



# Current Report

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## Protein Content of Winter Wheat Varieties in Oklahoma 2010

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### General Information

Protein is just one of many attributes which determine 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 commonly exist, differences in varietal protein among environments are generally much larger than differences among varieties. Factors such as nitrogen fertility, for example, can sharply impact final protein content of the grain.

### Procedures

Approximately 600g subsamples of wheat grain were collected from the OSU wheat variety testing plots at harvest.

These plots were well-fertilized and managed according to OSU Cooperative Extension recommendations. Additional information on test locations and management practices is available in Current Report 2143 2010 Oklahoma Small Grains Variety Performance Tests on the web at [www.wheat.okstate.edu](http://www.wheat.okstate.edu). Samples were stored in plastic containers for approximately four weeks following harvest. Samples were analyzed for protein content using a Diode Array Near Infrared instrument (NIR) (model DA 7200, Perten Instruments, Sweden).

### Acknowledgments

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**Table 1. Wheat protein (12% moisture basis) of winter wheat varieties in the 2009-10 OSU wheat variety performance tests.**

Variety	Afton	Alva	Apache	Apache fungicide	Balko	Buffalo	Cherokee	El Reno DP
-----% wheat protein-----								
Armour	12.0	-	-	-	-	-	-	-
Art	<b>13.1</b>	<b>16.0</b>	-	-	-	-	<b>17.5</b>	-
Aspen (W)	-	-	-	-	-	-	-	-
Billings	<b>13.2</b>	<b>15.7</b>	-	-	14.3	<b>15.6</b>	16.2	11.7
Centerfield	<b>13.0</b>	14.6	<b>14.1</b>	13.8	14.5	12.6	15.1	12.2
Deliver	12.5	14.7	13.4	13.6	14.1	12.9	14.7	11.4
Doans	12.0	14.3	13.6	13.2	14.0	13.0	15.3	11.4
Duster	11.6	13.3	12.9	12.6	13.9	13.5	13.9	10.3
Endurance	12.3	13.4	13.1	13.0	12.6	12.6	14.1	10.9
Everest	-	-	-	-	-	-	14.5	-
Fannin	-	-	<b>14.0</b>	13.9	-	-	-	<b>12.4</b>
Fuller	12.5	13.9	<b>13.9</b>	<b>14.4</b>	14.0	<b>14.5</b>	15.3	10.9
Greer	<b>12.8</b>	13.8	13.2	13.3	-	14.6	14.5	10.8
Guymon (W)	-	-	-	-	-	-	-	-
Jackpot	11.9	14.9	12.5	13.1	13.3	<b>15.2</b>	15.8	10.7
Jagalene	12.3	14.3	12.9	13.4	13.6	12.9	15.1	10.7
Jagger	12.3	15.4	13.3	13.6	14.3	<b>14.7</b>	16.2	11.5
Keota	-	13.9	-	-	13.5	13.1	15.2	-
Mace	-	-	-	-	13.3	-	-	-
OK Bullet	12.3	14.6	12.9	13.4	14.1	<b>14.7</b>	15.3	10.8
OK Rising (W)	-	-	-	-	-	-	-	-
Overley	12.0	13.9	13.3	13.4	13.9	14.1	15.3	10.9
Pete	12.4	14.4	13.2	<b>14.1</b>	13.3	12.5	15.1	10.9
Santa Fe	<b>12.9</b>	15.3	13.5	13.9	14.1	<b>15.0</b>	16.3	<b>11.7</b>
Shocker	<b>13.1</b>	15.0	<b>14.3</b>	<b>14.7</b>	14.3	<b>14.6</b>	15.9	11.2
TAM 111	-	13.0	-	-	13.4	13.8	14.9	-
TAM 112	-	14.3	-	-	13.3	11.9	15.9	-
TAM 203	<b>13.1</b>	<b>16.1</b>	<b>13.9</b>	13.9	14.1	<b>15.4</b>	<b>17.3</b>	<b>11.8</b>
TAM 401	12.5	15.1	13.3	13.4	-	13.1	16.0	<b>11.9</b>
Winterhawk	-	13.3	-	-	13.1	12.7	14.3	-
OK05212	-	13.8	-	-	<b>15.0</b>	-	14.9	11.4
OK05312	-	12.6	-	-	12.4	12.8	-	-
OK05511	-	-	12.5	12.3	13.8	-	-	11.3
OK05526	12.3	14.3	13.3	13.6	13.7	-	16.0	11.3
OK06618	-	-	-	-	-	-	-	-
OK07231	-	13.9	-	-	-	-	-	10.8
STARS 0601W	-	-	-	-	13.8	<b>14.3</b>	-	-
Mean	12.5	14.4	13.4	13.5	13.8	13.8	15.4	11.2
LSD (0.05)	0.5	0.7	0.7	0.7	0.4	1.4	0.7	0.7

Bold numbers within a column are in the top statistical grouping for that test site  
(W) = Hard white Variety  
DP = Dual Purpose Management

**Table 1. Wheat protein (continued).**

Variety	Frederick	Gage DP	Goodwell Irrigated	Goodwell Nonirrigated	Haskell	Homestead	Hooker	Keyes
-----% wheat protein-----								
Armour	-	-	-	-	<b>12.4</b>	-	-	-
Art	-	-	-	13.9	<b>13.2</b>	-	-	-
Aspen (W)	-	-	13.4	15.1	-	-	-	-
Billings	-	13.0	13.7	15.4	<b>13.3</b>	<b>14.5</b>	<b>14.5</b>	<b>14.0</b>
Centerfield	<b>11.4</b>	12.7	13.7	<b>15.8</b>	<b>13.0</b>	14.2	-	-
Deliver	<b>11.3</b>	12.2	13.2	14.5	12.1	13.6	-	-
Doans	10.7	12.3	13.2	15.1	-	14.3	13.7	12.2
Duster	9.6	11.6	13.2	-	11.9	13.6	13.4	12.1
Endurance	10.2	12.3	11.9	15.1	11.3	13.1	12.5	11.1
Everest	-	-	-	14.7	12.1	-	-	-
Fannin	<b>11.9</b>	-	-	-	-	-	-	-
Fuller	10.4	12.4	13.5	15.3	<b>13.0</b>	13.9	14.1	<b>12.6</b>
Greer	<b>10.8</b>	<b>13.1</b>	13.2	15.1	<b>12.7</b>	13.6	-	-
Guymon (W)	-	-	13.6	15.4	-	-	-	-
Jackpot	<b>11.0</b>	12.9	13.4	15.3	<b>12.3</b>	13.8	13.7	12.0
Jagalene	10.3	12.1	13.1	14.8	<b>12.4</b>	14.0	12.9	12.0
Jagger	11.0	<b>13.2</b>	13.2	-	<b>13.1</b>	<b>15.0</b>	14.0	<b>12.9</b>
Keota	-	12.7	13.5	14.8	-	-	13.6	<b>13.8</b>
Mace	-	-	12.7	-	-	-	13.5	12.4
OK Bullet	10.4	<b>13.2</b>	13.4	15.3	<b>12.7</b>	14.2	<b>14.3</b>	<b>13.2</b>
OK Rising (W)	-	-	<b>13.9</b>	15.5	-	-	-	-
Overley	10.4	12.5	<b>13.9</b>	14.3	<b>12.9</b>	14.0	-	-
Pete	10.1	12.0	12.3	15.1	<b>13.3</b>	13.0	12.9	<b>12.5</b>
Santa Fe	<b>11.6</b>	<b>13.1</b>	<b>14.3</b>	15.5	<b>12.8</b>	<b>14.9</b>	-	-
Shocker	<b>11.3</b>	12.9	<b>14.1</b>	<b>16.2</b>	<b>12.8</b>	<b>15.1</b>	-	-
TAM 111	-	12.0	12.8	15.2	-	-	13.6	<b>12.5</b>
TAM 112	-	12.3	13.1	13.8	-	-	13.1	<b>12.8</b>
TAM 203	<b>11.1</b>	<b>14.0</b>	13.7	<b>15.7</b>	<b>12.4</b>	<b>14.8</b>	<b>14.6</b>	12.3
TAM 401	<b>10.9</b>	12.7	13.3	15.4	11.8	<b>14.5</b>	-	-
Winterhawk	-	11.2	12.8	15.1	-	-	13.2	12.1
OK05212	-	-	<b>14.3</b>	15.0	11.9	-	14.0	-
OK05312	-	-	11.9	-	-	-	12.7	12.0
OK05511	<b>11.2</b>	-	-	15.4	-	13.2	13.6	<b>14.3</b>
OK05526	-	-	13.4	15.3	11.8	-	-	<b>12.8</b>
OK06618	-	-	-	-	-	-	-	-
OK07231	-	-	13.2	15.2	-	-	-	-
STARS 0601W	-	-	<b>13.8</b>	15.1	-	-	13.8	<b>13.1</b>
Mean	10.8	12.6	13.3	15.1	12.5	14.1	13.6	12.6
LSD (0.05)	1.1	0.9	0.5	0.5	1.1	0.7	0.4	1.8

Bold numbers within a column are in the top statistical grouping for that test site  
(W) = Hard white Variety  
DP = Dual Purpose Management

**Table 1. Wheat protein (continued).**

Variety	Kingfisher	Lahoma	Lahoma Fungicide	Lamont	Marshall	Marshall DP	Olustee
-----% wheat protein-----							
Armour	-	14.0	13.8	12.0	-	-	-
Art	-	<b>15.1</b>	<b>15.4</b>	<b>13.0</b>	-	-	-
Aspen (W)	-	-	-	-	-	-	-
Billings	<b>12.0</b>	<b>14.9</b>	14.8	<b>12.9</b>	14.3	12.8	-
Centerfield	<b>12.4</b>	14.2	14.2	12.5	14.6	12.9	14.6
Deliver	<b>12.2</b>	13.5	13.8	12.0	13.6	12.7	14.0
Doans	11.4	14.2	14.5	11.9	13.8	12.3	13.5
Duster	10.7	13.3	13.0	12.3	13.4	12.2	13.7
Endurance	10.9	12.8	12.6	11.8	13.0	11.6	13.3
Everest	-	13.7	13.4	11.8	-	-	-
Fannin	-	-	-	-	-	-	<b>14.9</b>
Fuller	11.2	14.3	14.7	<b>12.8</b>	14.0	11.9	13.4
Greer	11.0	13.7	13.8	<b>13.1</b>	13.8	12.5	13.9
Guymon (W)	-	-	-	-	-	-	-
Jackpot	10.6	14.4	14.7	11.7	13.4	11.6	12.9
Jagalene	11.6	13.8	14.3	12.4	14.4	12.3	14.0
Jagger	11.8	<b>15.1</b>	<b>15.7</b>	<b>12.7</b>	14.7	12.6	13.9
Keota	-	-	-	-	-	-	-
Mace	-	-	-	-	-	-	-
OK Bullet	11.6	14.0	14.7	12.4	14.3	13.1	13.9
OK Rising (W)	-	-	-	-	-	-	-
Overley	10.8	14.2	15.0	12.4	13.8	12.5	13.1
Pete	11.4	13.8	14.0	12.1	13.8	12.3	12.4
Santa Fe	11.9	<b>15.0</b>	<b>15.4</b>	<b>13.2</b>	14.9	12.6	14.2
Shocker	<b>12.2</b>	14.6	14.9	12.6	14.5	13.2	14.3
TAM 111	-	-	-	-	-	-	-
TAM 112	-	-	-	-	-	-	-
TAM 203	<b>12.4</b>	<b>15.2</b>	<b>15.3</b>	<b>13.0</b>	<b>15.6</b>	12.2	<b>15.3</b>
TAM 401	11.8	14.6	14.7	12.5	14.7	12.3	14.3
Winterhawk	-	-	-	-	-	-	-
OK05212	11.2	13.2	13.5	12.2	13.6	12.1	-
OK05312	-	-	-	-	-	-	-
OK05511	11.2	13.2	13.5	-	-	-	13.5
OK05526	11.4	14.0	14.1	12.0	13.9	12.7	-
OK06618	-	-	-	<b>13.4</b>	-	<b>14.3</b>	-
OK07231	-	13.4	13.4	-	-	12.4	-
STARS 0601W	-	-	-	-	-	-	-
Mean	11.5	14.1	14.3	12.4	14.1	12.5	13.8
LSD (0.05)	0.4	0.3	0.4	0.7	0.4	0.9	0.5

Bold numbers within a column are in the top statistical grouping for that test site  
(W) = Hard white Variety  
DP = Dual Purpose Management

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