



Current Report

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Protein Content of Winter Wheat Varieties in Oklahoma 2011

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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 performance test 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 CR-2143, *2011 Oklahoma Small Grains Variety Performance Tests* on the web at www.wheat.okstate.edu. Samples were stored in plastic containers for approximately three months following harvest. Samples were analyzed for protein content using a Diode Array Near Infrared instrument (NIR) (model DA 7200, Perten Instruments, Sweden).

Acknowledgments

The authors wish to acknowledge the financial support of the Oklahoma Wheat Commission and Oklahoma Wheat Research Foundation.

Table 1. 2011 Oklahoma Wheat Variety Trial Grain Protein Summary

Variety	Apache											
	Afton	Alva	Apache	Fung.	Balko	Buffalo	Cherokee	El Reno	Elk City	Frederick	Gage	Goodwell Irr
2174	-	-	-	-	-	-	-	-	-	-	-	-
Armour	11.8	13.3	12.4	12.5	13.7	15.6	16.1	13.8	14.6	13.1	13.9	16.1
Aspen	-	-	-	-	-	-	-	-	-	-	-	16.1
Bill Brown	-	-	-	-	12.6	-	-	-	-	-	-	15.6
Billings	11.6	14.3	14.3	13.4	13.8	16.7	17.4	14.6	15.6	13.2	14.4	16.2
Centerfield	12.9	14.1	-	-	-	16.4	16.3	13.7	14.6	12.5	13.0	-
Deliver	-	14.0	-	-	-	-	16.1	13.6	-	-	12.6	-
Doans	13.1	13.2	13.4	13.6	13.4	14.4	16.9	14.1	14.2	13.1	12.7	16.4
Duster	11.6	13.2	13.1	13.1	13.3	15.0	15.3	13.6	14.3	12.2	13.5	15.9
Endurance	11.9	12.5	12.6	12.4	12.3	15.2	16.6	13.4	13.3	12.2	12.2	15.3
Everest	11.0	-	13.0	12.8	-	-	16.9	12.9	-	12.9	-	-
Fannin	-	-	15.1	14.3	-	-	-	15.4	15.1	14.0	-	-
Fuller	11.5	14.4	12.0	11.6	13.1	15.2	17.0	14.5	14.5	12.6	13.3	16.1
Garrison	-	13.8	13.8	13.5	13.4	15.5	16.8	14.9	15.4	14.1	-	-
Greer	11.5	13.7	11.9	11.6	13.4	15.9	15.3	14.4	14.6	12.3	12.8	16.1
Guymon	-	-	-	-	-	-	-	-	-	-	-	16.2
Hatcher	-	-	-	-	12.9	-	-	-	-	-	-	15.6
Jackpot	12.3	14.8	11.9	11.9	12.8	16.5	16.5	14.1	14.1	12.5	13.5	16.0
Jagger	11.8	15.0	12.6	11.7	13.5	16.8	17.2	15.0	15.7	12.9	14.1	16.2
Mace	-	-	-	-	13.3	-	-	-	-	-	-	15.9
OK Bullet	12.3	13.4	12.7	12.0	13.4	16.5	17.1	13.9	15.0	13.2	13.4	16.8
OK Rising	-	-	-	-	-	-	-	-	-	-	-	17.0
Overley	13.6	14.1	-	-	-	-	16.4	14.3	-	12.8	-	-
Pete	-	-	12.5	11.7	-	-	-	13.4	13.9	12.2	-	-
Ruby Lee	-	-	-	-	-	-	-	13.4	-	12.7	-	-
Santa Fe	11.9	14.1	13.1	13.2	14.0	17.2	17.6	15.7	15.5	13.2	13.4	16.4
Shocker	14.2	-	-	-	-	-	16.8	14.7	-	-	-	-
T-158	-	-	-	-	12.6	15.7	-	-	-	-	-	15.2
TAM 111	-	14.4	-	-	13.2	16.9	-	-	14.2	-	14.0	15.9
TAM 112	-	11.7	-	-	12.7	14.8	-	-	14.7	-	14.3	16.0
TAM 203	11.6	14.8	13.0	12.1	-	15.1	16.8	15.3	14.9	12.8	14.3	-
TAM 401	-	14.1	13.3	12.7	-	-	16.6	14.7	15.1	13.0	14.4	-
WB-Cedar	12.3	-	-	-	-	-	16.4	14.2	-	-	-	-
WB-Stout	12.6	15.0	13.4	13.1	13.5	16.5	18.0	14.8	16.0	13.4	13.4	16.6
Winterhawk	-	-	-	-	13.1	14.3	-	-	-	-	12.5	15.3
Experimentals												
OK05312	-	-	-	-	11.4	13.0	-	-	-	-	-	-
OK05511RHf2	-	-	-	-	-	-	-	-	14.4	12.3	-	-
OK06336	-	-	-	-	-	-	-	-	-	-	-	-
OK07209	10.6	12.5	11.7	11.2	-	-	15.3	12.9	14.0	11.8	-	-
OK07214	10.5	13.2	12.2	11.2	-	-	16.7	-	-	-	-	16.2
OK07231	-	-	-	-	-	-	-	13.3	-	-	-	-
OK07S117	-	-	-	-	-	-	-	14.9	-	-	-	-
OK08328	-	-	12.4	12.2	-	-	-	-	-	12.3	-	-
Mean	12.0	13.8	12.9	12.5	13.1	15.7	16.6	14.2	14.7	12.8	13.5	16.0
LSD (0.05)	1.2	NS	1.4	1.6	0.9	1.3	1.2	0.8	0.9	0.8	0.9	1.0

Table 1. 2011 Oklahoma Wheat Variety Trial Grain Protein Summary (cont'd)

Variety						Lahoma		Marshall				
	Homestead	Hooker	Keyes	Kildare	Kingfisher	Lahoma	Fung.	Lamont	DP	GO	McCloud	Olustee
-----% wheat protein (12% moisture basis)-----												
2174	-	-	-	-	-	-	-	-	-	-	15.6	-
Armour	15.1	15.6	14.7	15.0	13.9	14.3	14.5	13.8	16.1	15.0	16.1	15.0
Aspen	-	-	-	-	-	-	-	-	-	-	-	-
Bill Brown	-	14.9	14.0	-	-	-	-	-	-	-	-	-
Billings	16.3	15.5	14.3	16.5	14.5	15.7	15.3	14.5	16.7	15.2	15.7	15.0
Centerfield	15.1	-	-	16.0	14.2	13.9	14.8	13.5	15.2	15.2	14.9	14.7
Deliver	15.2	-	-	-	13.3	14.9	15.2	13.4	14.3	13.5	-	-
Doans	15.0	14.9	13.4	15.8	13.8	14.1	14.1	13.3	15.7	14.2	15.0	13.8
Duster	14.7	14.7	14.4	14.4	12.9	13.1	14.0	12.5	15.1	14.8	14.7	14.2
Endurance	14.5	15.3	13.6	14.7	13.7	13.7	13.6	13.2	14.3	13.8	14.2	13.4
Everest	15.3	-	-	14.8	14.5	13.9	13.9	13.4	15.3	14.9	14.9	15.1
Fannin	-	-	-	-	-	-	-	-	-	-	-	14.9
Fuller	16.0	15.5	14.6	16.0	14.1	14.1	14.3	13.5	16.8	13.6	15.4	13.8
Garrison	15.9	-	-	15.4	14.0	15.1	15.1	14.2	16.4	15.6	-	15.1
Greer	15.6	-	-	14.9	13.4	14.6	14.0	13.6	15.9	15.1	14.8	14.5
Guymon	-	-	-	-	-	-	-	-	-	-	-	-
Hatcher	-	14.5	13.6	-	-	-	-	-	-	-	-	-
Jackpot	15.1	15.7	14.4	15.0	13.2	14.6	14.4	13.9	15.4	13.8	15.0	13.6
Jagger	16.8	15.6	14.2	16.7	13.4	14.5	14.7	14.4	17.4	15.2	16.7	14.2
Maçe	-	14.6	14.8	-	-	-	-	-	-	-	-	-
OK Bullet	15.8	15.1	14.2	15.8	14.4	14.6	13.9	13.2	16.1	14.8	15.4	14.0
OK Rising	-	-	-	-	-	-	-	-	-	-	-	-
Overley	16.3	-	-	16.5	13.8	14.3	14.8	12.8	16.4	15.2	15.8	14.1
Pete	-	-	-	-	13.5	14.0	13.7	-	14.7	13.3	-	13.5
Ruby Lee	-	-	-	15.4	-	-	-	-	-	-	15.3	-
Santa Fe	16.5	-	-	15.9	14.5	15.2	15.2	14.0	17.5	16.0	16.1	14.5
Shocker	16.5	-	-	16.2	14.5	14.6	15.3	13.7	15.5	15.2	15.7	-
T-158	-	13.9	14.5	-	-	-	-	-	-	-	-	-
TAM 111	-	14.6	13.9	-	-	-	-	-	-	-	-	-
TAM 112	-	15.2	14.5	-	-	-	-	-	-	-	-	-
TAM 203	16.8	-	-	16.4	13.6	14.9	15.3	14.3	17.0	15.5	16.1	15.2
TAM 401	16.6	-	-	-	14.8	14.6	15.0	13.7	16.9	15.5	-	14.6
WB-Cedar	15.5	-	-	15.0	15.1	14.7	15.1	13.5	15.7	14.7	14.7	-
WB-Stout	16.4	15.3	14.5	16.3	14.2	15.5	15.5	14.4	17.2	15.3	16.4	14.8
Winterhawk	-	-	-	-	-	-	-	-	-	-	-	-
Experimentals												
OK05312	-	13.6	13.8	-	-	-	-	-	-	-	-	-
OK05511RHf2	-	-	-	-	-	-	-	-	-	-	-	-
OK06336	-	-	-	16.8	-	-	-	-	-	-	15.8	-
OK07209	-	-	-	13.7	13.4	13.3	13.0	-	14.4	-	13.9	-
OK07214	-	-	-	-	-	14.1	13.8	-	-	-	14.8	14.4
OK07231	15.3	-	-	15.4	-	14.9	14.9	-	-	-	-	-
OK07S117	-	-	-	-	-	-	-	-	-	-	-	-
OK08328	-	-	-	-	-	-	-	-	-	-	-	-
Mean	15.7	15.0	14.2	15.6	13.9	14.4	14.5	13.7	15.9	14.8	15.3	14.4
LSD (0.05)	0.5	0.8	0.8	1.0	1.7	0.9	0.9	1.2	0.8	0.7	0.7	0.4

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- It utilizes research from university, government, and other sources to help people make their own decisions.
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