

# Wheat Variety Disease and Insect Ratings 2008

MF-991 • Wheat Ratings



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Diseases and insect pests limit wheat yields in Kansas almost every year. Genetic resistance to diseases and insect pests is usually the most effective, most economical, and most environmentally sound method of control. The ratings in this fact sheet are intended to help producers select wheat varieties that will reduce the risk of serious yield losses. No variety is resistant to all pathogens and pests, but producers can reduce the risks of yield loss by selecting several varieties that differ in their resistance profile. This strategy will reduce the risk of a devastating yield loss from one disease or insect problem at the whole farm level. Consult the latest K-State wheat performance test report for details on other important characteristics including yield potential and maturity class.

These resistance ratings represent the results of multiple field and greenhouse evaluations by public and private wheat researchers. Although great efforts were made to confirm the accuracy of these ratings no guarantee can be made that the information is without error. Disease and pest reactions may vary with weather and populations of pathogens or pests.

Diseases and pests differ considerably in the magnitude of yield loss that they cause and in their prevalence across the state. Therefore, it is important to consider regionally important diseases and pests when selecting wheat varieties. Contact your local K-State Research and Extension office for the most recent information about diseases in your area. The following is a brief description of several important diseases and insects.

**Soilborne Mosaic (SBM).** SBM is prevalent in the eastern half of the state, especially in the wetter areas of fields. Yield losses in susceptible varieties often exceed 50 percent. Once a field has become infested with soilborne mosaic virus, there is no way to eradicate it. Consequently, resistant varieties should be planted in any field where SBM has ever appeared.

**Wheat Spindle Streak Mosaic (WSSM).** WSSM often occurs with SBM because both viruses are carried by the same soil-borne organism and require cool temperatures for symptom expression. Losses to

WSSM are often less severe than those of SBM, but can be significant in highly susceptible varieties. Varieties with a rating of 8 or 9 should be avoided in fields where WSSM has appeared before.

**Wheat Streak Mosaic (WSM).** Wheat streak mosaic is an important viral disease in western Kansas. The ratings for WSM may be complicated by interactions with other viruses including High Plains Virus (HPV), and Triticum Mosaic Virus (TrMV). When WSM is combined with one of these other viruses the severity of disease symptoms can be much greater than if the plants were being affected by WSM alone. Control of WSM requires an integrated approach: 1) destroy all volunteer wheat within ½ mile of the field at least 2 weeks before planting, 2) plant after the “Hessian fly-free” date for your area, and 3) avoid varieties that are highly susceptible to WSM. These management practices should also reduce the risk of severe losses to HPV and TrMV.

**Barley Yellow Dwarf (BYD).** Barley yellow dwarf can occur almost anywhere in Kansas. Visual symptoms of BYD are not always the best indicator of potential yield loss; therefore, the field ratings of BYD may be less reliable than the ratings for other diseases. No varieties have high levels of resistance to BYD, but some are more tolerant than others. This viral disease is spread by aphids, and the use of insecticide seed treatments at the highest labeled rate can suppress early season aphids and thus, BYD.

**Leaf Rust.** Leaf rust is an important disease in all parts of Kansas, and was probably the most important disease this past year. The fungus that causes leaf rust usually blows in from Texas and Oklahoma, but can occasionally overwinter in Kansas. Leaf rust often results in 5 to 10 percent yield loss, but losses can exceed 30 percent if the disease becomes severe during the early stages of grain development. Selecting varieties with leaf rust ratings of less than 4 will reduce the risk for disease losses.

**Stem Rust.** Stem rust also survives in the southern United States but usually does not spread into Kansas until late in the growing season. In most cases, yield

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## Hard Red Winter Wheat <sup>a</sup>

Variety	Soilborne Mosaic	Spindle Streak Mosaic	Wheat Streak Mosaic	Barley Yellow Dwarf	Leaf Rust	Stem Rust	Stripe Rust	Speckled Leaf Blotch	Glume Blotch	Tan Spot	Powdery Mildew	Head Scab	Hessian Fly <sup>b</sup>	Russian Wheat Aphid <sup>c</sup>
2137	1	5	6	5	7	7	8	5	7	5	4	8	8	9
2145	1		9	6	8	3	5	5		8	8	8	5	9
2163	1	4	4	5	7	4	7	5	8	4	2	8	9	9
2174	1	5	8	5	7	8	7	5	7	5	2	6	9	9
Above <sup>d,e</sup>	9		5	7	9	3	8	6		7	1		9	9
Alliance	9	9	9	9	8	4	3	7		8	6	5	3	9
AP502CL <sup>d,e</sup>	9	9	6	7		4	8	7		7	1		9	9
Armour	1	1	6		2	4	2	6		6	2	7	5	9
Art	1	1	6		3	2	2	5		7	3	6	9	9
Bond CL <sup>e</sup>	8		7		9	7	8	6		4	1		9	9
Coronado	1	4	6	6	7	5	6	6	6	6	5	9	5	9
Cutter	3	4	6	7	8	2	3	5		6	7	8	9	9
Deliver	1		7		2	7	2	4		5	3	9	9	9
Dominator	1	4	7	6	9	4	6	5	4	5	4	7	5	9
Dumas	8	7	7	7	6	3	7	4		4	6	6	9	9
Duster	1	1	7	4	3	7	3	7		9	3	9	2	9
Endurance	2	8	8		5	7	5	6		7	5	6	9	9
Fuller	1	1	5	6	3	7	2	6		6	6	7	9	9
Hatcher	7		8	8	9	4	4	5		5	5		2	9
Hawken	1	1	9		2	2	3			6		8	9	9
Ike	1	5	9	6	9	3	6	7	6	8	6	6	3	9
Jagalene	2	3	5	7	9	2	4	4		8	9	8	9	9
Jagger	2	4	5	7	9	5	3	3	6	4	7	7	9	9
Karl/Karl 92	1	3	9	8	8	6	5	5	3	3	4	6	9	9
Keota	1		7	8	9	7	4	7		7	7		9	9
Larned	9	8	9	9	8	2	2	8	8	9	5	5	3	9
Longhorn	9	7	5	6	4	4	6	7	5	6	4		9	9
Millennium	9		8	7	2	3	3	7		7			2	9
Neosho	2	4	5		9	2	2	4		6	3		8	9
OK Bullet	4	4	6	6	7	7	4	6		5	8	8	9	9
Onaga	1	5	5	6	6	8	6	5		8	6	5	4	9
Overland	8		5		2	7		6		7		5	5	9
Overley	1	4	5	5	7	3	2	5		5	7	9	9	9
PostRock	2	5	7	7	4	7	4	8		6	8	7	9	9
Protection <sup>e</sup>	4		7		9	4	2	6		7	7	8	9	9
Santa Fe	1		7	8	3	4	4	2		6	6	7	9	9
Shocker	1		8	8	4	4	2	4		5	5	8	9	9
Smoky Hill	1		8	8	5	6	1	4		5	5	8	9	9
Spartan	1		4		3	2	2	6		7	2	7	9	9
Stanton <sup>c</sup>	8	5	6	8	2	2	7	7		9	9	7	8	9
Sturdy 2K	2				4		6	6		7	5	8	9	9
T81	8	4	8	6	8	3	3	7	7	6	3	5	8	9
TAM 110 <sup>d</sup>	9	9	5	8	9	4	8	6	6	7	1	8	9	9
TAM 111	8	8	7	7	9	1	4	5		5	6	8	7	9

Variety	Soilborne Mosaic	Spindle Streak Mosaic	Wheat Streak Mosaic	Barley Yellow Dwarf	Leaf Rust	Stem Rust	Stripe Rust	Speckled Leaf Blotch	Glume Blotch	Tan Spot	Powdery Mildew	Head Scab	Hessian Fly <sup>b</sup>	Russian Wheat Aphid <sup>c</sup>
TAM 112	8		5		8		8	5		7	1	8	9	9
Tarkio	3				2					7		9	9	9
Thunderbolt	8	8	6	7	7	8	5	6		7	7	7	9	9
Wesley	1	4	8	7	6	3	2	5		6	7	7	9	9
Winterhawk	1	1	8		7	8	1	7		7	6	8	9	9

## Soft Red Winter Wheat

Variety	Soilborne Mosaic	Spindle Streak Mosaic	Wheat Streak Mosaic	Barley Yellow Dwarf	Leaf Rust	Stem Rust	Stripe Rust	Speckled Leaf Blotch	Glume Blotch	Tan Spot	Powdery Mildew	Head Scab	Hessian Fly <sup>b</sup>	Russian Wheat Aphid <sup>c</sup>
Coker 9663	7	6		3	6		3	7				6	9	9
MFA 2020					7						6		3	9
Pat	1	1		6	4		1	7					5	9
Pioneer 25R47					6		2				1		9	9
Roane	7	7		3	5	8	1	5	7	7	1	5	1	9
Sabbe	4	7	5		8		5	1			1		9	9
Truman	3	6		5	6	6	3	4			9	3	9	9

## Hard White Winter Wheat

Aspen	1	1	6		6	4	2				2		9	9
Danby	7		5	8	8	2	2	6		8	7	7	9	9
NuFrontier	4		8	6	9		2	7		7	2	4	7	9
NuHills	2	2	6	6	9		3	7		7	8		9	9
Platte	4	4	6		4	3	9	7		7	7		9	9
RonL	4		2		7	6	2	6			5	8	9	9
Trego	2	4	7	7	8	3	8	7	5	8	8	9	8	9

<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> Ratings are based on results of greenhouse tests with Kansas (Great Plains) biotype of Hessian fly or observations from regional nursery trials. Hessian fly populations are often a mixture of biotypes thus results can vary among years and locations.

<sup>c</sup> New Russian wheat aphid biotype is thought to be virulent on all currently available commercial varieties.

<sup>d</sup> Resistant to greenbug biotypes E, I, and K.

<sup>e</sup> CLEARFIELD™ variety, which is resistant to Beyond herbicide.

losses are negligible. However, if the stem rust arrives early, it can cause heavy losses on susceptible varieties. Planting a large percentage of your acres with varieties that are susceptible to stem rust is risky.

**Stripe Rust.** Stripe rust was present at low levels in many parts of Kansas in 2008, but it did not appear to cause the major losses experienced 2003 and 2005. This disease is a significant threat to wheat production anywhere in Kansas. Many widely grown varieties have excellent resistance to this disease, and highly susceptible varieties should be avoided when possible.

**Speckled Leaf Blotch.** This disease is common throughout Kansas, but it is most likely to become serious in the eastern half of the state. It is favored by extended periods of cool and rainy weather. Many varieties have moderate levels of resistance to speckled leaf blotch.

**Glume Blotch.** Glume blotch affects the developing wheat heads and can result in significant reductions to test weight and grain quality. Glume blotch is caused by two fungal pathogens; the speckled leaf blotch pathogen and the pathogen that causes *Stagonospora* leaf blotch. It is difficult to distinguish these two diseases in the field; consequently, the ratings are combined. Varieties with a rating of 5 or less have good resistance to both pathogens.

**Tan Spot.** Tan spot is an important disease in eastern and central Kansas. The tan spot fungus survives in wheat debris that is left on the soil surface, and the disease is most serious when continuous wheat is combined with conservation tillage practices. Crop rotation for at least 1 full year will reduce the risk of severe tan spot. When this is not possible, avoid varieties with a rating of 7 or greater.

**Powdery Mildew.** Powdery mildew was present at moderate to high levels the past 2 years. Powdery mildew thrives in thick stands of wheat under cool, humid conditions. Powdery mildew typically does not result in serious yield reductions if it remains restricted to the lower canopy. However, it can reduce yield and test weight when infections occur on the flag leaves and heads. The risk of powdery mildew is greatest in the

eastern part of the state, and susceptible varieties should be avoided in these areas.

**Head Scab (*Fusarium* head blight).** Scab can occur anywhere in Kansas, but serious losses are usually limited to the eastern half of the state. Scab was a problem in the state during the 2008 growing season. Planting wheat into fields with large amounts of corn residues on the soil surface and irrigating heavily increases the risk of disease.

**Hessian Fly.** The Hessian fly occurs in most areas of Kansas. The potential for damage is usually greater in the eastern half of the state as infestations are favored by high humidity and abundant rainfall. Injury occurs in the fall as well as in the spring. Once a field becomes infested, no remedial measures can be applied. Control is based entirely on prevention and depends on good management and community cooperation. Important elements of fly management include: burying the stubble following harvest (where erosion control practices allow) to reduce over-summering survival; controlling volunteer wheat; using resistant varieties; and planting after the fly-free date. Infestations of Hessian fly have been on the increase in recent years probably as a result of less tillage and a lack of well-adapted resistant varieties. Current breeding efforts are focusing on developing new Hessian fly resistant varieties that will hopefully be released in the next few years.

**Russian Wheat Aphid.** This pest occasionally occurs in western Kansas, with significant damage most likely in counties bordering Colorado. Damage may occur either in the fall or in the spring. Risk of early fall infestation may be greater where wheat is planted close to undisturbed volunteer wheat. Recently, a new biotype of this aphid was detected that is virulent on previously resistant varieties; thus, all commercially available wheat varieties should be considered susceptible to Russian wheat aphids.

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