



Wheat Variety Disease and Insect Ratings 2019

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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.

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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, and drought tolerance 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 about the characteristics of

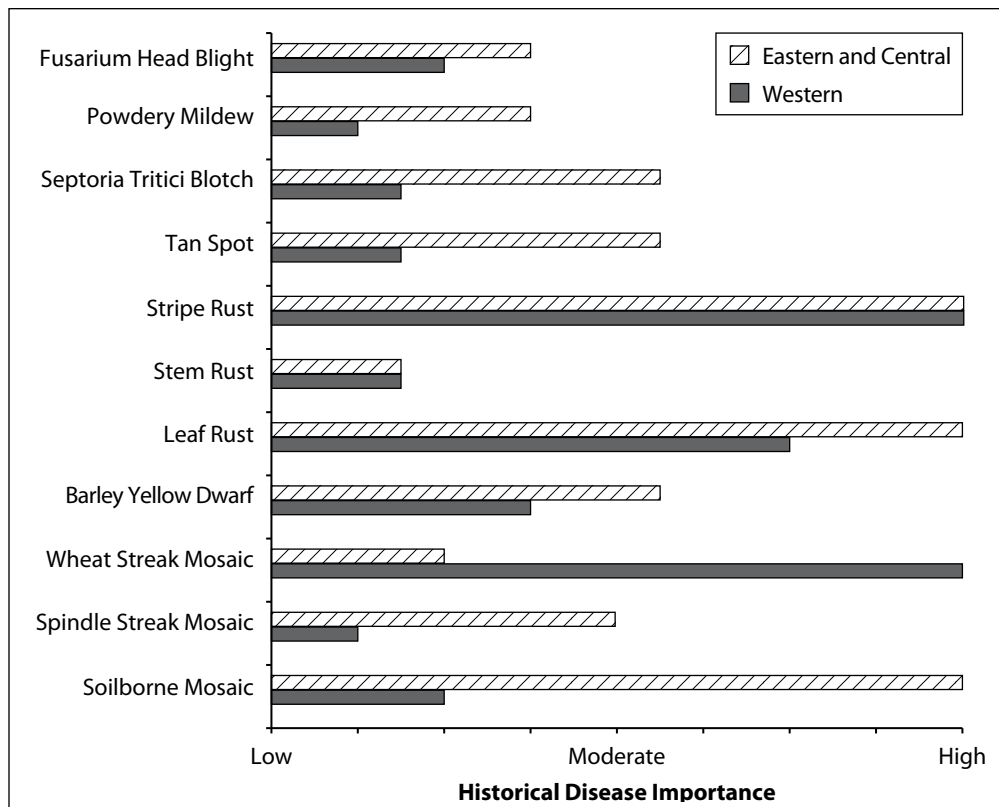


Figure 1. Regional importance of wheat diseases in Kansas. The importance of wheat diseases is based on their potential to cause yield loss and how often it reaches damaging levels in different regions of the state. The relative importance of the diseases is the product of historical records of disease 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.

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.

Characteristic	Eastern and	
	Central Kansas	Western Kansas
Maturity	Medium or earlier	Medium-late or earlier
Height	Medium or shorter	Medium or taller
Drought tolerance	Moderately good or good	Good or excellent
Straw strength	Average or better	Average or better
Acid soil tolerance	Moderately tolerant or better	Generally not applicable

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.

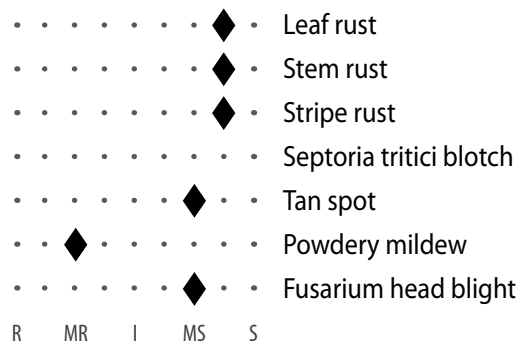
Table 2. Experimental wheat disease resistance summary. *The wheat disease resistance summary combines resistance ratings for multiple diseases. It weights each disease relative to its historical regional importance in Kansas. Varieties with genetic resistance to the historically important diseases within 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	Eastern and Central			Western		
Above Average: Varieties have moderate or high levels of genetic resistance to most diseases common in this region	Bob Dole	Gallagher	SY Wolf	Bob Dole	Joe (W)	Smith's Gold
	Doublestop CL Plus	LCS Chrome	WB4269	Clara CL (W)	Larry	SY Wolf
	Everest	Smith's Gold	Zenda	Doublestop CL Plus	LCS Chrome	Tatanka
				Gallagher	Oakley CL	Zenda
Average: Varieties have moderate or high levels of genetic resistance to some of the diseases common in this region	1863	KanMark	SY Grit	Danby (W)	SY Rugged	TAM 113
	Fuller	Larry	Tatanka	KanMark	T158	TAM 114
	Iba	SY Benefit	WB4458	SY Monument		WB4721
Below average: Varieties are susceptible to many of the diseases common in this region	AP503 CL2	LCS Pistol	WB-Grainfield	Antero (W)	Denali	SY Flint
	LCS Mint	T158	Winterhawk	Avery	Langin	SY Grit
		SY Flint		Brawl CL Plus	LCS Mint	WB-Grainfield
				Byrd	LCS Pistol	Winterhawk

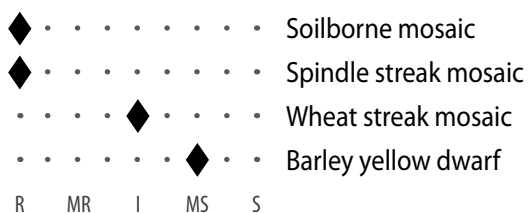
(W) = White wheat varieties

Avery

Fungal diseases

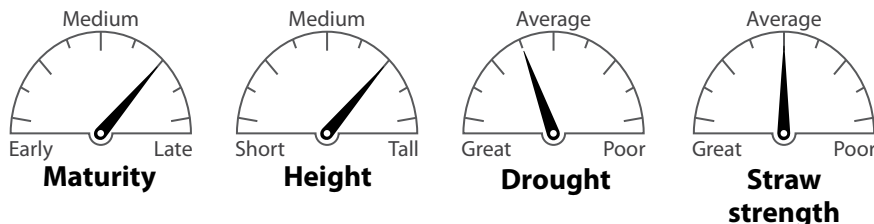


Viral diseases



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

Agronomic characteristics



Pedigree: Byrd and TAM 112

Adaptation: Western Kansas.

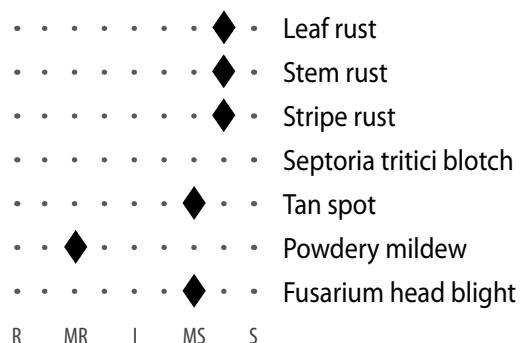
Strengths: Drought tolerance, intermediate resistance to wheat curl mite.

Weaknesses: Susceptible to all rust diseases, intermediate straw strength.

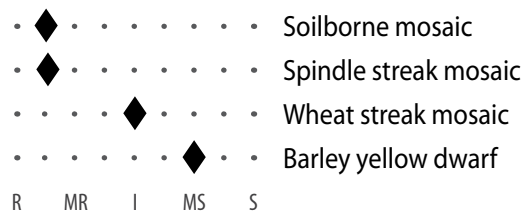
Comments: Slightly taller, later, and better yield potential than Byrd. Plan on a foliar fungicide. Resistance to wheat curl mite could reduce the risk of severe wheat streak mosaic virus.

Byrd

Fungal diseases

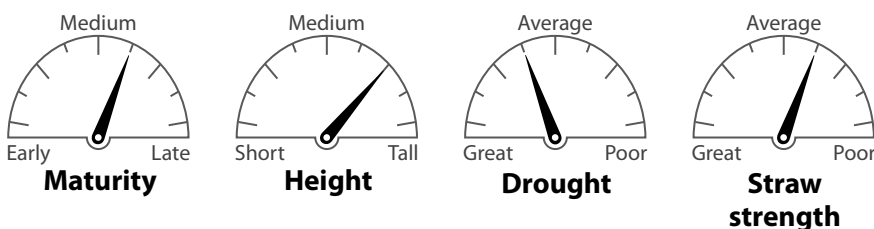


Viral diseases



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

Agronomic characteristics



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

Adaptation: Western Kansas.

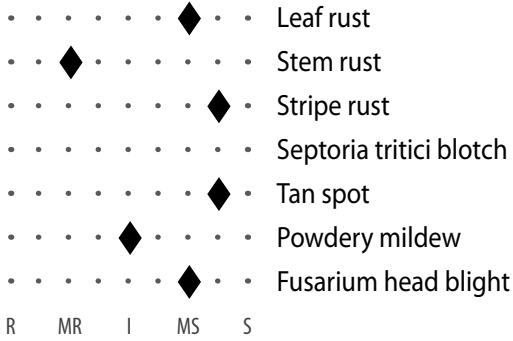
Strengths: Good drought tolerance, good yield potential, good milling and baking characteristics, intermediate resistance to wheat curl mite and wheat streak mosaic.

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

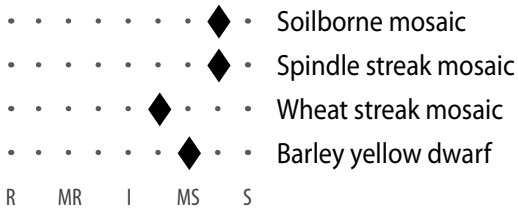
Comments: Drought tolerance is key to the success of this variety. Highly susceptible to rust diseases. Foliar fungicides may be needed to maintain its yield potential when stripe rust is a problem. Smaller seed size than many varieties. May require adjustments in planting rate to avoid plant populations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

Denali

Fungal diseases

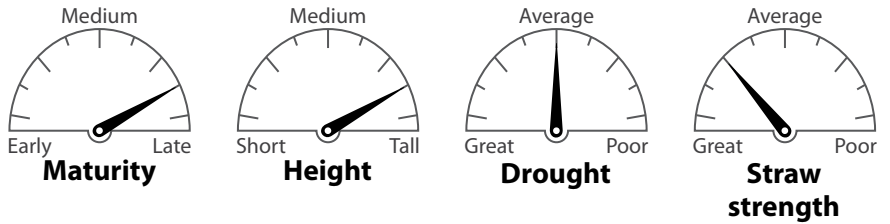


Viral diseases



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MS = Moderately susceptible; S = Susceptible

Agronomic characteristics



Pedigree: TAM 111, Colorado experimental lines, and Yumar.

Adaptation: Western Kansas.

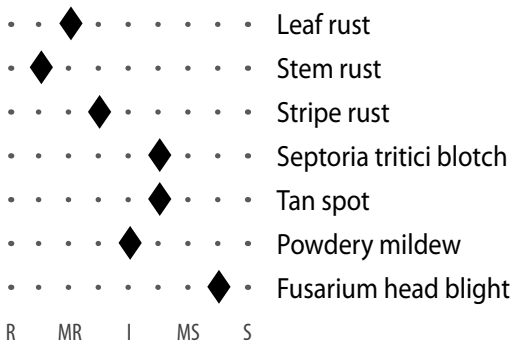
Strengths: Long coleoptile, good test weight, good yield potential, and moderately resistant to stem rust.

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

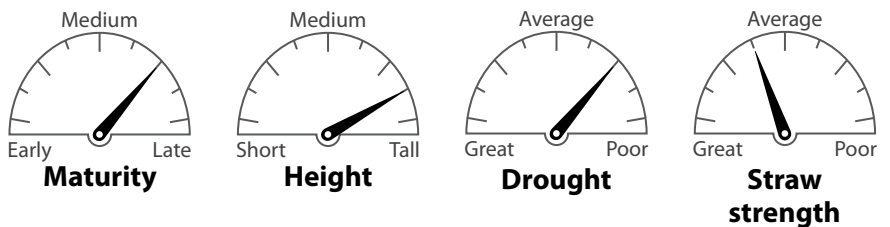


Viral diseases



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

Agronomic characteristics



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

Adaptation: Central and west central Kansas.

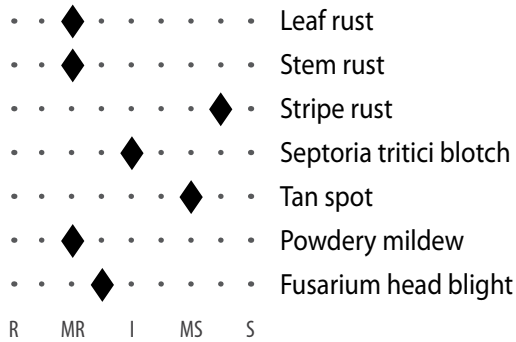
Strengths: Two-gene Clearfield, good acid soil tolerance, good grazing potential, good test weight.

Weaknesses: Intermediate reaction to stripe rust.

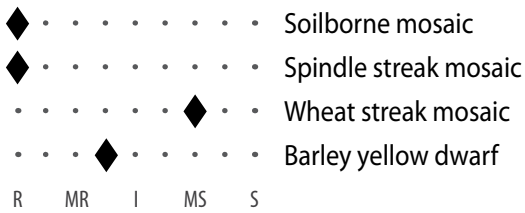
Comments: A good yield record in south central Kansas; however, its medium-late maturity increases the risk that it will be exposed to heat stress during the grain-filling stages in some years. A good Clearfield option where adapted. Often has an uneven canopy; although recent efforts by OSU may reduce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

Everest

Fungal diseases

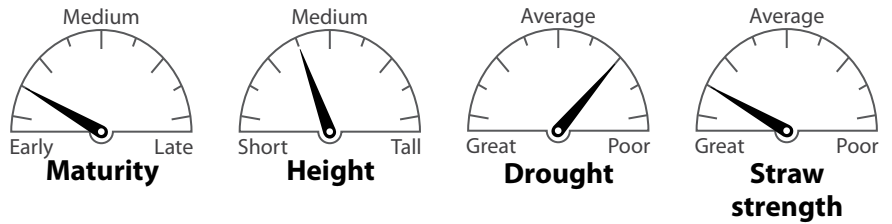


Viral diseases



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Agronomic characteristics



Pedigree: Pioneer experimental lines with the white wheat Betty.

Adaptation: Central and eastern Kansas.

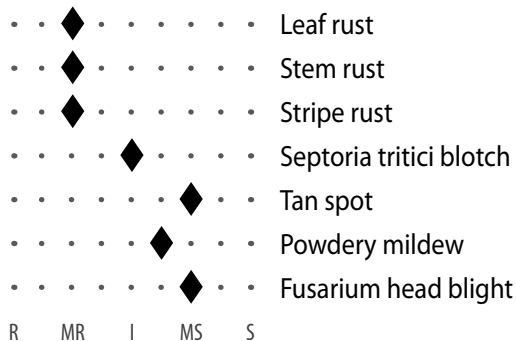
Strengths: Resistance to Hessian fly, moderate resistance to barley yellow dwarf and Fusarium head blight, acid soil tolerance.

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

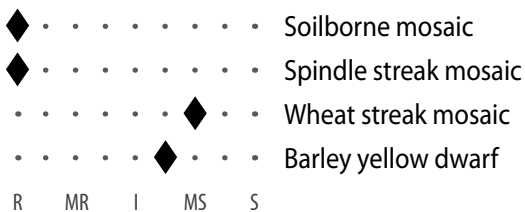
Comments: A medium to medium-short variety with early maturity. Fall tiller formation is important to ensure yield potential. Resistance to Fusarium head blight makes it a great option to follow corn in central and eastern Kansas.

Gallagher

Fungal diseases

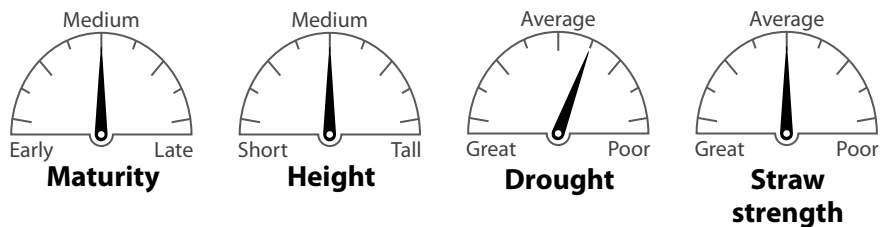


Viral diseases



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Agronomic characteristics



Pedigree: Duster and OSU experimental with Pioneer 2180.

Adaptation: South central Kansas.

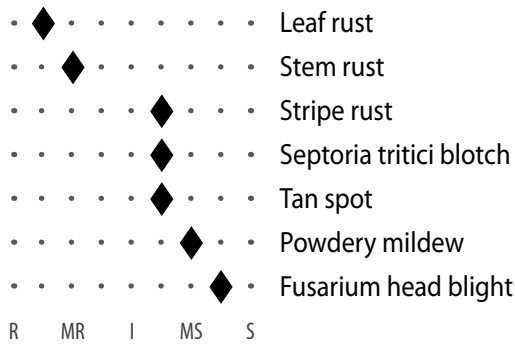
Strengths: Yield potential, Hessian fly tolerance, acid soil tolerance, excellent grazing potential, good drought tolerance.

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.

KanMark

Fungal diseases

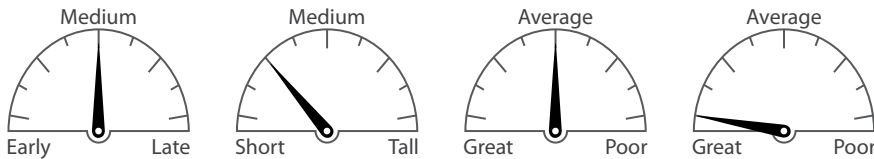


Viral diseases



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

Agronomic characteristics



Maturity

Height

Drought

Straw strength

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

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

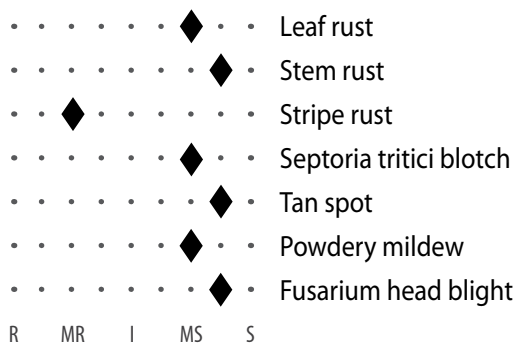
Strengths: Yield stability, excellent straw strength.

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

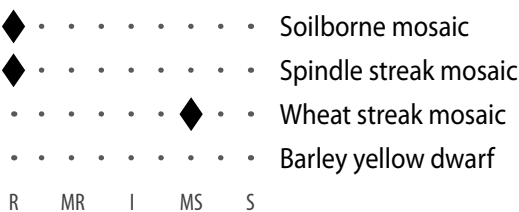
Comments: Has an upright plant growth habit that makes it look thin, but generally yields better than it looks. Can be pushed for yields under irrigation due to good straw strength. Moderately susceptible to stripe rust and will often benefit from a foliar fungicide application.

Langin

Fungal diseases

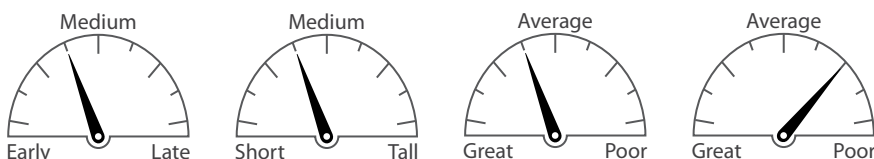


Viral diseases



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

Agronomic characteristics



Maturity

Height

Drought

Straw strength

Pedigree: Byrd and a University of Colorado experimental line containing Hatcher.

Adaption: Western Kansas.

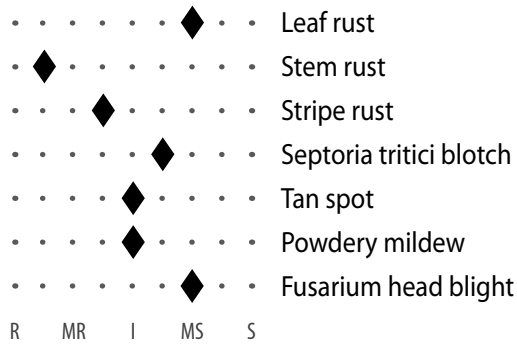
Strengths: Drought tolerance, stripe rust resistance, and partial resistance to wheat curl mites.

Weaknesses: Susceptible to leaf rust and stem rust.

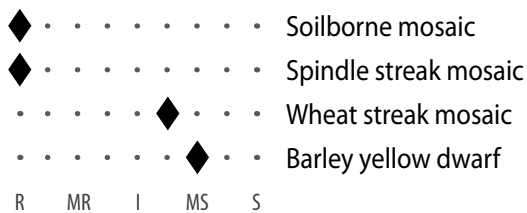
Comments: Early maturing variety with above-average drought tolerance and a good yield record in western Kansas. Langin has better stripe rust resistance than Byrd or Avery, but it is vulnerable to leaf rust and stem rust. Resistance to wheat curl mite could help slow the spread of wheat streak mosaic.

Larry

Fungal diseases

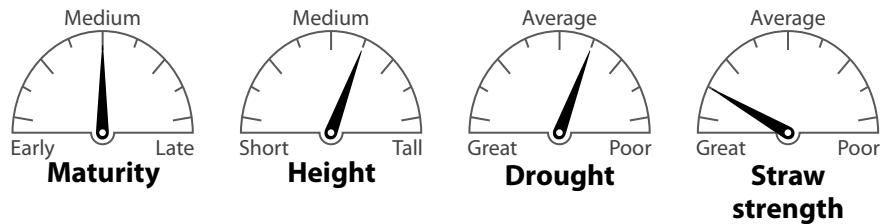


Viral diseases



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MS = Moderately susceptible; S = Susceptible

Agronomic characteristics



Pedigree: Overlay sibling, Karl 92, and experimental lines.

Adaptation: Central and west central Kansas.

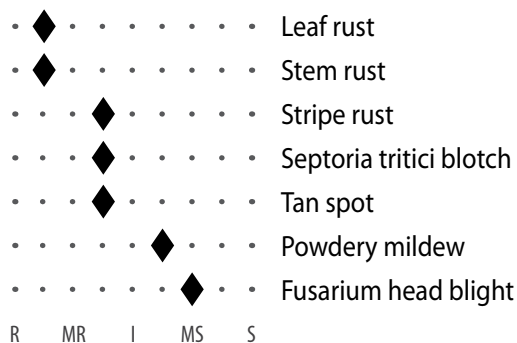
Strengths: Tolerance to moderate drought, high tillering capacity, resistance to stripe rust, good acid soil tolerance.

Weaknesses: Moderately susceptible to leaf rust.

Comments: A new variety from the Kansas Wheat Alliance with a strong yield record in central Kansas. Currently has stripe rust resistance but is moderately susceptible to leaf rust. A better baking quality than Everest. Larry should be widely available in the fall of 2017.

LCS Chrome

Fungal diseases

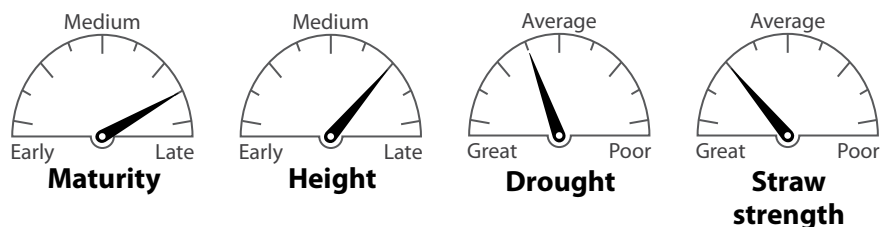


Viral diseases



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

Agronomic characteristics



Pedigree: Unknown

Adaptation: Central and western Kansas.

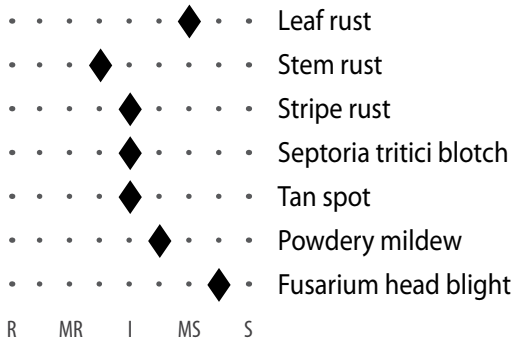
Strengths: Straw strength, acid soils, leaf and stripe rust.

Weaknesses: Wheat streak mosaic, late maturity.

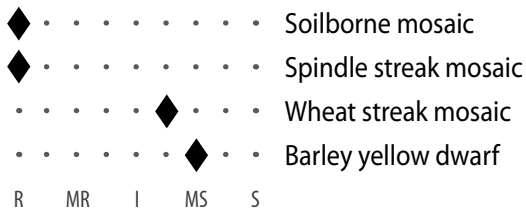
Comments: LCS Chrome showed exceptional performance in 2015 and average performance in 2016. Leaf health is one of its main strengths, but its stripe rust rating was downgraded in 2019. Late maturity might restrict its adaptation to southern environments.

LCS Mint

Fungal diseases

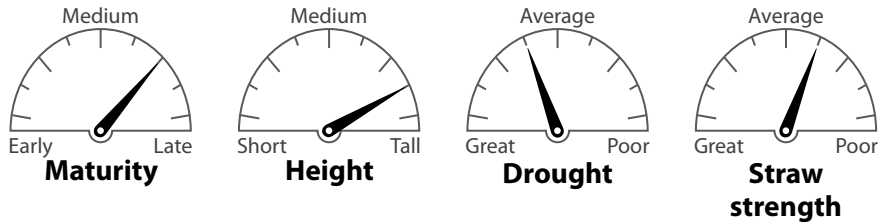


Viral diseases



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Agronomic characteristics



Pedigree: Colorado experimental lines.

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

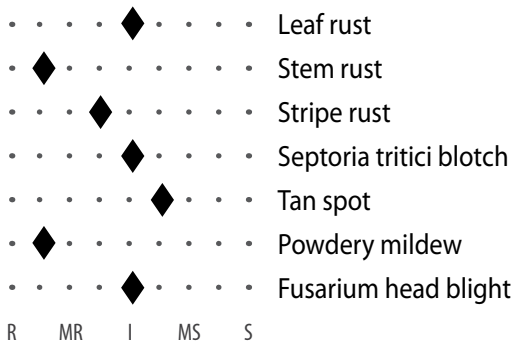
Strengths: Good drought and acid soil tolerance, good test weight, high yield potential.

Weaknesses: Susceptible to leaf rust, below-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.

Oakley CL

Fungal diseases

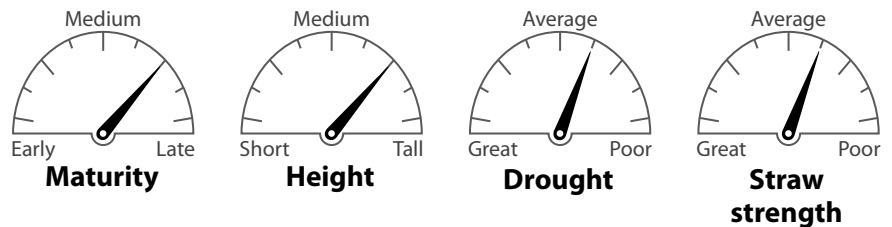


Viral diseases



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Agronomic characteristics



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

Adaptation: Western Kansas.

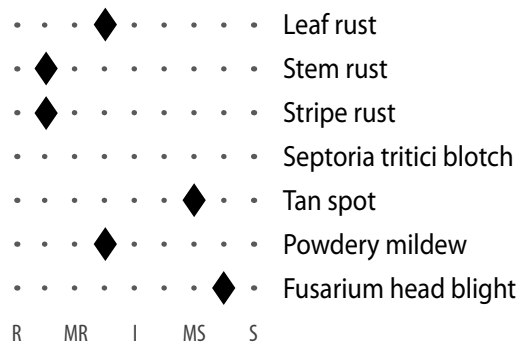
Strengths: Resistance to wheat streak mosaic virus and stripe rust, good drought tolerance.

Weaknesses: Average straw strength, susceptible to acid soils.

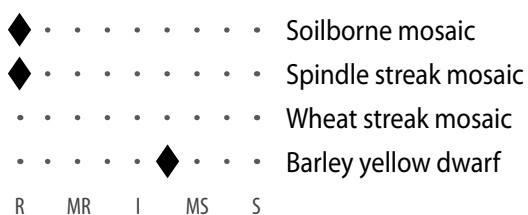
Comments: An excellent yield record in western Kansas. It is a single gene Clearfield variety, which means it cannot tolerate the high rate of Beyond herbicide or methylated seed oils that improve the performance of this herbicide. Resistance to wheat streak mosaic is not effective at high temperatures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

Smith's Gold

Fungal diseases

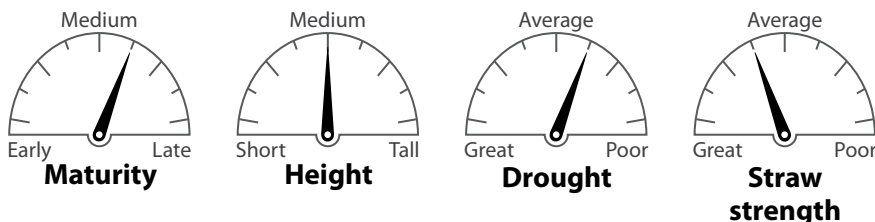


Viral diseases



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Agronomic characteristics



Pedigree: Gallagher, Oklahoma experimental lines containing TAM 110 and 2174.

Adaption: South central and Southwest Kansas.

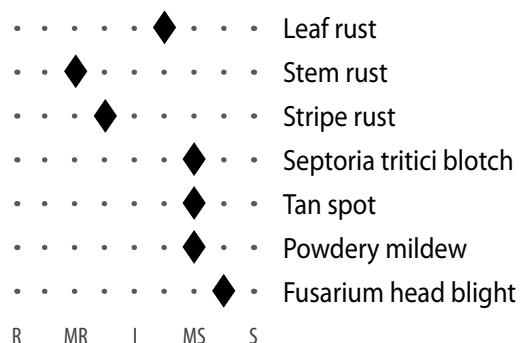
Strengths: Grazing potential, stripe rust resistance.

Weaknesses: Susceptible to tan spot, physiological leaf spot and preharvest sprouting, intermediate tolerance to acid soils.

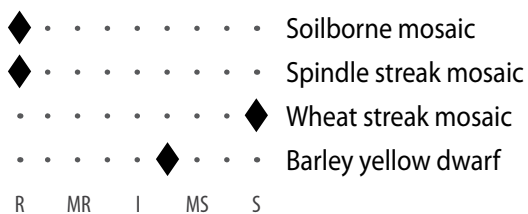
Comments: Solid wheat variety for south central Kansas with good grazing potential. May offer some improvements over Gallagher on stripe rust resistance and duration of spring grazing.

SY Flint

Fungal diseases

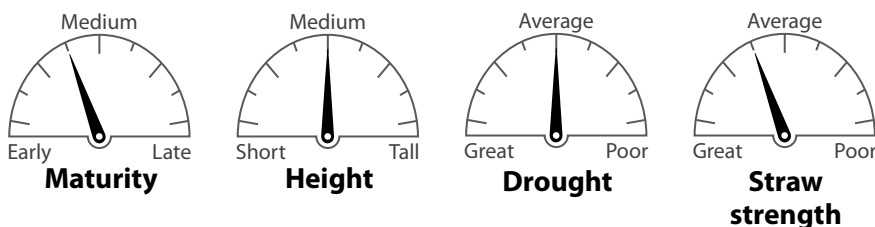


Viral diseases



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Agronomic characteristics



Pedigree: WGRC experimental line, Jagalene, and Duster.

Adaptation: Central Kansas.

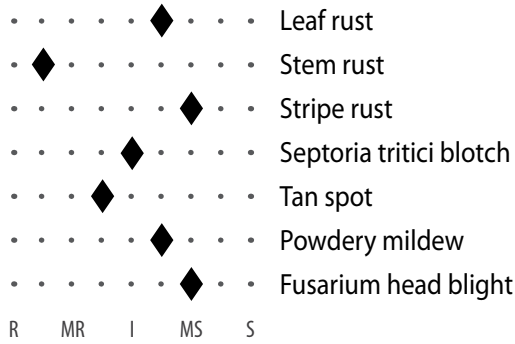
Strengths: Intermediate stripe rust resistance, Hessian fly resistance, good straw strength, and good grazing potential.

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

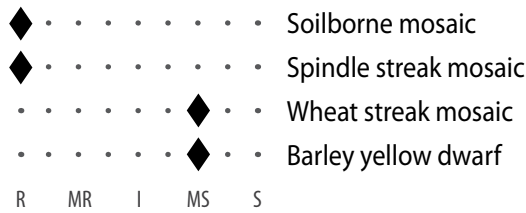
Comments: It appears to be best adapted for south central Kansas, where its grazing potential may be attractive to some growers. Its stripe rust resistance has been a plus in recent years.

SY Grit

Fungal diseases

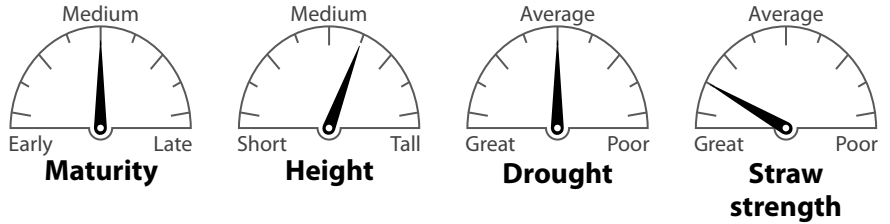


Viral diseases



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Agronomic characteristics



Pedigree: Post Rock and experimental lines.

Adaptation: Central and Western Kansas.

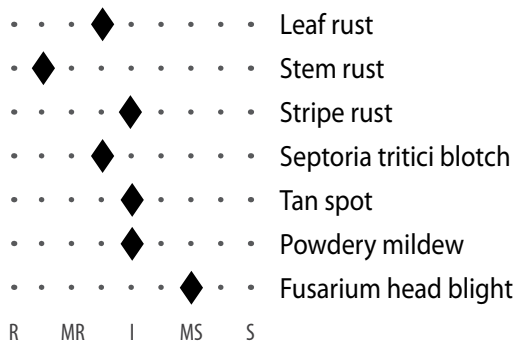
Strengths: Straw strength, resistance to soilborne mosaic virus.

Weaknesses: Susceptibility to acid soils and Hessian fly, moderate susceptibility to wheat streak mosaic and barley yellow dwarf.

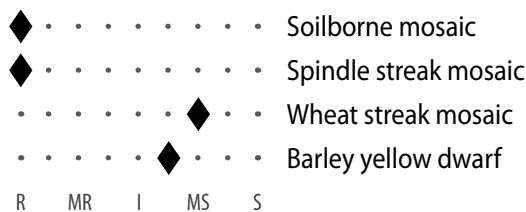
Comments: Similar to Post Rock in many characteristics. Intermediate to stripe and leaf rust, can benefit from a fungicide application. Avoid planting on low pH soils.

SY Monument

Fungal diseases

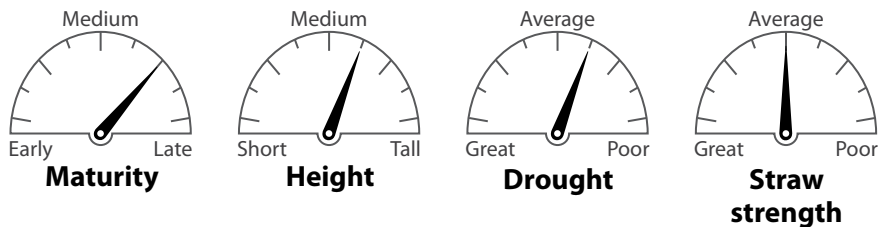


Viral diseases



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Agronomic characteristics



Pedigree: AgriPro experimental lines.

Adaptation: Central and western Kansas.

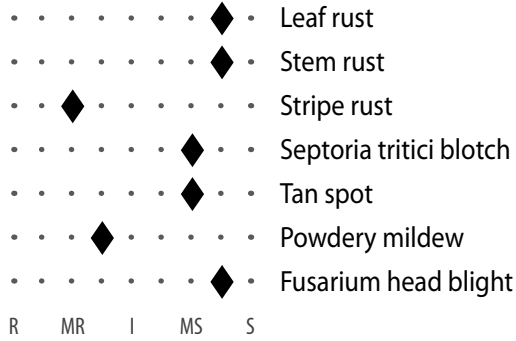
Strengths: Good disease package, good test weight, high tillering potential.

Weaknesses: Average straw strength.

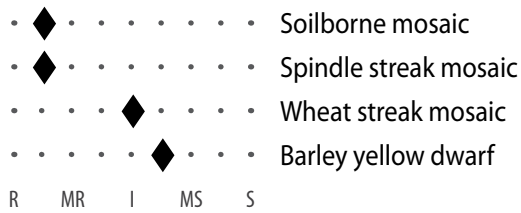
Comments: Excellent yield record across Kansas, although its medium-late maturity suggests it is best adapted for northern Kansas. The stripe rust and leaf rust ratings were downgraded to intermediate in 2019. A good option following soybeans in north central Kansas, because the later planting may reduce the risk of lodging.

T158

Fungal diseases

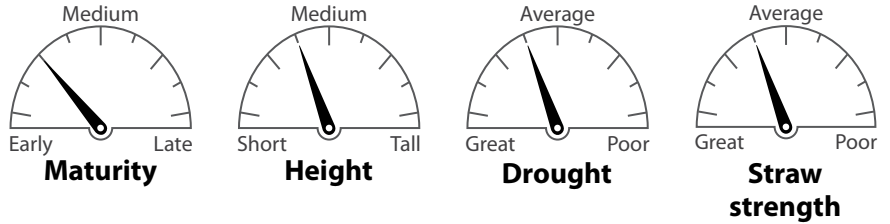


Viral diseases



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

Agronomic characteristics



Pedigree: Kansas experimental lines and T81.

Adaptation: Central and western Kansas.

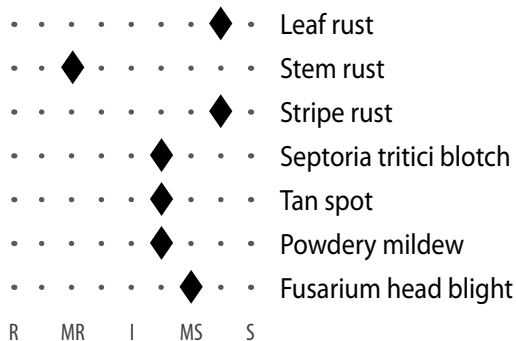
Strengths: Good drought tolerance, yield stability, adult plant resistance to stripe rust, intermediate resistance to wheat streak mosaic.

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

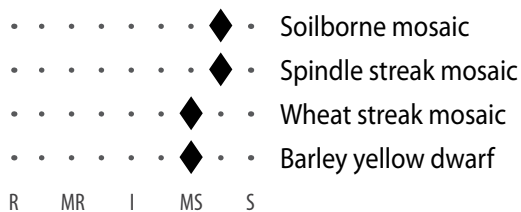
Comments: A good yield record in southwest Kansas and has done well in parts of central Kansas in recent years. Stripe rust resistance is most effective after the jointing and heading stages of growth. Generally considered to have good drought tolerance.

TAM 111

Fungal diseases

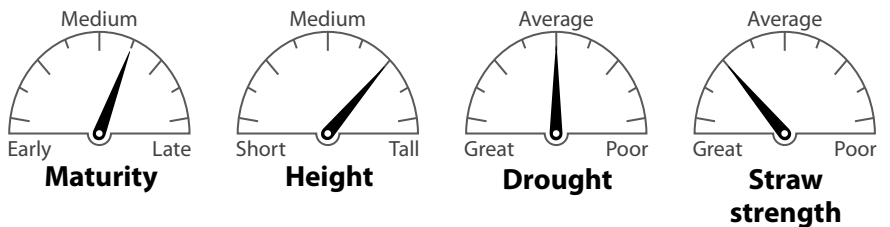


Viral diseases



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

Agronomic characteristics



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

Adaptation: Western Kansas.

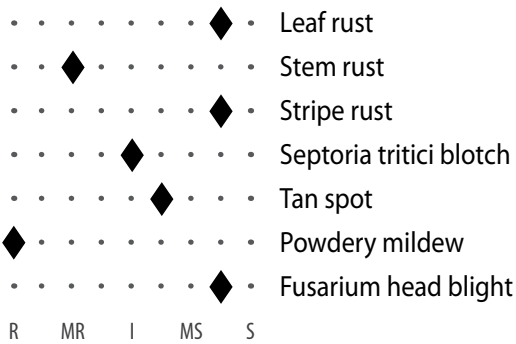
Strengths: Drought tolerance, good yield potential if treated with a foliar fungicide, good shattering reputation, stem rust resistance, and good test weight.

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

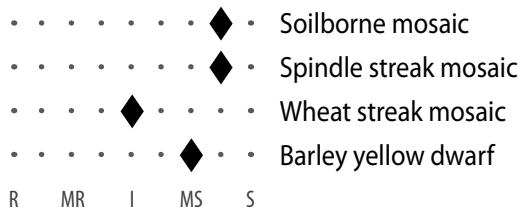
Comments: A successful variety in western Kansas because of its drought tolerance. In recent years, its disease susceptibility has resulted in lower yields relative to other, more resistant varieties. Still a good option in western Kansas, but plan to use a fungicide in years when stripe rust and leaf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

TAM 112

Fungal diseases

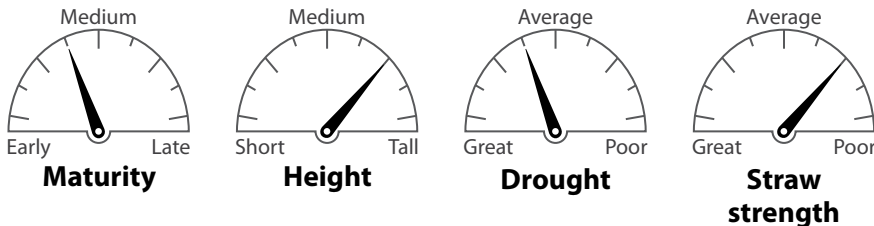


Viral diseases



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

Agronomic characteristics



Pedigree: TAM 110 sibling, TAM 200, and WGRC experimental lines.

Adaptation: Western Kansas.

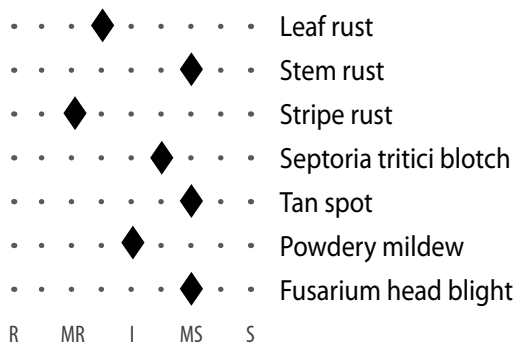
Strengths: Good drought tolerance, good grazing potential, good yield potential if treated with a foliar fungicide, intermediate reaction to wheat streak mosaic.

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

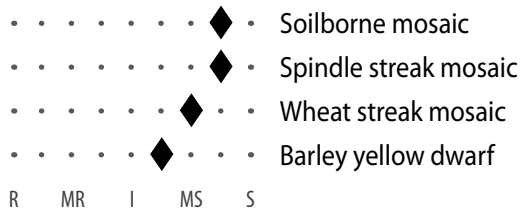
Comments: A reliable wheat variety for western Kansas. Susceptible to stripe rust and leaf rust. Benefits from a foliar fungicide when these diseases are active. Weak straw strength may predispose it to lodging and complications at harvest.

TAM 114

Fungal diseases

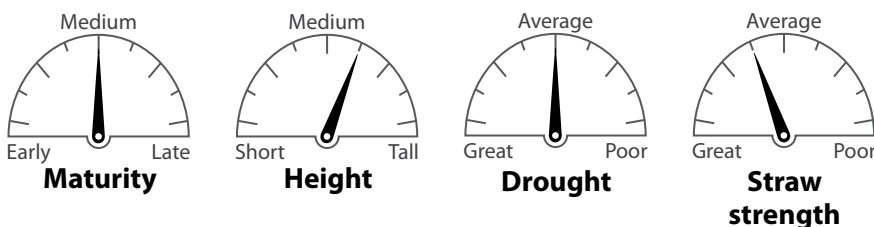


Viral diseases



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

Agronomic characteristics



Pedigree: TAM 111, Texas experimental lines, and TAM 200.

Adaptation: Western Kansas.

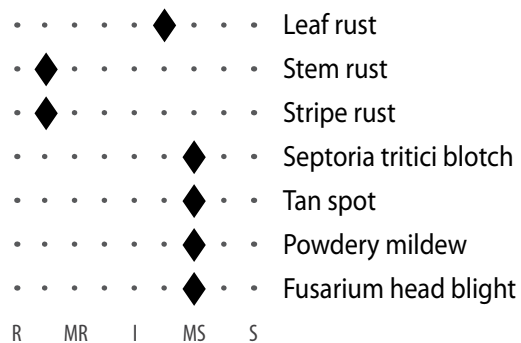
Strengths: Good drought tolerance, moderately resistant to leaf rust and stripe rust, good milling and baking characteristics.

Weaknesses: Moderately susceptible to wheat streak mosaic and stem rust.

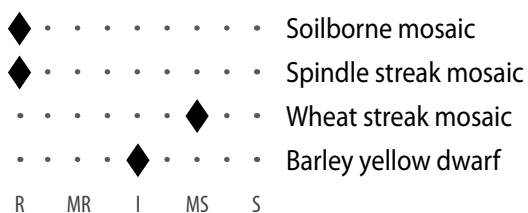
Comments: A good yield record in western Kansas. Drought tolerance similar to TAM 111 but better resistance to stripe rust and leaf rust. Historically, its stripe rust resistance has been more effective after the heading stages of growth. Has shown good grazing potential with forage yield potentials comparable to Duster.

Tatanka

Fungal diseases

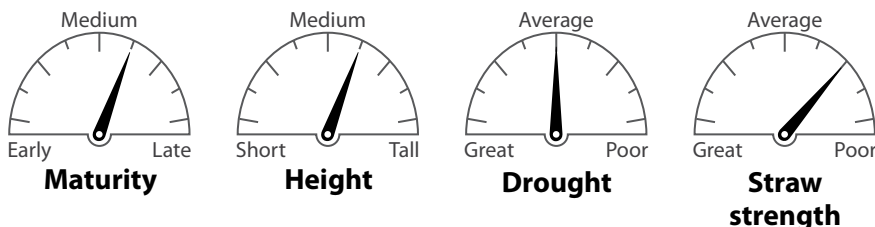


Viral diseases



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

Agronomic characteristics



Pedigree: T151 with K-State experimental lines.

Adaptation: Western and central Kansas.

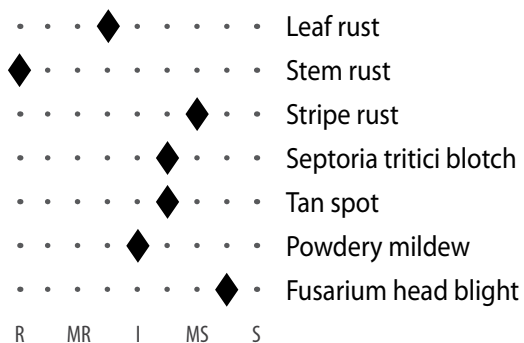
Strengths: Moderate resistance to stripe rust, intermediate resistance to barley yellow dwarf, good tolerance to acid soils.

Weaknesses: Below-average straw strength, susceptible to Hessian fly.

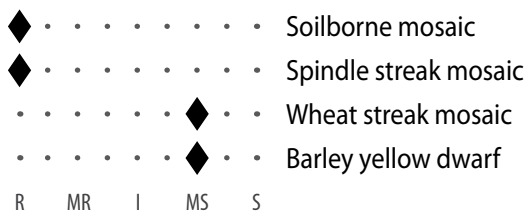
Comments: A strong yield record in western Kansas and has done better than TAM 111 in many trials. Good drought tolerance and is currently resistant to stripe rust. Below-average straw strength, which could become an issue in some high-yielding environments.

WB4303

Fungal diseases

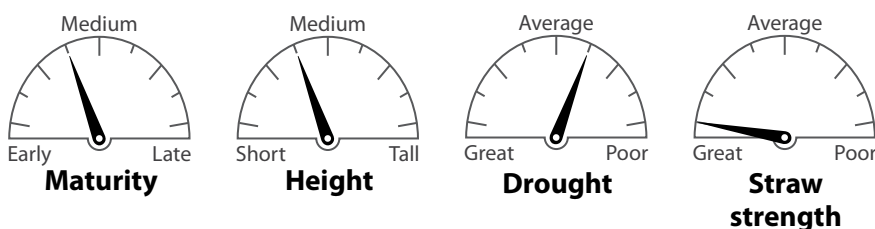


Viral diseases



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

Agronomic characteristics



Pedigree: CIMMYT (HV9W10-100)

Adaption: Eastern and central Kansas, western Kansas under irrigation.

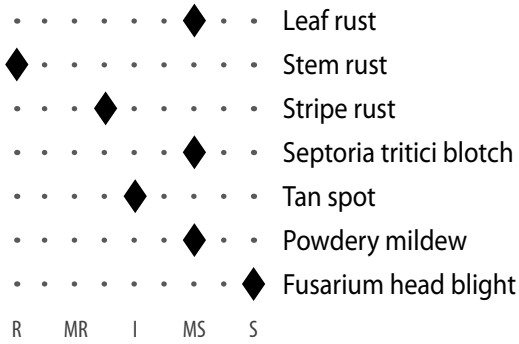
Strengths: Potential for high yield, excellent straw strength.

Weaknesses: Susceptible to multiple diseases, potential for low test weight.

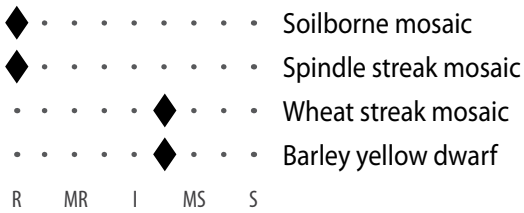
Comments: The excellent straw strength and yield potential of this variety make it a good candidate for intensive management production systems. The variety likely needs a foliar fungicide to protect yield potential. WB4303 tends to fill multiple berries per spikelet, which contributes to its track record for high yields. This trait can result in problems with low test weight at times.

WB4458

Fungal diseases

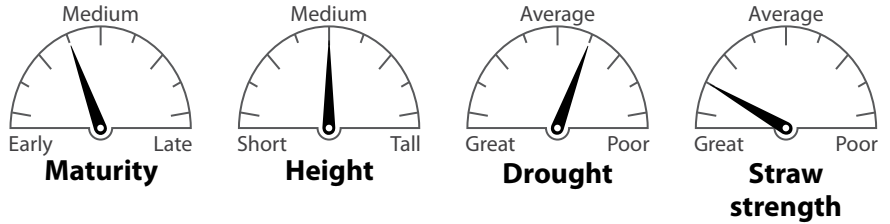


Viral diseases



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

Agronomic characteristics



Pedigree: Overlay and WestBred experimental lines.

Adaptation: Central and west central Kansas.

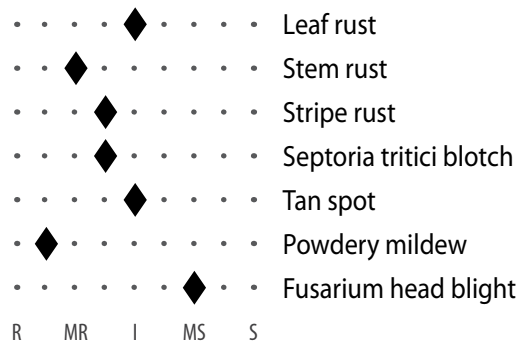
Strengths: Good yield potential, good straw strength, tolerance to acid soils.

Weaknesses: Susceptible to Fusarium head blight and powdery mildew, below-average tillering potential.

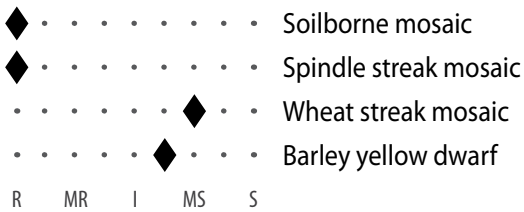
Comments: Excellent yield record in central Kansas. May not be a good choice following corn because it is highly susceptible to Fusarium head blight. Above-average seed size may require adjustments in seeding rate to avoid suboptimal stands.

WB-Cedar

Fungal diseases

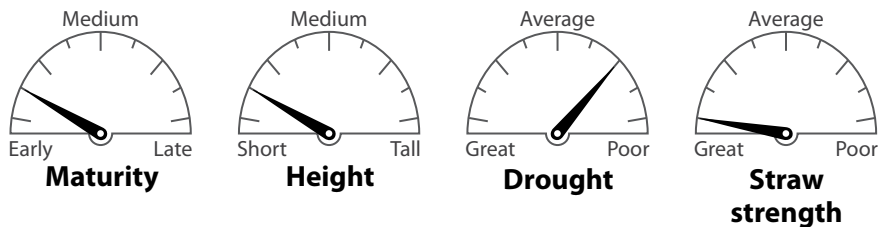


Viral diseases



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

Agronomic characteristics



Pedigree: TAM 203 and Pioneer experimental lines with 2180.

Adaptation: Central and eastern Kansas, western Kansas under irrigation.

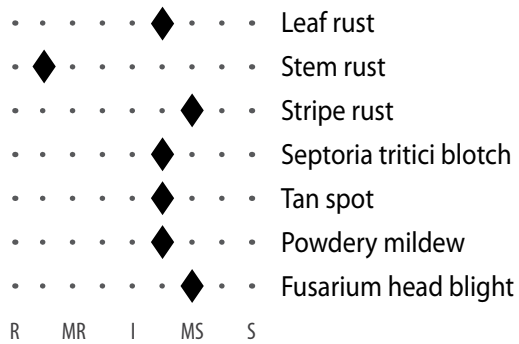
Strengths: Good yield potential, good straw strength, moderate resistance to stripe rust, good acid soil tolerance.

Weaknesses: Short stature may complicate harvest in dry years. Moderately susceptible to wheat streak mosaic.

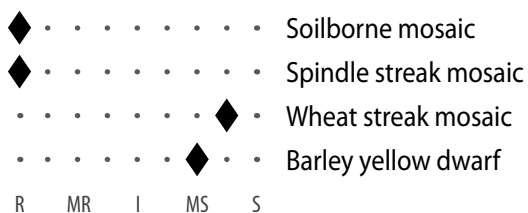
Comments: A short variety with early maturity. Good yield record in central Kansas, but its early maturity makes it vulnerable to spring freeze injury. Often used in blends for central Kansas.

WB-Grainfield

Fungal diseases

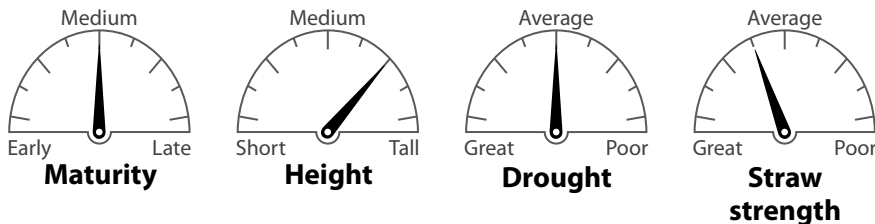


Viral diseases



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

Agronomic characteristics



Pedigree: WestBred and K-State experimental lines.

Adaptation: Central and western Kansas.

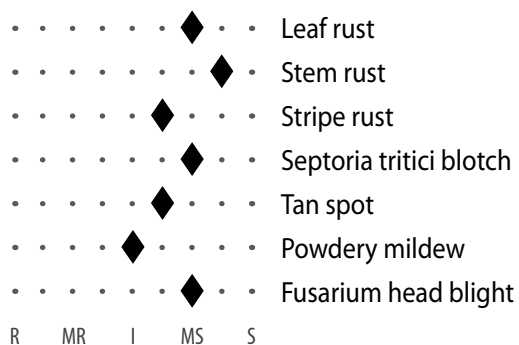
Strengths: Good drought tolerance, resistance to leaf rust, intermediate resistance to stripe rust, good shattering reputation.

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

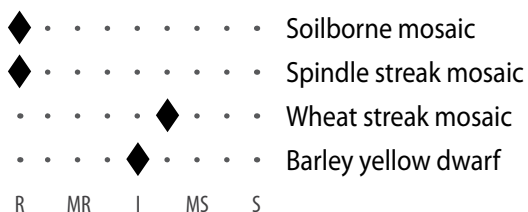
Comments: A good yield potential, but its medium-late maturity suggests it is best adapted for north central and northwest Kansas. Good drought tolerance. Stripe rust and leaf rust are adapting to the genetic resistance of WB-Grainfield. This variety may need a fungicide to protect its yield potential when rust diseases are a problem.

Winterhawk

Fungal diseases

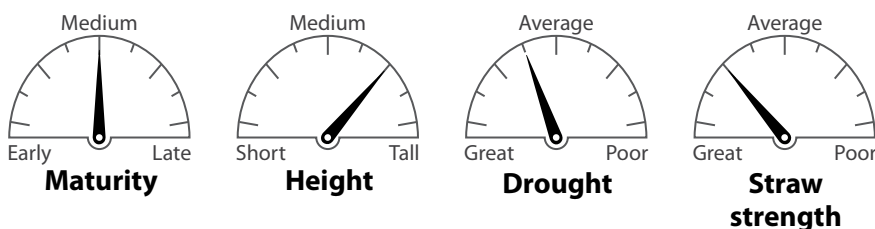


Viral diseases



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

Agronomic characteristics



Pedigree: WestBred experimental lines.

Adaptation: Central and western Kansas.

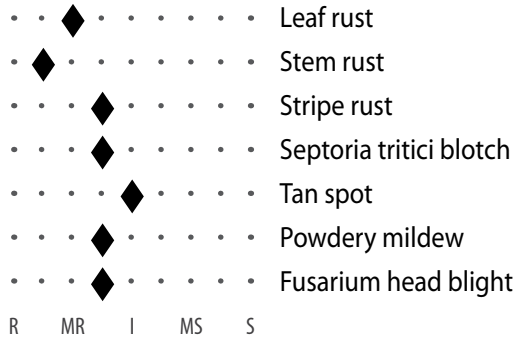
Strengths: Above average drought tolerance, good yield potential, good test weight, good straw strength.

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

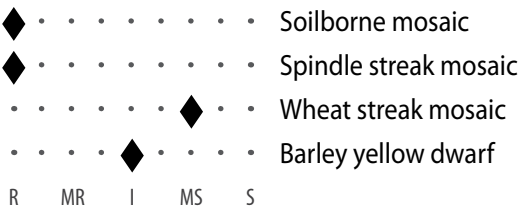
Comments: Excellent yield record under dry conditions in western Kansas and the best available drought tolerance. This variety is best adapted to northwest Kansas because of its medium-late maturity and intermediate tolerance to acid soils. Plan to use a fungicide in years that stripe rust and leaf rust are problems.

Zenda

Fungal diseases

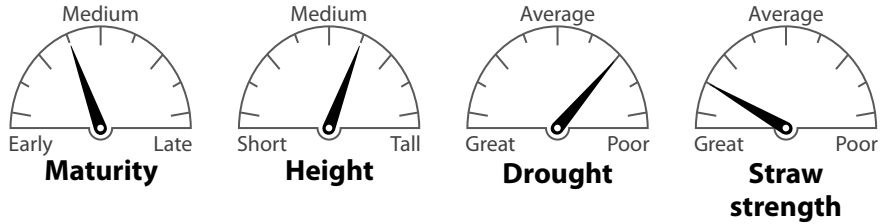


Viral diseases



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

Agronomic characteristics



Pedigree: Overlay sibling, W04-417, and Everest.

Adaptation: Central and eastern Kansas.

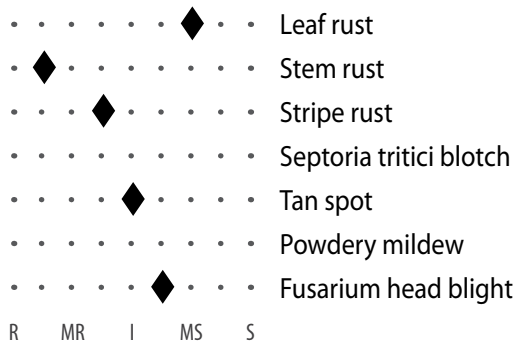
Strengths: Moderate resistance to Fusarium head blight and stripe rust, tolerance to acid soils.

Weaknesses: Below-average drought tolerance.

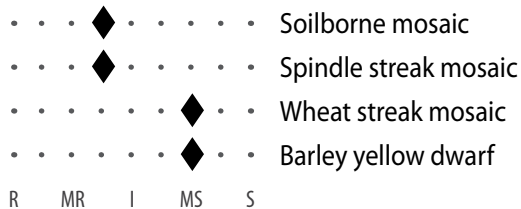
Comments: A new variety from the Kansas Wheat Alliance that should be widely available in the fall of 2017. A strong yield record in central Kansas. A step up in baking quality from Everest and has similar resistance to Fusarium head blight. It is more susceptible to barley yellow dwarf than Everest.

Antero (White)

Fungal diseases

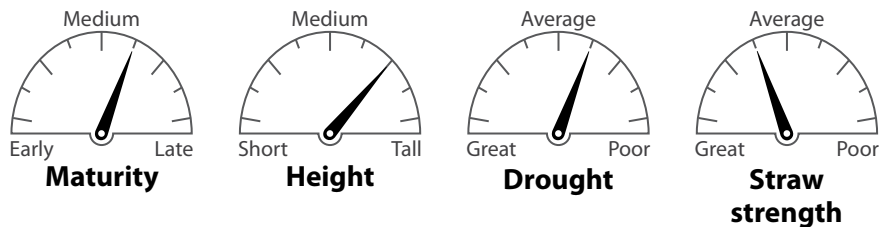


Viral diseases



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

Agronomic characteristics



Pedigree: TAM 111, K-State experimental lines, Trego, and Betty sibling.

Adaptation: Western Kansas.

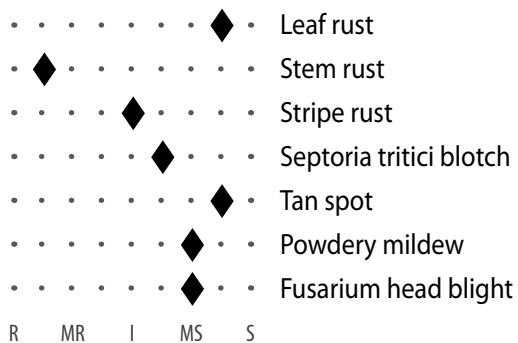
Strengths: Good yield potential, moderate resistance to stripe rust, resistance to stem rust, good straw strength.

Weaknesses: Moderately susceptible to leaf rust, susceptible to wheat streak mosaic.

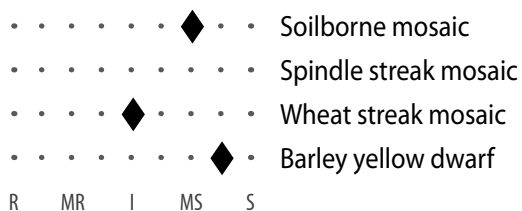
Comments: An excellent yield record in western Kansas under irrigated and dryland. Currently considered moderately resistant to stripe rust but is moderately susceptible to leaf rust and wheat streak mosaic.

Danby (White)

Fungal diseases

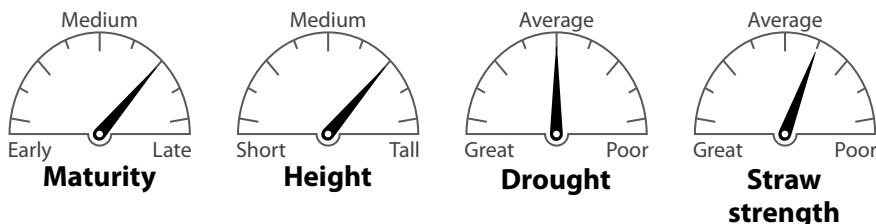


Viral diseases



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

Agronomic characteristics



Pedigree: Trego and Jagger sibling.

Adaptation: Western Kansas.

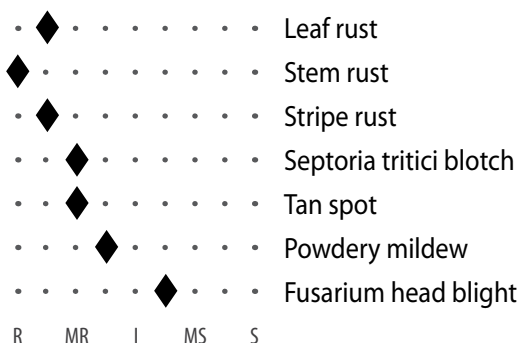
Strengths: Tolerance to pre-harvest sprouting, resistance to wheat streak mosaic virus, good test weight and milling characteristics, good drought tolerance.

Weaknesses: Susceptible to leaf rust. Below-average straw strength.

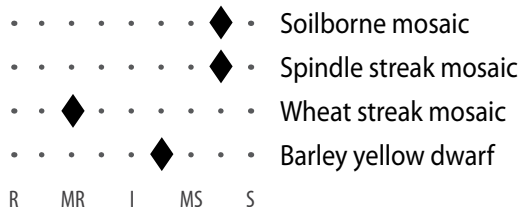
Comments: A good yield record in western Kansas and the number one white wheat in the state. Good drought tolerance. Moderately susceptible to the races of stripe rust that can overcome the Jagger type of resistance but has performed better than expected in recent years.

Joe (White)

Fungal diseases

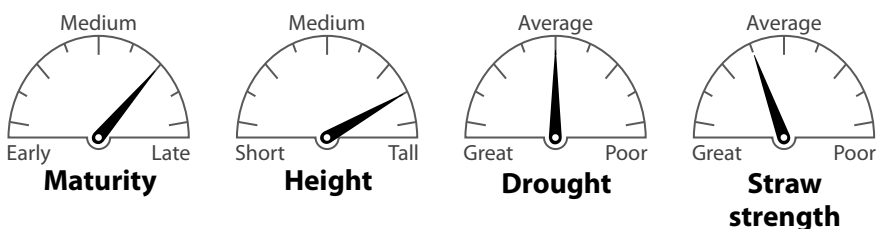


Viral diseases



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

Agronomic characteristics



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.

Hard Red Winter Wheat ^a												
Variety	Soilborne	Spindle	Wheat	Barley	Leaf	Stem	Stripe	Septoria		Fusarium		Hessian
	Mosaic	Streak	Streak	Yellow				Rust	Tritici	Tan	Powdery	
1863	2	1	5	6	7	1	3	6	6	6	7	9 ^c
2137	1	5	6	5	7	6	8	5	5	4	8	5 ^c
AG Gallant	1	1		7	6	5	2	8	7		7	9
AG Icon	1	1	7	7	3	1	4			6	7	
AG Robust	1	1		7	4	5	2	6	8		4	9
AM Eastwood	1	1	6		7	2	7				7	9
AP503 CL2 ^d	2	5	6	7	8	2	5	4	7	7	7	6
Armour	1	1	7	6	5	3	7	6	5	2	7	9
Avery	1	1	5	7	8	8	8		7	3	7	9
Bentley	1	1	6	5	5	2	5		6	6	7	9
Billings	2	5	8	5	2	4	2	6	8	6	8	5
Bob Dole	1	1	8	7	3	1	3	4	4	6	6	8
Brawl CL Plus ^d	2	2	7	7	6	7	7		7	3	8	9
Byrd	2	2	5	7	8	8	8		7	3	7	9
Denali	8	8	6	7	7	3	8		8	5	7	2 ^c
Doublestop CL Plus ^d	1	1	6	6	3	2	4	6	6	5	8	9 ^c
Duster	1	1	7	4	3	3	5	7	7	3	8	1
Endurance	2	8	7	5	5	7	5	5	7	5	6	9 ^c
Everest	1	1	7	4	3	3	8	5	7	3	4	5
Fuller	1	1	5	7	6	2	5	6	6	6	6	8
Gallagher	1	1	7	6	3	3	3	5	7	6	7	1
Garrison	1	1	6	6	6	4	8	3	4	3	6	6 ^c
Greer	1		6	7	7	2	3	5	4	5		9
Hatcher	7	8	8	8	7	3	5	5	5	3	6	7 ^c
Hot Rod	1	1		5	3	5	4	5	6	4	8	9
Iba	1	1	8	5	3	2	5	7	7	2	8	5
Jackpot	1	1	8	7	8	4	4	6	5	6	8	6
Jagalene	2	3	6	7	9	2	5	4	7	9	8	6
Jagger	2	4	5	7	9	3	5	3	4	7	7	8
KanMark	1	1	6	6	2	3	6	6	6	7	8	9
Karl/Karl 92	1	3	9	8	8	6	5	5	3	4	6	9
Langin	1	1	7		7	8	3	7	8	7	8	8
Larry	1	1	6	7	7	2	4	6	5	5	7	9
LCS Chrome	1	1	7	7	2	2	4	4	4	6	7	1
LCS Mint	1	1	6	7	7	4	5	5	5	6	8	9
LCS Pistol	1	1	7	7	6	8	7		7	3	8	9
LCS Wizard	2	1	8	6	7	9	8	5	5	4	7	1
Oakley CL ^d	7	7	3	6	5	2	4	5	6	2	5	9
Overley	1	4	5	5	8	2	4	5	5	7	9	8
Paradise	1	1	6		5	3	2		4		7	9
PostRock	2	5	6	7	7	3	5	8	5	8	7	8
Ruby Lee	1	1	7	6	6	5	8	7	5	3	8	9
Smith's Gold	1	1		6	4	2	2		7	4	8	2
SY Achieve CL2	1	1	7	7	5	2	5	7	6		7	9
SY Benefit	1	1	8		9	2	4			7	6	8
SY Flint	1	1	9	6	6	3	4	7	7	7	8	2
SY Grit	1	1	7	7	6	2	7	5	4	6	7	9
SY Monument	1	1	7	6	4	2	5	4	5	5	7	6

Appendix 1. Overall listing of disease and insect reactions.

Hard Red Winter Wheat^a												
Variety	Soilborne	Spindle	Wheat	Barley	Leaf	Stem	Stripe	Septoria		Powdery	Fusarium	
	Mosaic	Streak	Streak	Yellow				Tritici	Tan		Head	Hessian
		Mosaic	Mosaic	Dwarf	Rust	Rust	Rust	Blotch	Spot	Mildew	Blight	Fly^b
SY Rugged	1	1	7	8	5	2	2	7	7	7	7	8
SY Wolf	2	1	6	6	2	2	6	3	3	5	7	7
T153	1	1	8	7	7	4	2	6	7	2		4 ^c
T154	1	1	7	7	7	6	3	5	7	2	7	5 ^c
T158	2	2	5	6	8	8	3	7	7	4	8	9 ^c
TAM 111	8	8	7	7	8	3	8	6	6	6	7	8
TAM 112	8	8	5	7	8	3	8	5	6	1	8	9
TAM 113	8	8	7	7	3	2	4		7	4	7	9
TAM 114	8	8	7	6	4	7	3	6	7	5	7	5 ^c
TAM 304	4	2	7	7	2	3	6	5	7	3	8	9
TAM 305			6	6	2	3	4		7		8	9
Tatanka	1	1	7	5	6	2	2	7	7	7	7	9
WB4269	1	1	8	5	4	2	4		7	3	5	7
WB4303	1	1	7	7	4	1	7	6	6	5	8	9
WB4458	1	1	6	6	7	1	4	7	5	7	9	9
WB4462	1	1	7		6	4	7	6	7	7	6	9
WB4515	1	1	7	5	6	3	6	6	5		8	
WB4721	8	8	8	7	2	2	2	6	6	7	7	8
WB-Cedar	1	1	7	6	5	3	4	4	5	2	7	9
WB-Grainfield	1	1	8	7	6	2	7	6	6	6	7	8 ^c
Winterhawk	1	1	6	5	7	8	6	7	6	5	7	8
Zenda	1	1	7	5	3	2	4	4	5	4	4	5

Hard White Winter Wheat												
Variety	Soilborne	Spindle	Wheat	Barley	Leaf	Stem	Stripe	Septoria		Powdery	Fusarium	
	Mosaic	Streak	Streak	Yellow				Tritici	Tan		Head	Hessian
		Mosaic	Mosaic	Dwarf	Rust	Rust	Rust	Blotch	Spot	Mildew	Blight	Fly^b
Antero	4	4	7	7	7	2	4		5		6	4 ^c
Aspen	1	1	7	6	6	3	3	4	5	2	6	6 ^c
Clara CL ^d	2	2	3	7	2	2	5		7		6	1
Danby	7		5	8	8	2	5	6	8	7	7	9
Joe	8	8	3	6	2	1	2	3	3	4	6	
Snowmass	6		3	7	6	2	7	7			6	9
Stardust	1	1		7	8		4	7	6	4	7	9

a Rating codes are: 1 – Highly resistant; 3 – Moderately resistant; 5 – Intermediate; 7 – Moderately susceptible; 9 – Highly susceptible. Blanks indicate insufficient information.

b 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.

c Indicates resistance has been inconsistent in greenhouse testing.

d CLEARFIELD® variety, which is resistant to Beyond herbicide.

Appendix 2. Overall listing of agronomic characteristics.

Hard Red Winter Wheat^a

Variety	Maturity	Height	Drought Tolerance	Straw Strength
1863	5	6	6	7
AG Gallant	5	4	8	2
AG Robust	3	3	7	2
AG Icon	5	5		2
AM Eastwood	3	3	6	3
AP503 CL2	5	5	5	3
Armour	2	3	7	3
Avery	7	7	4	5
Bentley	4	8	4	7
Billings	3	5	8	6
Bob Dole	4	8	6	4
Brawl CL Plus	4	7	5	3
Byrd	6	7	4	6
Denali	8	8	5	3
Doublestop CL Plus	7	8	7	4
Duster	5	5	5	7
Endurance	6	7	5	5
Everest	2	4	7	2
Fuller	3	6	6	5
Gallagher	5	5	6	5
Garrison	6	6	6	3
Greer	5	6	5	2
Hatcher	7	4	6	6
Hot Rod	3	4	7	2
Iba	5	6	6	4
Jackpot	2	5	5	3
Jagalene	5	5	5	3
Jagger	2	5	5	7
KanMark	5	3	5	1
Langin	4	4	4	7
Larry	5	6	6	2
LCS Chrome	8	7	4	3
LCS Mint	7	8	4	6
LCS Pistol	4	5	5	7
LCS Wizard	6	5	6	2
Oakley CL	7	7	6	6
Overley	2	7	6	3
Paradise	5	5	5	
PostRock	5	5	5	2
Ruby Lee	3	7	5	4

Hard Red Winter Wheat^a

Variety	Maturity	Height	Drought Tolerance	Straw Strength
Smith's Gold	6	5	6	4
SY Achieve CL2	4	6	8	6
SY Benefit	4	6	6	6
SY Flint	4	5	5	4
SY Grit	5	6	5	2
SY Monument	7	6	6	5
SY Rugged	4	4	6	6
SY Wolf	7	6	5	3
T154	3	5	6	4
T158	3	4	4	4
TAM 111	6	7	5	3
TAM 112	4	7	4	7
TAM 114	5	6	5	4
TAM 204	6	5		1
TAM 304	5	4	7	2
Tatanka	6	6	5	7
WB4269	3	4	5	3
WB4303	4	4	6	1
WB4458	4	5	6	2
WB4462	5	7	5	6
WB4515	5	5	7	4
WB4721	7	7	4	3
WB-Cedar	2	2	7	1
WB-Grainfield	5	7	5	4
Winterhawk	5	7	4	3
Zenda	4	6	7	2

Hard White Winter Wheat

Antero	6	7	6	4
Aspen	2	2	7	1
Clara CL	7	7	6	6
Danby	7	7	5	6
Joe	7	8	5	4
Stardust	4	6		4

^a Maturity: 1 = Early; 5 = Medium; 9 = Late
 Height: 1 = Short; 5 = Medium; 9 = Tall
 Drought tolerance: 1 = Excellent; 5 = Good; 9 = Poor
 Straw strength: 1 = Excellent; 5 = Good; 9 = Poor
 Blanks indicate insufficient information.

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