



Current Report

Oklahoma Cooperative Extension Fact Sheets are also available on our website at: <http://www.osuextra.com>

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.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.

- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Protein Content of Winter Wheat Varieties in Oklahoma 2008

Jeff Edwards
Small Grains Extension Specialist

Nurhan Dunford
Oilseed Chemist

Brett Carver
Wheat Breeder

Rick Kochenower
Panhandle Area Agronomist

Richard Austin
Senior Agriculturalist

Jay Ladd
Lab Technician II

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.

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.

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

Acknowledgments

The authors wish to acknowledge the financial support of the Oklahoma Wheat Commission and Oklahoma Wheat Research Foundation. We also wish to acknowledge John Dollar whose hard work and commitment made this report possible.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, gender, age, religion, disability, or status as a veteran in any of its policies, practices, or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy.

Table 1. Wheat protein (12% moisture basis) of winter wheat varieties in the 2007-08 OSU wheat variety performance tests.

Variety	% wheat protein										
	Alva	Apache	Apache fungicide	Cherokee	El Reno Conv Till DP	El Reno Conv Till GO	El Reno No-Till DP	El Reno No-Till GO	Elk City	Gage	Haskell
Centerfield	14.1	14.4	13.8	15.4	14.7	13.6	13.0	12.0	12.8	14.3	14.6
Danby (W)	-	-	-	-	-	-	-	-	-	-	-
Deliver	13.3	14.0	12.7	14.6	13.8	12.9	12.6	11.6	12.3	13.7	13.2
Doans	13.9	13.4	13.1	16.0	14.2	13.4	13.0	11.4	11.6	13.2	14.7
Duster	13.7	13.8	12.7	15.3	12.6	12.1	11.9	10.1	12.2	14.6	13.5
Endurance	13.6	13.2	12.4	15.4	12.2	11.3	11.7	10.5	11.0	13.0	12.7
Fannin	14.1	15.5	13.7	16.4	14.9	12.9	12.5	11.4	12.3	14.4	14.2
Fuller	13.7	14.4	12.7	16.6	13.9	12.8	12.7	10.9	12.1	14.4	14.3
Guymon (W)	-	-	-	-	-	-	-	-	-	-	-
Jackpot	12.9	13.4	12.2	15.7	13.5	12.9	12.6	11.3	11.7	13.8	14.5
Jagalene	12.9	13.9	13.1	15.2	13.4	12.0	11.8	10.5	12.7	13.4	13.0
Jagger	13.0	14.1	13.7	15.9	14.5	12.8	12.5	11.2	12.1	14.6	14.5
Mace	-	-	-	-	-	-	-	-	-	-	-
OK Bullet	14.3	15.1	15.4	16.2	14.7	13.2	13.7	11.5	12.8	14.8	14.5
OK Rising (W)	15.0	14.1	13.9	15.9	13.0	12.1	12.9	11.3	13.4	15.2	13.6
Okfield	13.3	14.0	13.1	15.2	14.2	12.6	12.8	11.6	12.8	14.0	13.6
Overley	13.1	14.6	13.9	17.3	13.8	13.1	12.8	11.4	12.6	14.8	14.8
Santa Fe	14.0	14.4	14.5	16.3	14.4	13.7	13.4	12.0	12.9	15.0	15.5
Shocker	14.3	15.1	13.6	-	-	-	-	-	12.7	14.5	14.5
TAM 111	13.9	-	-	-	-	-	-	-	12.0	13.6	-
TAM 112	-	-	-	-	-	-	-	-	-	-	-
TAM 203	-	15.6	14.3	-	-	-	-	-	-	-	-
TAM 304	-	-	-	-	-	-	-	-	-	-	-
OK00514-05806	-	15.2	14.2	-	-	-	-	-	13.2	-	-
OK00611W	14.3	-	-	-	-	-	-	-	-	15.1	-
OK02405	-	-	-	-	-	-	-	-	13.3	-	-
OK03305	13.5	14.1	14.2	-	-	-	-	-	11.6	-	-
OK03522	15.0	14.3	12.7	-	-	-	-	-	12.3	-	-
OK04505	13.7	14.1	13.7	-	-	-	-	-	-	-	-
OK05737W	13.7	-	-	-	-	-	-	-	-	-	-
OK05903C	-	-	-	-	-	-	-	-	-	-	-
OK07S110	-	-	-	-	-	-	-	-	-	-	-
STARS 0601W	-	-	-	-	-	-	-	-	-	-	-
Mean	13.8	14.3	13.5	15.8	13.9	12.8	12.7	11.3	12.4	14.2	14.1
LSD _(0.05)	0.7	0.7	0.7	0.7	0.5	0.7	0.4	0.4	0.3	0.5	0.4

DP = Dual Purpose Management
GO = Grain Only Management

Table 2. Wheat protein (12% moisture basis) of winter wheat varieties in the 2007-08 OSU wheat variety performance tests.

Variety	% wheat protein											
	Homestead Conv Till	Homestead No-Till	Hooker	Keyes	Kildare	Kingfisher	Lahoma fungicide	Lahoma Lamont	Marshall DP	Marshall GO	Olustee	
Centerfield	11.3	11.3	-	-	16.1	11.0	14.6	14.5	14.0	13.9	14.8	13.1
Danby (W)	-	-	15.8	15.6	-	-	-	-	-	-	-	-
Deliver	12.1	11.1	15.5	15.9	14.5	10.5	13.7	13.5	12.5	13.3	13.4	11.5
Doans	11.0	10.6	-	-	15.9	10.6	13.8	13.8	12.8	13.4	13.7	11.7
Duster	11.3	10.5	16.0	16.3	15.1	10.0	13.8	13.8	12.9	13.3	13.9	11.5
Endurance	12.1	10.5	15.0	15.0	14.8	9.9	13.9	14.3	12.9	12.7	13.1	11.8
Fannin	11.6	10.4	-	-	15.5	10.7	13.7	14.0	13.4	14.3	14.3	11.4
Fuller	11.1	10.9	15.7	17.8	15.1	10.6	14.3	14.4	12.3	13.6	13.9	11.8
Guymon (W)	-	-	16.0	16.5	-	-	-	-	-	-	-	-
Jackpot	11.0	9.9	-	-	14.6	10.6	12.8	13.3	12.2	13.0	13.2	11.3
Jagalene	12.0	10.2	16.2	16.3	14.5	10.0	14.3	13.8	13.5	13.8	13.7	11.6
Jagger	12.5	10.4	16.1	18.1	15.3	10.4	14.3	14.4	13.5	13.5	13.7	11.4
Mace	-	-	14.9	16.0	-	-	-	-	-	-	-	-
OK Bullet	12.0	11.1	16.2	17.6	15.5	11.0	14.9	14.5	13.3	14.8	14.3	11.9
OK Rising (W)	10.9	11.1	-	18.0	15.7	10.8	14.4	14.4	14.2	14.9	14.7	-
Okfield	10.9	10.8	-	-	15.0	10.1	14.2	14.3	13.2	13.6	14.3	12.4
Overley	12.0	11.1	-	-	14.1	10.6	12.8	14.0	12.0	12.9	13.2	11.8
Santa Fe	11.7	11.0	-	-	15.2	10.8	14.2	14.4	13.2	14.7	14.2	12.4
Shocker	-	-	-	-	15.4	11.1	14.0	14.8	13.3	13.8	14.7	12.1
TAM 111	-	-	15.6	16.0	-	-	-	-	-	-	-	-
TAM 112	-	-	15.9	16.0	-	-	-	-	-	-	-	-
TAM 203	-	-	-	-	-	10.5	14.6	14.3	-	14.1	14.2	13.2
TAM 304	-	-	-	-	14.8	-	-	-	12.1	-	-	-
OK00514-05806	-	-	-	-	15.5	-	14.8	14.4	12.9	-	-	-
OK00611W	-	-	-	-	15.5	10.5	14.4	14.6	13.5	-	14.7	-
OK02405	-	-	-	-	-	-	-	-	-	-	-	12.8
OK03305	-	-	-	-	-	10.1	-	-	-	-	-	10.9
OK03522	-	-	-	-	16.3	10.3	13.8	14.0	12.8	13.6	14.0	-
OK04505	-	-	-	-	15.0	-	13.8	14.0	13.3	13.7	14.2	11.8
OK05737W	-	-	-	-	15.7	10.5	14.6	14.5	-	-	-	-
OK05903C	-	-	-	-	-	-	-	-	-	13.2	-	11.1
OK07S110	-	-	-	-	-	-	16.0	16.1	-	-	-	-
STARS 0601W	-	-	16.0	16.9	-	-	-	-	-	-	-	-
Mean	11.6	10.7	15.8	16.6	15.2	10.5	14.2	14.2	13.0	13.7	14.0	11.9
LSD _(0.05)	1.0	0.3	0.7	0.4	0.4	0.2	0.3	0.3	0.6	0.5	0.2	0.7

DP = Dual Purpose Management
GO = Grain Only Management