



# Current Report

## EXTENSION

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# Protein Concentration of Winter Wheat Varieties in Oklahoma — 2020–2021

Amanda de Oliveira Silva  
Small Grains Extension Specialist

Robert Calhoun  
Senior Agriculturalist

Brett Carver  
Wheat Breeder

Tina Johnson  
Senior Research Specialist

Molly Sawatzky  
Undergraduate Student

### General Information

Protein is just one of many attributes that determines end-use quality and marketability of winter wheat. In fact, some millers and bakers would argue that functionality of wheat protein is more important than the quantity of protein. While varietal differences exist, variability in protein among environments is generally much larger than variability among varieties. Factors such as nitrogen (N) fertilization and drought stress, for example, can sharply impact final wheat protein concentration.

To reflect these management and environmental impacts on wheat protein concentration, data are reported by variety and location in Table 1. In Table 2, we report the wheat protein concentration by variety as a deviation from the location mean. This allows for easier comparison of wheat protein among varieties across locations. Doublestop CL Plus and Green Hammer, for example, showed positive deviation from the location mean in about 95% of this year's trials, indicating a tendency for above-average wheat protein concentration. Iba, on the other hand, showed a negative deviation from location mean in 85% of the trials, indicating a tendency for lower than average wheat protein concentration. Adequate and timely N fertility as recommended by a recent soil test or sensor-based N management program can help ensure that varieties with lower than average protein produce wheat or flour protein within the acceptable range for the end-users.

However, protein quantity should not be used as a barometer for protein quality (i.e., dough strength and functionality). Although, there are few exceptions to this, with Doublestop CL Plus being one example. Iba is also a prime example of how protein data can sometimes be misused, as the functionality of the protein in Iba is above average, which can offset lower absolute protein concentration. More information on end-use quality is available in Current Report CR-2165 Wheat and Flour Quality for Varieties Tested in the 2016 OSU Variety Performance Tests.

### Procedures

Approximately 600 g subsamples of wheat grain were collected at harvest from four field replicates of all entries for each OSU Wheat Variety Performance Test. Each test was properly

fertilized and managed according to OSU Cooperative Extension recommendations. Additional information on test locations and management practices is available in Current Report 2143 2020-2021 Oklahoma Small Grains Variety Performance Tests online at [www.wheat.okstate.edu](http://www.wheat.okstate.edu). Samples were analyzed nondestructively immediately after harvest for wheat protein concentration on a 12% moisture basis, using a Diode Array Near Infrared (NIR) moisture and protein determinator (model DA 7200, Perten Instruments, Sweden).

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Lamont – Don & Roger Kirby  
Thomas – Butch Wherrit  
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**Table 1. Wheat protein concentration (%) of varieties and experimental lines tested in the 2020-2021 Oklahoma Wheat Variety Performance Tests.**

Licensee	Variety	%wheat protein concentration												
		Afton	Altus	Alva	Apache	Apache Fungicide	Balko	Buffalo	Cherokee	Chickasha	Chickasha IM	El Reno DP	El Reno GO	
AgriMaXX	AM Cartwright	11.4	11.1	11.6	-	-	-	-	10.5	14.1	13.9	10.5	10.4	
AgriPro	AP Bigfoot	-	11.1	-	-	-	-	-	-	14.4	16.0	-	-	
AgriPro	AP EverRock	-	11.8	-	12.5	13.0	-	-	-	-	16.4	-	-	
AgriPro	AP Roadrunner	-	10.8	-	-	-	-	-	-	12.4	13.1	-	-	
AgriPro	AP18 AX	-	10.7	-	-	-	-	-	-	14.7	15.1	-	-	
AgriPro	Bob Dole	11.3	11.3	11.9	13.4	13.9	12.3	11.3	9.6	14.7	15.3	10.1	10.2	
AgriPro	SY Achieve CL2	11.7	11.7	11.4	14.4	14.8	12.6	12.7	8.7	14.9	16.0	-	-	
AgriPro	SY Rugged	-	10.7	10.2	13.0	12.9	11.5	11.0	8.4	15.4	15.2	10.0	10.4	
AGSECO	AG Icon	11.8	11.8	10.3	-	-	12.0	-	-	14.8	15.1	10.3	10.3	
AGSECO	AG Radical	-	10.7	-	-	-	-	-	-	13.9	14.0	-	-	
CHS	Allegiant 3063	-	10.5	-	-	-	-	-	-	13.7	14.6	-	-	
CROPLAN	CP7017AX	-	9.8	-	-	-	-	-	-	12.7	12.9	-	-	
CROPLAN	CP7050AX	-	11.6	-	-	-	-	-	-	16.4	16.6	-	-	
CROPLAN	CP7909	9.9	11.4	10.5	10.8	11.5	12.1	10.8	8.4	13.5	14.6	-	-	
Dyna-Gro	Buckhorn AX	-	11.5	-	-	-	-	-	-	15.4	17.0	-	-	
KWA	Everest	12.1	-	-	-	-	-	-	-	-	-	-	-	
KWA	KS Dallas	-	10.4	10.4	12.0	12.0	11.2	11.4	8.4	14.8	15.4	9.6	9.9	
KWA	KS Hamilton	-	10.3	-	-	-	-	-	-	13.9	13.4	-	-	
KWA	KS Hatchett	-	12.4	-	-	-	-	-	-	14.5	15.4	-	-	
KWA	KS Silverado	-	9.4	11.0	11.9	12.3	-	11.2	8.5	14.3	15.5	10.3	9.7	
KWA	KS Western Star	-	11.0	10.1	10.4	11.0	11.6	11.0	8.0	11.9	12.2	10.4	9.9	
KWA	Zenda	10.7	11.2	-	-	-	-	-	-	13.7	14.2	-	-	
LCS	LCS Atomic AX	-	11.3	-	-	-	-	-	-	15.7	16.0	-	-	
LCS	LCS Chrome	11.9	11.6	10.7	11.8	12.0	11.8	12.2	9.0	12.7	13.4	10.2	10.6	
LCS	LCS Fusion AX	-	11.4	-	-	-	-	-	-	12.9	12.9	-	-	
LCS	LCS Helix AX	-	10.9	-	-	-	-	-	-	14.2	14.7	-	-	
LCS	LCS Julep	-	12.1	-	-	-	-	-	-	12.5	13.1	-	-	
LCS	LCS Photon AX	12.5	11.7	12.6	13.1	13.5	-	12.4	9.5	15.8	16.4	10.1	10.5	
LCS	LCS Revere	-	10.8	-	-	-	-	-	-	13.8	14.7	-	-	
LCS	LCS Valiant	-	11.3	-	-	-	-	-	-	14.4	15.1	-	-	
OGI	Baker's Ann	-	-	11.1	-	-	11.9	11.7	8.6	16.6	17.5	10.4	10.5	
OGI	Bentley	10.3	10.7	10.4	-	-	11.5	-	8.2	14.5	15.5	-	-	
OGI	Big Country	10.7	12.2	10.7	13.8	13.2	12.3	11.9	8.4	14.3	15.1	10.2	10.3	
OGI	Breakthrough	-	-	10.2	-	-	11.8	11.3	8.3	-	-	-	-	
OGI	Doublestop CL+	12.1	12.6	13.2	13.3	13.2	12.8	13.7	11.0	13.7	14.8	10.1	11.2	
OGI	Duster	-	11.2	-	-	-	-	-	-	14.0	14.9	-	-	
OGI	Gallagher	10.9	10.7	10.3	12.2	12.0	11.8	11.0	8.8	15.1	15.1	10.0	9.8	
OGI	Green Hammer	-	12.2	-	14.2	14.4	-	-	-	15.7	16.2	10.1	11.3	
OGI	Iba	-	-	11.1	-	-	11.3	10.9	8.3	-	-	-	-	
OGI	Lonerider	-	-	10.6	-	-	11.7	11.7	9.2	-	-	-	-	
OGI	OK Corral	10.8	11.6	9.7	12.6	12.3	11.9	11.3	7.7	14.4	15.0	9.8	9.5	
OGI	Showdown	9.9	10.5	10.3	11.9	12.1	11.7	10.6	8.3	13.8	15.1	10.5	9.3	
OGI	Skydance	12.2	11.5	12.5	13.5	13.2	-	-	9.8	16.6	16.6	-	-	
OGI	Smith's Gold	11.2	10.7	10.6	13.2	13.2	11.8	11.5	8.2	13.8	14.8	10.0	10.2	
OGI	Strad CL+	-	-	-	-	-	-	-	-	14.5	14.7	10.2	10.3	
OGI	Uncharted	-	10.1	-	13.8	13.6	-	-	-	14.2	14.6	10.2	10.5	
PlainsGold	Canvas	-	10.3	-	10.5	11.0	11.2	11.2	8.2	13.0	13.2	-	-	
PlainsGold	Crescent AX	-	9.8	9.9	-	-	11.3	11.1	8.1	15.3	15.7	-	-	
PlainsGold	Guardian	-	10.6	9.7	-	-	11.0	-	8.5	13.8	13.9	-	-	
Watley	TAM 112	-	-	-	-	-	-	-	-	-	-	-	-	
Watley	TAM 115	-	-	-	-	-	-	-	-	-	-	-	-	
Watley	TAM 204	-	-	-	-	-	-	-	-	-	-	-	-	
Westbred	WB4269	10.7	11.5	11.7	11.4	11.8	-	10.8	9.6	12.2	13.1	10.7	10.4	
Westbred	WB4401	10.0	11.3	10.4	-	-	-	-	8.8	14.5	14.9	9.8	9.3	
Westbred	WB4699	-	10.8	10.3	10.7	11.1	10.6	10.0	8.5	11.9	11.7	-	-	
Westbred	WB4792	11.2	10.0	10.8	11.2	11.5	10.9	10.9	8.6	13.4	13.9	9.9	9.5	
<b>Experimentals</b>														
KSU	KS12DH0156-88	-	11.7	-	-	-	-	-	-	13.8	14.5	-	-	
OSU	OCW03S580S-8WF	-	10.9	-	13.4	13.7	-	-	-	13.6	14.5	10.1	10.1	
OSU	OK12716W	11.0	11.6	9.8	11.0	11.1	11.2	10.3	7.7	12.3	13.3	9.6	9.1	
OSU	OK15DMASBx7 ARS 6-8	-	-	-	-	-	-	-	-	-	-	10.0	10.2	
OSU	OK15MASBx7 ARS 8-29	-	-	-	-	-	-	-	-	-	-	9.7	9.4	
<b>Mean</b>		<b>11.1</b>	<b>11.1</b>	<b>10.8</b>	<b>12.4</b>	<b>12.6</b>	<b>11.7</b>	<b>11.4</b>	<b>8.7</b>	<b>14.1</b>	<b>14.7</b>	<b>10.1</b>	<b>10.1</b>	
<b>LSD (0.05)</b>		<b>0.7</b>	<b>1.4</b>	<b>0.7</b>	<b>0.7</b>	<b>0.8</b>	<b>0.4</b>	<b>0.4</b>	<b>0.9</b>	<b>0.7</b>	<b>0.8</b>	<b>NS</b>	<b>0.5</b>	

Notes: Protein was adjusted to 12% moisture content. Shaded values are not statistically different from the highest value within a column. NS = not significant. Single-dashes "-" = data not available.

**Table 1. Wheat protein concentration (%) of varieties and experimental lines tested in the 2020-2021 Oklahoma Wheat Variety Performance Tests. (cont'd)**

Licensee	Variety	Goodwell					Lahoma			
		Irrigated	Hooker	Keyes	Kildare	Kingfisher	Lahoma	Fungicide	Thomas	Walters
----- %wheat protein concentration -----										
AgriMaXX	AM Cartwright	14.2	-	-	-	11.6	12.5	12.8	-	-
AgriPro	AP Bigfoot	15.0	-	-	-	-	11.5	12.0	-	-
AgriPro	AP EverRock	15.4	-	-	-	-	12.9	13.4	-	11.4
AgriPro	AP Roadrunner	14.4	-	-	-	-	12.6	12.4	-	-
AgriPro	AP18 AX	14.9	-	-	-	-	11.6	11.9	-	-
AgriPro	Bob Dole	14.5	17.0	14.9	-	11.8	12.4	13.1	15.3	11.3
AgriPro	SY Achieve CL2	15.8	15.5	15.9	-	12.6	12.6	13.2	15.6	-
AgriPro	SY Rugged	13.5	14.4	13.6	-	11.7	12.5	12.4	14.2	10.9
AGSECO	AG Icon	14.7	14.9	14.8	-	12.3	12.9	13.2	14.8	-
AGSECO	AG Radical	15.3	-	-	-	-	12.9	12.5	-	-
CHS	Allegiant 3063	13.9	-	-	-	-	11.6	12.4	-	-
CROPLAN	CP7017AX	14.2	-	-	-	-	11.5	11.7	-	-
CROPLAN	CP7050AX	15.2	-	-	-	-	13.0	13.7	-	-
CROPLAN	CP7909	14.0	14.9	14.4	-	-	11.8	12.2	-	9.7
Dyna-Gro	Buckhorn AX	15.9	-	-	-	-	13.0	13.8	-	-
KWA	Everest	-	-	-	-	-	-	-	-	-
KWA	KS Dallas	14.5	14.6	14.3	-	12.3	13.0	13.0	14.8	11.1
KWA	KS Hamilton	15.1	-	-	-	-	13.1	13.5	-	-
KWA	KS Hatchett	15.1	-	-	-	-	12.5	12.8	-	-
KWA	KS Silverado	14.1	-	-	-	12.1	12.9	13.2	14.2	11.3
KWA	KS Western Star	14.3	13.7	13.5	-	12.7	12.8	12.3	13.6	10.9
KWA	Zenda	14.3	-	-	-	-	11.5	12.2	-	-
LCS	LCS Atomic AX	13.8	-	-	-	-	11.6	12.2	-	-
LCS	LCS Chrome	15.2	15.1	14.6	-	13.0	12.7	12.8	15.8	11.5
LCS	LCS Fusion AX	14.2	-	-	-	-	11.3	11.9	-	-
LCS	LCS Helix AX	13.9	-	-	-	-	12.3	12.4	-	-
LCS	LCS Julep	14.9	-	-	-	-	13.1	12.9	-	-
LCS	LCS Photon AX	15.7	-	-	-	12.6	12.9	13.4	15.5	11.9
LCS	LCS Revere	14.2	-	-	-	-	11.5	11.7	-	-
LCS	LCS Valiant	14.7	-	-	-	-	12.6	12.9	-	-
OGI	Baker's Ann	14.9	16.3	15.2	-	13.0	12.7	13.2	15.9	-
OGI	Bentley	14.6	15.2	14.3	-	-	11.9	12.3	-	10.5
OGI	Big Country	15.9	17.3	14.8	-	12.9	12.7	12.7	15.4	11.8
OGI	Breakthrough	14.5	14.8	14.1	-	-	12.8	13.0	-	-
OGI	Doublestop CL+	15.6	16.2	15.4	-	13.3	13.4	13.8	15.6	12.5
OGI	Duster	14.8	-	-	-	-	12.9	12.5	-	-
OGI	Gallagher	14.9	16.2	14.8	-	11.4	12.1	12.0	14.3	10.9
OGI	Green Hammer	-	-	-	-	13.5	13.8	14.0	16.4	13.2
OGI	Iba	13.7	13.3	13.5	-	-	-	-	-	-
OGI	Lonerider	15.8	15.5	15.6	-	-	12.7	12.8	-	-
OGI	OK Corral	14.7	14.9	13.7	-	12.2	12.4	12.5	14.8	11.2
OGI	Showdown	14.1	15.7	14.4	-	11.4	11.2	11.4	14.7	10.4
OGI	Skydance	-	-	-	-	12.7	13.1	13.3	16.1	12.6
OGI	Smith's Gold	14.8	15.9	14.8	-	12.2	12.1	12.1	14.7	11.4
OGI	Strad CL+	-	-	-	-	12.9	13.8	13.6	15.7	-
OGI	Uncharted	-	-	-	-	12.1	12.2	12.2	14.3	11.6
PlainsGold	Canvas	14.4	14.1	13.1	-	-	12.2	12.1	-	10.7
PlainsGold	Crescent AX	14.7	14.5	14.3	-	-	11.6	12.3	-	-
PlainsGold	Guardian	15.5	14.3	14.2	-	-	13.7	13.7	-	-
Watley	TAM 112	-	14.6	15.0	-	-	-	-	-	-
Watley	TAM 115	-	15.4	14.6	-	-	-	-	-	-
Watley	TAM 204	-	15.8	15.2	-	-	-	-	-	-
Westbred	WB4269	12.9	-	-	-	11.3	11.8	12.1	13.8	11.1
Westbred	WB4401	13.9	-	-	-	11.1	11.5	12.1	15.1	-
Westbred	WB4699	13.6	14.5	13.2	-	-	10.9	10.9	-	10.1
Westbred	WB4792	14.2	15.0	13.4	-	11.2	12.0	11.9	14.7	10.5
<b>Experimentals</b>										
KSU	KS12DH0156-88	15.1	-	-	-	-	13.2	12.7	-	-
OSU	OCW03S580S-8WF	-	-	-	-	12.1	12.1	12.4	15.1	11.7
OSU	OK12716W	14.2	14.6	13.7	-	11.5	11.5	11.3	14.3	10.5
OSU	OK15DMASBx7 ARS 6-8	-	-	-	-	-	-	-	15.1	-
OSU	OK15MASBx7 ARS 8-29	-	-	-	-	-	11.7	11.7	14.1	-
<b>Mean</b>		<b>14.6</b>	<b>15.1</b>	<b>14.4</b>	<b>-</b>	<b>12.2</b>	<b>12.4</b>	<b>12.6</b>	<b>14.9</b>	<b>11.2</b>
<b>LSD (0.05)</b>		<b>0.6</b>	<b>1.2</b>	<b>0.6</b>	<b>-</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>1.2</b>	<b>0.5</b>

Notes: Protein was adjusted to 12% moisture content. Shaded values are not statistically different from the highest value within a column. NS = not significant. Single-dashes "-" = data not available.

**Table 2. Wheat protein concentration relative to the location mean (expressed as a deviation) for varieties and experimental lines in the 2020-2021 Oklahoma Wheat Variety Performance Tests.**

Licensee	Variety	% wheat protein relative to location mean-----												
		Afton	Altus	Alva	Apache	Apache Fungicide	Balko	Buffalo	Cherokee	Chickasha	Chickasha IM	El Reno DP	El Reno GO	
AgriMAXX	AM Cartwright	0.2	0.0	0.8	-	-	-	-	1.8	0.0	-0.9	0.4	0.3	
AgriPro	AP Bigfoot	-	0.0	-	-	-	-	-	-	0.3	1.3	-	-	
AgriPro	AP EverRock	-	0.7	-	0.1	0.4	-	-	-	-	1.7	-	-	
AgriPro	AP Roadrunner	-	-0.3	-	-	-	-	-	-	-1.7	-1.6	-	-	
AgriPro	AP18 AX	-	-0.4	-	-	-	-	-	-	0.6	0.4	-	-	
AgriPro	Bob Dole	0.1	0.2	1.1	1.0	1.3	0.6	-0.1	0.9	0.6	0.6	0.0	0.1	
AgriPro	SY Achieve CL2	0.5	0.6	0.6	2.0	2.2	0.9	1.3	0.0	0.8	1.3	-	-	
AgriPro	SY Rugged	-	-0.4	-0.6	0.6	0.3	-0.2	-0.4	-0.4	1.3	0.5	-0.1	0.3	
AGSECO	AG Icon	0.6	0.7	-0.5	-	-	0.3	-	-	0.7	0.4	0.2	0.2	
AGSECO	AG Radical	-	-0.4	-	-	-	-	-	-	-0.2	-0.8	-	-	
CHS	Allegiant 3063	-	-0.6	-	-	-	-	-	-	-0.4	-0.1	-	-	
CROPLAN	CP7017AX	-	-1.3	-	-	-	-	-	-	-1.4	-1.9	-	-	
CROPLAN	CP7050AX	-	0.5	-	-	-	-	-	-	2.3	1.9	-	-	
CROPLAN	CP7909	-1.3	0.3	-0.4	-1.6	-1.1	0.4	-0.6	-0.4	-0.7	-0.1	-	-	
Dyna-Gro	Buckhorn AX	-	0.4	-	-	-	-	-	-	1.3	2.3	-	-	
KWA	Everest	0.9	-	-	-	-	-	-	-	-	-	-	-	
KWA	KS Dallas	-	-0.7	-0.4	-0.4	-0.7	-0.5	0.0	-0.3	0.7	0.7	-0.5	-0.2	
KWA	KS Hamilton	-	-0.8	-	-	-	-	-	-	-0.2	-1.3	-	-	
KWA	KS Hatchett	-	1.3	-	-	-	-	-	-	0.4	0.7	-	-	
KWA	KS Silverado	-	-1.8	0.2	-0.5	-0.3	-	-0.2	-0.2	0.2	0.8	0.2	-0.4	
KWA	KS Western Star	-	-0.1	-0.7	-2.0	-1.7	-0.1	-0.4	-0.7	-2.2	-2.6	0.3	-0.2	
KWA	Zenda	-0.5	0.1	-	-	-	-	-	-	-0.4	-0.5	-	-	
LCS	LCS Atomic AX	-	0.2	-	-	-	-	-	-	1.6	1.3	-	-	
LCS	LCS Chrome	0.8	0.5	-0.1	-0.6	-0.6	0.1	0.8	0.3	-1.4	-1.3	0.1	0.5	
LCS	LCS Fusion AX	-	0.3	-	-	-	-	-	-	-1.2	-1.8	-	-	
LCS	LCS Helix AX	-	-0.2	-	-	-	-	-	-	0.1	0.0	-	-	
LCS	LCS Julep	-	1.0	-	-	-	-	-	-	-1.6	-1.6	-	-	
LCS	LCS Photon AX	1.4	0.6	1.8	0.7	0.9	-	1.0	0.8	1.7	1.7	0.0	0.4	
LCS	LCS Revere	-	-0.3	-	-	-	-	-	-	-0.4	0.0	-	-	
LCS	LCS Valiant	-	0.2	-	-	-	-	-	-	0.3	0.4	-	-	
OGI	Baker's Ann	-	-	0.3	-	-	0.2	0.3	-0.1	2.5	2.8	0.3	0.4	
OGI	Bentley	-0.8	-0.4	-0.4	-	-	-0.2	-	-0.5	0.4	0.8	-	-	
OGI	Big Country	-0.4	1.1	-0.1	1.4	0.6	0.6	0.5	-0.4	0.2	0.4	0.1	0.2	
OGI	Breakthrough	-	-	-0.6	-	-	0.1	-0.1	-0.4	-	-	-	-	
OGI	Doublestop CL+	0.9	1.5	2.4	0.9	0.6	1.1	2.3	2.3	-0.4	0.1	0.0	1.1	
OGI	Duster	-	0.1	-	-	-	-	-	-	-0.1	0.2	-	-	
OGI	Gallagher	-0.2	-0.4	-0.5	-0.2	-0.6	0.1	-0.4	0.1	1.0	0.4	-0.1	-0.4	
OGI	Green Hammer	-	1.1	-	1.8	1.8	-	-	-	1.6	1.5	0.0	1.2	
OGI	Iba	-	-	0.3	-	-	-0.4	-0.5	-0.4	-	-	-	-	
OGI	Lonerider	-	-	-0.3	-	-	0.0	0.3	0.5	-	-	-	-	
OGI	OK Corral	-0.4	0.5	-1.1	0.2	-0.3	0.2	-0.1	-1.0	0.3	0.3	-0.4	-0.7	
OGI	Showdown	-1.2	-0.6	-0.5	-0.5	-0.5	0.0	-0.8	-0.4	-0.4	0.4	0.4	-0.9	
OGI	Skydance	1.0	0.4	1.7	1.1	0.6	-	-	1.1	2.5	1.9	-	-	
OGI	Smith's Gold	0.1	-0.4	-0.3	0.8	0.6	0.1	0.1	-0.5	-0.3	0.1	-0.2	0.1	
OGI	Strad CL+	-	-	-	-	-	-	-	-	0.4	0.0	0.1	0.2	
OGI	Uncharted	-	-1.0	-	1.4	1.0	-	-	-	0.1	-0.1	0.1	0.4	
PlainsGold	Canvas	-	-0.9	-	-1.9	-1.6	-0.5	-0.2	-0.5	-1.2	-1.5	-	-	
PlainsGold	Crescent AX	-	-1.3	-0.9	-	-	-0.4	-0.3	-0.6	1.2	1.0	-	-	
PlainsGold	Guardian	-	-0.5	-1.1	-	-	-0.7	-	-0.2	-0.3	-0.9	-	-	
Watley	TAM 112	-	-	-	-	-	-	-	-	-	-	-	-	
Watley	TAM 115	-	-	-	-	-	-	-	-	-	-	-	-	
Watley	TAM 204	-	-	-	-	-	-	-	-	-	-	-	-	
Westbred	WB4269	-0.4	0.4	0.9	-1.0	-0.8	-	-0.6	0.9	-1.9	-1.6	0.6	0.3	
Westbred	WB4401	-1.1	0.2	-0.4	-	-	-	-	0.1	0.4	0.2	-0.3	-0.8	
Westbred	WB4699	-	-0.4	-0.5	-1.7	-1.6	-1.2	-1.4	-0.2	-2.2	-3.0	-	-	
Westbred	WB4792	0.0	-1.1	-0.1	-1.2	-1.1	-0.8	-0.5	-0.1	-0.7	-0.8	-0.3	-0.6	
<b>Experimentals</b>														
KSU	KS12DH0156-88	-	0.6	-	-	-	-	-	-	-0.3	-0.2	-	-	
OSU	OCW03S580S-8WF	-	-0.2	-	1.0	1.1	-	-	-	-0.5	-0.2	0.0	0.0	
OSU	OK12716W	-0.2	0.5	-1.0	-1.5	-1.5	-0.5	-1.1	-1.0	-1.8	-1.4	-0.5	-1.0	
OSU	OK15DMASBx7 ARS 6-8	-	-	-	-	-	-	-	-	-	-	-0.1	0.1	
OSU	OK15MASBx7 ARS 8-29	-	-	-	-	-	-	-	-	-	-	-0.4	-0.7	
<b>Location Mean</b>		<b>11.1</b>	<b>11.1</b>	<b>10.8</b>	<b>12.4</b>	<b>12.6</b>	<b>11.7</b>	<b>11.4</b>	<b>8.7</b>	<b>14.1</b>	<b>14.7</b>	<b>10.1</b>	<b>10.1</b>	
<b>LSD (0.05)</b>		<b>0.7</b>	<b>1.4</b>	<b>0.7</b>	<b>0.7</b>	<b>0.8</b>	<b>0.4</b>	<b>0.4</b>	<b>0.9</b>	<b>0.7</b>	<b>0.8</b>	<b>NS</b>	<b>0.5</b>	

Notes: Protein was adjusted to 12% moisture content. Shaded values are not statistically different from the highest value within a column. NS = not significant. Single-dashes "-" = data not available.

**Table 2. Wheat protein concentration relative to the location mean (expressed as a deviation) for varieties and experimental lines in the 2020-2021 Oklahoma Wheat Variety Performance Tests. (cont'd).**

Licensee	Variety	Goodwell					Lahoma				
		Irrigated	Hooker	Keyes	Kildare	Kingfisher	Lahoma	Fungicide	Thomas	Walters	
		----- % wheat protein relative to location mean-----									
AgriMaXX	AM Cartwright	-0.4	-	-	-	-0.6	0.1	0.2	-	-	
AgriPro	AP Bigfoot	0.4	-	-	-	-	-0.9	-0.6	-	-	
AgriPro	AP EverRock	0.8	-	-	-	-	0.5	0.8	-	11.4	
AgriPro	AP Roadrunner	-0.2	-	-	-	-	0.2	-0.3	-	-	
AgriPro	AP18 AX	0.3	-	-	-	-	-0.9	-0.7	-	-	
AgriPro	Bob Dole	-0.2	1.9	0.5	-	-0.4	0.0	0.5	0.4	11.3	
AgriPro	SY Achieve CL2	1.2	0.4	1.5	-	0.4	0.2	0.6	0.7	-	
AgriPro	SY Rugged	-1.1	-0.7	-0.9	-	-0.5	0.0	-0.2	-0.7	10.9	
AGSECO	AG Icon	0.1	-0.2	0.4	-	0.1	0.4	0.6	-0.2	-	
AGSECO	AG Radical	0.7	-	-	-	-	0.5	-0.1	-	-	
CHS	Allegiant 3063	-0.7	-	-	-	-	-0.8	-0.2	-	-	
CROPLAN	CP7017AX	-0.4	-	-	-	-	-0.9	-0.9	-	-	
CROPLAN	CP7050AX	0.6	-	-	-	-	0.6	1.1	-	-	
CROPLAN	CP7909	-0.6	-0.3	-0.1	-	-	-0.6	-0.4	-	9.7	
Dyna-Gro	Buckhorn AX	1.3	-	-	-	-	0.6	1.2	-	-	
KWA	Everest	-	-	-	-	-	-	-	-	-	
KWA	KS Dallas	-0.1	-0.5	-0.1	-	0.1	0.5	0.4	-0.1	11.1	
KWA	KS Hamilton	0.5	-	-	-	-	0.7	0.9	-	-	
KWA	KS Hatchett	0.5	-	-	-	-	0.0	0.2	-	-	
KWA	KS Silverado	-0.5	-	-	-	-0.1	0.4	0.6	-0.7	11.3	
KWA	KS Western Star	-0.4	-1.5	-0.9	-	0.5	0.4	-0.3	-1.3	10.9	
KWA	Zenda	-0.3	-	-	-	-	-0.9	-0.4	-	-	
LCS	LCS Atomic AX	-0.8	-	-	-	-	-0.9	-0.4	-	-	
LCS	LCS Chrome	0.6	0.0	0.2	-	0.8	0.3	0.2	0.9	11.5	
LCS	LCS Fusion AX	-0.4	-	-	-	-	-1.1	-0.8	-	-	
LCS	LCS Helix AX	-0.7	-	-	-	-	-0.2	-0.2	-	-	
LCS	LCS Julep	0.3	-	-	-	-	0.7	0.3	-	-	
LCS	LCS Photon AX	1.1	-	-	-	0.4	0.4	0.8	0.6	11.9	
LCS	LCS Revere	-0.4	-	-	-	-	-0.9	-0.9	-	-	
LCS	LCS Valiant	0.1	-	-	-	-	0.2	0.3	-	-	
OGI	Baker's Ann	0.3	1.2	0.8	-	0.8	0.3	0.6	1.0	-	
OGI	Bentley	0.0	0.1	-0.1	-	-	-0.5	-0.3	-	10.5	
OGI	Big Country	1.3	2.2	0.4	-	0.7	0.3	0.1	0.5	11.8	
OGI	Breakthrough	-0.1	-0.3	-0.3	-	-	0.4	0.4	-	-	
OGI	Doublestop CL+	1.0	1.1	1.0	-	1.1	1.0	1.2	0.7	12.5	
OGI	Duster	0.2	-	-	-	-	0.5	-0.2	-	-	
OGI	Gallagher	0.3	1.1	0.4	-	-0.8	-0.4	-0.6	-0.6	10.9	
OGI	Green Hammer	-	-	-	-	1.3	1.4	1.4	1.5	1.9	
OGI	Iba	-0.9	-1.8	-0.9	-	-	-	-	-	-	
OGI	Lonerider	1.2	0.4	1.2	-	-	0.3	0.2	-	-	
OGI	OK Corral	0.1	-0.2	-0.7	-	0.0	0.0	-0.2	-0.1	11.2	
OGI	Showdown	-0.5	0.6	0.0	-	-0.8	-1.2	-1.2	-0.2	10.4	
OGI	Skydance	-	-	-	-	0.5	0.7	0.7	1.2	12.1	
OGI	Smith's Gold	0.2	0.8	0.4	-	0.0	-0.3	-0.5	-0.2	11.4	
OGI	Strad CL+	-	-	-	-	0.7	1.4	1.0	0.8	-	
OGI	Uncharted	-	-	-	-	-0.1	-0.2	-0.4	-0.7	11.6	
PlainsGold	Canvas	-0.2	-1.0	-1.3	-	-	-0.3	-0.5	-	10.7	
PlainsGold	Crescent AX	0.1	-0.6	-0.1	-	-	-0.8	-0.4	-	-	
PlainsGold	Guardian	0.9	-0.8	-0.2	-	-	1.3	1.1	-	-	
Watley	TAM 112	-	-0.5	0.5	-	-	-	-	-	-	
Watley	TAM 115	-	0.3	0.2	-	-	-	-	-	-	
Watley	TAM 204	-	0.7	0.8	-	-	-	-	-	-	
Westbred	WB4269	-1.7	-	-	-	-0.9	-0.6	-0.5	-1.1	11.1	
Westbred	WB4401	-0.7	-	-	-	-1.1	-0.9	-0.5	0.2	-	
Westbred	WB4699	-1.0	-0.6	-1.2	-	-	-1.5	-1.8	-	10.1	
Westbred	WB4792	-0.4	-0.1	-1.1	-	-1.0	-0.4	-0.8	-0.2	10.5	
	<b>Experimentals</b>										
KSU	KS12DH0156-88	0.5	-	-	-	-	0.8	0.1	-	-	
OSU	OCW03S580S-8WF	-	-	-	-	-0.1	-0.4	-0.2	0.2	11.7	
OSU	OK12716W	-0.4	-0.5	-0.7	-	-0.7	-0.9	-1.3	-0.6	10.5	
OSU	OK15DMASBx7 ARS 6-8	-	-	-	-	-	-	-	0.2	-	
OSU	OK15MASBx7 ARS 8-29	-	-	-	-	-	-0.7	-0.9	-0.8	-	
	<b>Location Mean</b>	<b>14.6</b>	<b>15.1</b>	<b>14.4</b>	<b>-</b>	<b>12.2</b>	<b>12.4</b>	<b>12.6</b>	<b>14.9</b>	<b>11.2</b>	
	<b>LSD (0.05)</b>	<b>0.6</b>	<b>1.2</b>	<b>0.6</b>	<b>-</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>1.2</b>	<b>0.5</b>	

Notes: Protein was adjusted to 12% moisture content. Shaded values are not statistically different from the highest value within a column. NS = not significant. Single-dashes "-" = data not available.

## Additional Information on the Web

A copy of this publication as well as additional information about wheat management can be found at:

Website: [www.wheat.okstate.edu](http://www.wheat.okstate.edu)

Blog: [www.osuwheat.com](http://www.osuwheat.com)



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Matt Wehmeyer  
7167 Highbanks Road  
Mascoutah, IL 62258  
Phone: (855) 629-9432  
Email: matt@agrimaxxwheat.com  
www.agrimaxxwheat.com  
Variety: AM Cartwright

### AgriPro

Greg McCormack  
8750 NW 66th st.  
Silver Lake, KS 66539  
Phone: (620) 532-6283  
Email: greg.mccormack@syngenta.com  
www.agriprowheat.com  
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Steve Ahring  
P.O. Box 7  
Girard, KS 66743  
Phone: (620) 724-6223  
Email: steve@delangeseed.com www.agseco.com  
Varieties: AG Icon, AG Radical

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PO Box 187  
Okarche, OK 73762  
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Email: zack.meyer@chsinc.com  
www.chswesternok.com  
Variety: Allegiant 3063

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Vincent, IA 50594  
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Phone: (515) 356-4524  
Email: claker@landolakes.com  
www.croplan.com  
Varieties: CP7017 AX, CP7050 AX, CP7909

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3492 Long Prairie Road Suite 200  
Flower Mound, TX 75022  
Phone: (318) 282-9804  
Email: shawn.carter@nutrien.com  
www.dynagroseed.com  
Variety: Buckhorn AX

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Daryl Strouts  
1990 Kimball Ave. Suite 200  
Manhattan, KS 66502  
Phone: (785) 320-4080  
Email: kwa@kansas.net www.kswheatalliance.org  
Varieties: KS Dallas, KS Hamilton, KS Hatchett, KS Silverado, KS Western Star, Zenda, KS12DH0156-88

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Wichita, KS 67204  
Phone: (316) 755-2042  
Email: nathan.miller@limagrain.com www.limagraincereal-seeds.com  
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Phone: (405) 744-4347  
Email: hodgesm1@cox.net www.okgenetics.com  
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Fort Collins, CO 80525  
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Email: tbenninghoven@coloradowheat.org  
www.plainsgold.com  
Varieties: Canvas, Crescent AX, Guardian

### Watley Seed

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Spearman, TX 79081  
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www.watleyseed.com  
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Stillwater, OK 74075  
Phone: (620) 243-4263  
Email: john.fenderson@bayer.com  
www.westbred.com  
Varieties: WB4269, WB4401, WB4699, WB4792



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