



Current Report

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Protein Content of Winter Wheat Varieties in Oklahoma 2009

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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

Production Technology Report 2008-2 *Oklahoma Small Grains Variety Performance Tests 2007-2008* on the web at 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). The protein and moisture content of the samples were determined by using the wheat calibration software provided by Perten Instruments. The calibration was validated by scanning wheat samples with known protein and moisture contents.

Acknowledgments

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Table 1. Wheat protein (12% moisture basis) of winter wheat varieties in the 2008-09 OSU wheat variety performance tests.

Variety	Afton	Alva	Balko	Buffalo	Cherokee	El Reno	El Reno	El Reno	El Reno	Elk City	Gage	Goodwell
						DP	GO	No-till DP	No-till GO			Dryland
-----% wheat protein-----												
Armour	12.7	14.4	11.4	13.8	12.4	13.6	14.6	15.1	14.7	12.3	14.6	13.3
Aspen	-	-	11.3	-	-	-	-	-	-	-	-	14.0
Billings	13.4	15.1	-	-	-	14.2	-	-	-	-	-	-
Centerfield	13.1	14.2	10.5	14.1	12.2	14.0	13.8	15.1	14.6	12.5	14.3	15.9
Deliver	12.6	13.8	11.0	13.3	12.6	14.0	13.8	14.7	14.3	12.5	13.5	14.6
Doans	13.7	14.7	10.8	14.3	13.0	14.3	15.2	15.0	14.3	12.4	14.2	14.7
Duster	12.9	13.9	10.6	13.2	12.0	13.6	13.4	15.0	14.5	12.6	14.2	14.7
Endurance	12.5	13.5	10.2	12.9	12.0	13.3	13.5	14.2	13.9	11.6	13.5	12.6
Fannin	-	-	-	-	-	14.5	15.1	15.1	14.8	-	-	-
Fuller	13.4	15.4	11.1	14.5	13.1	15.4	15.1	15.4	15.4	12.9	14.8	16.0
Guymon	-	-	11.3	-	-	-	-	-	-	-	-	14.9
Jackpot	13.8	14.2	12.2	14.5	12.6	15.4	15.3	16.2	16.3	12.6	14.7	14.4
Jagalene	13.2	14.3	11.3	14.0	12.0	14.2	13.7	15.2	15.4	12.3	14.6	15.2
Jagger	13.9	15.2	11.5	14.6	13.5	15.7	15.3	16.3	15.1	13.0	15.1	15.4
Keota	-	15.1	11.5	13.8	12.8	-	-	-	-	12.6	14.6	14.0
Mace	-	-	10.5	-	-	-	-	-	-	-	-	14.9
OK Bullet	13.7	15.1	11.2	14.6	12.4	14.2	14.5	15.6	15.7	12.7	15.3	16.0
OK Rising	14.5	15.0	12.3	14.7	13.4	15.5	15.0	16.4	15.7	13.5	15.8	15.5
Overley	14.2	15.4	11.1	14.4	12.9	14.3	14.6	15.4	15.0	13.1	15.3	16.4
Pete	13.3	13.5	10.6	-	12.2	14.8	-	-	-	12.6	13.6	13.9
Santa Fe	13.4	15.2	11.6	14.9	12.9	14.8	14.6	15.8	15.7	13.1	15.3	15.4
Shocker	13.7	15.2	13.0	15.1	13.4	14.6	15.6	15.4	15.8	13.6	15.1	15.0
TAM 111	-	14.5	10.7	13.2	12.3	-	-	-	-	11.9	14.4	15.1
TAM 112	-	14.2	11.7	14.0	12.6	-	-	-	-	12.1	14.2	14.3
TAM 203	13.5	15.3	12.1	14.4	12.1	14.9	14.4	15.7	15.6	12.8	15.0	14.8
TAM 304	14.2	-	-	-	-	-	-	-	-	-	-	13.8
Winterhawk	-	14.3	10.9	13.4	12.0	-	-	-	-	12.4	14.2	14.1
OK04525	-	14.8	-	-	-	-	-	-	-	13.0	-	-
OK04315	-	-	-	-	-	14.8	-	-	-	13.5	-	-
OK05312	-	-	9.7	-	-	-	-	-	-	-	-	13.8
OK05526	13.5	14.5	11.8	-	12.8	13.6	-	-	-	12.7	-	-
OK05742W	-	-	-	-	-	-	-	-	-	13.2	-	-
OK06114	-	-	-	-	-	-	-	-	-	-	-	-
OK06729	-	-	-	-	-	-	-	-	-	-	-	-
STARS 0601W	-	13.8	12.1	-	-	-	-	-	-	-	-	13.8
Mean	13.5	14.6	11.3	14.1	12.6	14.5	14.6	15.4	15.1	12.7	14.6	14.7
LSD_(0.05)	0.7	0.3	1.5	0.6	0.8	0.9	0.8	0.7	0.6	0.5	0.4	1.5

Table 1. Wheat protein (12% moisture basis) of winter wheat varieties in the 2008-09 OSU wheat variety performance tests. (continued)

Variety	Homestead						Lahoma		Marshall			
	Haskell	Homestead	NT	Hooker	Keyes	Kildare	Kingfisher	Lahoma fungicide	Lamont	GO	Olustee	
-----% wheat protein-----												
Armour	13.9	12.3	13.4	13.2	10.3	11.3	11.5	12.8	13.2	11.1	14.5	14.6
Aspen	-	-	-	13.0	10.5	-	-	-	-	-	-	-
Billings	14.2	-	-	-	-	11.6	11.4	13.7	14.2	11.8	15.0	-
Centerfield	14.2	12.7	13.6	13.6	10.7	11.5	12.3	13.1	13.3	11.8	14.6	14.3
Deliver	13.2	12.0	12.9	12.6	11.0	11.6	11.4	12.7	13.3	11.0	13.7	13.6
Doans	14.5	12.8	12.9	13.1	10.4	12.2	11.4	13.5	13.3	12.1	14.7	13.9
Duster	13.8	11.8	13.4	13.2	10.8	11.5	10.9	13.2	12.9	11.3	13.9	14.0
Endurance	13.0	11.6	12.7	12.4	10.5	11.3	11.1	12.2	12.6	11.1	13.4	13.5
Fannin	-	-	-	-	-	-	-	-	-	-	-	15.8
Fuller	14.1	13.0	13.7	14.4	10.8	11.7	12.4	14.1	13.6	11.8	14.9	14.6
Guymon	-	-	-	14.5	11.0	-	-	-	-	-	-	-
Jackpot	14.7	12.7	14.3	14.1	10.7	11.2	11.9	13.1	14.2	11.5	15.0	13.9
Jagalene	12.9	12.1	12.7	13.4	10.2	11.3	11.3	12.6	13.0	11.1	14.4	14.4
Jagger	14.4	12.8	13.4	14.0	10.7	11.5	13.0	13.1	14.3	11.6	16.3	15.1
Keota	-	-	-	14.2	10.5	-	-	12.7	13.7	11.5	14.9	14.2
Mace	-	-	-	12.0	10.5	11.3	11.4	13.0	13.1	11.8	15.5	14.5
OK Bullet	13.5	11.7	13.9	15.0	10.9	11.4	11.8	13.4	14.1	-	-	-
OK Rising	14.7	12.7	14.6	14.9	10.6	-	-	-	-	-	-	-
Overley	15.0	12.2	12.9	13.4	10.4	11.4	12.3	13.1	14.2	11.3	15.7	14.7
Pete	13.4	-	-	-	-	-	11.8	13.1	12.9	-	14.6	13.8
Santa Fe	14.3	12.6	14.1	14.1	10.8	11.8	12.3	13.7	14.7	11.4	15.9	14.6
Shocker	14.5	13.3	14.2	14.9	12.0	12.6	12.6	14.8	14.7	12.3	16.2	15.6
TAM 111	-	-	-	12.8	10.6	-	-	12.5	12.9	-	-	-
TAM 112	-	-	-	13.0	10.8	-	-	12.9	13.5	-	-	-
TAM 203	14.5	12.7	14.3	13.6	11.0	11.8	11.8	13.7	14.1	12.3	14.3	14.0
TAM 304	14.9	-	-	-	-	11.3	12.7	14.0	13.7	11.9	-	-
Winterhawk	-	-	-	12.9	10.3	-	-	12.5	13.2	-	-	-
OK04525	-	-	-	-	-	11.3	-	-	-	-	-	14.6
OK04315	-	-	-	14.1	-	-	-	-	-	-	14.8	-
OK05312	-	-	-	-	10.2	-	-	-	-	-	-	-
OK05526	-	-	-	14.3	-	11.3	12.7	13.2	13.9	11.7	15.0	-
OK05742W	-	-	-	-	-	-	12.1	-	-	-	-	14.5
OK06114	-	-	-	-	-	10.8	-	13.1	13.2	10.9	-	-
OK06729	-	-	-	-	-	-	-	-	-	-	-	13.5
STARS 0601W	-	-	-	-	-	-	-	-	-	-	-	14.4
Mean	14.1	12.4	13.6	13.6	10.7	11.5	11.9	13.2	13.6	11.6	14.9	14.4
LSD (0.05)	0.7	0.7	1.1	0.9	0.9	0.7	0.6	0.7	0.7	0.7	0.7	0.3

DP = Dual Purpose
GO = Grain Only

The Oklahoma Cooperative Extension Service

Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

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