

# MOUNTAIN WEST SEED GUIDE



EDITION ONE



# Hello!

I'm excited to be representing LCS in the brand new Mountain West region serving Montana, Wyoming and Utah. Inside this guide, you'll find proven hard red spring wheat varieties, including our first-ever CoAXium® spring wheat.

Agriculture has always been my passion. I grew up on my family's farm and have been in the seed industry since 2018. I've had the pleasure of seeing the satisfaction growers get when they experience a higher ROI from a variety first-hand. I believe in "Happy Farmer, Happy Life," and I look forward to working with you to bringing the right lines to your wheat acres!

## Zach Thibault

Regional Commercial Manager

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# Bred to thrive

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## Visit us 24/7

### LimagrainsCerealSeeds.com

is home to the best wheat genetics in the Mountain West. Stop by anytime to find your next high-performance variety, get the most up-to-date data and contact your local seed dealer.



Agronomic, disease resistance and quality scores in this guide are based on the most recent data available at the time of publication, Dec. 1, 2023. Visit [LimagrainsCerealSeeds.com](http://LimagrainsCerealSeeds.com) year-round to see the latest trial data.



# Take your yield to new heights



**Top-end yield**



**High test weight**



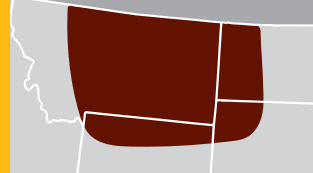
**Excellent disease package**



**Beautiful look**

## HARD RED SPRING WHEAT LCS Ascent

ADAPTATION



YIELD			
	BU/AC	LCS Ascent	Trial Avg. MEAN
2022 UMN North	91.3	88.4	103% of mean
2022 UMN South	61.7	58.7	105% of mean
2-Year MSU Rain-Fed	44.1	42.2	105% of mean
2-Year MSU Irrigated	86.5	82.2	105% of mean
2022 SDSU Eastern	45.6	44.8	102% of mean
2022 SDSU Western	52.3	50.3	104% of mean

PROTEIN			
	Protein %	LCS Ascent	Trial Avg. MEAN
2022 NDSU State	13.1	13.7	96% of mean
2022 SDSU Eastern	15.5	16.0	97% of mean
2022 SDSU Western	14.2	14.6	97% of mean
2-Year MSU State	14.3	14.9	96% of mean
2022 UMN State	14.6	14.9	98% of mean

AGRONOMIC FEATURES					
	LCS Ascent	ND Frohberg	Duclair	AP Smith	WB Gunnison
Test Weight	61.7	59.8	58.0	59.1	61.3
Heading (days from planting)	46.0	49.5	60.0	50.0	61.0
Plant Height (inches)	30.0	28.7	27.6	28.0	26.5
Straw Strength	Very Good	Average	Good	Excellent	Good

All available public and private data used in compiling scores

DISEASE RESISTANCE			
	7-9: Susceptible	4-6: Intermediate	1-3: Resistant
Fusarium Head Blight	4		
Bacterial Leaf Streak	6		
Tan Spot	5		
Stripe Rust	5		
Stem Rust	4		
Leaf Rust	4		

All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Flour Protein	Milling Quality
Desirable	Acceptable	Acceptable	Desirable

Data obtained from LCS Quality Laboratory



## Why not have both?



**Yield**  
AND protein



**Widely**  
adapted



**Excellent**  
disease package

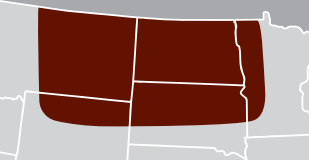


**Exceptional**  
straw

### HARD RED SPRING WHEAT

# LCS Dual

ADAPTATION



YIELD			
	BU/AC	LCS Dual	Trial Avg. MEAN
2022 UMN North	88.5	88.4	100% of mean
2022 UMN South	62.6	58.7	107% of mean
2022 MSU Rain-Fed	45.4	45.6	100% of mean
2022 MSU Irrigated	91.3	82.4	111% of mean
2022 SDSU Eastern	44.2	44.8	99% of mean
2022 SDSU Western	49.9	50.3	99% of mean

PROTEIN			
	Protein %	LCS Dual	Trial Avg. MEAN
2022 NDSU State	13.3	13.7	97% of mean
2022 SDSU Eastern	15.6	16.0	98% of mean
2022 SDSU Western	13.8	14.6	95% of mean
2022 MSU State	13.9	14.6	95% of mean
2022 UMN State	14.6	14.9	98% of mean

AGRONOMIC FEATURES					
	LCS Dual	MS Ranchero	Duclair	AP Murdock	Vida
Test Weight	61.4	59.8	58.0	61.7	60.5
Heading (days from planting)	48.0	53.0	60.0	49.0	61.0
Plant Height (inches)	30.0	32.0	27.6	28.0	28.0
Straw Strength	Very Good	Average	Good	Good	Good

All available public and private data used in compiling scores

DISEASE RESISTANCE			
	7-9: Susceptible	4-6: Intermediate	1-3: Resistant
Fusarium Head Blight		5	
Bacterial Leaf Streak		5	
Tan Spot		4	
Stripe Rust		4	
Stem Rust			2
Leaf Rust		4	

All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Flour Protein	Milling Quality
Acceptable	Less Desirable	Acceptable	Acceptable

Data obtained from LCS Quality Laboratory



## Bin-busting yield

**Trial-topping yield**

**Improved protein over LCS Trigger**

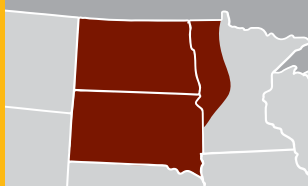
**Very strong straw**

**Good tolerance to head scab**

### HARD RED SPRING WHEAT

# LCS Buster

ADAPTATION



YIELD			
	BU/AC	LCS Buster	Trial Avg.
2-Year NDSU Eastern	75.3		70.1
2-Year NDSU Western	64.4		57.7
3-Year UMN North	85.5		80.3
3-Year UMN South	60.4		56.8
3-Year SDSU Eastern	58.6		54.2
3-Year SDSU Western	47.6		46.4

PROTEIN			
	Protein %	LCS Buster	Trial Avg.
2022 NDSU State	11.8		13.7
3-Year SDSU Eastern	13.8		15.2
3-Year SDSU Western	14.9		15.5
2-Year UMN State	12.7		14.8
2022 LCS Trials	13.3		14.7

AGRONOMIC FEATURES					
	LCS Buster	SY Ingmar	Duclair	Bolles	WB 9668
Test Weight	60.8	61.5	61.2	59.3	60.6
Heading (days from planting)	50.0	49.7	46.2	49.3	46.0
Plant Height (inches)	24.4	24.3	25.9	25.3	22.3
Straw Strength	Very Good	Very Good	Very Good	Very Good	Very Good

All available public and private data used in compiling scores

DISEASE RESISTANCE		
	7-9: Susceptible	4-6: Intermediate
Fusarium Head Blight		3
Bacterial Leaf Streak		4
Tan Spot		3
Stripe Rust		3
Stem Rust		2
Leaf Rust		3

All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Flour Protein	Milling Quality
Acceptable	Acceptable	Less Desirable	Acceptable

Data obtained from LCS Quality Laboratory



# Blaze a trail to higher profits

**Quality check** for Wheat Quality Council

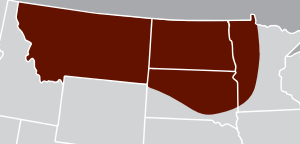
**Consistent protein** and top-end yield

**Proven Northern Plains** performer

**Exceptionally wide** adaptation

## HARD RED SPRING WHEAT LCS Rebel

ADAPTATION



YIELD			
	BU/AC	LCS Rebel	MEAN
3-Year NDSU Eastern	73.6 71.4		103% of mean
3-Year NDSU Western	44.2 42.8		103% of mean
2021 LCS Trials	43.6 44.0		99% of mean
2022 LCS Trials	50.3 50.6		99% of mean
3-Year SDSU Eastern	50.9 54.2		94% of mean
3-Year SDSU Western	46.2 46.4		100% of mean

PROTEIN			
	Protein %	LCS Rebel	MEAN
2022 NDSU State	14.1 13.7		103% of mean
3-Year SDSU Eastern	16.1 15.2		106% of mean
3-Year SDSU Western	15.8 15.5		102% of mean
2022 LCS Trials	15.2 14.7		103% of mean

AGRONOMIC FEATURES					
	LCS Rebel	SY Ingmar	Linkert	WB 9479	ND VitPro
Test Weight	60.0	59.8	58.9	59.0	59.9
Heading (days from planting)	48.4	51.0	50.3	49.6	49.5
Plant Height (inches)	32.0	28.6	27.5	27.0	30.5
Straw Strength	Good	Very Good	Excellent	Very Good	Very Good

All available public and private data used in compiling scores

DISEASE RESISTANCE			
	7-9: Susceptible	4-6: Intermediate	1-3: Resistant
Fusarium Head Blight		4	
Bacterial Leaf Streak		3	
Tan Spot		4	
Stripe Rust		4	
Stem Rust		2	
Leaf Rust		5	

All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Flour Protein	Milling Quality
Most Desirable	Desirable	Most Desirable	Most Desirable

Data obtained from LCS Quality Laboratory



# What you can bet on

 **National Wheat Yield Contest** winner

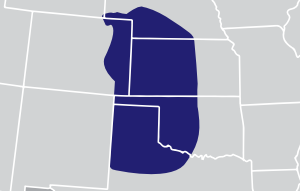
 **Large head size** and good tillering ability

 **Tolerant** to Hessian fly

 **Broadly adapted** throughout the Central Plains

## HARD RED WINTER WHEAT LCS Julep

ADAPTATION



YIELD			
	BU/AC	LCS Julep	MEAN
2022 KSU Dryland St. John, KS	36		104% of mean
2022 KSU Dryland Russell, KS	82		113% of mean
2023 KSU Dryland Russell, KS	37		109% of mean
2023 KSU Dryland St. John, KS	29		114% of mean
2023 OSU Regional Cherokee, OK	44		113% of mean
2023 OSU Regional Chickasha, OK	80		104% of mean
2023 OSU Regional Lahoma, OK	68		106% of mean
2023 UNL Rainfed Deuel County, NE	80		111% of mean

AGRONOMIC FEATURES					
	LCS Julep	SY	WB 4401	KS Hamilton	Showdown
Test Weight	Very Good	Good	Good	Good	Average
Protein %	Above Avg.	Average	Average	Average	Average
Winter-Hardiness	Excellent	Excellent	Good	Good	Good
Heading (Julian)	Late	Medium-Late	Medium-	Medium	Medium-Late
Plant Height (in.)	Medium	Medium-Tall	Medium-	Medium	Medium
Straw Strength	Very Good	Average	Good	Average	Average

DISEASE TOLERANCE			
	7-9: Susceptible	4-6: Intermediate	1-3: Resistant
Stripe Rust			
Leaf Rust			
Stem Rust			
Fusarium Head Blight			
WSMV			
Soil-Borne Mosaic			

All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Dough Properties	Milling Quality
Desirable	Desirable	Desirable	Acceptable

Data obtained from LCS Quality Laboratory



# Launch your yield



**Strong tolerance**  
to Fusarium crown rot



**Top-end yield**  
across diverse PNW  
production zones



**Excellent**  
straw strength



**Broadly adapted**  
leader in WSU  
dryland trials

HARD RED WINTER WHEAT

## LCS Missile

ADAPTATION



YIELD			
	BU/AC	LCS Missile	Trial Avg. MEAN
2-Year WSU < 12"	38		103% of mean
3-Year WSU 12-16"	85		106% of mean
3-Year WSU > 16"	103		105% of mean
2-Year WSU Irrigated	138		100% of mean
3-Year OSU Low Rain	61		107% of mean
3-Year OSU Int. Rain	100		103% of mean
3-Year OSU Irrigated	128		104% of mean

AGRONOMIC FEATURES					
	LCS Missile	LCS Jet	WB Keldin	Scorpio	Norwest 553
Test Weight	62	61.1	63	60.3	61.1
Protein %	10.7	10.8	10.9	11.1	11.6
Winter-Hardiness	Average	Average	Very Good	Average	-
Heading (Julian)	153	149	153	152	152
Plant Height (in.)	44	41	42	39	42
Straw Strength	Very Good	Very Good	Good	Very Good	Very Good

All available public and private data used in compiling scores

DISEASE TOLERANCE			
	Susceptible	Intermediate	Resistant
Stripe Rust			
Septoria			
Strawbreaker Foot Rot			
Crown Rot			
C-Stripe			

All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Flour Protein	Milling Quality
Desirable	Acceptable	Less Desirable	Desirable

Data obtained from LCS Quality Laboratory





## Faster than a jet



**Top-end yield**  
potential, excellent  
for high rainfall and  
irrigated production



**Good** stripe  
rust tolerance



**Highest yield**  
in WSU >20" 5-year

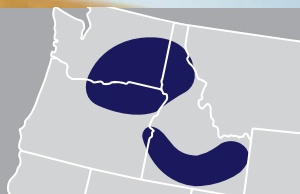


**Highest yielding**  
variety in  
UI North trials

HARD RED WINTER WHEAT

# LCS Rocket

ADAPTATION



YIELD			
	BU/AC	LCS Rocket	Trial Avg. MEAN
2021 UI North	74		116% of mean
	64		
5-Year WSU >16"	120		113% of mean
	106		
2-Year UI North	105		113% of mean
	93		
2-Year WSU >16"	110		112% of mean
	98		
2021 WSU Irrigated	151		112% of mean
	135		
2-Year OSU Low Rain	65		110% of mean
	59		
2-Year OSU High Rain	104		109% of mean
	95		
2021 UI South	140		108% of mean
	130		

AGRONOMIC FEATURES			
	LCS Rocket	Keldin	WB4303
Test Weight	59.3	62.4	61.2
Protein %	11.1	11.5	12.7
Winter-Hardiness	Average	Excellent	Very Good
Heading (Julian)	154	154	151
Plant Height (Inches)	32	34	33
Straw Strength	Very Good	Average	Good

2-year average | All available public and private data used in compiling scores

DISEASE TOLERANCE			
	Susceptible	Intermediate	Resistant
Stripe Rust			
Strawbreaker Foot Rot			
Crown Rot			
C-Stripe			
Soil-Borne Mosaic			

All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Flour Protein	Milling Quality
Desirable	Desirable	Acceptable	Most Desirable

Data obtained from LCS Quality Laboratory



# Supersonic yield potential

**Most widely grown**  
HRW wheat in the PNW

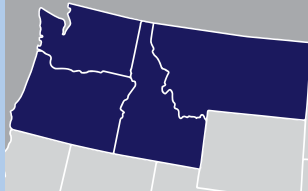
**4x National**  
Wheat Yield Contest  
Bin Buster winner

**Top-end yield**  
across a variety of PNW  
production zones

**Preferred variety**  
by southern Idaho  
end-users

## HARD RED WINTER WHEAT LCS Jet

ADAPTATION



YIELD			
	BU/AC	LCS Jet	MEAN
2-Year OSU Low Rain	67		114% of mean
3-Year WSU <12"	49		111% of mean
2021 OSU High Rain	113		110% of mean
5-Year WSU >16"	116		109% of mean
2021 UI South	142		109% of mean
3-Year UI North	105		106% of mean
2021 WSU Irrigated	143		106% of mean
2-Year WSU 12-16"	76		106% of mean

AGRONOMIC FEATURES			
	LCS Jet	Keldin	WB4303
Test Weight	60.1	62.4	61.2
Protein %	11.4	11.5	12.7
Winter-Hardiness	Very Good	Excellent	Very Good
Heading (Julian)	154	154	151
Plant Height (Inches)	31	34	33
Straw Strength	Very Good	Average	Good

2-year average | All available public and private data used in compiling scores

DISEASE TOLERANCE			
	Susceptible	Intermediate	Resistant
Stripe Rust			
Strawbreaker Foot Rot			
Crown Rot			
C-Stripe			
Soil-Borne Mosaic			

All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Flour Protein	Milling Quality
Desirable	Acceptable	Less Desirable	Desirable

Data obtained from LCS Quality Laboratory

GIVE WEEDS THE AX



DEFEND  
YOUR  
FIELDS

Go home, downy brome. Set sail, foxtail. Take a pass, barnyardgrass. CoAXium hard red spring wheat is here and ready to destroy grassy weeds.



## Grow wheat, not weeds

**The solution for yield-robbing weeds you've been asking for is here for spring and winter wheat acres. Certified seed is available this season!**

The CoAXium® Wheat Production System combines elite varieties and the patented non-GMO herbicide tolerance trait AXigen® with Aggressor® AX brand herbicides. This combination helps protect fields from Group 2-resistant grassy weeds that shrink yield through inter-crop competition and reduce overall crop quality.



Untreated downy brome

Treated with Aggressor AX

**Stewardship delivers cleaner fields and higher yields.** To prolong the utility, features and benefits of CoAXium technology, growers must:

- Sign a CoAXium grower stewardship agreement
- Use only Certified seed
- Use only labeled rates of Aggressor AX herbicides by weed species
- Prevent grassy weed escapes from going to seed
- Rotate herbicide modes of action between crop cycles
- Use CoAXium no more than two years in a row

**The CoAXium hard red spring wheat LCS Hammer AX is part of the next generation of elite genetics** from Limagrain Cereal Seeds. This game-changing line has been tested and retested for yield, trait tolerance, seedling vigor, disease resistance and adaptation in a wide variety of growing conditions.

**Get serious about grassy weed control. Fetch your AX.**  
[LimagrainCerealSeeds.com/CoAXium](http://LimagrainCerealSeeds.com/CoAXium)



## Smash grassy weeds



**High-yielding**  
CoAXium variety



**Balanced protein**  
and good test weight



**Early**  
maturing

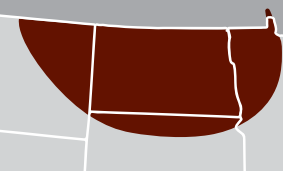


**Good end-use**  
quality

### HARD RED SPRING WHEAT

# LCS Hammer AX

ADAPTATION



YIELD				
	BU/AC	LCS Hammer AX	Trial Avg.	MEAN ▶
2022 SDSU Eastern	42.6 44.8			<b>95%</b> of mean
2022 SDSU Western	51.3 50.3			<b>102%</b> of mean
2022 MSU Rain-Fed	45.9 45.6			<b>101%</b> of mean
2022 MSU Irrigated	98.6 82.4			<b>120%</b> of mean
2022 NDSU Eastern	74.2 72.2			<b>103%</b> of mean
2022 NDSU Western	59.4 57.7			<b>103%</b> of mean

PROTEIN				
	Protein %	LCS Hammer AX	Trial Avg.	MEAN ▶
2022 NDSU State	13.4 13.7			<b>98%</b> of mean
2022 SDSU State	15.1 15.2			<b>99%</b> of mean
2022 MSU State	13.9 14.6			<b>95%</b> of mean

AGRONOMIC FEATURES					
	LCS Hammer AX	Glenn	AP Smith	SY 611 CL2	Vida
Test Weight	63.0	64.1	59.6	63.0	61.2
Heading (days from planting)	47.0	47.0	59.0	48.0	59.0
Plant Height (inches)	29.0	33.0	25.8	28.0	29.6
Straw Strength	Very Good	Very Good	Very Good	Excellent	Very Good

All available public and private data used in compiling scores

DISEASE RESISTANCE			
	7-9: Susceptible	4-6: Intermediate	1-3: Resistant
Fusarium Head Blight		5	
Bacterial Leaf Streak		7	
Tan Spot		6	
Stripe Rust		5	
Stem Rust		5	
Leaf Rust		6	

All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Flour Protein	Milling Quality
<b>Desirable</b>	Acceptable	Acceptable	Acceptable


Data obtained from LCS Quality Laboratory





## Strong and steady

 **National Wheat Yield Contest** winner

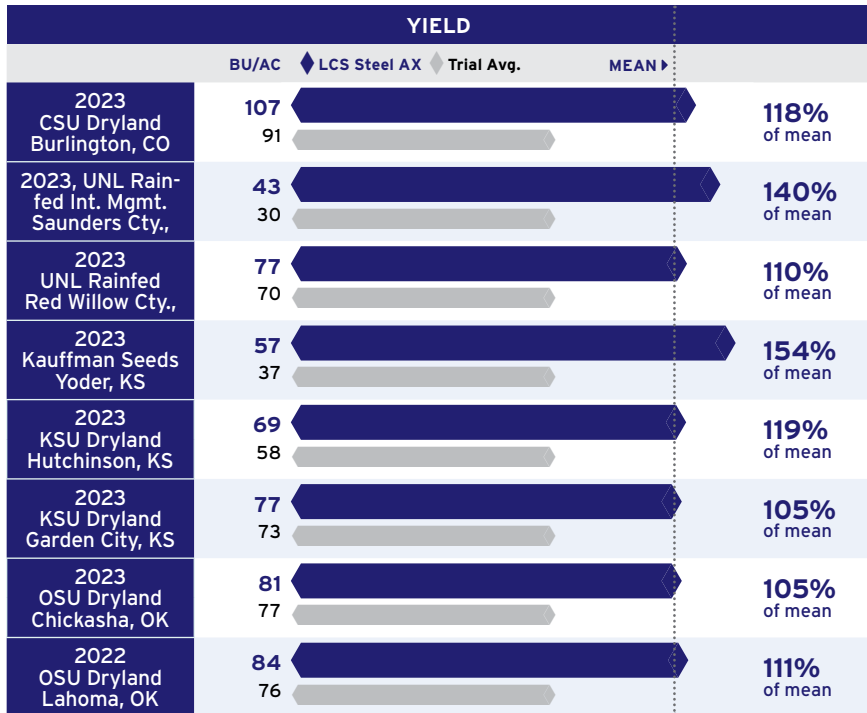
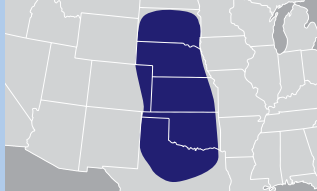
 **Drought-tolerant** with top-end yield potential

 **Excellent** FHB tolerance

 **Very good** straw strength and standability

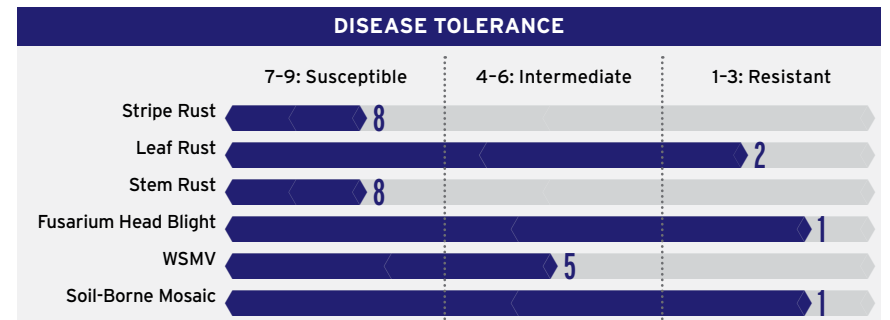
## HARD RED WINTER WHEAT LCS Steel AX

ADAPTATION



AGRONOMIC FEATURES					
	LCS Steel AX	Crescent AX	Doublestop CL+	Kivari AX	LCS Fusion AX
Test Weight	Very Good	Very Good	Very Good	Good	Average
Protein %	Average	Average	Above Avg.	Average	Average
Winter-	Excellent	Very Good	Very Good	Very Good	Very Good
Heading (Julian)	Late	Medium-Early	Late	Medium	Medium-Late
Plant Height (in.)	Medium-Tall	Medium	Tall	Medium	Medium-Tall
Straw Strength	Excellent	Below Avg.	Very Good	Average	Average

Data Sources: 2024 Wheat Varieties for Kansas and the Great Plains, 2023 LCS CP Y4ACC, 2023 Carnegie



All available public and private data used in compiling scores

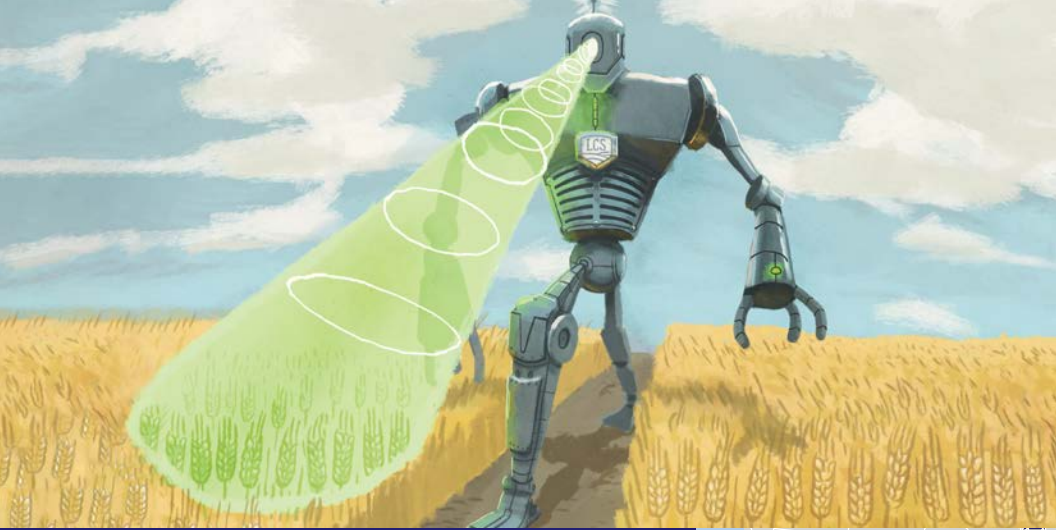
END-USE QUALITY			
Overall Quality	Baking Quality	Dough Properties	Milling Quality
Acceptable	Acceptable	Desirable	Desirable

Data obtained from LCS Quality Laboratory

A signed Stewardship Agreement is required before purchase.

**FVP** Unauthorized seed multiplication prohibited by law. U.S. Plant Variety Protection Number has been granted.





# Blast away grassy weeds

**Most broadly adapted** with excellent yield stability

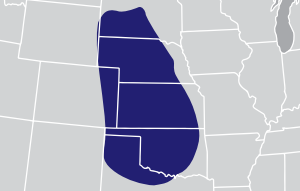
**Excellent** straw strength

**Quick emergence** and excellent fall growth

**Excellent acid soil** tolerance

## HARD RED WINTER WHEAT LCS Atomic AX

ADAPTATION



YIELD			
	BU/AC	LCS Atomic AX	MEAN
2023 KSU Irrigated Garden City, KS	83		113% of mean
2023 KSU Dryland Wellington, KS	27		105% of mean
2023 OSU Altus, OK	55		125% of mean
2023 OSU Walters, OK	45		102% of mean
2022 OSU Chickasha, OK	76		121% of mean
2022 OSU Int. Mgmt. Apache, OK	56		124% of mean
2022 OSU Alva, OK	22		138% of mean
2022 UNL Rainfed Jefferson Cty.,	106		112% of mean

AGRONOMIC FEATURES					
	LCS Atomic AX	Crescent AX	Doublestop CL+	Kivari AX	LCS Fusion AX
Test Weight	Good	Very Good	Very Good	Good	Average
Protein %	Above Avg.	Average	Above Avg.	Average	Average
Winter-	Very Good	Very Good	Very Good	Very Good	Very Good
Heading (Julian)	Early	Medium-Early	Late	Medium	Medium-Late
Plant Height (in.)	Medium	Medium	Tall	Medium	Medium-Tall
Straw Strength	Excellent	Below Avg.	Very Good	Average	Average

Data Sources: 2024 Wheat Varieties for Kansas and the Great Plains, 2023 LCS CP Y4ACC, 2023 Carnegie

DISEASE TOLERANCE			
	7-9: Susceptible	4-6: Intermediate	1-3: Resistant
Stripe Rust			
Leaf Rust			
Stem Rust			
Fusarium Head Blight			
WSMV			
Soil-Borne Mosaic			

All available public and private data used in compiling scores

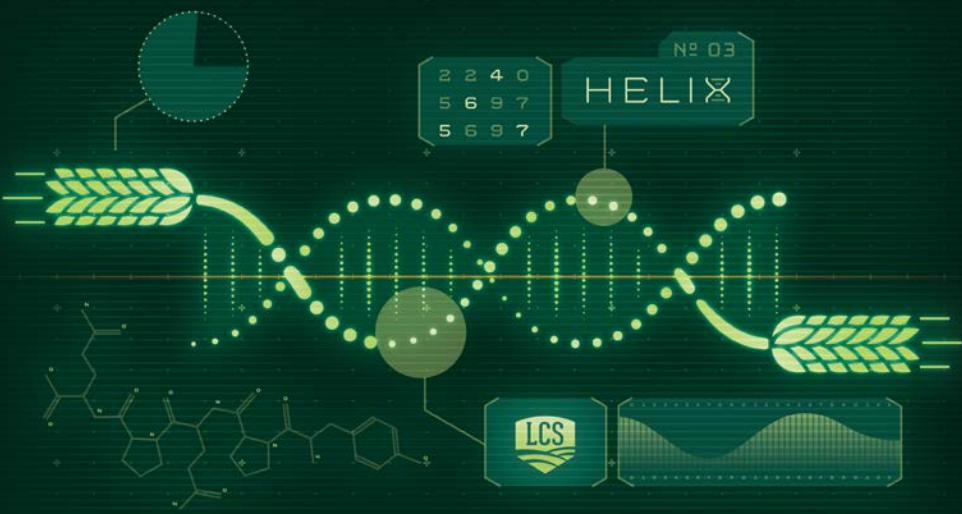
END-USE QUALITY			
Overall Quality	Baking Quality	Dough Properties	Milling Quality
Acceptable	Unacceptable	Most Desirable	Less Desirable

Data obtained from LCS Quality Laboratory

A signed Stewardship Agreement is required before purchase.

FVP Unauthorized seed multiplication prohibited by law. U.S. Plant Variety Protection Number has been granted.





# Engineered to beat weeds

 **National Wheat Yield Contest** winner

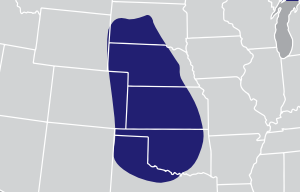
 **Superior** disease package

 **Excellent top-end yield** with ability to handle tough acres

 **Excellent** drought tolerance

## HARD RED WINTER WHEAT LCS Helix AX

ADAPTATION



YIELD			
	BU/AC	LCS Helix AX	MEAN
2023 OSU Altus, OK	48		109% of mean
2023 OSU Int. Mgmt. Chickasha, OK	93		108% of mean
2023 Kauffman Seeds Yoder, KS	49		132% of mean
2022 OSU Chickasha, OK	70		109% of mean
2022 OSU Lahoma, OK	89		117% of mean
2022 KSU Dryland Garden City, KS	84		111% of mean
2022 KSU Dryland Belleville, KS	91		110% of mean
2022 KSU Irrigated Hugoton, KS	129		119% of mean

AGRONOMIC FEATURES					
	LCS Helix AX	Crescent AX	Doublestop CL+	Kivari AX	LCS Fusion AX
Test Weight	Very Good	Very Good	Very Good	Good	Average
Protein %	Above Avg.	Average	Above Avg.	Average	Average
Winter-	Very Good	Very Good	Very Good	Very Good	Very Good
Heading (Julian)	Medium-Early	Medium-Early	Late	Medium	Medium-Late
Plant Height (in.)	Medium	Medium	Tall	Medium	Medium-Tall
Straw Strength	Very Good	Below Avg.	Very Good	Average	Average

Data Sources: 2024 Wheat Varieties for Kansas and the Great Plains, 2023 LCS CP Y4ACC, 2023 Carnige

DISEASE TOLERANCE			
	7-9: Susceptible	4-6: Intermediate	1-3: Resistant
Stripe Rust			
Leaf Rust			
Stem Rust			
Fusarium Head Blight			
WSMV			
Soil-Borne Mosaic			

All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Dough Properties	Milling Quality
Desirable	Desirable	Most Desirable	Acceptable

Data obtained from LCS Quality Laboratory

A signed Stewardship Agreement is required before purchase.

**FVP** Unauthorized seed multiplication prohibited by law. U.S. Plant Variety Protection Number has been granted.




# Eclipse the competition

 **Excels**  
under irrigation

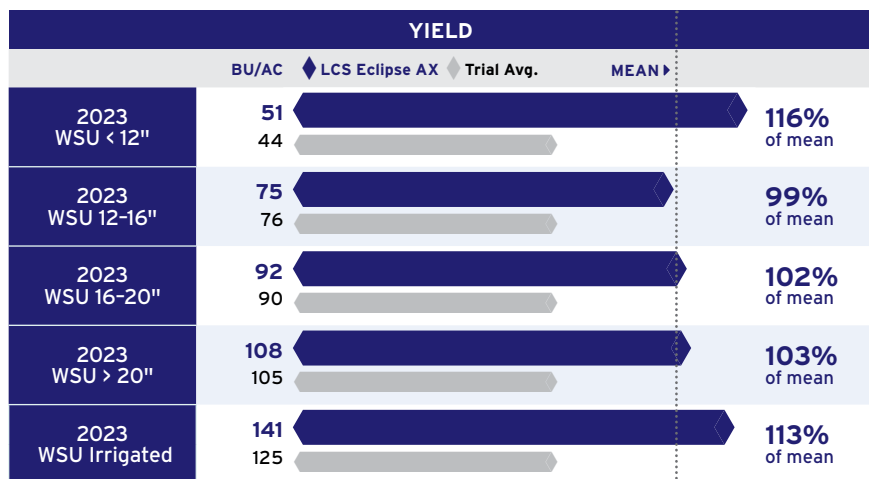
 **Good straw**  
strength

 **First HRWW**  
with PNW pedigree

 **Medium height**  
and early  
heading date

## HARD RED WINTER WHEAT LCS Eclipse AX

ADAPTATION



AGRONOMIC FEATURES			
	LCS Eclipse AX	LCS Helix AX	LCS Jet
Test Weight	59.3	63.9	59.8
Protein %	11.6	11.7	12.5
Heading (Julian)	150	144	149
Plant Height (in.)	37	36	32
Coleoptile Length (in.)	3.5	3.9	4.3
Straw Strength	Good	Average	Excellent

All available public and private data used in compiling scores



All available public and private data used in compiling scores

END-USE QUALITY			
Overall Quality	Baking Quality	Flour Protein	Milling Quality
Desirable	Desirable	Acceptable	Acceptable

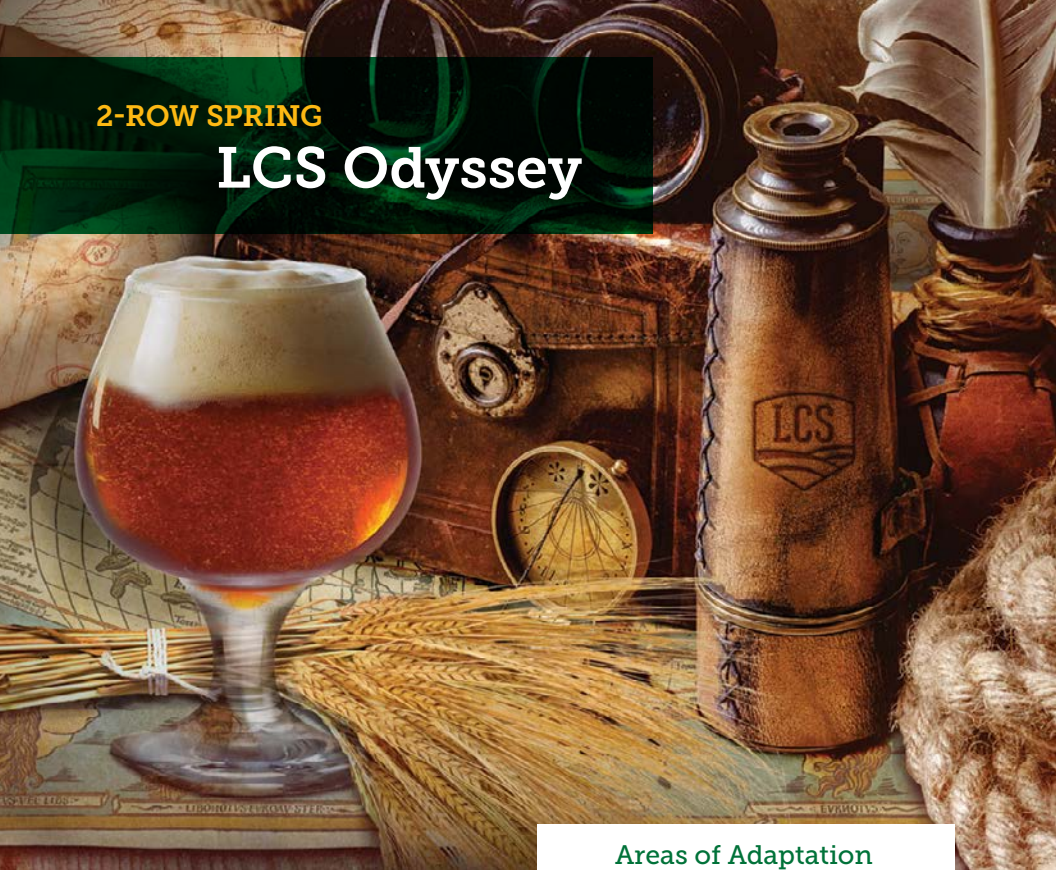
Data obtained from LCS Quality Laboratory





2-ROW SPRING

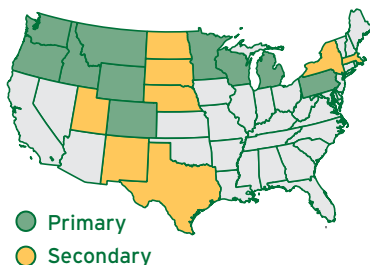
# LCS Odyssey



## An Adventure in Craft Barley

LCS Odyssey is a must-have variety for distillers, as it is the only malting barley variety available in the United States today rated as non-GN (zero glycosidic nitrile content).

### Areas of Adaptation



# Malting & Brewing LCS Odyssey



### Malting Specifications

Specification	2016 LCS <sup>1</sup>	2016 MSU <sup>2</sup>	2015 MSU <sup>3</sup>	2013 AMBA <sup>4</sup>	2013 AMBA <sup>4</sup>	
	Fort Collins, Colorado	Bozeman, Montana	Combined Michigan	Idaho Falls, Idaho	Pullman, Washington	
Barley	Plump (On 6/64) (%)	97.0	99.9	97.8	97.9	94.5
	Moisture (%)	10.4	-	15.0	8.1	8.6
	Total Protein (% d.b.)	10.9	13.6	10.8	10.7	10.3
	Pre-Harvest Sprouting (RVA)	154	-	142	-	-
	DON (ppm)	< 0.1	-	0.0	-	-
Malt	Extract, Fine Grind (% d.b.)	82.4	79.0	83.2	82.9	81.2
	Wort Color (Deg. Lov.)	1.56	1.90	2.45	1.66	1.88
	Diastatic Power (Deg. L)	110	127	77	125	124
	Alpha Amylase (D.U.)	54.9	44.7	62.0	61.5	60.4
	Soluble Protein (% d.b.)	4.40	3.62	4.25	4.78	4.14
	Total Protein (% d.b.)	11.1	13.6	10.7	11.5	10.9
	Soluble/Total Protein (% d.b.)	39.6	27.5	42.6	41.8	37.8
	Beta-Glucan (ppm)	82	190	56	76	78
	Free Amino Nitrogen (FAN)	160	105	214	192	179

### Malt House Analysis<sup>4</sup>

Chitting (%)	Steep Out Moisture (%)	Malt Yield (%)	96-Hour Acrospire Count				
			0-1/4	>1/4-1/2	>1/2-3/4	>3/4-1	>1
95	45.4	91.3	0	30	35	35	0

1 LCS data, obtained from Hartwick College: [hartwick.edu/about-us/centers-institutes/center-for-craft-food-and-beverage/](http://hartwick.edu/about-us/centers-institutes/center-for-craft-food-and-beverage/)  
 2 Data obtained from Montana State University: [plantsciences.montana.edu/crops/index.html](http://plantsciences.montana.edu/crops/index.html)  
 3 Data obtained from Michigan State University: [msue.anr.msu.edu/topic/malting\\_barley/research](http://msue.anr.msu.edu/topic/malting_barley/research)  
 4 Data obtained from the American Malting Barley Association: [ambainc.org/](http://ambainc.org/)

By the Numbers

**Non-producer** of GN (glycosidic nitrile)

**#1 choice** for cereal cyst nematode resistance

**Highest yielding** variety in 2016 MSU trials



## FORAGE BARLEY

## LCS Saturn

A ringer for forage barley



**Excellent**  
straw strength



**Good option**  
for cover  
crop mixes



**Very good**  
stripe and leaf  
rust tolerance



**Higher**  
than average  
protein content



**PVP** Unauthorized seed multiplication prohibited by law.  
U.S. Plant Variety Protection Number has been granted.

LCS Saturn is an awned forage barley

## Superior wheat quality

**Limagrain Cereal Seeds is the only private breeding program with a dedicated, state-of-the-art quality lab.** The LCS Quality Laboratory utilizes a comprehensive set of data, compiled over multiple years, to determine the end-use quality of all wheat varieties we release. Key attributes include:

**Baking quality**, including loaf volume, cookie diameter and dough rheology.

**Milling quality**, including flour yields and protein loss from grain to flour.

**Flour protein**, including water absorption, gluten strength and percentage of protein content.

These characteristics are weighted and combined into a single score: baking quality (30%), dough properties (20%), milling quality (40%), test weight (5%) and flour protein (5%). Overall end-use quality is classified in one of four categories:

**Most Desirable.** Elite varieties with excellent intrinsic (kernel) qualities and a superior combination of milling, baking and dough properties.

**Desirable.** High-demand varieties with strong intrinsic qualities and very good to good milling, baking and dough properties.

**Acceptable.** One or more quality parameters may have minor flaws. Overall, these varieties are acceptable to end users.

**Less Desirable.** Varieties with quality parameters that are less than adequate for current end-user standards or a single critical flaw.

# Game-changing wheat genetics



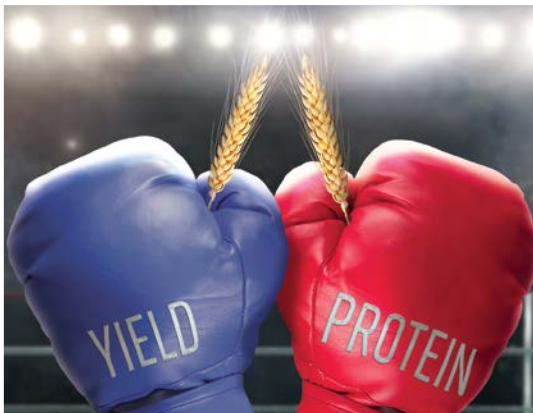
LCS Hammer AX



LCS Buster



LCS Ascent



LCS Dual

[LimagrainsCerealSeeds.com](http://LimagrainsCerealSeeds.com)

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Limagrain 