1.44</td>
<td>12</td>
<td>11.5*</td>
<td>104.3*</td>
</tr>
<tr>
<td>Leonard</td>
<td>1.89</td>
<td>1.93*</td>
<td>1.91</td>
<td>17</td>
<td>10.1</td>
<td>99.4</td>
</tr>
<tr>
<td>Moraine</td>
<td>1.69</td>
<td>1.32</td>
<td>1.51</td>
<td>12</td>
<td>11.1*</td>
<td>106.2*</td>
</tr>
<tr>
<td>Ogle</td>
<td>1.71</td>
<td>1.28</td>
<td>1.50</td>
<td>13</td>
<td>11.0*</td>
<td>102.9*</td>
</tr>
<tr>
<td>Richard</td>
<td>1.67</td>
<td>1.55</td>
<td>1.61</td>
<td>14</td>
<td>10.9*</td>
<td>105.3*</td>
</tr>
<tr>
<td>Vista</td>
<td>2.03</td>
<td>1.76*</td>
<td>1.89</td>
<td>15</td>
<td>10.0</td>
<td>98.4</td>
</tr>
<tr>
<td>Wabasha</td>
<td>1.92</td>
<td>1.67</td>
<td>1.79</td>
<td>13</td>
<td>10.2</td>
<td>99.1</td>
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<tr>
<td>LSD (0.05)</td>
<td>0.32</td>
<td>0.34</td>
<td>0.23</td>
<td>0.69</td>
<td>3.50</td>
<td>0.11</td>
</tr>
</tbody>
</table>

*Varieties not significantly different from highest yielding variety in the trial.

* RFV = Relative feed value. Relative feed values can be used to make comparisons among varieties listed in this table, but should not be used to compare with other crops such as alfalfa.

### Table 5. Barley variety descriptions

<table>
<thead>
<tr>
<th>Variety</th>
<th>Origin</th>
<th>Year released</th>
<th>Awns</th>
<th>Quality</th>
<th>Maturity* (head date)</th>
<th>Ht* (in.)</th>
<th>Lodging* (%)</th>
<th>Test wt* (lb/bu)</th>
<th>Leaf rust</th>
<th>Stem Loose Powd. Spot</th>
<th>Disease resistance*</th>
<th>Wis cert.</th>
</tr>
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<tbody>
<tr>
<td>Recommended varieties</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drummond</td>
<td>N. Dakota</td>
<td>2001</td>
<td>Smooth</td>
<td>malt</td>
<td>6-15</td>
<td>36</td>
<td>strong</td>
<td>47</td>
<td>—</td>
<td>R</td>
<td>S</td>
<td>—</td>
</tr>
<tr>
<td>Hazen</td>
<td>N. Dakota</td>
<td>1984</td>
<td>Smooth</td>
<td>feed</td>
<td>6-17</td>
<td>37</td>
<td>med</td>
<td>47</td>
<td>S</td>
<td>R</td>
<td>S</td>
<td>I</td>
</tr>
<tr>
<td>Kewaunee</td>
<td>Wisconsin</td>
<td>1997</td>
<td>Smooth</td>
<td>feed</td>
<td>6-17</td>
<td>37</td>
<td>med</td>
<td>46</td>
<td>R</td>
<td>R</td>
<td>—</td>
<td>R</td>
</tr>
<tr>
<td>Lacey</td>
<td>Minnesota</td>
<td>2000</td>
<td>Smooth</td>
<td>malt</td>
<td>6-17</td>
<td>36</td>
<td>med</td>
<td>48</td>
<td>—</td>
<td>R</td>
<td>S</td>
<td>—</td>
</tr>
<tr>
<td>Robust</td>
<td>Minnesota</td>
<td>1993</td>
<td>Smooth</td>
<td>malt</td>
<td>6-18</td>
<td>38</td>
<td>med</td>
<td>47</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Stander</td>
<td>Minnesota</td>
<td>1993</td>
<td>Smooth</td>
<td>feed</td>
<td>6-17</td>
<td>35</td>
<td>strong</td>
<td>47</td>
<td>—</td>
<td>R</td>
<td>S</td>
<td>S</td>
</tr>
</tbody>
</table>

| Other varieties |          |               |      |         |                       |           |              |                   |           |                       |                     |           |
| Bounty      | Canada   | 1989          | Smooth | feed | med | med | med | med | I | I | S | R | S | yes | yes |
| Chilton     | Wisconsin| 1990         | Smooth | feed | med | med | med | med | high | R | R | — | R | R | yes | no |
| Excel       | Minnesota| 1990         | Smooth | malt | early | med | med | med | S | R | S | S | R | yes | no |
| MNBrite     | Minnesota| 1998         | Smooth | — | early | med | weak | high | R | R | S | S | R | yes | no |

*a Maturity (month-day) as indicated by heading date in 17 Wisconsin tests conducted 2003–2005. Varieties with generalized ratings indicate the following: early = before June 21, med = June 21–25, late = after June 25.

*b Height (inches) at maturity in 18 Wisconsin tests conducted 2003-2005. Varieties with generalized ratings were included in other tests and indicate the following: short = <30 inches, med = 30–36 inches, tall = >36 inches.

c Lodging: strong = <15%, med = 15–35%, weak = >35%.

d Test weight (pounds/bushel) in 19 Wisconsin tests conducted 2003–2005. Varieties with generalized ratings were included in other tests and indicate the following: low = <42 lb/bu, med = 42–46 lb/bu, high = >46 lb/bu.

*e Disease resistance: R = resistant or moderately resistant, I = intermediate or some tolerance, S = moderately susceptible or susceptible.

f PVP = Plant Variety Protection. A “yes” indicates that these varieties cannot be reproduced and sold as seed by variety name without certification.

— = Information not available.
### Table 6. Barley variety grain yield comparisons in Wisconsin

<table>
<thead>
<tr>
<th>Variety</th>
<th>Mean</th>
<th>Arlington</th>
<th>Lancaster</th>
<th>Madison</th>
<th>Chilton</th>
<th>Marshfield</th>
<th>Spooner</th>
<th>Sturgeon Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2005 YIELDS</strong></td>
<td></td>
<td>2005 yields (bu/a)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Drummond</td>
<td>70°</td>
<td>84</td>
<td>68</td>
<td>85°</td>
<td>—</td>
<td>51°</td>
<td>75°</td>
<td>56°</td>
</tr>
<tr>
<td>Hazen</td>
<td>68°</td>
<td>89°</td>
<td>61°</td>
<td>69°</td>
<td>—</td>
<td>57°</td>
<td>82°</td>
<td>51°</td>
</tr>
<tr>
<td>Kewaunee</td>
<td>70°</td>
<td>94°</td>
<td>65°</td>
<td>84°</td>
<td>—</td>
<td>57°</td>
<td>69°</td>
<td>52°</td>
</tr>
<tr>
<td>Lacey</td>
<td>73°</td>
<td>93°</td>
<td>73°</td>
<td>77°</td>
<td>—</td>
<td>57°</td>
<td>82°</td>
<td>55°</td>
</tr>
<tr>
<td>MNBrite</td>
<td>53°</td>
<td>74°</td>
<td>40°</td>
<td>57°</td>
<td>—</td>
<td>43°</td>
<td>60°</td>
<td>46°</td>
</tr>
<tr>
<td>Robust</td>
<td>64°</td>
<td>87°</td>
<td>54°</td>
<td>78°</td>
<td>—</td>
<td>51°</td>
<td>62°</td>
<td>51°</td>
</tr>
<tr>
<td>Stander</td>
<td>69°</td>
<td>87°</td>
<td>73°</td>
<td>78°</td>
<td>—</td>
<td>51°</td>
<td>71°</td>
<td>54°</td>
</tr>
<tr>
<td>Mean</td>
<td>67°</td>
<td>87°</td>
<td>62°</td>
<td>75°</td>
<td>—</td>
<td>52°</td>
<td>72°</td>
<td>52°</td>
</tr>
<tr>
<td>LSD (0.05)²</td>
<td>4</td>
<td>6</td>
<td>14</td>
<td>11°</td>
<td>—</td>
<td>8</td>
<td>14°</td>
<td>10</td>
</tr>
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</table>

#### HISTORIC YIELDS

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Drummond</td>
<td>77°</td>
<td>91°</td>
<td>11.5</td>
<td>74°</td>
<td>75°</td>
</tr>
<tr>
<td>Hazen</td>
<td>75°</td>
<td>94°</td>
<td>70°</td>
<td>70°</td>
<td>65°</td>
</tr>
<tr>
<td>Kewaunee</td>
<td>78°</td>
<td>100°</td>
<td>75°</td>
<td>72°</td>
<td>67°</td>
</tr>
<tr>
<td>Lacey</td>
<td>79°</td>
<td>98°</td>
<td>69°</td>
<td>67°</td>
<td>78°</td>
</tr>
<tr>
<td>MNBrite</td>
<td>65°</td>
<td>85°</td>
<td>69°</td>
<td>55°</td>
<td>58°</td>
</tr>
<tr>
<td>Robust</td>
<td>68°</td>
<td>86°</td>
<td>70°</td>
<td>60°</td>
<td>59°</td>
</tr>
<tr>
<td>Stander</td>
<td>75°</td>
<td>94°</td>
<td>77°</td>
<td>63°</td>
<td>69°</td>
</tr>
<tr>
<td>Mean</td>
<td>74°</td>
<td>93°</td>
<td>75°</td>
<td>65°</td>
<td>69°</td>
</tr>
<tr>
<td>LSD (0.05)²</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>9</td>
</tr>
</tbody>
</table>

*Varieties not significantly different from highest yielding variety in the trial.

²The LSD (least significant difference) figures listed under the yield columns are a statistical measure of variation within the trial. If the difference in yield of two varieties is equal to or greater than the LSD, then the yields are significantly different. If the difference is less than the LSD, then the yield difference may have been due to environmental factors.

### Table 7. Forage dry matter yield of barley varieties harvested at late boot/early heading

<table>
<thead>
<tr>
<th>Variety</th>
<th>2005</th>
<th>2003–'04</th>
<th>2003–'05</th>
<th>2004–'05</th>
<th>2004–'05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazen</td>
<td>1.86°</td>
<td>1.51°</td>
<td>1.69°</td>
<td>11°</td>
<td>11.5</td>
</tr>
<tr>
<td>Kewaunee</td>
<td>1.83°</td>
<td>1.74°</td>
<td>1.78°</td>
<td>11°</td>
<td>11.5</td>
</tr>
<tr>
<td>Lacey</td>
<td>1.69°</td>
<td>1.34°</td>
<td>1.51°</td>
<td>11°</td>
<td>12.0</td>
</tr>
<tr>
<td>Royal</td>
<td>1.66°</td>
<td>1.23°</td>
<td>1.45°</td>
<td>11°</td>
<td>14.1</td>
</tr>
<tr>
<td>LSD (0.05)²</td>
<td>0.32</td>
<td>0.34</td>
<td>0.23</td>
<td>0.69</td>
<td>3.50</td>
</tr>
</tbody>
</table>

*Varieties not significantly different from highest yielding variety in the trial.

²RFV = Relative feed value. Relative feed values can be used to make comparisons among varieties, but should not be used to compare with other crops such as alfalfa.

### Table 8. Winter rye variety descriptions

<table>
<thead>
<tr>
<th>Variety</th>
<th>Origin</th>
<th>Year released</th>
<th>Seed color</th>
<th>Maturity</th>
<th>Height</th>
<th>Straw strength</th>
<th>Test wt.</th>
<th>Leaf rust resistance</th>
<th>PVP</th>
<th>Wis. certified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aroostook</td>
<td>NY</td>
<td>1981</td>
<td>brown/tan</td>
<td>early</td>
<td>tall</td>
<td>poor</td>
<td>low</td>
<td>—</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Dacold</td>
<td>ND</td>
<td>1989</td>
<td>bluish-green</td>
<td>late</td>
<td>med</td>
<td>good</td>
<td>low</td>
<td>—</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Hancock</td>
<td>WI</td>
<td>1979</td>
<td>tan</td>
<td>med</td>
<td>tall</td>
<td>good</td>
<td>high</td>
<td>R</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Spooner</td>
<td>WI</td>
<td>1993</td>
<td>tan</td>
<td>med</td>
<td>tall</td>
<td>v. good</td>
<td>high</td>
<td>R</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Rymin</td>
<td>MN</td>
<td>1973</td>
<td>greenish-gray</td>
<td>med-late</td>
<td>med</td>
<td>good</td>
<td>high</td>
<td>—</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

*Leaf rust resistance: R = resistant or moderately resistant, — = information not available.

¹PVP = Plant Variety Protection. A “yes” indicates that these varieties cannot be reproduced and sold as seed by variety name without certification.
Table 9. Winter wheat public variety descriptions

<table>
<thead>
<tr>
<th>Variety</th>
<th>Origin</th>
<th>Year released</th>
<th>Type</th>
<th>Awns</th>
<th>Ht.</th>
<th>Test strength</th>
<th>Winter hardness</th>
<th>BYDV</th>
<th>Leaf rust</th>
<th>Stem rust</th>
<th>Powd.</th>
<th>mildew</th>
<th>Scab</th>
<th>PVP cert.</th>
</tr>
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<tbody>
<tr>
<td>Cardinal</td>
<td>Ohio</td>
<td>1986</td>
<td>soft red</td>
<td>N</td>
<td>med</td>
<td>med</td>
<td>excel</td>
<td>—</td>
<td>R</td>
<td>I</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Hopewell</td>
<td>Ohio</td>
<td>1995</td>
<td>soft red</td>
<td>N</td>
<td>med</td>
<td>strong</td>
<td>excel</td>
<td>—</td>
<td>S</td>
<td>I</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Kaskaskia</td>
<td>Illinois</td>
<td>1998</td>
<td>soft red</td>
<td>Y</td>
<td>med</td>
<td>med</td>
<td>excel</td>
<td>—</td>
<td>I</td>
<td>S</td>
<td>R</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

a Height at maturity: short = < 38 inches, med = 38–42 inches, tall = > 42 inches.
b Test weight: low = < 53 lb/bu, med = 53–56 lb/bu, high = > 56 lb/bu.
c Disease resistance: R = resistant or moderately resistant, I = intermediate or some tolerance, S = moderately susceptible or susceptible, — = information not available.
d BYDV = barley yellow dwarf virus.
e PVP = Plant Variety Protection. A “yes” indicates that these varieties cannot be reproduced and sold as seed by variety name without certification.


<table>
<thead>
<tr>
<th>Variety</th>
<th>Entry</th>
<th>Class</th>
<th>Yield WS a (%)</th>
<th>Yield WS b (%)</th>
<th>Ht. (in.)</th>
<th>Yield WS b (%)</th>
<th>Yield WS b (%)</th>
<th>Yield WS b (%)</th>
<th>Yield WS b (%)</th>
<th>Yield WS b (%)</th>
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<tbody>
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<td>Public</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Cardinal</td>
<td>SR</td>
<td>74.2*</td>
<td>88</td>
<td>57.3</td>
<td>30</td>
<td>68.7</td>
<td>85</td>
<td>69.2*</td>
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(continued)
### Table 10. Performance of winter wheat varieties in Wisconsin (2004–2005)—continued

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- **KW 53** SR 66.4 74 56.9 26 83.2% 84 52.6 68 77.0 100 52.8 46
- **KW 54** SR 58.3 50 58.0 27 75.0 66 47.7 36 69.6 78 41.0 22
- **KW 55** SR 71.7 77 58.7 28 77.3 81 64.1 89 80.0 98 65.5 40
- **KW 56** SR 68.7 78 59.5 31 63.2 58 68.3% 93 74.1 100 69.3 63
- **KW 57** SR 66.9 85 58.4 27 73.5 85 56.5 86 74.0 100 63.5 70
- **KW 58** SR 74.1% 85 57.8 29 80.1 91 60.9 83 81.1 100 74.3% 66
- **Pioneer** 25R35 SR 60.7 65 57.9 26 57.6 50 55.3 77 76.4 100 53.5 34
- **25R37** SR 63.1 69 58.2 26 72.5 71 55.4 72 74.6 100 49.9 31 70.2
- **25R47** SR 79.6% 84 57.4 26 82.4 96 59.0 73 84.6% 100 74.3% 66
- **25R78** SR 63.1 71 57.8 24 63.6 51 62.2 96 76.9 94 49.8 42 72.1
- **Pro Seed Genetics** Pro 110 SR 54.4 64 58.8 25 76.7 83 46.7 67 61.9 85 32.6 20 63.6
- **Pro 200** SR 79.0% 94 57.6 31 80.7 100 71.4% 86 84.6% 100 79.3% 89 77.2%
- **Pro EX 210** SR 71.9 77 58.0 29 82.4 96 59.0 73 84.6% 100 61.6 40
- **ACS 52004** HR 14.2 11 54.1 25 17.6 4 20.1 31 10.5 6 8.7 4 8.7
- **ACS 52062** HR 43.4 47 56.9 23 45.6 35 46.9 72 57.6 63 23.5 17 60.9
- **ACS 53047** HR 44.6 49 56.8 22 67.0 66 32.4 53 49.1 49 30.2 29
- **ACS 97003** HR 74.4% 90 59.1 31 85.1% 98 68.9% 81 76.2 100 67.3 80 74.9%
- **Carlisle** HR 71.3 93 61.4 29 83.3% 100 59.4 90 74.2 100 68.5 80 72.9
- **Harvard** HR 80.4% 93 60.3 31 86.7% 100 71.4% 78 81.3 100 80.4% 96
- **Maxine** HR 68.9 85 59.8 28 75.7 84 61.4 88 74.2 100 64.4 68
- **UAP Great Lakes** DynaGro DG 403 SR 66.0 83 57.9 30 76.8 93 57.3 83 71.6 100 58.4 56
- **DynaGro DG 410** SR 64.7 78 57.9 28 68.5 83 51.0 69 76.5 100 62.7 60
- **DynaGro DG 419** SR 67.3 78 57.9 29 78.6 81 53.0 74 72.1 100 65.6 56
- **Public - exp** AR 93027-3-2 SR 63.6 73 57.7 27 77.2 78 49.4 70 77.9 100 50.0 43
- **Bess** SR 63.3 66 57.9 27 72.4 60 56.4 71 70.4 88 54.0 45
- **IL 00-8061** SR 78.4% 93 59.7 31 83.5% 99 72.8% 96 84.8% 100 72.4% 79
- **P97462A1-21-1-5-2** SR 64.6 82 57.4 26 66.4 94 53.9 80 72.9 95 65.4 60
- **P981312A1-6-2-2** SR 51.9 55 56.4 25 56.6 45 54.6 78 66.8 86 29.6 12
- **P981359C1-4-2-1-8** SR 65.1 74 60.5 30 79.2 81 56.5 74 65.7 85 58.9 54 72.8
| **Mean**     |          |        |            |           |       |                      |                      |                  |                  |                 |
| **LSD(.10)** |          |        |            |           |       |                      |                      |                  |                  |                 |

- **Varieties not significantly different (0.10 level) from the highest yielding cultivar.**
- **Class abbreviations: SR= soft red winter, HR= hard red winter.**
- **WS = winter survival, a rating of percent stand in late spring.**
- **TW = test weight.**