Variety selection is one of the most important decisions a wheat grower makes. This choice profoundly influences the potential wheat crop’s productivity. Agronomic characteristics, such as height, acid soil tolerance, and maturity, determine how well a variety is adapted for a region or desired cropping system. Selecting a good variety also influences how well the crop tolerates drought or resists diseases and insects.

The agronomic characteristics and resistance ratings in this publication summarize results of multiple field and greenhouse tests by public and private wheat researchers. The ratings are intended to help producers select wheat varieties according to their specific needs. The paragraphs below contain suggestions for using this information to minimize the potential for production problems and resulting yield losses. Growers should consult the latest K-State wheat performance test report for additional information about varieties that have yielded well in their area.

Although great efforts were made to confirm the accuracy of these ratings, no guarantee can be made that the information is without error. A variety’s agronomic characteristics are generally stable but can be influenced by unanticipated interactions with production practices or environment. Disease and pest reactions are influenced by regional populations of the pathogens or insects and may vary between years.

**How to Use the Variety Ratings**

Evaluate how well a variety is adapted for your area. The agronomic characteristics of a wheat variety influence its ability to provide consistent, high yields. The importance of characteristics such as relative maturity, height, drought tolerance, and straw strength vary regionally in Kansas. For example, varieties successful in western Kansas tend to have a medium or medium-late maturity and medium height or taller, as well as good drought tolerance (Table 1). In contrast, wheat varieties with early or medium-early maturity, medium or shorter height, and good acid soil tolerance are most successful in central Kansas. Information

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**Figure 1. Regional importance of wheat diseases in Kansas.** The importance of wheat diseases is based on their potential to cause yield loss and how often it reaches damaging levels in different regions of the state. The relative importance of the diseases is the product of historical records of disease losses in Kansas and expert opinion by wheat disease specialists. Not all diseases and insect pests are considered in the figure. Growers may need to adjust their priorities based on previous crop production practices on their farms.
about the characteristics of wheat varieties can be found in the variety profiles and the overall listing of agronomic characteristics (Appendix 2).

**Determine which diseases are most important.** The importance of any disease or insect pest depends on its potential to cause yield loss and how often it reaches damaging levels within a given region of the state. In western Kansas, wheat streak mosaic, leaf rust, and stripe rust are among the most damaging and common diseases (Figure 1). These diseases should be top priorities when selecting wheat varieties for that region. In eastern and central Kansas, the environment is often more conducive for disease development, and additional factors should be considered when selecting a variety. Important diseases to consider in these regions of Kansas include soilborne mosaic, spindle streak mosaic, barley yellow dwarf, leaf rust, stripe rust, tan spot, and Septoria tritici blotch.

It may be helpful to consider a disease resistance summary that combines the historical estimates of regionally important diseases with the variety disease ratings (Table 2). Varieties with genetic resistance to historically important diseases are considered above average, compared to more susceptible varieties. Detailed information about a variety’s disease and insect reactions can be found in the variety profiles and the overall listing of disease and insect reactions (Appendix 1).

**Table 1. Agronomic characteristics of wheat varieties that were successful in Kansas historically.**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Eastern and Central Kansas</th>
<th>Western Kansas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maturity</td>
<td>Medium or earlier</td>
<td>Medium-late or earlier</td>
</tr>
<tr>
<td>Height</td>
<td>Medium or shorter</td>
<td>Medium or taller</td>
</tr>
<tr>
<td>Drought tolerance</td>
<td>Moderately good or good</td>
<td>Good or excellent</td>
</tr>
<tr>
<td>Straw strength</td>
<td>Average or better</td>
<td>Average or better</td>
</tr>
<tr>
<td>Acid soil tolerance</td>
<td>Moderately tolerant or</td>
<td>Generally not applicable</td>
</tr>
<tr>
<td></td>
<td>better</td>
<td></td>
</tr>
</tbody>
</table>

The agronomic characteristics presented here are based on historical records of varieties that occupied 5 percent or more of the acres within a region during the last 20 years. Varieties with these characteristics are most likely to provide consistent, high yields in a given region of the state.

**Table 2. Experimental wheat disease resistance summary.** The wheat disease resistance summary combines resistance ratings for multiple diseases. It weights each disease relative to its historical regional importance in Kansas. Varieties with genetic resistance to the historically important diseases within a region are ranked above average relative to more susceptible varieties. The summary is intended to facilitate comparisons among varieties. The more complete lists of disease and insect ratings (Appendix 1) should be consulted after narrowing the list of potential varieties.

**Disease Resistance Grouping**

**Above Average:** Varieties have moderate or high levels of genetic resistance to **most** diseases common in this region

<table>
<thead>
<tr>
<th>Eastern and Central</th>
<th>Western</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspen (W)</td>
<td>Iba</td>
</tr>
<tr>
<td>Gallagher</td>
<td>SY Wolf</td>
</tr>
<tr>
<td>Tatanka</td>
<td></td>
</tr>
<tr>
<td>Clara CL (W)</td>
<td>Joe (W)</td>
</tr>
<tr>
<td>Duster</td>
<td></td>
</tr>
<tr>
<td>SY Monument</td>
<td>Larry</td>
</tr>
<tr>
<td>Everest</td>
<td></td>
</tr>
<tr>
<td>SY Wolf</td>
<td></td>
</tr>
</tbody>
</table>

**Average:** Varieties have moderate or high levels of genetic resistance to **some** of the diseases common in this region

<table>
<thead>
<tr>
<th>Eastern and Central</th>
<th>Western</th>
</tr>
</thead>
<tbody>
<tr>
<td>1863</td>
<td></td>
</tr>
<tr>
<td>Armour</td>
<td>Hatcher</td>
</tr>
<tr>
<td>Billings</td>
<td>TAM 111</td>
</tr>
<tr>
<td>Doublestop CL Plus</td>
<td></td>
</tr>
<tr>
<td>Fuller</td>
<td></td>
</tr>
<tr>
<td>Garrison</td>
<td></td>
</tr>
<tr>
<td>Iba</td>
<td></td>
</tr>
</tbody>
</table>

**Below average:** Varieties are susceptible to **many** of the diseases common in this region

<table>
<thead>
<tr>
<th>Eastern and Central</th>
<th>Western</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antero (W)</td>
<td>Garrison</td>
</tr>
<tr>
<td>APS03 CL2</td>
<td></td>
</tr>
<tr>
<td>Brawl CL Plus</td>
<td></td>
</tr>
<tr>
<td>Byrd</td>
<td></td>
</tr>
<tr>
<td>Danby (W)</td>
<td></td>
</tr>
<tr>
<td>Denali</td>
<td></td>
</tr>
</tbody>
</table>

(W) = White wheat varieties
### Fungal diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>R</th>
<th>MR</th>
<th>I</th>
<th>MS</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf rust</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Stem rust</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Stripe rust</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Septoria tritici blotch</td>
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</tr>
<tr>
<td>Tan spot</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Powdery mildew</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fusarium head blight</td>
<td></td>
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</tr>
</tbody>
</table>

### Agronomic characteristics

<table>
<thead>
<tr>
<th>Trait</th>
<th>Early</th>
<th>Late</th>
<th>Short</th>
<th>Tall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maturity</td>
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</tr>
<tr>
<td>Height</td>
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<td></td>
</tr>
<tr>
<td>Drought</td>
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</tr>
<tr>
<td>Straw strength</td>
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</tbody>
</table>

### Viral diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>R</th>
<th>MR</th>
<th>I</th>
<th>MS</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soilborne mosaic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle streak mosaic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat streak mosaic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barley yellow dwarf</td>
<td></td>
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</tbody>
</table>

### Armour

#### Fungal diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>R</th>
<th>MR</th>
<th>I</th>
<th>MS</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf rust</td>
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<td></td>
</tr>
<tr>
<td>Stem rust</td>
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<tr>
<td>Stripe rust</td>
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<td></td>
</tr>
<tr>
<td>Septoria tritici blotch</td>
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<tr>
<td>Tan spot</td>
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</tr>
<tr>
<td>Powdery mildew</td>
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<td></td>
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<tr>
<td>Fusarium head blight</td>
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</table>

### Agronomic characteristics

<table>
<thead>
<tr>
<th>Trait</th>
<th>Early</th>
<th>Late</th>
<th>Short</th>
<th>Tall</th>
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<tbody>
<tr>
<td>Maturity</td>
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<tr>
<td>Height</td>
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<tr>
<td>Drought</td>
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<tr>
<td>Straw strength</td>
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</tbody>
</table>

### Viral diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>R</th>
<th>MR</th>
<th>I</th>
<th>MS</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Soilborne mosaic</td>
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<td></td>
</tr>
<tr>
<td>Spindle streak mosaic</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Wheat streak mosaic</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Barley yellow dwarf</td>
<td></td>
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</tr>
</tbody>
</table>

### Pedigree: Overley sibling, Karl 92, and Cutter.

**Adaptation:** Central and north central Kansas.

**Strengths:** Acid soil tolerance, good milling and baking characteristics.

**Weaknesses:** Below-average straw strength, susceptible to leaf rust.

**Comments:** Probably best adapted for north central Kansas. A good option following soybeans in north central Kansas because it has a good tillering potential. Later planting after soybeans also may reduce the risk of lodging and resulting harvest complications.
### Byrd

#### Fungal diseases

- Leaf rust
- Stem rust
- Stripe rust
- Septoria tritici blotch
- Tan spot
- Powdery mildew
- Fusarium head blight

#### Agronomic characteristics

- Maturity: Medium
- Height: Short
- Drought: Poor
- Straw strength: Average

#### Pedigree:
TAM 112, CSU experimental lines, Ike, and Halt.

#### Adaptation:
Western Kansas.

#### Strengths:
- Good drought tolerance
- Good yield potential
- Good milling and baking characteristics
- Intermediate resistance to wheat curl mite and wheat streak mosaic

#### Weaknesses:
- Average test weight and straw strength
- Susceptible to stripe rust, leaf rust, and stem rust

#### Comments:
- Drought tolerance is key to the success of this variety.
- Highly susceptible to rust diseases. Foliar fungicides may be needed to maintain its yield potential when stripe rust is a problem.
- Smaller seed size than many varieties. May require adjustments in planting rate to avoid plant populations that are too high.

### Denali

#### Fungal diseases

- Leaf rust
- Stem rust
- Stripe rust
- Septoria tritici blotch
- Tan spot
- Powdery mildew
- Fusarium head blight

#### Agronomic characteristics

- Maturity: Medium
- Height: Short
- Drought: Poor
- Straw strength: Average

#### Pedigree:
TAM 112, Colorado experimental lines, Yumar.

#### Adaptation:
Western Kansas.

#### Strengths:
- Long coleoptile
- Good test weight
- Good yield potential
- Moderately resistant to stem rust

#### Weaknesses:
- Susceptible to stripe rust, leaf rust, and wheat streak mosaic

#### Comments:
- A medium-late, medium-tall variety with good yield record in northwest Kansas. Good drought tolerance. Stripe rust can increase rapidly on this variety. Growers should plan to be aggressive with foliar fungicides if stripe rust is active in the region.
**Doublestop CL Plus**

**Fungal diseases**
- - • • • • • • • • Leaf rust
- • • • • • • • • Stem rust
- • • • • • • • • Stripe rust
- • • • • • • • • Septoria tritici blotch
- • • • • • • • • Tan spot
- • • • • • • • • Powdery mildew
• • • • • • • • • • Fusarium head blight

**Agronomic characteristics**

- • • • • • • • • • • Maturity
- • • • • • • • • • • Height
- • • • • • • • • • • Drought
- • • • • • • • • • • Straw strength

Pedigree: Pioneer experimental lines with the white wheat Betty.

Adaptation: Central and eastern Kansas.

Strengths: Resistance to Hessian fly, moderate resistance to barley yellow dwarf and Fusarium head blight, acid soil tolerance.

Weaknesses: Susceptible to stripe rust, poor milling and baking characteristics.

Comments: A medium to medium-short variety with early maturity. Fall tiller formation is important to ensure yield potential. Resistance to Fusarium head blight makes it the best option to follow corn in central and eastern Kansas.

**Everest**

**Fungal diseases**
- • • • • • • • • • • Leaf rust
- • • • • • • • • • • Stem rust
- • • • • • • • • • • Stripe rust
- • • • • • • • • • • Septoria tritici blotch
- • • • • • • • • • • Tan spot
- • • • • • • • • • • Powdery mildew
• • • • • • • • • • Fusarium head blight

**Agronomic characteristics**

- • • • • • • • • • • Maturity
- • • • • • • • • • • Height
- • • • • • • • • • • Drought
- • • • • • • • • • • Straw strength

Pedigree: Mason SRW (CL donor), Jagger, 2174, TAM 110, and Intrada.

Adaptation: Central and west central Kansas.

Strengths: Two-gene Clearfield, good acid soil tolerance, good grazing potential, good test weight.

Weaknesses: Intermediate reaction to stripe rust.

Comments: A good yield record in south central Kansas; however, its medium-late maturity increases the risk that it will be exposed to heat stress during the grain-filling stages in some years. A good Clearfield option where adapted. Often has an uneven canopy.
**Gallagher**

### Fungal diseases
- Leaf rust
- Stem rust
- Stripe rust
- Septoria tritici blotch
- Tan spot
- Powdery mildew
- Fusarium head blight

R = Resistant; MR = Moderately resistant; I = Intermediate; MS = Moderately susceptible; S = Susceptible

### Agronomic characteristics

<table>
<thead>
<tr>
<th>Maturity</th>
<th>Height</th>
<th>Drought</th>
<th>Straw strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
<td>Short</td>
<td>Great</td>
<td>Poor</td>
</tr>
<tr>
<td>Late</td>
<td>Tall</td>
<td>Poor</td>
<td>Average</td>
</tr>
</tbody>
</table>

**Pedigree:** Duster and OSU experimental with Pioneer 2180.

**Adaptation:** South central Kansas.

**Strengths:** Yield potential, Hessian fly tolerance, acid soil tolerance, excellent grazing potential, good drought tolerance.

**Weaknesses:** Possible physiological leaf spot in some environments, moderately susceptible to Fusarium head blight.

**Comments:** Probably best adapted to southern Kansas. A good option for grazing, but it reaches first hollow stem earlier than Duster, leaving less time for grazing in the spring. Moderate levels of stripe rust resistance have helped this variety maintain its yield potential.

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**KanMark**

### Fungal diseases
- Leaf rust
- Stem rust
- Stripe rust
- Septoria tritici blotch
- Tan spot
- Powdery mildew
- Fusarium head blight

R = Resistant; MR = Moderately resistant; I = Intermediate; MS = Moderately susceptible; S = Susceptible

### Agronomic characteristics

<table>
<thead>
<tr>
<th>Maturity</th>
<th>Height</th>
<th>Drought</th>
<th>Straw strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
<td>Short</td>
<td>Great</td>
<td>Poor</td>
</tr>
<tr>
<td>Late</td>
<td>Tall</td>
<td>Poor</td>
<td>Average</td>
</tr>
</tbody>
</table>

**Pedigree:** Karl 92, WestBred experimental lines, and a CIMMYT spring wheat.

**Adaptation:** Central and west central Kansas, western Kansas under irrigation.

**Strengths:** Yield stability, excellent straw strength.

**Weaknesses:** Susceptible to acid soils and Fusarium head blight. Moderately susceptible to stripe rust.

**Comments:** Has an upright plant growth habit that makes it look thin, but generally yields better than it looks. Can be pushed for yields under irrigation due to good straw strength. Moderately susceptible to stripe rust and will often benefit from a foliar fungicide application.
Fungal diseases

- Leaf rust
- Stem rust
- Stripe rust
- Septoria tritici blotch
- Tan spot
- Powdery mildew
- Fusarium head blight

Viral diseases

- Soilborne mosaic
- Spindle streak mosaic
- Wheat streak mosaic
- Barley yellow dwarf

Agronomic characteristics

Pedigree: Colorado experimental lines.

Adaptation: Broadly adapted for many areas of Kansas but probably best suited for northern portions of the state.

Strengths: Good drought and acid soil tolerance, good test weight, high yield potential.

Weaknesses: Susceptible to leaf rust, average straw strength.

Comments: A good yield record in many areas of the state. Maturity has been hard to determine because it is photoperiod sensitive, which may cause it to head late in central and eastern Kansas where heat stress during the grain filling period is common.
LCS Pistol

### Fungal diseases
- - - - ♦ - Leaf rust
- ♦ - - - - Stem rust
- ♦ - - - - Stripe rust
- - - - ♦ - Septoria tritici blotch
- - - - ♦ - Tan spot
- - - - ♦ - Powdery mildew
- - - - ♦ - Fusarium head blight

### Agronomic characteristics

#### Pedigree:
T158 and T157.

#### Adaptation:
Wide adaptability across Kansas.

#### Strengths:
Good acid soil tolerance, good drought tolerance, resistance to soilborne mosaic virus.

#### Weaknesses:
Susceptible to stripe rust, stem rust, and Hessian fly.

#### Comments:
Better acid soil tolerance than T158, which may make it more broadly adapted for central Kansas. Susceptibility to stripe, leaf, and stem rusts makes it a good candidate for foliar fungicide applications. Straw strength is not as good as T158.

### Oakley CL

#### Fungal diseases
- - ♦ - - - Leaf rust
- ♦ - - - - - Stem rust
- ♦ - - - - - Stripe rust
- - ♦ - - - Septoria tritici blotch
- - ♦ - - - Tan spot
- - ♦ - - - Powdery mildew
- - - ♦ - - Fusarium head blight

#### Agronomic characteristics

#### Pedigree:
Above, Danby, and K-State Experimental lines.

#### Adaptation:
Western Kansas.

#### Strengths:
Resistance to wheat streak mosaic virus and stripe rust, good drought tolerance.

#### Weaknesses:
Average straw strength, susceptible to acid soils.

#### Comments:
An excellent yield record in western Kansas. It is a single gene Clearfield variety, which means it cannot tolerate the high rate of Beyond herbicide or methylated seed oils that improve the performance of this herbicide. Resistance to wheat streak mosaic is not effective at high temperatures and does not provide protection against Triticum mosaic.
### Fungal diseases

- Leaf rust
- Stem rust
- Stripe rust
- Septoria tritici blotch
- Tan spot
- Powdery mildew
- Fusarium head blight

**Agronomic characteristics**

- Maturity
- Height
- Drought
- Straw strength

**Pedigree:**

**Adaptation:** Central and western Kansas.

**Strengths:** Good disease package, good test weight, high tillering potential.

**Weaknesses:** Average straw strength.

**Comments:** Has done well in yield trials in recent years. Its medium–late maturity suggests it is best adapted for northern Kansas. It currently has good resistance to stripe rust and leaf rust. A good option following soybeans in north central Kansas, because the later planting may reduce the risk of lodging.

### Viral diseases

- Soilborne mosaic
- Spindle streak mosaic
- Wheat streak mosaic
- Barley yellow dwarf

**R** = Resistant; **MR** = Moderately resistant; **I** = Intermediate; **MS** = Moderately susceptible; **S** = Susceptible

### SY Flint

#### Fungal diseases

- Leaf rust
- Stem rust
- Stripe rust
- Septoria tritici blotch
- Tan spot
- Powdery mildew
- Fusarium head blight

**Agronomic characteristics**

- Maturity
- Height
- Drought
- Straw strength

**Pedigree:** WGRC experimental line, Jagalene, and Duster.

**Adaptation:** Central Kansas.

**Strengths:** Stripe rust resistance, Hessian fly resistance, good straw strength, and good grazing potential.

**Weaknesses:** Average drought tolerance, susceptible to leaf rust and wheat streak mosaic.

**Comments:** A relatively new variety from AgriPro. It appears to be best adapted for south central Kansas, where its grazing potential may be attractive to some growers. Its stripe rust resistance has been a plus in recent years.

### SY Monument

#### Fungal diseases

- Leaf rust
- Stem rust
- Stripe rust
- Septoria tritici blotch
- Tan spot
- Powdery mildew
- Fusarium head blight

**Agronomic characteristics**

- Maturity
- Height
- Drought
- Straw strength

**Pedigree:** AgriPro experimental lines.

**Adaptation:** Central and western Kansas.

**Strengths:** Good disease package, good test weight, high tillering potential.

**Weaknesses:** Average straw strength.

**Comments:** Has done well in yield trials in recent years. Its medium–late maturity suggests it is best adapted for northern Kansas. It currently has good resistance to stripe rust and leaf rust. A good option following soybeans in north central Kansas, because the later planting may reduce the risk of lodging.
### SY Wolf

**Fungal diseases**
- ♦ - - - - - • - Leaf rust
- ♦ - - - - - • - Stem rust
- • - - - - • - Stripe rust
- • - - * - • - Septoria tritici blotch
- • - - ♦ - • - Tan spot
- • - - ♦ - • - Powdery mildew
- ♦ - - - - ♦ - Fusarium head blight

**Viral diseases**
- ♦ - - - - - • - Soilborne mosaic
- ♦ - - ♦ - ♦ - Spindle streak mosaic
- ♦ - - ♦ - ♦ - Wheat streak mosaic
- ♦ - - ♦ - ♦ - Barley yellow dwarf

**Agronomic characteristics**
- Maturity
- Height
- Drought
- Straw strength

**Pedigree:** AgriPro experimental lines.

**Adaptation:** North central and northwest Kansas.

**Strengths:** Moderate resistance to tan spot and Septoria tritici blotch.

**Weaknesses:** Susceptible to acid soils and Hessian fly.

**Comments:** A medium-late maturity suggests it is best adapted to northern Kansas. A good option for planting after wheat in no-till production systems because it has good resistance to tan spot and other residue-borne fungal diseases.

---

### T158

**Fungal diseases**
- • - - - - - - • - Leaf rust
- ♦ - - ♦ - ♦ - Stem rust
- ♦ - - - - ♦ - Stripe rust
- • - - • - • - Septoria tritici blotch
- • - - • - • - Tan spot
- • - - ♦ - ♦ - Powdery mildew
- • - - ♦ - ♦ - Fusarium head blight

**Viral diseases**
- ♦ - - • - • - Soilborne mosaic
- ♦ - - ♦ - ♦ - Spindle streak mosaic
- • - - ♦ - ♦ - Wheat streak mosaic
- ♦ - - ♦ - ♦ - Barley yellow dwarf

**Agronomic characteristics**
- Maturity
- Height
- Drought
- Straw strength

**Pedigree:** Kansas experimental lines and T81.

**Adaptation:** Central and western Kansas.

**Strengths:** Good drought tolerance, yield stability, adult plant resistance to stripe rust, intermediate resistance to wheat streak mosaic.

**Weaknesses:** Susceptible to acid soils, leaf rust, and stem rust.

**Comments:** A good yield record in southwest Kansas and has done well in parts of central Kansas in recent years. Stripe rust resistance is most effective after the jointing and heading stages of growth. Generally considered to have good drought tolerance; however, recent observations suggest that it may not be as tolerant as Winterhawk or LCS Mint.
TAM 111

Fungal diseases

- - - - - - - ♦ - Leaf rust
- - ♦ - - - - - - Stem rust
- - - - - - ♦ - Stripe rust
- - - - ♦ - - - Septoria tritici blotch
- - - - ♦ - - - Tan spot
- - - - ♦ - Powdery mildew
- - - - - - ♦ - Fusarium head blight

Viral diseases

- - - - - - - ♦ - Soilborne mosaic
- - - - - - ♦ - Spindle streak mosaic
- - - - - - ♦ - Wheat streak mosaic
- - - - - - ♦ - Barley yellow dwarf

Agronomic characteristics

Pedigree: TAM 111 sibling, TAM 200, and WGRC experimental lines.

Adaptation: Western Kansas.

Strengths: Good drought tolerance, good grazing potential, good yield potential if treated with a foliar fungicide, intermediate reaction to wheat streak mosaic.

Weaknesses: Susceptible to stripe rust and leaf rust, below-average straw strength.

Comments: A reliable wheat variety for western Kansas. Susceptible to stripe rust and leaf rust. Benefits from a foliar fungicide when these diseases are active. Weak straw strength may predispose it to lodging and complications at harvest.

R = Resistant; MR = Moderately resistant; I = Intermediate; MS = Moderately susceptible; S = Susceptible

TAM 112

Fungal diseases

- - - - - - - ♦ - Leaf rust
- - ♦ - - - - - - Stem rust
- - - - - - ♦ - Stripe rust
- - - - ♦ - - - Septoria tritici blotch
- - - - ♦ - - - Tan spot
- - - - ♦ - Powdery mildew
- - - - - - ♦ - Fusarium head blight

Viral diseases

- - - - - - - ♦ - Soilborne mosaic
- - - - - - ♦ - Spindle streak mosaic
- - - - - - ♦ - Wheat streak mosaic
- - - - - - ♦ - Barley yellow dwarf

Agronomic characteristics

Pedigree: TAM 107, Centurk, and Texas experimental lines.

Adaptation: Western Kansas.

Strengths: Drought tolerance, good yield potential if treated with a foliar fungicide, good shattering reputation, stem rust resistance, and good test weight.

Weaknesses: Susceptible to acid soils, leaf rust, stripe rust, barley yellow dwarf, and wheat streak mosaic.

Comments: A successful variety in western Kansas because of its drought tolerance. In recent years, its disease susceptibility has resulted in lower yields relative to other, more resistant varieties. Still a good option in western Kansas, but plan to use a fungicide in years when stripe rust and leaf rust are a problem.

R = Resistant; MR = Moderately resistant; I = Intermediate; MS = Moderately susceptible; S = Susceptible
TAM 114

Fungal diseases

- - - - - - - - Leaf rust
- - - - - - - - Stem rust
- - - - - - - - Stripe rust
- - - - - - - - Septoria tritici blotch
- - - - - - - - Tan spot
- - - - - - - - Powdery mildew
- - - - - - - - Fusarium head blight

Agronomic characteristics

Pedigree: TAM 114, Texas experimental lines, and TAM 200.
Adaptation: Western Kansas.
Strengths: Good drought tolerance, moderately resistant to leaf rust and stripe rust, good milling and baking characteristics.
Weaknesses: Moderately susceptible to wheat streak mosaic and stem rust.
Comments: A good yield record in western Kansas. Drought tolerance similar to TAM 111 but better resistance to stripe rust and leaf rust. Has shown good grazing potential with forage yield potentials comparable to Duster.

Viral diseases

- - - - - - - - Soilborne mosaic
- - - - - - - - Spindle streak mosaic
- - - - - - - - Wheat streak mosaic
- - - - - - - - Barley yellow dwarf

Tatanka

Fungal diseases

- - - - - - - - Leaf rust
- - - - - - - - Stem rust
- - - - - - - - Stripe rust
- - - - - - - - Septoria tritici blotch
- - - - - - - - Tan spot
- - - - - - - - Powdery mildew
- - - - - - - - Fusarium head blight

Agronomic characteristics

Pedigree: T151 with K-State experimental lines.
Adaptation: Western and central Kansas.
Strengths: Moderate resistance to stripe rust, intermediate resistance to barley yellow dwarf, good tolerance to acid soils.
Weaknesses: Below-average straw strength, susceptible to Hessian fly.
Comments: A strong yield record in western Kansas and has done better than TAM 111 in many trials. Good drought tolerance and is currently resistant to stripe rust. Below-average straw strength, which could become an issue in some high-yielding environments.

Viral diseases

- - - - - - - - Soilborne mosaic
- - - - - - - - Spindle streak mosaic
- - - - - - - - Wheat streak mosaic
- - - - - - - - Barley yellow dwarf

R = Resistant; MR = Moderately resistant; I = Intermediate; MS = Moderately susceptible; S = Susceptible
WB4458

Fungal diseases

- - - - - • Leaf rust
• - - - - - Stem rust
- - - • - - Stripe rust
• - - • - - Septoria tritici blotch
• - - - • - Tan spot
• - - - • Powdery mildew
- - - - • Fusarium head blight

**Viral diseases**

• - - - - - Soilborne mosaic
• - - - - - Spindle streak mosaic
• - - - • Wheat streak mosaic
• - - - • Barley yellow dwarf

**Agronomic characteristics**

**Maturity**: Early, Late
**Height**: Short, Tall
**Drought**: Great, Poor
**Straw strength**: Average

**Pedigree**: TAM 203 and Pioneer experimental lines with 2180.
**Adaptation**: Central and eastern Kansas, western Kansas under irrigation.
**Strengths**: Good yield potential, good straw strength, resistance to stripe rust, good acid soil tolerance.
**Weaknesses**: Short stature may complicate harvest in dry years. Moderately susceptible to wheat streak mosaic.
**Comments**: A short variety with early maturity. Good yield record in central Kansas, but its early maturity makes it vulnerable to spring freeze injury. Often used in blends for central Kansas.

**WB-Cedar**

Fungal diseases

- - - • - Leaf rust
• - - - - - Stem rust
• - • - - - Stripe rust
• - - • - - Septoria tritici blotch
• - - • - Tan spot
• - • - - Powdery mildew
- • - - - Fusarium head blight

**Viral diseases**

• - - - - - Soilborne mosaic
• - - - - - Spindle streak mosaic
• - - - • Wheat streak mosaic
• - - - • Barley yellow dwarf

**Agronomic characteristics**

**Maturity**: Early, Late
**Height**: Short, Tall
**Drought**: Great, Poor
**Straw strength**: Average

**Pedigree**: Overley and WestBred experimental lines.
**Adaptation**: Central and west central Kansas.
**Strengths**: Good yield potential, good straw strength, tolerance to acid soils.
**Weaknesses**: Susceptible to Fusarium head blight and powdery mildew, below-average tillering potential.
**Comments**: Excellent yield record in central Kansas. May not be a good choice following corn because it is highly susceptible to Fusarium head blight. Above-average seed size. May require adjustments in seeding rate to avoid suboptimal stands.

R = Resistant; MR = Moderately resistant; I = Intermediate; MS = Moderately susceptible; S = Susceptible
### WB-Grainfield

**Fungal diseases**
- • • • • • • • • Leaf rust
- • • • • • • • • Stem rust
- • • • • • • • • Stripe rust
- • • • • • • • • Septoria tritici blotch
- • • • • • • • • Tan spot
- • • • • • • • • Powdery mildew
- • • • • • • • • Fusarium head blight

**Viral diseases**
- • • • • • • • • Soilborne mosaic
- • • • • • • • • Spindle streak mosaic
- • • • • • • • • Wheat streak mosaic
- • • • • • • • • Barley yellow dwarf

**Agronomic characteristics**

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<th>Drought</th>
<th>Straw strength</th>
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<tr>
<td>Early</td>
<td>Late</td>
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</table>

**Pedigree:** WestBred and K-State experimental lines.

**Adaptation:** Central and western Kansas.

**Strengths:** Good drought tolerance, resistance to leaf rust, moderate resistance to stripe rust, good shattering reputation.

**Weaknesses:** Moderately susceptible to barley yellow dwarf and wheat streak mosaic.

**Comments:** A good yield potential, but its medium-late maturity suggests it is best adapted for north central and northwest Kansas. Good drought tolerance. Stripe rust resistance has given it an advantage over many other varieties in recent years.

### WB-Redhawk

**Fungal diseases**
- • • • • • • • • Leaf rust
- • • • • • • • • Stem rust
- • • • • • • • • Stripe rust
- • • • • • • • • Septoria tritici blotch
- • • • • • • • • Tan spot
- • • • • • • • • Powdery mildew
- • • • • • • • • Fusarium head blight

**Viral diseases**
- • • • • • • • • Soilborne mosaic
- • • • • • • • • Spindle streak mosaic
- • • • • • • • • Wheat streak mosaic
- • • • • • • • • Barley yellow dwarf

**Agronomic characteristics**

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**Pedigree:** CIMMYT spring wheat, K-State experimental lines with Jagger backgrounds.

**Adaptation:** Central and eastern Kansas.

**Strengths:** Good yield potential if treated with a foliar fungicide. Tolerance to acid soils, moderate resistance to leaf rust, good test weight.

**Weaknesses:** Very susceptible to stripe rust and Fusarium head blight.

**Comments:** A medium-height variety with an early maturity. It has an inconsistent yield record in variety performance tests because of its vulnerabilities to stripe rust and Fusarium head blight.
**Winterhawk**

### Fungal diseases

- Leaf rust
- Stem rust
- Stripe rust
- Septoria tritici blotch
- Tan spot
- Powdery mildew
- Fusarium head blight

### Agronomic characteristics

**Pedigree:** WestBred experimental lines.

**Adaptation:** Central and western Kansas.

**Strengths:** Above average drought tolerance, good yield potential, good test weight, good straw strength.

**Weaknesses:** Intermediate tolerance to acid soils. Susceptible to leaf rust, stripe rust and stem rust.

**Comments:** Excellent yield record under dry conditions in western Kansas and the best available drought tolerance. This variety is best adapted to northwest Kansas because of its medium-late maturity and intermediate tolerance to acid soils.

**Zenda**

### Fungal diseases

- Leaf rust
- Stem rust
- Stripe rust
- Septoria tritici blotch
- Tan spot
- Powdery mildew
- Fusarium head blight

### Agronomic characteristics

**Pedigree:** Overley sibling, W04-417, and Everest.

**Adaptation:** Central and eastern Kansas.

**Strengths:** Moderate resistance to Fusarium head blight and stripe rust, tolerance to acid soils.

**Weaknesses:** Moderately susceptible to leaf rust.

**Comments:** A new variety from the Kansas Wheat Alliance that should be widely available in the fall of 2017. A strong yield record in central Kansas. A step up in baking quality from Everest and has similar resistance to Fusarium head blight. It is more susceptible to barley yellow dwarf than Everest.
Antero (White)

Fungal diseases
- - - - - -  ♦ - - Leaf rust
- ♦ - - - - - Stem rust
- - - - - ♦ - - Stripe rust
- - - - - - - - ♦ Septoria tritici blotch
- - - - - - - ♦ Tan spot
- - - - - - ♦ Powdery mildew
- - - - - - - ♦ Fusarium head blight

Viral diseases
- - - - - - - - - Soilborne mosaic
- - - - - - - - - Spindle streak mosaic
- - - - - - - - - Wheat streak mosaic
- - - - - - - - - Barley yellow dwarf

Agronomic characteristics
Pedigree: TAM 111, K-State experimental lines, Trego, and Betty sibling.
Adaptation: Western Kansas.
Strengths: Good yield potential, moderate resistance to stripe rust, resistance to stem rust, good straw strength.
Weaknesses: Moderately susceptible to leaf rust, susceptible to wheat streak mosaic.
Comments: An excellent yield record in western Kansas under irrigated and dryland. Currently considered moderately resistant to stripe rust but is moderately susceptible to leaf rust and wheat streak mosaic.

Danby (White)

Fungal diseases
- - - - - -  ♦ - - Leaf rust
- ♦ - - - - - Stem rust
- - - - - ♦ - - Stripe rust
- - - - - - - - ♦ Septoria tritici blotch
- - - - - - - ♦ Tan spot
- - - - - - ♦ Powdery mildew
- - - - - - - ♦ Fusarium head blight

Viral diseases
- - - - - - - - - Soilborne mosaic
- - - - - - - - - Spindle streak mosaic
- - - - - - - - - Wheat streak mosaic
- - - - - - - - - Barley yellow dwarf

Agronomic characteristics
Pedigree: Trego and Jagger sibling.
Adaptation: Western Kansas.
Strengths: Tolerance to pre-harvest sprouting, resistance to wheat streak mosaic virus, good test weight and milling characteristics, good drought tolerance.
Weaknesses: Susceptible to leaf rust. Below-average straw strength.
Comments: A good yield record in western Kansas and the number one white wheat in the state. Good drought tolerance. Moderately susceptible to the races of stripe rust that can overcome the Jagger type of resistance but has performed better than expected in recent years.
**Joe (White)**

### Fungal diseases

-  ♦  ♦  ♦  ♦  ♦  ♦  Leaf rust
-  ♦  ♦  ♦  ♦  ♦  ♦  Stem rust
-  ♦  ♦  ♦  ♦  ♦  ♦  Stripe rust
-  ♦  ♦  ♦  ♦  ♦  ♦  Septoria tritici blotch
-  ♦  ♦  ♦  ♦  ♦  ♦  Tan spot
-  ♦  ♦  ♦  ♦  ♦  ♦  Powdery mildew
-  ♦  ♦  ♦  ♦  ♦  ♦  Fusarium head blight

**R** = Resistant; **MR** = Moderately resistant; **I** = Intermediate; **MS** = Moderately susceptible; **S** = Susceptible

### Viruses diseases

-  ♦  ♦  ♦  ♦  ♦  ♦  Soilborne mosaic
-  ♦  ♦  ♦  ♦  ♦  ♦  Spindle streak mosaic
-  ♦  ♦  ♦  ♦  ♦  ♦  Wheat streak mosaic
-  ♦  ♦  ♦  ♦  ♦  ♦  Barley yellow dwarf

**R** = Resistant; **MR** = Moderately resistant; **I** = Intermediate; **MS** = Moderately susceptible; **S** = Susceptible

### Agronomic variables

**Maturity**

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**Height**

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**Drought**

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**Straw strength**

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### Pedigree:

Jagger, Arlin, Trego, and Colorado experimental lines.

### Adaptation:

Western Kansas.

### Strengths:

Excellent yield potential, resistance to wheat streak mosaic, stripe rust, leaf rust, good straw strength.

### Weaknesses:

Moderately susceptible to pre-harvest sprouting, susceptible to soilborne mosaic virus and Hessian fly.

### Comments:

A new white wheat with an excellent yield record in western Kansas. Its resistance to stripe rust and wheat streak mosaic have been an asset in recent years. Resistance to wheat streak mosaic is less effective at high temperatures. Early observations suggest that it is susceptible to Triticum mosaic. More susceptible to pre-harvest sprouting than Danby.
## Appendix 1. Overall listing of disease and insect reactions.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Soilborne Mosaic</th>
<th>Spindle Streak Mosaic</th>
<th>Wheat Streak Mosaic</th>
<th>Barley Yellow Dwarf</th>
<th>Leaf Rust</th>
<th>Stem Rust</th>
<th>Stripe Rust</th>
<th>Septoria Tritici Blotch</th>
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Appendix 1. Overall listing of disease and insect reactions.

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<th>Stem Rust</th>
<th>Stripe Rust</th>
<th>Septoria Tritici Blotch</th>
<th>Tan Spot</th>
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<sup>a</sup> Rating codes are: 1 – Highly resistant; 3 – Moderately resistant; 5 – Intermediate; 7 – Moderately susceptible; 9 – Highly susceptible. Blanks indicate insufficient information.
<sup>b</sup> Hessian fly ratings are based on results of greenhouse tests with Kansas (Great Plains) biotype of Hessian fly. Hessian fly populations are often a mixture of biotypes thus results can vary among years and locations.
<sup>c</sup> Indicates resistance has been inconsistent in greenhouse testing.
<sup>d</sup> CLEARFIELD<sup>®</sup> variety, which is resistant to Beyond herbicide.

### Hard White Winter Wheat

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