

Oklahoma Small Grains Variety Performance Tests 2015-2016

D.A. Marburger
J.T. Edwards
T. Beedy
S.R. Calhoun
B.F. Carver
R.M. Hunger



Authors

David Marburger Small Grains Extension Specialist

Jeff Edwards
Professor and Department Head

Tracy Beedy
OSU Area Agronomist – OPREC

Robert Calhoun Senior Agriculturalist

Brett Carver Wheat Breeder

Bob Hunger Extension Plant Pathologist

Funding provided by:

Oklahoma Wheat Commission
Oklahoma Wheat Research Foundation
OSU Cooperative Extension Service
OSU Agricultural Experiment Station
Entry fees from participating seed companies

Area Extension Staff

Brian Pugh OSU Area Agronomist – Northeast District

Josh Bushong
OSU Area Agronomist – Northwest District

Heath Sanders
OSU Area Agronomist – Southwest District

County Extension Staff

Thomas Puffinbarger, Alfalfa County Extension Educator

Loren Sizelove, Beaver County Extension Educator

David Nowlin, Caddo County Extension Educator

Kyle Worthington, Canadian County Extension Educator

Sug Farrington, Cimarron County Extension Educator

Ron Wright, Custer County Extension Educator

Rick Nelson, Garfield County Extension Educator

Kassie Junghanns, Grant County Extension Educator

Darrell McBee, Harper County Extension Educator

Gary Strickland, Jackson County Extension Educator

Corbin Dewitt, Kay County Extension Educator

Zack Meyer, Kingfisher County Extension Educator

Greg Highfill, Woods County Extension Educator

Station Superintendents

Erich Wehrenberg, Agronomy Research Station, Stillwater

Richard Austin, North Central Research Station, Lahoma

Cameron Murley, Oklahoma Panhandle Research and Extension Center, Goodwell

Michael Pettijohn, South Central Research Station, Chickasha

Rocky Thacker, Southwest Research and Extension Center, Altus

Student Workers

Jacob Koscelny

We sincerely thank our variety trial cooperators for donation of land, time, and resources. Variety trial cooperators not otherwise listed in this document include:

Corey Frantz, Balko, OK J.B. Stewart, Keyes, OK Rodney Mueggenborg, Kingfisher, OK

Participating Seed Companies



wheat.okstate.edu

AGSECO, Inc.

Steve Ahring P.O. Box 7 Girard, KS 66743

Phone: 800-962-5429

Email: steve@delangeseed.com

www.agseco.com

Varieties: AG Robust, TAM 114

Colorado Wheat Research Foundation (PlainsGold)

Kim Warner

4026 S. Timberline Rd. Ste. 100

Fort Collins, CO 80525 Phone: (970) 449-6994

Email: kwarner@coloradowheat.org

www.coloradowheat.org

Varieties: Avery, Brawl CL Plus, Byrd

Dyna-Gro Seed

Ryan Klamforth (419) 310-6370

www.dynagroseed.com Varieties: Long Branch

Kansas Wheat Alliance (KWA)

Daryl Strouts 1990 Kimball Ave. Manhattan, KS 66502 Phone: (785) 320-4080 Email: kwa@kansas.net www.kswheatalliance.org

Varieties: 1863, Everest, Joe, KanMark, Larry, Oakley CL, Tatanka, Zenda

Limagrain Cereal Seeds (LCS)

Drew Hendricker / Marla Barnett 2040 SE Frontage Rd.

Fort Collins, CO 80525 Phone: (970) 498-2218

Email: drew.hendricker@limagrain.com

www.limargraincerealseeds.com

Varieties: LCS Chrome, LCS Mint, LCS

Pistol, LCS Wizard, T158

Monsanto/WestBred

John Fenderson 1616 E. Glencoe Rd. Stillwater, OK 74075 Phone: (620) 243-4263

Email: john.m.fenderson@monsanto.com

www.westbred.com

Varieties: WB4303, WB4458, WB4515, WB4721, WB-Cedar, WB-Grainfield,

Winterhawk

Oklahoma Genetics Inc. (OGI)

Mark Hodges P.O. Box 2113 Stillwater, OK 74076 Phone: (405) 744-7741 www.okgenetics.com

Varieties: Bentley, Billings, Doublestop CL Plus, Duster, Gallagher, Iba, NF 101, OK

Rising, Ruby Lee, Stardust

Oklahoma Foundation Seed Services (OSU)

Jeff Wright 2902 W. 6th Ave. Stillwater, OK 74074 Phone: (405) 744-7741 www.ofss.okstate.edu Varieties: Endurance

Syngenta Seeds

Greg Gungoll 1517 Osage Ave. Enid, OK 73703

Phone: (405) 714-2839

Email: greg.gungoll@syngenta.com

www.agriprowheat.com

Varieties: SY Drifter, SY Flint, SY Grit, SY Llano, SY Monument, SY Razor, SY Wolf

Watley Seed

Andy Watley

Box 51

Spearman, TX 79081 Phone: (806) 659-3838

Email: watleyseed@valornet.com

www.watleyseed.com

Varieties: TAM 112, TAM 204





wheat.okstate.edu

2016 Wheat Crop Overview	4
Summary of All Locations	7
2016 Results by Location	
Afton	9
Altus Regional Trial	10
Alva	11
Apache	12
Apache Fungicide	13
Apache Fungicide vs. No Fungicide Comparison	14
Buffalo	
Cherokee	16
Chickasha Regional Trial	17
Chickasha Intensive Wheat Management	
Chickasha Standard vs. Intensive Wheat Management	
Goodwell Irrigated Regional Trial	
Homestead	
Hooker	22
Kildare	
Lahoma Regional Trial	24
Lahoma Fungicide	25
Lahoma Fungicide vs. No Fungicide Comparison	26
Lamont	
Marshall Dual-Purpose	28
Marshall Grain-Only	29
Marshall Dual-Purpose vs. Grain-Only Comparison	30
Thomas	
Union City	
Walters	33
Heading Date and Plant Height	34
Current Report 2141 Fall forage production and date of first hollow	
stem in winter wheat varieties during the 2015-2016 crop year	35

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, Thomas G. Coon, Director of Oklahoma 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 000 cents per copy.

Protein data will be reported in a separate publication later in 2016 and posted at www.wheat.okstate.edu

2016 Wheat Crop Overview



wheat.okstate.edu

At the time of writing this report, 2016 Oklahoma wheat production is estimated to be approximately 132 million bushels, which is about 34% greater than our 2015 production (Table 1) and 277% greater than production in 2014. Although the estimated harvested acres is lower than 2015, the statewide average yield is projected at 40 bu/ac, and this is a 14 bu/ac (54%) increase compared to 2015 (Table 1). Based on these projections, this would be the largest wheat production since 2012, but the average yield would be a new state record.

Table 1. Oklahoma wheat production for 2015 and 2016 as estimated by USDA NASS, July 2016							
	2015	2016					
Harvested Acres	3.7 million	3.3 million					
Yield (bu/ac)	26	40					
Total bushels	98.8 million	132 million					

The 2015-2016 wheat growing season was unlike most years in Oklahoma, characterized by periods of plentiful rainfall and near optimal growing conditions at critical times. Most wheat was sown into soil with adequate moisture, allowing it to emerge rapidly. The sufficient rainfall and mild temperatures allowed for good fall growth and bumper forage yields. In fact, plants in many nongrazed fields were abnormally large and phenologically advanced going into winter, and there was some concern about winter-kill. With mild temperatures continuing into the winter months, this concern proved to be largely unfounded, and most plants moved to spring green-up without injury.

Similar to 2014 and 2015, January and February were dry months for the Southern Great Plains, and the ample forage growth quickly wicked moisture from the soil. As the wheat crop was coming out of dormancy, there was much concern that the dry conditions would quickly reduce yield potential. Fortunately, rain fell during early- to

mid-March as the crop was greening up. This also helped provide grazed wheat the extra boost it needed to recover from grazing injury.

As the wheat crop progressed from green-up to flowering, rain continued to fall, but warmer than normal temperatures moved the crop along quickly, and at the time, most thought harvest would come earlier than normal. As we transitioned into grain fill, temperatures stayed at more ideal levels, favoring kernel filling.

Most wheat was mature in southwestem Oklahoma and in the central part of the state by the end of the May. Widespread rainfall at the end of May delayed most producers from beginning harvest until the first week in June. Dry weather during June allowed much of the wheat crop to be harvested quickly. Unfortunately, some areas of southwestem Oklahoma were plagued by regular and heavy rainfall events that delayed harvest towards the end of the month. Overall, harvest was pretty well wrapped up in the state by the end of June.

Yields throughout Oklahoma were very good overall, with field averages of 30 to 60 bu/ac being the norm. Field averages in the 60 to 90 bu/ac range were not uncommon, and there were even isolated cases of fields averaging over 100 bu/ac. Some producers expressed they will never see their yields this high again in their lifetime, and let's hope they are wrong! Test weights throughout harvest remained at or above 60 lb/bu for early-harvested fields and did not drop much below the upper 50's towards the end of harvest. This was a much welcomed change from the low test weights of 2015.

Other than bird cherry oat aphids and wheat curl mites, there were few widespread insect problems in 2015-2016. Aphids were not really on the radar screen of most producers until numbers ballooned in mid-March. As a

2016 Wheat Crop Overview



wheat.okstate.edu

result, it was not hard to find barley yellow dwarf (BYD) as flag leaves and heads started to emerge. While there was quite a bit of purpling associated with BYD, there was not as much stunting as sometimes observed with early-season transmission of the virus. Wheat streak mosaic (WSM) was not as wide spread as in 2015, but it was still a significant issue for many producers in 2016. The favorable growing conditions likely reduced the impact of both BYD and WSM, and yield reductions were not as severe as they might have been in a more drought stressed environment.

Similar to 2015, stripe rust was the major foliar disease impacting wheat production in 2016. The devastation caused by the 2015 stripe rust epidemic had many producers more open to the idea of applying foliar fungicide to susceptible varieties. Many fields throughout the state received at least one fungicide application, and anecdotal evidence from agricultural retailers indicates that Oklahoma wheat acres treated with a foliar fungicide in 2016 was more than double that treated in 2015. Variety trial results from Apache, Chickasha, and Lahoma indicate that producers were well justified in spraying many of these acres. Grain yield of the popular variety Ruby Lee, for example, was increased by 68 bu/ac at Chickasha when treated twice with a foliar fungicide. Our results at Chickasha also show the power of genetic resistance to disease in varieties such as Billings which maintained an 83 bu/ac grain yield without the assistance of a foliar fungicide. In addition to stripe rust, leaf rust was present, but it was at low levels in isolated areas and was not widespread throughout the state.

Methods

Seed was packaged and planted in the same condition as it was delivered from the respective seed companies. Most seed was treated with an insecticide plus fungicide seed treatment, but the formulation and rate of

seed treatment used was not confirmed or reported in this document.

Conventional till plots were eight rows wide with six-inch row spacing and were sown with a Hege small plot cone seeder. No-till plots were seven rows wide with 7.5-inch row spacing and were sown with a Great Plains no-till drill modified for cone-seeded, smallplot research. With the exception of dryland locations in the Panhandle, plots were planted 25 feet long and trimmed to 19 feet at harvest with the plot combine. Panhandle dryland locations were 35 feet long at planting and trimmed to 29 feet at harvest. Wheel tracks were included in the plot area for yield calculation, for a total plot width of 59 inches. Experimental design for all sites other than Apache and Lahoma was a randomized complete block with four replications. Apache and Lahoma were a split-block arrangement of a randomized complete block with four replications where whole plots were fungicide treated or non-treated, and sub-plots were wheat variety.

Conventional till plots received 50 lb/ac of 18-46-0 in-furrow at planting. No-till plots received 5 gal/ac of 10-34-0 at planting. The Marshall dual-purpose (DP) trial, Union City, Walters, and forage trials were sown at 120 lb/ac. All other locations were sown at 60 lb/ac. Grazing pressure, nitrogen fertilization, and insect and weed control decisions were made on a location-by-location basis and reflect standard management practices for the area.

Plots were harvested with a Kincaid or Winterstieger Delta small plot combine. When sample size allowed for grain moisture measurement on individual plots, grain yields were corrected to 12% moisture. Grain moisture at all sites was generally below 11%, and maximum and minimum grain moisture for all plots at a location typically ranged no more than 2%. Balko plots were not harvested



2016 Wheat Crop Overview

wheat.okstate.edu

due to severe hail damage in early May. Kingfisher plots were harvested but not reported due to harvest equipment malfunctions. The Keyes plots were also harvested, but data are not reported as the coefficient of variation (c.v.) exceeded 25.

Additional information on the Web

A copy of this publication as well as additional variety information and more information on wheat management can be found at:

Website: www.wheat.okstate.edu

Blog: www.osuwheat.com



@OSU_smallgrains



OSU Small Grains



OSU Small Grains



2015-2016 Oklahoma Wheat Variety Performance Tests Summary

_/ ' <i>``</i>	IVERSITY								whe	eat.okstate	.edu
AGRICU	ILTURE	Afton	Altus	Alva	Apache	Apache Fungicide	Buffalo	Cherokee	Chickasha	Chickasha IWM	Goodwell Irrigated
Source	Variety	-				grain yie	eld (bu/ac)				
KWA	1863	-	44	-	-	-	-	-	73	84	73
AGSECO	AG Robust	-	44	-	-	-	-	-	80	94	63
PlainsGold	Avery	-	33	60	-		72	65	27	82	77
OGI	Bentley	42	48	61	77	80	82	71	54	84	83
OGI	Billings	46	35	-	-	-	-	-	83	94	91
PlainsGold	Brawl CL Plus	-	44	48	-	-	79	65	42	87	82
PlainsGold	Byrd	-	34	60	-	-	80	68	26	91	84
OGI	Doublestop CL Plus	40	39	56	61	68	73	62	56	75	66
OGI	Duster	43	51	58	39	49	73	68	56	67	87
OSU	Endurance	41	34	56	50	57	75	68	47	74	79 70
KWA	Everest	36	22	-	-	-	-	-	25	85	76
OGI	Gallagher 	44	42	56	63	68	65	57	73	93	86
OGI	lba	42	51	57	61	76	79	71	60	81	91
KWA	Joe	-	52	-	-	-	-	-	76	75	94
KWA	KanMark	-	44	55	57	76	73	59	61	87	83
KWA	Larry	-	48	-	-	-	-	-	77	84	88
LCS	LCS Chrome	-	55	-	-	-	-	-	75	84	88
LCS	LCS Mint	-	45	61	-	-	71	62	40	79 70	88
LCS	LCS Pistol	41	33	52	51	60	66	58	47	70	83
LCS	LCS Wizard	43	31	55	48	70	77	54	36	87	77
Dyna-Gro	Long Branch	-	49	-	-	-	-	-	52	55	90
OGI	NF 101	-	23	-	-	-	-	-	49	77	73
KWA	Oakley CL	-	60	-	-	-	-	-	66	69	90
OGI	OK Rising	-	39	-	-	-	-	-	57	80	71
OGI	Ruby Lee	42	23	50	37	75	60	53	23	92	85 -
OGI	Stardust	-	-	-	-	-	-	-	-	-	
Syngenta	SY Drifter	39	48	-	56	66	-	-	64	84	89
Syngenta	SY Flint	37	52	51	68	69	74	64	74 64	91	90
Syngenta	SY Grit	-	43	-	-	-	-	-	61	95	81
Syngenta	SY Llano	35	32	-	64	66	-	-	72	85	65
Syngenta	SY Monument	-	50	56 -	-	-	80	70 -	71 60	80	87
Syngenta	SY Razor	-	39		-	-			60	73	77 85
Syngenta LCS	SY Wolf	-	-	-		-	-	-	-	-	
	T158 TAM 112	-	55 29	- 59	64 -	68 -	60	-	71	89 72	75 75
Watley AGSECO		-			-	-		64 54	33		
	TAM 204	- 45	42 45	49 55	- 67	- 79	76 69	54 67	72 68	90 101	87 90
Watley	TAM 204			55	07	79	69	67			
KWA	Tatanka	-	60	-	-	-	-	-	74	82	86
WestBred	WB4303	-	44	-	- 04	-	-	-	62	103	80
WestBred	WB4458	32	47 47	-	84	90	-	-	72 70	103	77 70
WestBred WestBred	WB4515 WB4721	-	47 51	-	-	-	-	-	70 65	91 72	79 87
WestBred	WB-Cedar	33	37	- 51	-	-	- 63	39	69	96	74
WestBred	WB-Grainfield	43	37 49	57	- 74	88	86	74	60	75	85
WestBred	Winterhawk	43 -	49 52	57 55	62	78	77	74 74	60	90	84
KWA	Zenda	-	48	-	-	-	-	-	70	85	85
	Experimentals	-	40	-	-	-	-	-	70	65	65
000	OK09915C-1	38	46	45	66	77	65	64	69	77	74
	OK10126	-	-	-	-	-	-	-	-	-	94
	OK1059060-3	_	-	_	_	_	_	_	_		34
	OK1039000-3	31	-	-	-	-	-	-	-	-	
	OK11231 OK118036R/W	٥١ -	-	-	-	-	-	-	-	-	
	OK11D25056	-	- 55	47	-	-	-	-	- 75	84	84
	OK12621	-	-	53	-	-	-	-	-	-	65
	OK12021 OK12716R/W	-	67	53	67	72	-	76	_	-	96
	OK12710K/W	-	-	47	-	-	- 76	60	78	90	76
	OK12DP22002-042	-	-	-	-	-	-	-	-	-	95
	Mean	40	44	54	61	72	73	64	60	84	82
	LSD (0.05)	7	6	7	7	11	8	7	7	9	15
	(0.05)	•	•	•	•	• • •	•	•	•	•	



2015-2016 Oklahoma Wheat Variety Performance Tests Summary

Ja"	NIVERSITY									whea	ıt.okstate.	edu
	8							Marshall	Marshall			
AGRIC	ULTURE					Lahoma		Dual-	Grain-			
-		Homestead	Hooker	Kildare	Lahoma	Fungicide	Lamont	Purpose	Only	Thomas	Union City	Walters
Source	Variety					gra	ain yield (bu	'ac)				
KWA	1863	-	-	-	76	85	-	-	-	-	-	-
AGSECO	AG Robust	-	-	-	71	82	-	-	-	-	-	-
PlainsGold	Avery	-	53	-	42	84	-	-	-	-	-	-
OGI	Bentley	92	60	59	69	87	86	50	51	81	66	35
OGI	Billings	86	-	49	64	75	52	38	51	68	52	-
PlainsGold PlainsGold	Brawl CL Plus	-	59	-	67	90 88	-	-	-	-	-	-
OGI	Byrd Doublestop CL Plus	- 74	43 56	- 53	37 62	73	- 69	48	48	- 66	- 57	36
OGI	Duster Duster	80	50 57	49	56	73 72	60	51	46 54	66	57 57	43
OSU	Endurance	73	60	48	57	77	63	51	47	69	66	27
KWA	Everest	64	-	57	55	75	64	40	30	-	-	
OGI	Gallagher	92	42	48	66	80	61	48	57	75	63	40
OGI	lba	88	47	61	65	76	69	51	58	70	62	32
KWA	Joe	-	-	-	82	92	-	-	-	-	-	-
KWA	KanMark	89	49	60	59	79	68	40	50	78	53	23
KWA	Larry	-	-	-	77	84	-	-	-	-	-	-
LCS	LCS Chrome	-	-	-	81	82	-	-	-	-	-	-
LCS	LCS Mint	76	56	41	65	88	73	25	42	77	73	-
LCS	LCS Pistol	78	54	41	54	72	58	41	39	69	57	31
LCS	LCS Wizard	74	48	59	52	80	71	32	28	64	53	30
Dyna-Gro	Long Branch	-	-	-	59	62	-	-	-	-	-	-
OGI	NF 101	-	-	-	57	67	-	-	-	-	-	-
KWA	Oakley CL	-	-	-	79	81	-	-	-	-	-	-
OGI	OK Rising	-	-	-	54	67	-	-	-	-	-	-
OGI	Ruby Lee	65	42	67	51	83	52	29	25	52	53	25
OGI	Stardust	-	-	-	70	81	70	-	-	-	- 50	- 24
Syngenta	SY Drifter SY Flint	- 87	-	- 47	63 69	72 77	- 54	- 45	- 57	69 63	58	43
Syngenta Syngenta	SY Grit	-	46 -	-	75	89	-	-	- -	-	-	-
Syngenta	SY Llano	- 75	-	- 44	64	70	- 46	32	- 52	37	- 50	24
Syngenta	SY Monument	88	40	53	74	83	72	53	62	-	-	-
Syngenta	SY Razor	-	-	-	77	76	-	-	-	_	_	_
Syngenta	SY Wolf	_	50	-	-	-	-	-	-	-	-	-
LCS	T158	-	-	-	67	87	-	-	-	-	-	37
Watley	TAM 112	-	36	-	43	83	-	-	-	-	-	-
AGSECO	TAM 114	-	38	-	75	90	-	-	-	-	-	-
Watley	TAM 204	91	62	64	70	85	82	31	45	75	60	31
KWA	Tatanka	-	-	-	71	84	-	-	-	-	-	-
WestBred	WB4303		-	-	70	90	-	-	-	-	-	-
WestBred	WB4458	88	-	59	73	84	76	38	51	62	50	27
WestBred	WB4515	-	-	-	65	76	-	-	-	-	-	-
WestBred	WB4721	-	-	-	78	85	-	-	-	-	-	-
WestBred	WB-Cedar	64	45	41	67	74	65	43	47	48	55 50	26
WestBred	WB-Grainfield	93	82	50	71	82	81	50	59	74	58	27
WestBred	Winterhawk	-	54	-	66	79	-	-	-	-	-	-
KWA	Zenda Experimentals	-	-	-	80	82	-	-	-	-	-	-
030	OK09915C-1	77	50	49	66	71	- 70	47	48	66	57	41
	OK10126	-	- -	49 55	-	-	81	-	40	66 -	-	-71
	OK1059060-3	-	-	52	-	-	78	-	-	-	-	-
	OK1039000-3	_	-	-	53	66	-	29	40	_	_	_
	OK11231 OK118036R/W	-	50	-	-	-	-	-	-	-	-	-
	OK11D25056	_	-	-	74	83	_	-	-	75	60	-
	OK12621	-	-	-	-	-	-	51	56	-	61	-
	OK12716R/W	84	-	50	73	88	68	50	59	-	72	-
	OK12912C	79	-	48	69	75	80	45	51	-	49	-
	OK12DP22002-042	-	53	-	-	-	-	-	-	-	-	
_	Mean	81	51	52	66	80	68	42	48	67	58	32
	LSD (0.05)	11	14	10	8	7	11	8	7	12	8	7



Afton Wheat Variety Trial

wheat.okstate.edu

Cooperator: Greg Leonard

Planting & harvest dates: 9/30/15 & 6/20/16 Previous crop: Corn

Management: Grain-only

Tillage Minimum-till

Soil type: Parsons silt loam

Soil test: pH = 7.3, P = 122, K = 398

			Grain Yield		Test Weigh
Source	Variety	2015-16	2-Year	3-Year	2015-16
			bu/ac		lb/bu
OGI	Billings	46	60	61	60.6
Watley	TAM 204	45	-	-	57.8
OGI	Gallagher	44	54	52	59.2
LCS	LCS Wizard	43	48	50	58.6
OGI	Duster	43	49	54	57.9
WestBred	WB-Grainfield	43	-	-	58.5
OGI	Bentley†	42	51	-	57.1
OGI	Ruby Lee	42	59	57	57.4
OGI	lba	42	50	53	58.4
OSU	Endurance	41	53	51	58.1
LCS	LCS Pistol	41	49	-	57.7
OGI	Doublestop CL Plus	40	52	55	60.3
Syngenta	SY Drifter	39	-	-	59.4
Syngenta	SY Flint	37	-	-	58.3
KWA	Everest	36	52	52	60.7
Syngenta	SY Llano	35	-	-	59.6
WestBred	WB-Cedar	33	50	51	58.5
WestBred	WB4458	32	54	55	57.9
Ex	(perimentals				
	OK09915C-1	38	-	-	61.7
	OK11231	31	38		59.5
	Mean	40	51	54	58.8
	LSD (0.05)	7	7	6	1.8

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. A freeze event occurred at the end of March. † Variety tested and reported as experimental line OK09125 in last year's trial.



Altus Regional Wheat Variety Trial

wheat.okstate.edu

Cooperator: Southwest Res. & Ext. Center

Extension Educator: Gary Strickland

Planting & harvest dates: 10/29/15 & 6/8/16

Management: Grain-only Tillage: Conventional

Soil type: Hollister silty clay loam Soil test: pH = 7.1, P = 63, K = 940

Previous crop: Wheat

			Grain Yield		Test Weight
Source	Variety	2015-16	2-Year	3-Year	2015-16
			bu/ac		lb/bu
KWA	Tatanka	60	-	-	63.6
KWA	Oakley CL	60	54	-	59.5
LCS	LCS Chrome†	55	54	-	57.6
LCS	T158	55	50	37	58.3
WestBred	Winterhawk	52	51	39	62.1
KWA	Joe	52	-	-	56.7
Syngenta	SY Flint†	52	52	-	57.6
WestBred	WB4721	51	-	-	60.1
OGI	lba	51	50	38	59.3
OGI	Duster	51	47	37	58.9
Syngenta	SY Monument	50	45	-	57.7
WestBred	WB-Grainfield	49	46	38	59.8
Dyna-Gro	Long Branch	49	-	-	55.4
OGI	Bentley†	48	52	42	56.3
ΚWA	Larry	48	-	-	57.3
ΚWA	Zenda	48	_	_	59.5
Syngenta	SY Drifter†	48	48	_	62.1
VestBred	WB4515	47	-	_	58.4
WestBred	WB4458	47	45	34	57.4
Watley	TAM 204	45	44	-	56.4
-CS	LCS Mint	45 45	43	35	59.0
AGSECO	AG Robust	44	45	33	57.8
PlainsGold	Brawl CL Plus	44	- 44	- 35	60.1
VestBred	WB4303	44	44	33	55.0
WA	1863	44	- 45	-	58.9
				-	
KWA	KanMark	44	50	-	60.4
Syngenta	SY Grit	43	-	-	59.8
AGSECO	TAM 114	42	43	-	57.0
OGI	Gallagher	42	44	32	58.7
OGI	Doublestop CL Plus	39	45	38	59.4
OGI	OK Rising	39	39	-	54.7
Syngenta	SY Razor	39	-	-	57.3
VestBred	WB-Cedar	37	44	32	57.7
OGI	Billings	35	40	30	56.9
DSU	Endurance	34	40	34	57.3
PlainsGold	Byrd	34	35	29	58.6
_CS	LCS Pistol	33	40	-	59.3
PlainsGold	Avery†	33	34	-	55.7
Syngenta	SY Llano	32	29	-	60.0
_CS	LCS Wizard	31	33	28	60.7
Natley	TAM 112	29	31	-	57.6
OGI	Ruby Lee	23	32	25	58.1
OGI	NF 101	23	32	-	57.1
ΚWA	Everest	22	33	24	58.5
	xperimentals				
	OK12716R/W	67	-	-	58.4
	OK11D25056	55	51	-	59.2
	OK09915C-1	46	-	-	58.5
	· - ·				
	Mean	44	43	34	58.4

Notes: Three-year results are average of 2016, 2015, and 2013. Data was not collected in 2014 due to severe drought. Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Heavy stripe rust pressure throughout grain fill. † Varieties tested and reported as experimental lines in previous trial(s): Avery = CO11D174; Bentley = OK09125; LCS Chrome = LCH13DH-20-87; SY Drifter = AP09T7631; SY Flint = 06BC722#25.



Alva Wheat Variety Trial

wheat.okstate.edu

Cooperator: Wes Mallory & Jared Bradt Ext. Educator: Greg Highfill

Planting & harvest dates: 10/21/15 & 6/22/16 Previous crop: Wheat Management: Grain-only Soil type: Grant silt loam

Tillage: Conventional Soil test: pH = 5.7, P = 60, K = 545

Conventi	Onai			Took \\\\ c \rightarrow k = 343
	Maniata.			Test Weight
rce	Variety			2015-16
	-			lb/bu
	_			58.6
			56	60.0
	•		-	60.0
nsGold	Byrd	60	54	59.9
ley	TAM 112	59	48	60.0
	Duster	58	50	59.8
stBred	WB-Grainfield	57	-	60.5
	lba	57	53	61.0
	Doublestop CL Plus	56	52	60.7
genta	SY Monument	56	-	59.9
J	Endurance	56	51	60.1
	Gallagher	56	50	59.6
stBred	Winterhawk	55	57	60.9
4	KanMark	55	50	59.6
	LCS Wizard	55	-	59.3
ley	TAM 204	55	54	58.9
	LCS Pistol	52	49	59.2
genta	SY Flint	51	-	58.7
stBred			48	58.0
	Ruby Lee	50	46	59.8
	•			60.5
	Brawl CL Plus			60.0
	perimentals		_	
		53	_	59.7
			_	58.5
			_	60.8
			_	60.2
			-	61.4
		54	52	59.8
		7	7	1.3
	rce InsGold	Bentley† LCS Mint asGold Avery asGold Byrd ley TAM 112 Duster tBred WB-Grainfield Iba Doublestop CL Plus genta SY Monument I Endurance Gallagher tBred Winterhawk A KanMark LCS Wizard ley TAM 204 LCS Pistol genta SY Flint tBred WB-Cedar Ruby Lee SECO TAM 114 asGold Brawl CL Plus Experimentals OK12716R/W OK12621 OK11D25056 OK12912C OK09915C-1 Mean	Grain Cree Variety Experimentals Cree Variety Experimentals Cree Variety Experimentals Cree Cree	Grain Yield 2015-16 2-Year

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. All plots received 20 lb/ac nitrogen todress on 1/28/2016.

† Variety tested and reported as experimental line OK09125 in last year's trial.



Apache Wheat Variety Trial

wheat.okstate.edu

AGRICULTURE Cooperator: Bryan Vail Extension Educator: David Nowlin

Planting & harvest dates: 10/13/15 & 6/9/16 Previous crop: Wheat

Management: Grain-only Soil type: Hollister silt loam

Tillage: No-till Soil test: pH = 4.9, P = 126, K = 546

- 3	****			0011 10011 pii = 110, i = 120, it = 0.10			
		Grain	Yield	Test Weight	Lodging		
Source	Variety	2015-16	2-Year	2015-16	2015-16		
•		bu/	/ac	lb/bu	1 - 5		
WestBred	WB4458	84	68	58.3	1		
OGI	Bentley†	77	65	56.5	2		
WestBred	WB-Grainfield	74	66	57.0	1		
Syngenta	SY Flint	68	-	56.8	2		
Watley	TAM 204	67	-	56.7	1		
LCS	T158	64	-	56.3	2		
Syngenta	SY Llano	64	55	58.6	3		
OGI	Gallagher	63	56	56.2	3		
WestBred	Winterhawk	62	54	59.0	2		
OGI	Iba	61	53	57.7	2		
OGI	Doublestop CL Plus	61	54	59.5	3		
KWA	KanMark	57	-	55.8	4		
Syngenta	SY Drifter	56	-	58.0	1		
LCS	LCS Pistol	51	45	55.3	4		
OSU	Endurance	50	44	54.5	2		
LCS	LCS Wizard	48	-	57.4	1		
OGI	Duster	39	36	55.2	4		
OGI	Ruby Lee	37	39	49.7	2		
Ex	(perimentals						
	OK12716R/W	67	-	56.5	3		
	OK09915C-1	66	-	60.3	3		
	Mean	61	53	56.7	2		
	LSD (0.05)	7	6	2.0			

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value withing a column. Lodging on a 1 - 5 scale with 1 indicating no lodging. Heavy stripe rust pressure throughout grain fill.

† Variety tested and reported as experimental line OK09125 in last year's trial.



Apache Fungicide Wheat Variety Trial

wheat.okstate.edu

AGRICULTURE Cooperator: Brian Vail Extension Educator: David Nowlin

Planting & harvest dates: 10/13/15 & 6/9/16 Previous crop: Wheat

Management: Grain-only Soil type: Hollister silt loam

Tillage: No-till Soil test: pH = 4.9, P = 126, K = 546

Fungicide: 9 oz/ac Twinline at heading on 4/01/2016

		Grain	Yield	Test Weight	Lodging
Source	Variety	2015-16	2-Year	2015-16	2015-16
		bu/	ac	lb/bu	1-5
WestBred	WB4458	90	73	59.5	1
WestBred	WB-Grainfield	88	78	58.4	4
OGI	Bentley†	80	73	58.0	3
Watley	TAM 204	79	-	57.5	3
WestBred	Winterhawk	78	70	60.0	4
KWA	KanMark	76	-	58.3	5
OGI	lba	76	69	59.0	2
OGI	Ruby Lee	75	65	58.5	1
LCS	LCS Wizard	70	-	59.3	2
Syngenta	SY Flint	69	-	57.7	4
LCS	T158	68	-	57.2	4
OGI	Doublestop CL Plus	68	64	61.1	2
OGI	Gallagher	68	65	57.4	3
Syngenta	SY Drifter	66	-	59.1	3
Syngenta	SY Llano	66	61	58.3	3
LCS	LCS Pistol	60	61	56.4	5
OSU	Endurance	57	54	56.8	1
OGI	Duster	49	48	55.0	5
Ex	cperimentals				
	OK09915C-1	77	-	61.4	2
	OK12716R/W	72	-	57.9	3
	Mean	72	65	58.3	3
	LSD (0.05)	11	7	1.4	

Notes: Grain yields adjusted to 12% moisture. Lodging on a 1 - 5 scale with 1 indicating no lodging. Shaded values are not statistically different from the highest value within a column. † Variety tested and reported as experimental line OK09125 in last year's trial.



Apache Wheat Variety Trial - Fungicide vs. No Fungicide Comparison

wheat.okstate.edu

TUBE Cooperator: Brian Vail Extension Educator: David Nowlin

Planting & harvest dates: 10/13/15 & 6/9/16 Previous crop: Wheat Soil type: Hollister silt loam

Management: Grain-only, no-till Fungicide: 9 oz/ac Twinline at heading on 4/01/2016 Soil test: pH = 4.9, P = 126, K = 546

	Grain Yield							-	Test Weight	
			2015-16			2-Year			2015-16	
Source	Variety	No Fungicide	Fungicide	Diff.	No Fungicide	Fungicide	Diff.	No Fungicide	Fungicide	Diff.
	-			bu/	ac				lb/bu	
WestBred	WB4458	84	90	6	68	73	6	58.3	59.5	1.2
OGI	Bentley†	77	80	3	65	73	7	56.5	58.0	1.5
WestBred	WB-Grainfield	74	88	14	66	78	12	57.0	58.4	1.3
Syngenta	SY Flint	68	69	1	-	-	-	56.8	57.7	0.9
Watley	TAM 204	67	79	13	-	-	-	56.7	57.5	0.8
LCS	T158	64	68	4	-	-	-	56.3	57.2	0.9
Syngenta	SY Llano	64	66	2	55	61	6	58.6	58.3	-0.3
OGI	Gallagher	63	68	5	56	65	9	56.2	57.4	1.2
WestBred	Winterhawk	62	78	16	54	70	15	59.0	60.0	1.1
OGI	lba	61	76	15	53	69	17	57.7	59.0	1.3
OGI	Doublestop CL Plus	61	68	7	54	64	10	59.5	61.1	1.6
KWA	KanMark	57	76	19	-	-	-	55.8	58.3	2.5
Syngenta	SY Drifter	56	66	10	-	-	-	58.0	59.1	1.1
LCS	LCS Pistol	51	60	9	45	61	16	55.3	56.4	1.1
OSU	Endurance	50	57	8	44	54	10	54.5	56.8	2.3
LCS	LCS Wizard	48	70	22	-	-	-	57.4	59.3	2.0
OGI	Duster	39	49	10	36	48	12	55.2	55.0	-0.2
OGI	Ruby Lee	37	75	38	39	65	26	49.7	58.5	8.9
E	xperimentals									
	OK12716R/W	67	72	5	-	-	-	56.5	57.9	1.4
	OK09915C-1	66	77	11	-			60.3	61.4	1.1
	Mean	61	72	11	53	65	13	56.7	58.3	1.6
	LSD (0.05)	7	11	10	6	7	11	2.0	1.4	1.9

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Boldfaced values in the "Diff." column represent a statistical difference between the fungicide vs. no fungicide averages for that variety. Heavy stripe rust pressure throughout grain fill.

[†] Variety tested and reported as experimental line OK09125 in last year's trial.



Buffalo Wheat Variety Trial

wheat.okstate.edu

Cooperator: NRCS Extension Educator: Darrell McBee

Planting & harvest dates: 10/12/15 & 6/17/16 Previous crop: Wheat

Management: Grain-only Soil type: St. Paul silt loam

Tillage: No-till Soil test: pH = 7.2, P = 59, K = 604

rillage. No-till			on test. pri –	7.2, 1 - 39, K - 004
		Grair	n Yield	Test Weight
Source	Variety	2015-16	2-Year	2015-16
		bu	ı/ac	lb/bu
WestBred	WB-Grainfield	86	-	57.7
OGI	Bentley†	82	60	55.2
PlainsGold	Byrd	80	56	56.0
Syngenta	SY Monument	80	-	56.5
PlainsGold	Brawl CL Plus	79	56	58.1
OGI	lba	79	63	57.4
WestBred	Winterhawk	77	60	56.8
LCS	LCS Wizard	77	-	56.1
AGSECO	TAM 114	76	54	58.4
OSU	Endurance	75	60	56.0
Syngenta	SY Flint	74	-	56.2
OGI	Doublestop CL Plus	73	60	58.5
KWA	KanMark	73	51	57.3
OGI	Duster	73	58	56.7
PlainsGold	Avery	72	-	54.8
LCS	LCS Mint	71	54	57.2
Watley	TAM 204	69	56	55.7
LCS	LCS Pistol	66	54	55.3
OGI	Gallagher	65	55	54.5
WestBred	WB-Cedar	63	40	55.9
OGI	Ruby Lee	60	48	54.9
Watley	TAM 112	60	55	56.8
Ex	perimentals			
	OK12912C	76	-	56.5
	OK09915C-1	65	-	58.9
	Mean	73	55	56.5
	LSD (0.05)	8	7	1.3

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. All plots received 20 lb/ac nitrogen todress on 1/28/2016.

† Variety tested and reported as experimental line OK09125 in last year's trial.



Cherokee Wheat Variety Trial

wheat.okstate.edu

BICULTURE Cooperator: Kenneth Failes Ext. Educator: Tommy Puffinbarger

Planting & harvest dates: 10/5/15 & 6/14/16 Previous crop: Wheat

Management: Dual-purpose Soil type: Dale silt loam

Tillage: Conventional Soil test: pH = 6.9, P = 45, K = 696

		Vield	Test Weight	Lodging
Variety				2015-16
varioty				1 - 5
WB-Grainfield		- -		2
		60		2
				2
lba	71	63		1
SY Monument	70	-	58.1	1
Endurance	68	60	58.7	1
Duster	68	58	59.0	2
Byrd	68	56	58.8	1
TAM 204	67	56	57.3	1
Avery	65	-	58.7	1
Brawl CL Plus	65	56	60.7	1
TAM 112	64	55	61.2	1
SY Flint	64	-	58.8	1
Doublestop CL Plus	62	60	61.1	1
LCS Mint	62	54	58.2	1
KanMark	59	51	57.6	1
LCS Pistol	58	54	57.7	2
Gallagher	57	55	58.9	2
LCS Wizard	54	-	58.7	1
TAM 114	54	54	60.2	1
Ruby Lee	53	48	59.6	2
WB-Cedar	39	40	58.2	1
perimentals				
OK12716R/W	76	-	58.1	1
OK09915C-1	64	-	61.5	1
OK12912C	60	-	60.3	1
Mean	64	55	59.2	1
LSD (0.05)	7	7	1.7	
	SY Monument Endurance Duster Byrd TAM 204 Avery Brawl CL Plus TAM 112 SY Flint Doublestop CL Plus LCS Mint KanMark LCS Pistol Gallagher LCS Wizard TAM 114 Ruby Lee WB-Cedar perimentals OK12716R/W OK09915C-1 OK12912C	Variety 2015-16 bu WB-Grainfield 74 Winterhawk 74 Bentley† 71 Iba 71 SY Monument 70 Endurance 68 Duster 68 Byrd 68 TAM 204 67 Avery 65 Brawl CL Plus 65 TAM 112 64 SY Flint 64 Doublestop CL Plus 62 LCS Mint 62 KanMark 59 LCS Pistol 58 Gallagher 57 LCS Wizard 54 TAM 114 54 Ruby Lee 53 WB-Cedar 39 perimentals OK12716R/W 76 OK12912C 60 Mean 64	WB-Grainfield 74 - Winterhawk 74 60 Bentley† 71 60 Iba 71 63 SY Monument 70 - Endurance 68 60 Duster 68 58 Byrd 68 56 TAM 204 67 56 Avery 65 - Brawl CL Plus 65 56 TAM 112 64 55 SY Flint 64 - Doublestop CL Plus 62 60 LCS Mint 62 54 KanMark 59 51 LCS Pistol 58 54 Gallagher 57 55 LCS Wizard 54 - TAM 114 54 54 Ruby Lee 53 48 WB-Cedar 39 40 Perimentals OK12716R/W 76 - OK09915C-1 64 - OK12912C 60 - Mean 64 55	Variety 2015-16 2-Year 2015-16 WB-Grainfield 74

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a 1 - 5 scale with 1 indicating no lodging. All plots received 30 lb/ac nitrogen topdress on 2/19/2016 and 5.5 oz/ac Prosaro fungicide on 4/15/2016. † Variety tested and reported as experimental line OK09125 in last year's trial.



Chickasha Regional Wheat Variety Trial

wheat.okstate.edu

Cooperator: OSU South Central Research Station

Planting & harvest dates: 10/20/15 & 6/10/16

Management: Grain-only, conventional tillage

Previous crop: Austrian winter pea
Soil test: pH = 6.7, P = 51, K = 396
Nitrogen: 141 lb/ac soil test +
9 lb/ac at planting

						at planting
		-	Grain Yield		Test Weight	Lodging
Source	Variety	2015-16	2-Year	3-Year	2015-16	2015-16
			bu/ac		lb/bu	1 - 5
OGI	Billings	83	41	61	58.5	2
AGSECO	AG Robust	80	23	-	59.4	2
KWA	Larry	77	-	-	58.0	2
KWA	Joe	76	-	-	57.0	4
LCS	LCS Chrome†	75	68	-	55.5	3
KWA	Tatanka	74	-	-	58.5	4
Syngenta	SY Flint†	74	67	-	59.9	2
KWA	1863	73	63	-	60.0	3
OGI	Gallagher	73	54	58	59.3	2
AGSECO	TAM 114	72	62	-	59.8	4
Syngenta	SY Llano	72	65	55	60.7	2
WestBred	WB4458	72	67	61	58.8	2
Syngenta	SY Monument	71	65	-	57.1	2
LCS	T158	71	59	52	59.4	4
WestBred	WB4515	70	-	-	57.9	3
KWA	Zenda	70	-	-	59.7	2
WestBred	WB-Cedar	69	67	61	57.7	2
Watley	TAM 204	68	61	-	56.8	4
KWA	Oakley CL	66	59	-	56.4	2
WestBred	WB4721	65	-	-	56.9	1
Syngenta	SY Drifter†	64	55	-	60.0	3
WestBred	WB4303	62	_	-	55.8	1
KWA	KanMark	61	54	-	57.3	5
Syngenta	SY Grit	61	_	-	56.2	2
WestBred	Winterhawk	60	54	51	58.2	4
WestBred	WB-Grainfield	60	57	52	54.0	2
OGI	Iba	60	-	52	57.1	4
Syngenta	SY Razor	60	_	-	61.6	2
OGI	OK Rising	57	47	45	56.0	2
OGI	Duster	56	42	49	56.6	4
OGI	Doublestop CL Plus	56	49	45	59.1	2
OGI	Bentley†	54	71	47	53.1	3
Dyna-Gro	Long Branch	52	-	-	50.2	3
OGI	NF 101	49	47	_	58.2	3
LCS	LCS Pistol	49 47	41	_	56.5	1
OSU	Endurance	47	28	42	55.0	3
PlainsGold	Brawl Cl. Plus	42	21	43	54.0	2
LCS	LCS Mint	40	34	38	53.3	3
LCS	LCS Wizard	36	34	39	57.3	2
Watley	TAM 112	33	28	39 34	57.3 52.3	4
vvalley PlainsGold		33 27	20 46	J -1	52.3 52.8	
PlainsGold PlainsGold	Avery†	27 26	46 48	30	52.8 53.4	3
	Byrd					3
KWA	Everest	25	65 24	35 34	58.8	1
OGI	Ruby Lee	23	24	31	54.8	2
E	xperimentals	70			F7 0	•
	OK12912C	78	-	-	57.6	3
	OK11D25056	75	62	-	59.5	2
	OK09915C-1	69	-	-	60.1	3
	Mean	60	51	47	57.1	3
	LSD (0.05)	7	6	8	2.1	

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a 1 - 5 scale with 1 indicating no lodging. Severe stripe rust pressure during grain fill.

[†] Varieties tested and reported as experimental lines in previous trial(s): Avery = CO11D174; Bentley = OK09125; LCS Chrome = LCH13DH-20-87; SY Drifter = AP09T7631; SY Flint = 06BC722#25.



Chickasha Intensive Wheat Management Variety Trial

wheat.okstate.edu

Cooperator: OSU South Central Research Station

Planting & harvest dates: 10/20/15 & 6/10/16 Previous crop: Austrian winter pea Soil type: Dale silt loam

Management: Grain-only, conventional tillage Soil test: pH = 6.7, P = 51, K = 396

Nitrogen: 141 lb/ac soil test + 9 lb/ac at planting + 40 lb/ac topdress 3/03/16

Fungicide: 4 oz/ac Tilt at jointing on 3/04/16 + 6.8 oz/ac Aproach Prima at heading on 4/08/16

			Grain Yield		Test Weight	Lodging
Source	Variety	2015-16	2-Year	3-Year	2015-16	2015-16
			bu/ac		lb/bu	1 - 5
VestBred	WB4303	103	-	-	57.5	1
VestBred	WB4458	103	91	74	60.7	2
Vatley	TAM 204	101	85	-	57.9	3
VestBred	WB-Cedar	96	88	75	59.4	2
Syngenta	SY Grit	95	-	-	59.3	2
OGI	Billings	94	79	70	59.8	2
AGSECO	AG Robust	94	68	-	58.7	2
OGI	Gallagher	93	77	69	59.9	3
OGI	Ruby Lee	92	78	68	60.7	2
VestBred	WB4515	91	-	-	60.2	2
PlainsGold	Byrd	91	68	64	59.6	3
Syngenta	SY Flint†	91	83	=	59.5	3
GSECO	TAM 114	90	85	-	60.9	3
VestBred	Winterhawk	90	77	67	60.2	3
.CS	T158	89	84	69	58.9	4
PlainsGold	Brawl CL Plus	87	73	68	59.8	3
.CS	LCS Wizard	87	77	67	59.9	2
(WA	KanMark	87	80	-	58.9	3
(WA	Everest	85	84	70	58.7	2
Syngenta	SY Llano	85	77	63	60.4	3
(WA	Zenda	85		-	60.6	2
(WA	Larry	84	_	_	58.1	2
.CS	LCS Chrome†	84	80	_	55.4	3
Syngenta	SY Drifter†	84	74	_	59.3	2
)GI	Bentley†	84	86	68	54.9	3
(WA	1863	84	81	-	59.1	3
(WA	Tatanka	82	-	_	57.9	3
PlainsGold	Avery†	82	79	- -	56.0	3
)GI	Iba	81	19	66	59.0	4
	SY Monument	80	- 77	-	53.6	3
Syngenta DGI	OK Rising	80	7 <i>1</i> 74	63	56.2	2
.CS	LCS Mint	79	74 74	65	58.1	3
)GI	NF 101	79 77		-		2
(WA		7 <i>1</i> 75	69	-	60.3	3
	Joe		-	-	57.6	3
)GI VootBrod	Doublestop CL Plus	75 75	63 74	60 64	60.4	
VestBred	WB-Grainfield	75 74			54.9	3
)SU	Endurance	74	81	61	59.0	3
Syngenta	SY Razor	73	-	-	60.7	2
Vatley	TAM 112	72	66	58	57.5	4
VestBred	WB4721	72	-	-	56.9	2
CS	LCS Pistol	70	68	-	56.0	2
WA.	Oakley CL	69	68	-	56.0	2
)GI	Duster	67	69	58	55.6	5
yna-Gro _	Long Branch	55	-	-	51.3	3
E	xperimentals					_
	OK12912C	90	-	-	61.6	3
	OK11D25056	84	75	-	58.7	3
	OK09915C-1	77	-	-	60.2	3
	Mean	84	77	66	58.4	3
	LSD (0.05)	9	7	7	2.5	

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a 1 - 5 scale with 1 indicating no lodging.

[†] Varieties tested and reported as experimental lines in previous trial(s): Avery = CO11D174; Bentley = OK09125; LCS Chrome = LCH13DH-20-87; SY Drifter = AP09T7631; SY Flint = 06BC722#25.



Chickasha Standard vs. Intensive Wheat Management Comparison

wheat.okstate.edu

Cooperator: OSU South Central Research Station

Planting & harvest dates: 10/20/15 & 6/10/16 Management: Grain-only, conventional tillage

20-87; SY Drifter = AP09T7631; SY Flint = 06BC722#25.

Previous crop: Austrian winter pea

Soil type: Dale silt loam Soil test: pH = 6.7, P = 51, K = 396

All plots had 150 lb/ac N available at planting. Intensive Wheat Management (IWM) plots received 40 lb/ac additional N at jointing, 4 oz/ac Tilt at jointing, and 6.8 oz/ac Aproach Prima at heading

_		2016 Grain Yield				2016 Test Weight			
Source	Variety	Standard	IWM	Diff.	Standard	IWM	Diff.		
						lb/bu			
OGI	Billings	83	94	12	58.5	59.8	1.2		
AGSECO	AG Robust	80	94	14	59.4	58.7	-0.8		
KWA	Larry	77	84	7	58.0	58.1	0.1		
KWA	Joe	76	75	-1	57.0	57.6	0.6		
LCS	LCS Chrome†	75	84	9	55.5	55.4	-0.1		
KWA	Tatanka	74	82	8	58.5	57.9	-0.6		
Syngenta	SY Flint†	74	91	17	59.9	59.5	-0.3		
KWA	1863	73	84	10	60.0	59.1	-0.9		
OGI	Gallagher	73	93	21	59.3	59.9	0.6		
AGSECO	TAM 114	72	90	18	59.8	60.9	1.0		
Syngenta	SY Llano	72	85	13	60.7	60.4	-0.3		
WestBred	WB4458	72	91	20	58.8	60.2	1.4		
Syngenta	SY Monument	71	80	10	57.1	53.6	-3.5		
LĆS	T158	71	89	18	59.4	58.9	-0.5		
WestBred	WB4515	70	103	33	57.9	60.7	2.8		
KWA	Zenda	70	85	15	59.7	60.6	1.0		
WestBred	WB-Cedar	69	96	27	57.7	59.4	1.7		
Watley	TAM 204	68	101	33	56.8	57.9	1.1		
KWA	Oakley CL	66	69	2	56.4	56.0	-0.4		
WestBred	WB4721	65	72	6	56.9	56.9	0.0		
Syngenta	SY Drifter†	64	84	20	60.0	59.3	-0.7		
NestBred	WB4303	62	103	41	55.8	57.5	1.7		
(WA	KanMark	61	87	26	57.3	58.9	1.6		
Syngenta	SY Grit	61	95	35	56.2	59.3	3.1		
NestBred	Winterhawk	60	90	29	58.2	60.2	2.1		
				29 14	54.0	54.9			
WestBred OGI	WB-Grainfield	60 60	75				0.9		
	lba SY Razor		81 73	20	57.1	59.0	1.9		
Syngenta		60		13	61.6	60.7	-0.9		
OGI	OK Rising	57	80	23	56.0	56.2	0.2		
OGI	Duster	56	67	11	56.6	55.6	-1.0		
OGI	Doublestop CL Plus	56	75	19	59.1	60.4	1.3		
OGI	Bentley†	54	84	30	53.1	54.9	1.8		
Dyna-Gro	Long Branch	52	55 	3	50.2	51.3	1.1		
OGI	NF 101	49	77	28	58.2	60.3	2.2		
LCS	LCS Pistol	47	70	23	56.5	56.0	-0.5		
OSU	Endurance	47	74	28	55.0	59.0	4.0		
PlainsGold	Brawl CL Plus	42	87	45	54.0	59.8	5.8		
LCS	LCS Mint	40	79	39	53.3	58.1	4.8		
LCS	LCS Wizard	36	87	51	57.3	59.9	2.6		
Watley	TAM 112	33	72	40	52.3	57.5	5.3		
PlainsGold	Avery†	27	82	55	52.8	56.0	3.1		
PlainsGold	Byrd	26	91	65	53.4	59.6	6.2		
KWA	Everest	25	85	61	58.8	58.7	-0.1		
OGI	Ruby Lee	23	92	68	54.8	60.7	5.8		
	xperimentals								
	OK12912C	78	90	12	57.6	61.6	4.0		
	OK11D25056	75	84	9	59.5	58.7	-0.8		
	OK09915C-1	69	77	9	60.1	60.2	0.1		
	Mean	60	84	24	57.1	58.4	1.3		
	LSD _(0.05)	7	9	9	2.1	2.5	2.4		
	(0.05)	1	9	Э	∠. I	2.5	∠.4		

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Boldfaced values in the "Diff." column represent a statistical difference between the standard and IWM averages for that variety. Severe stripe rust pressure during grain fill. † Varieties tested and reported as experimental lines in previous trial(s): Avery = CO11D174; Bentley = OK09125; LCS Chrome = LCH13DH-



Goodwell Irrigated Regional Wheat Variety Trial

wheat.okstate.edu

Cooperator: Oklahoma Panhandle Research & Extension Center

Planting & harvest dates: 10/13/16 & 6/27/16 Previous crop: Fallow

Management: Grain-only Soil type: Gruver clay loam

Tillage: Conventional

_			Grain Yield		Test Weight	Lodging
Source	Variety	2015-16	2-Year	3-Year	2015-16	2015-16
			bu/ac		lb/bu	1 - 5
KWA	Joe	94	-	-	58.9	1
OGI	Iba	91	79	77	59.3	1
OGI	Billings	91	78	75	58.5	1
Dyna-Gro	Long Branch	90	-	-	57.9	1
KWA	Oakley CL	90	85	-	59.3	1
Watley	TAM 204	90	87	-	57.4	1
Syngenta	SY Flint†	90	84	-	57.2	1
Syngenta	SY Drifter†	89	79	-	58.4	1
KWA	Larry	88	-	-	57.6	1
LCS	LCS Mint	88	62	61	57.1	2
LCS	LCS Chrome†	88	77	-	57.6	1
OGI	Duster	87	73	72	58.8	2
WestBred	WB4721	87	-	-	58.8	1
AGSECO	TAM 114	87	71	-	59.5	1
Syngenta	SY Monument	87	83	-	57.1	1
OGI [°]	Gallagher	86	84	75	57.1	1
KWA	Tatanka	86	-	-	58.0	1
KWA	Zenda	85	-	-	58.6	1
Syngenta	SY Wolf	85	-	-	57.2	1
WestBred	WB-Grainfield	85	82	76	58.7	1
OGI	Ruby Lee	85	68	64	57.2	1
PlainsGold	Byrd	84	61	61	57.2	1
WestBred	Winterhawk	84	74	73	57.8	1
LCS	LCS Pistol	83	75	-	58.0	1
KWA	KanMark	83	76	-	58.2	1
OGI	Bentley†	83	-	-	55.9	2
PlainsGold	Brawl CL Plus	82	74	75	57.9	1
Syngenta	SY Grit	81	-	-	56.4	1
WestBred	WB4303	80	-	-	53.8	1
WestBred	WB4515	79	-	-	55.8	1
OSU	Endurance	79	66	64	57.9	1
LCS	LCS Wizard	73 77	65	65	56.7	1
Syngenta	SY Razor	77	-	-	57.5	1
PlainsGold	Avery†	77	57	-	55.3	2
WestBred	WB4458	77 77	85	78	56.0	1
KWA	Everest	7 <i>7</i> 76	73	68	58.7	1
LCS	T158	76 75	73 71	72	50.7 57.7	1
Watley	TAM 112	75 75	53	60	54.5	2
WestBred	WB-Cedar	75 74	53 69	68	54.5 54.5	1
KWA				00		
	1863 NE 101	73 73	74	-	56.6	1
OGI	NF 101	73 74	62	-	57.1	2
OGI	OK Rising	71	66	64	56.3	ı
OGI	Doublestop CL Plus	66	64	63	58.5	1
Syngenta	SY Llano	65	-	-	58.5	1
AGSECO	AG Robust	63	-	-	56.7	1
E	experimentals	0.5				
	OK12716R/W	96	-	-	57.6	1
	OK12DP22002-042	95	-	-	58.2	1
	OK10126	94	81	78	58.0	2
	OK11D25056	84	77	-	59.4	1
	OK12912C	76	-	-	56.8	1
	OK09915C-1	74	-	-	58.1	1
	OK12621	65	69	-	56.3	1
	Mean	82	73	69	57.5	1
	LSD (0.05)	15	12	10	1.9	
	\/					

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a scale from 1 - 5 with 1 indicating no lodging. A significant freeze event occurred between March 18 and 20 with 19 hours spent below 28° F during that time. Stripe rust was present.

[†] Variety tested and reported as experimental lines in previous trial(s): Avery = CO11D174; Bentley = OK09125; LCS Chrome = LCH13DH-20-87; SY Drifter = AP09T7631; SY Flint = 06BC722#25.



Homestead Wheat Variety Trial

wheat.okstate.edu

Previous crop: Fallow

Cooperator: Brook Strader

Planting & harvest dates: 10/8/15 & 6/15/16

Management: Grain-only

Tillage: No-till

Soil type: Canadian fine sandy loam
Soil test: pH = 6.0, P = 63, K = 453

			Grain Yield		Test Weight	Lodging
Source	Variety	2015-16	2-Year	3-Year	2015-16	2015-2016
			bu/ac		lb/bu	1 - 5
WestBred	WB-Grainfield	93	-	-	57.7	1
OGI	Bentley†	92	62	52	57.6	2
OGI	Gallagher	92	58	47	59.1	2
Watley	TAM 204	91	-	-	58.1	2
KWA	KanMark	89	-	-	58.8	1
WestBred	WB4458	88	59	49	57.9	1
Syngenta	SY Monument	88	-	-	58.3	2
OGI	lba	88	57	47	60.0	2
Syngenta	SY Flint	87	-	-	59.7	1
OGI	Billings	86	56	45	58.5	1
OGI	Duster	80	51	42	58.2	3
LCS	LCS Pistol	78	50	-	59.0	2
LCS	LCS Mint	76	53	46	58.4	3
Syngenta	SY Llano	75	-	-	58.7	1
OGI	Doublestop CL Plus	74	52	44	59.4	2
LCS	LCS Wizard	74	49	41	59.7	2
OSU	Endurance	73	49	41	58.1	2
OGI	Ruby Lee	65	47	41	59.0	1
KWA	Everest	64	45	39	59.6	1
WestBred	WB-Cedar	64	46	40	56.8	1
Ex	perimentals					
	OK12716R/W	84	-	-	56.8	3
	OK12912C	79	-	-	58.8	1
	OK09915C-1	77	-	-	60.9	2
	Mean	81	52	44	58.6	2
	LSD (0.05)	11	8	6	1.6	

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a 1 - 5 scale with 1 indicating no lodging. Low disease pressure throughout grain fill.

† Variety tested and reported as experimental line OK09125 in the two previous trials.



Hooker Wheat Variety Trial

wheat.okstate.edu

Cooperator: Dan & Ernest Herald

Planting & harvest dates: 9/28/16 & 6/24/16

Management: Grain-only

Tillage: No-till

Previous crop: Fallow

Soil type: Dalhart fine sandy loam Soil test: pH = 7.8, P = 36, K = 722

		Grain Yield			Test Weight	Lodging
Source	Variety	2015-16	2-Year	3-Year	2015-16	2015-16
'			bu/ac		lb/bu	
WestBred	WB-Grainfield	82	62	54	49.8	1
Watley	TAM 204	62	61	-	55.2	1
OGI	Bentley†	60	-	-	54.1	2
OSU	Endurance	60	56	50	55.1	1
PlainsGold	Brawl CL Plus	59	58	51	55.8	1
OGI	Duster	57	54	50	55.8	1
LCS	LCS Mint	56	55	51	52.7	1
OGI	Doublestop CL Plus	56	55	48	57.2	1
LCS	LCS Pistol	54	47	-	53.5	3
WestBred	Winterhawk	54	57	51	55.0	1
PlainsGold	Avery	53	-	-	53.1	1
Syngenta	SY Wolf	50	-	-	54.0	1
KWA	KanMark	49	56	-	54.7	1
LCS	LCS Wizard	48	-	-	55.1	1
OGI	lba	47	49	47	55.3	1
Syngenta	SY Flint	46	-	-	56.1	2
WestBred	WB-Cedar	45	-	-	53.0	1
PlainsGold	Byrd	43	51	47	53.0	1
OGI	Gallagher	42	44	38	54.9	3
OGI	Ruby Lee	42	43	41	51.0	2
Syngenta	SY Monument	40	-	-	55.4	1
AGSECO	TAM 114	38	40	-	56.4	1
Watley	TAM 112	36	40	38	53.9	2
Ex	perimentals					
	OK12DP22002-042	53	-	-	53.7	1
	OK118036	50	-	-	52.8	1
	OK09915C-1	50	-	-	55.8	1
	Mean	51	52	47	54.3	1
	LSD (0.05)	14	10	7	NS	

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a 1 - 5 scale with 1 indicating no lodging. Wheat streak mosaic was present. NS = not significant.

† Variety tested and reported as experimental line OK09125 in the two previous trials.



Kildare Wheat Variety Trial

wheat.okstate.edu

Cooperator: Don Schieber Extension Educator: Corbin Dewitt

Planting & harvest dates: 10/6/15 & 6/13/16 Previous crop: Wheat

Management: Grain-only Soil type: Tabler silt loam

Tillage: No-till Soil test: pH = 6.4, P = 113, K = 340

rillage. No-till				3011 test. pri = 0.	4, F = 113, K = 340
			Grain	Yield	Test Weight
	Source	Variety	2015-16	2-Year	2015-16
	·		bu	/ac	lb/bu
	OGI	Ruby Lee	67	53	58.4
	Watley	TAM 204	64	-	54.8
	OGI	lba	61	53	56.5
	KWA	KanMark	60	-	55.9
	WestBred	WB4458	59	54	56.2
	LCS	LCS Wizard	59	49	55.4
	OGI	Bentley†	59	56	54.4
	KWA	Everest	57	50	59.9
	OGI	Doublestop CL Plus	53	50	59.4
	Syngenta	SY Monument	53	-	57.8
	WestBred	WB-Grainfield	50	-	52.2
	OGI	Duster	49	45	53.1
	OGI	Billings	49	40	57.1
	OSU	Endurance	48	44	52.4
	OGI	Gallagher	48	45	56.7
	Syngenta	SY Flint	47	-	55.9
	Syngenta	SY Llano	44	-	58.7
	WestBred	WB-Cedar	41	40	58.1
	LCS	LCS Mint	41	43	53.1
	LCS	LCS Pistol	41	40	53.2
	Ex	perimentals			
		OK10126	55	-	60.5
		OK105906-3	52	-	57.2
		OK12716R/W	50	-	54.3
		OK09915C-1	49	-	60.4
		OK12912C	48	-	58.3
		Mean	52	47	56.4
		LSD _(0.05)	10	8	2.5

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Low disease pressure during grain fill. † Variety tested and reported as experimental line OK09125 in last year's trial.



Lahoma Regional Wheat Variety Trial

wheat.okstate.edu

Cooperator: North Central Research Station

Planting & harvest dates: 10/27/15 & 6/16/16 Previous crop: Wheat

Management: Grain-only

Soil type: Pond Creek silt loam Soil test: pH = 5.6. P = 47. K = 428

Extension Educator: Rick Nelson

Tillage: Con	- Tondona		One in March		Soil test: pH = 5.6	
			Grain Yield		Test Weight	Lodging
Source	Variety	2015-16	2-Year	3-Year	2015-16	2015-16
			bu/ac		lb/bu	1 - 5
KWA	Joe	82	-	-	60.7	3
LCS	LCS Chrome†	81	74	-	58.1	2
KWA	Zenda	80	-	-	61.5	2
KWA	Oakley CL	79	69	-	60.2	3
WestBred	WB4721	78	-	-	61.0	1
KWA	Larry	77	-	-	59.9	2
Syngenta	SY Razor	77	-	-	62.0	2
KWA	1863	76	69	-	60.0	4
AGSECO	TAM 114	75	69	-	61.4	2
Syngenta	SY Grit	75	-	=	58.3	2
Syngenta	SY Monument	74	69	_	59.4	1
WestBred	WB4458	73	66	62	58.4	1
AGSECO	AG Robust	71	-	-	60.8	3
WestBred	WB-Grainfield	71	68	59	57.4	2
KWA	Tatanka	71	-	-	59.9	4
Watley	TAM 204	70	62	_	57.1	2
WestBred	WB4303	70 70	-	_	55.9	1
				<u>-</u>		
OGI	Stardust†	70 60	61	58	57.4	3
OGI	Bentley†	69	63	59	55.7	3
Syngenta	SY Flint†	69	62	-	59.9	3
WestBred	WB-Cedar	67	64	60	57.2	2
PlainsGold	Brawl CL Plus	67	59	53	57.9	2
LCS	T158	67	59	55	58.3	3
OGI	Gallagher	66	64	61	59.2	3
WestBred	Winterhawk	66	57	55	58.3	3
WestBred	WB4515	65	-	-	60.0	1
OGI	lba	65	60	55	59.1	3
LCS	LCS Mint	65	56	51	58.6	2
OGI	Billings	64	60	55	58.7	3
Syngenta	SY Llano	64	58	56	58.8	3
Syngenta	SY Drifter†	63	55	-	60.6	2
ogi [°]	Doublestop CL Plus	62	58	53	60.7	2
Dyna-Gro	Long Branch	59	=	=	54.1	3
KWA	KanMark	59	52	_	57.9	3
OGI	NF 101	57	57	_	58.1	3
OSU	Endurance	57	53	50	55.7	3
OGI	Duster	56	50	49	57.8	3
KWA	Everest	55	49	47	58.5	3
LCS	LCS Pistol	54	50	47 -	56.9	3
OGI	OK Rising	54	50 50	50	57.1	2
LCS	LCS Wizard	52	43	45	56.4	1
OGI	Ruby Lee	51	49	49	53.7	3
Watley	TAM 112	43	39	42	52.1	3
PlainsGold	Avery†	42	33	-	52.0	3
PlainsGold	Byrd	37	35	40	52.3	2
	Experimentals					
	OK11D25056	74	64	-	58.5	3
	OK12716R/W	73	-	-	57.8	2
	OK12912C	69	-	-	60.5	2
	OK09915C-1	66	=	-	61.5	1
	OK11231	53	50	-	56.7	2
	Mean	66	57	53	58.2	2
	LSD _(0.05)	8	6	6	2.1	

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a 1 - 5 scale with 1 indicating no lodging. Heavy stripe rust pressure during mid- to late-grain fill.

[†] Varieties tested and reported as experimental lines in the previous trial(s): Avery = CO11D174; Bentley = OK09125; LCS Chrome = LCH13DH-20-87; Stardust = OK10728W; SY Drifter = AP09T7631; SY Flint = 06BC722#25.



Lahoma Regional Wheat Variety Trial - Fungicide Treated

wheat.okstate.edu

Cooperator: North Central Research Station

Extension Educator: Rick Nelson

Planting & harvest dates: 10/27/15 & 6/16/16 Management: Grain-only, conventional tillage Fungicide = 9 oz/ac Twinline at GS 9 on 4/12/16 Previous crop: Wheat Soil type: Pond Creek silt loam

			Grain Yield		Test Weight	Lodging
Source	Variety	2015-16	2-Year	3-Year	2015-16	2015-16
			bu/ac		lb/bu	1 - 5
KWA	Joe	92	-	-	62.4	2
AGSECO	TAM 114	90	81	-	61.7	2
PlainsGold	Brawl CL Plus	90	80	66	62.0	1
WestBred	WB4303	90	-	-	58.8	1
Syngenta	SY Grit	89	-	-	60.9	2
LĆS	LCS Mint	88	77	65	61.0	3
PlainsGold	Byrd	88	79	70	60.4	2
LCS	T158	87	74	65	61.1	3
OGI	Bentley†	87	80	69	59.5	2
WestBred	WB4721	85	-	-	62.1	1
Watley	TAM 204	85	81	_	59.3	2
KWA	1863	85	81	_	61.6	4
KWA	Tatanka	84	- -	_	62.4	3
WestBred	WB4458	84	- 77	69	60.9	1
KWA	Larry	84	-	-	61.3	2
PlainsGold	Avery†	84	73	-	60.1	2
Watley	TAM 112	83	72	63	62.1	3
OGI	Ruby Lee	83	73	65	61.6	2
Syngenta	SY Monument	83	78	-	60.9	1
KWA	Zenda	82	-	-	61.3	2
LCS	LCS Chrome†	82	78	-	58.9	2
WestBred	WB-Grainfield	82	80	67	59.0	2
AGSECO	AG Robust	82	-	-	61.1	2
OGI	Stardust†	81	73	65	60.2	2
KWA	Oakley CL	81	76	-	60.9	3
LCS	LCS Wizard	80	70	62	62.0	1
OGI	Gallagher	80	76	67	60.8	2
KWA	KanMark	79	72	-	61.3	2
WestBred	Winterhawk	79	71	63	61.0	3
OSU	Endurance	77	72	61	58.4	2
Syngenta	SY Flint†	77	73	-	61.7	2
Syngenta	SY Razor	76	-	_	62.3	2
WestBred	WB4515	76 76	- -	_	61.4	1
OGI	lba	76 76	- 71	- 61	61.0	2
KWA	Everest	75 75	75 60	64	60.9	2
OGI	Billings	75 74	69 74	60	60.8	2
WestBred	WB-Cedar	74 70	71	62	59.9	1
OGI	Doublestop CL Plus	73	70	61	62.0	2
Syngenta	SY Drifter†	72	68	-	61.4	1
LCS	LCS Pistol	72	69	-	59.1	3
OGI	Duster	72	66	59	60.0	3
Syngenta	SY Llano	70	67	61	59.8	2
OGI	NF 101	67	68	-	59.5	2
OGI	OK Rising	67	66	60	59.6	1
Dyna-Gro	Long Branch	62	-	_	56.1	2
•	xperimentals					
_	OK12716R/W	88	-	-	59.6	2
	OK11D25056	83	74	_	59.8	2
	OK12912C	75	-	_	61.1	2
	OK09915C-1	73 71	_	_	62.3	1
	OK11231	66	64	-	59.3	2
				- 04		
	Mean	80	73	64	60.6	2

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a 1 - 5 scale with 1 indicating no lodging.

[†] Varieties tested and reported as experimental lines in the previous trial(s): Avery = CO11D174; Bentley = OK09125; LCS Chrome = LCH13DH-20-87; Stardust = OK10728W; SY Flint = 06BC722#25; SY Drifter = AP09T7631.



Lahoma - Fungicide vs. No Fungicide Comparison

wheat.okstate.edu

Cooperator: North Central Research Station

Extension Educator: Rick Nelson

Planting & harvest dates: 10/27/15 & 6/16/16 Management: Grain-only, conventional tillage Fungicide = 9 oz/ac Twinline at GS 9 on 4/12/16

Soil type: Pond Creek silt loam Soil test: pH = 5.6, P = 47, K = 428

Previous crop: Wheat

·			2016 Grain Yield		2016 Test Weight			
		No			No			
Source	Variety	fungicide	Fungicide	Diff.	fungicide	Fungicide	Diff.	
			bu/ac			lb/bu		
KWA	Joe	82	92	10	60.7	62.4	1.8	
LCS	LCS Chrome†	81	82	1	58.1	58.9	8.0	
KWA	Zenda	80	82	2	61.5	61.3	-0.2	
KWA	Oakley CL	79	81	2	60.2	60.9	0.7	
WestBred	WB4721	78	85	8	61.0	62.1	1.1	
KWA	Larry	77	84	7	59.9	61.3	1.4	
Syngenta	SY Razor	77	76	0	62.0	62.3	0.3	
KWA	1863	76	85	9	60.0	61.6	1.6	
AGSECO	TAM 114	75	90	15	61.4	61.7	0.3	
Syngenta	SY Grit	75	89	13	58.3	60.9	2.6	
Syngenta	SY Monument	74	83	8	59.4	60.9	1.5	
WestBred	WB4458	73	84	11	58.4	60.9	2.5	
AGSECO	AG Robust	71	82	11	60.8	61.1	0.4	
WestBred	WB-Grainfield	71	82	11	57.4	59.0	1.6	
KWA	Tatanka	71	84	13	59.9	62.4	2.5	
Watley	TAM 204	70	85	15	57.1	59.3	2.2	
WestBred	WB4303	70	90	20	55.9	58.8	2.8	
OGI	Stardust†	70	81	12	57.4	60.2	2.8	
OGI	Bentley†	69	87	17	55.7	59.5	3.7	
Syngenta	SY Flint†	69	77	7	59.9	61.7	1.8	
WestBred	WB-Cedar	67	74	7	57.2	59.9	2.7	
PlainsGold	Brawl CL Plus	67	90	23	57.9	62.0	4.1	
LCS	T158	67	87	20	58.3	61.1	2.8	
OGI	Gallagher	66	80	14	59.2	60.8	1.6	
WestBred	Winterhawk	66	79	13	58.3	61.0	2.8	
WestBred	WB4515	65	79 76	11	60.0	61.4	1.4	
OGI	lba	65	76 76	11	59.1	61.0	1.9	
LCS	LCS Mint	65	88	23	58.6	61.0	2.4	
OGI		64	75	23 11	58.7	60.8	2.4 2.1	
	Billings	64						
Syngenta	SY Llano		70 72	6	58.8	59.8	1.1	
Syngenta	SY Drifter†	63	72	9	60.6	61.4	0.8	
OGI	Doublestop CL Plus	62	73	11	60.7	62.0	1.3	
Dyna-Gro	Long Branch	59	62	4	54.1	56.1	2.0	
KWA	KanMark	59	79	20	57.9	61.3	3.4	
OGI	NF 101	57	67	10	58.1	59.5	1.4	
OSU	Endurance	57	77	20	55.7	58.4	2.7	
OGI	Duster	56	72	16	57.8	60.0	2.2	
KWA	Everest	55	75 	20	58.5	60.9	2.4	
LCS	LCS Pistol	54	72	18	56.9	59.1	2.3	
OGI	OK Rising	54	67	13	57.1	59.6	2.5	
LCS	LCS Wizard	52	80	29	56.4	62.0	5.7	
OGI	Ruby Lee	51	83	32	53.7	61.6	7.9	
Watley	TAM 112	43	83	40	52.1	62.1	10.0	
PlainsGold	Avery†	42	84	42	52.0	60.1	8.2	
PlainsGold	Byrd	37	88	50	52.3	60.4	8.1	
Ex	cperimentals							
	OK11D25056	74	83	9	58.5	59.8	1.3	
	OK12716R/W	73	88	15	57.8	59.6	1.8	
	OK12912C	69	75	6	60.5	61.1	0.6	
	OK09915C-1	66	71	6	61.5	62.3	0.8	
		-						
	OK11231	53	66	13	56.7	59.3	2.6	
	OK11231 Mean	53 66	66 80	13	56.7 58.2	59.3 60.6	2.6 2.5	

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Boldfaced values in the "Diff." column represent a statistical difference between the fungicide vs. no fungicide averages for that variety. Heavy stripe rust pressure during mid- to late-grain fill.

[†] Varieties tested and reported as experimental lines in the previous trial(s): Avery = CO11D174; Bentley = OK09125; LCS Chrome = LCH13DH-20-87; Stardust = OK10728W; SY Drifter = AP09T7631; SY Flint = 06BC722#25.



Lamont Wheat Variety Trial

wheat.okstate.edu

Cooperator: Kirby Brothers Ext. Educator: Kassie Junghanns

Planting & harvest dates: 10/6/15 & 6/13/16 Previous crop: Wheat

Management: Grain-only

Tillage: Conventional

Soil type: Pond Creek silt loam
Soil test: pH = 5.7, P = 49, K = 417

ı mage. Goi	Iveritional		oon tost. pri – o	.,,,5,,,,
		Grain Yield	Test Weight	Lodging
Source	Variety	2015-16	2015-16	2015-16
		bu/ac	lb/bu	1 - 5
OGI	Bentley†	86	56.8	3
Watley	TAM 204	82	56.3	2
WestBred	WB-Grainfield	81	55.7	2
WestBred	WB4458	76	56.9	1
LCS	LCS Mint	73	56.7	3
Syngenta	SY Monument	72	56.9	1
LCS	LCS Wizard	71	58.5	1
OGI	Stardust†	70	57.2	1
OGI	Doublestop CL Plus	69	59.3	3
OGI	lba	69	57.9	4
KWA	KanMark	68	59.4	2
WestBred	WB-Cedar	65	59.0	1
KWA	Everest	64	59.1	2
OSU	Endurance	63	56.6	1
OGI	Gallagher	61	57.5	2
OGI	Duster	60	55.9	2
LCS	LCS Pistol	58	53.5	3
Syngenta	SY Flint	54	57.6	1
OGI	Ruby Lee	52	58.9	1
OGI	Billings	52	58.1	1
Syngenta	SY Llano	46	55.4	3
Ex	xperimentals			
	OK10126	81	60.3	1
	OK12912C	80	58.8	1
	OK1059060-3	78	58.0	1
	OK09915C-1	70	60.4	1
	OK12716R/W	68	53.2	3
	Mean	68	57.4	2
	LSD _(0.05)	11	2.5	
	(0.00)			

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a 1 - 5 scale with 1 indicating no lodging. All plots received an application of 4 oz/ac Monsoon fungicide at GS 9 on 4/14/2016.

† Varieties tested and reported as experimental lines in the trial(s): Bentley = OK09125; Stardust = OK10728W.



Marshall Dual-Purpose Wheat Variety Trial

wheat.okstate.edu

Cooperator: Fuxa Farms

Planting & harvest dates: 9/15/15 & 6/11/16

Management: Dual-purpose

Tillage: Conventional

Previous crop: Wheat

Soil type: Kirkland silt loam

Soil test: pH = 6.1, P = 58, K = 330

			Grain Yield	Test Weight	
Source	Variety	2015-16	2-Year	3-Year	2015-16
			bu/ac		lb/bu
Syngenta	SY Monument	53	_	-	58.2
OGI	lba	51	44	37	58.3
OGI	Duster	51	47	38	58.7
OSU	Endurance	51	44	35	57.3
WestBred	WB-Grainfield	50	_	-	56.5
OGI	Bentley†	50	42	36	55.3
OGI	Doublestop CL Plus	48	43	36	60.9
OGI	Gallagher	48	45	35	60.0
Syngenta	SY Flint	45	-	-	58.1
WestBred	WB-Cedar	43	44	35	58.0
LCS	LCS Pistol	41	38	-	54.5
KWA	KanMark	40	-	-	56.8
KWA	Everest	40	38	31	60.1
WestBred	WB4458	38	36	29	54.8
OGI	Billings	38	33	26	58.6
Syngenta	SY Llano	32	-	-	59.0
LCS	LCS Wizard	32	29	25	54.0
Watley	TAM 204	31	-	-	55.1
OGI	Ruby Lee	29	31	27	55.1
LCS	LCS Mint	25	26	23	56.3
E	xperimentals				
	OK12621	51	-	-	57.8
	OK12716R/W	50	-	-	54.5
	OK09915C-1	47	-	-	60.2
	OK12912C	45	-	-	57.6
	OK11231	29		-	55.6
	Mean	42	39	32	57.2
	LSD _(0.05)	8	6	5	3.3

Notes: Cattle were removed when Duster reached first hollow stem. Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Moderate stripe rust pressure throughout grain fill.

† Variety tested and reported as experimental line OK09125 in the two previous trials.



Marshall Grain-Only Wheat Variety Trial

wheat.okstate.edu

Cooperator: Fuxa Farms

Planting & harvest dates: 10/15/15 & 6/11/16

Management: Grain-only

Tillage: Conventional

Previous crop: Wheat

Soil type: Kirkland silt loam

Soil test: pH = 6.1, P = 58, K = 330

<u> </u>			Grain Yield		Test Weight
Source	Variety	2015-16	2-Year	3-Year	2015-16
			bu/ac		lb/bu
Syngenta	SY Monument	62	-	-	58.2
WestBred	WB-Grainfield	59	-	-	57.0
OGI	lba	58	52	42	57.9
Syngenta	SY Flint	57	-	-	58.0
OGI	Gallagher	57	50	39	57.7
OGI	Duster	54	45	40	56.8
Syngenta	SY Llano	52	-	-	59.8
WestBred	WB4458	51	49	40	55.8
OGI	Bentley†	51	46	38	57.1
OGI	Billings	51	46	37	58.6
KWA	KanMark	50	-	-	56.8
OGI	Doublestop CL Plus	48	42	36	59.0
OSU	Endurance	47	40	34	54.4
WestBred	WB-Cedar	47	50	40	56.2
Watley	TAM 204	45	-	-	56.6
LCS	LCS Mint	42	36	32	55.7
LCS	LCS Pistol	39	38	-	55.6
KWA	Everest	30	36	31	56.5
LCS	LCS Wizard	28	27	25	51.7
OGI	Ruby Lee	25	29	27	51.4
Exp	perimentals				
	OK12716R/W	59	-	-	55.8
	OK12621	56	-	-	56.3
	OK12912C	51	-	-	57.2
	OK09915C-1	48	-	-	60.4
	OK11231	40	-	-	56.5
	Mean	48	42	35	56.7
	LSD _(0.05)	7	7	6	2.4

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Moderate stripe rust pressure throughout grain fill.

[†] Variety tested and reported as experimental line OK09125 in the two previous trials.



Marshall Dual-Purpose vs. Grain-Only Comparison

wheat.okstate.edu

Cooperator: Fuxa Farms

Planting da Harvest dat	ate: 9/15/15 (Dual-Purpo te: 6/11/16	ose) & 10/1	5/15 (Grain-c	only)		anagement: evious crop		ose, conven	tional tillag	е	Soil type: K Soil test: pl	H = 6.1, P = 5	58, K = 330
						Grain Yield						Test Weight	<u> </u>
	ļ		2015-16			2-Year			3-Year			2015-16	
	ļ	Dual-	Grain-		Dual-	Grain-		Dual-	Grain-		Dual-	Grain-	
Source	Variety	purpose	only	Diff.	purpose	only	Diff.	purpose	only	Diff.	purpose	only	Diff.
						bu/ac						lb/bu	
Syngenta	SY Monument	53	62	-9	-	-	-	-	-	-	58.2	58.2	0.0
OGI	lba	51	58	-7	44	52	-8	37	42	-5	58.3	57.9	0.4
OGI	Duster	51	54	-3	47	45	2	38	40	-1	58.7	56.8	1.9
OSU	Endurance	51	47	4	44	40	4	35	34	1	57.3	54.4	2.9
WestBred	WB-Grainfield	50	59	-9	-	-	-	-	-	-	56.5	57.0	-0.4
OGI	Bentley	50	51	-1	42	46	-4	36	38	-3	55.3	57.1	-1.7
OGI	Doublestop CL Plus	48	48	1	43	42	1	36	36	0	60.9	59.0	1.9
OGI	Gallagher	48	57	-8	45	50	-5	35	39	-4	60.0	57.7	2.3
Syngenta	SY Flint	45	57	-12	-	-	-	-	-	-	58.1	58.0	0.0
WestBred	WB-Cedar	43	47	-4	44	50	-5	35	40	-5	58.0	56.2	1.8
LCS	LCS Pistol	41	39	2	38	38	0	-	-	-	54.5	55.6	-1.1
KWA	KanMark	40	50	-10	-	-	-	-	-	-	56.8	56.8	0.0
KWA	Everest	40	30	10	38	36	2	31	31	0	60.1	56.5	3.7
WestBred	WB4458	38	51	-14	36	49	-13	29	40	-11	54.8	55.8	-1.0
OGI	Billings	38	51	-13	33	46	-13	26	37	-11	58.6	58.6	0.0
Syngenta	SY Llano	32	52	-19	-	-	-	-	-	-	59.0	59.8	-0.8
LCS	LCS Wizard	32	28	4	29	27	2	25	25	0	54.0	51.7	2.3
Watley	TAM 204	31	45	-13	-	-	-	-	-	-	55.1	56.6	-1.5
OGI	Ruby Lee	29	25	4	31	29	2	27	27	0	55.1	51.4	3.7
LCS	LCS Mint	25	42	-18	26	36	-10	23	32	-9	56.3	55.7	0.6
E	xperimentals												
	OK12621	51	56	-5	-	-	-	-	-	-	57.8	56.3	1.5
	OK12716R/W	50	59	-9	-	-	-	-	-	-	54.5	55.8	-1.3
	OK09915C-1	47	48	-1	-	-	-	-	-	-	60.2	60.4	-0.2
	OK12912C	45	51	-5	-	-	-	-	-	-	57.6	57.2	0.4
	OK11231	29	40	-11					-	_	55.6	56.5	-0.9
	Mean	42	48	-6	39	42	-3	32	35	-4	57.2	56.7	0.6

Notes: Cattle were removed when Duster reached first hollow stem. Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Boldfaced values in the "Diff." column represent a statistical difference between the dual-purpose vs. grain-only averages for that variety. Moderate stripe rust pressure throughout grain fill.

LSD (0.05)

2.4

3.0

[†] Variety tested and reported as experimental line OK09125 in the two previous trials.



Thomas Wheat Variety Trial

wheat.okstate.edu

Cooperator: Bill Jackson & Keith Killer Ext. Educator: Ron Wright

Planting & harvest dates: 10/2/15 & 6/21/16 Previous crop: Wheat

Management: Grain-only

Tillage: Conventional

Soil type: Pond Creek silt loam
Soil test: pH = 5.3, P = 58, K = 490

			Grain Yield		Test Weight	Lodging
Source	Variety	2015-16	2-Year	3-Year	2015-16	2015-16
			bu/ac		lb/bu	1 - 5
OGI	Bentley†	81	62	47	58.7	1
KWA	KanMark	78	-	-	61.0	3
LCS	LCS Mint	77	-	-	60.1	2
OGI	Gallagher	75	58	44	60.0	2
Watley	TAM 204	75	57	-	59.0	1
WestBred	WB-Grainfield	74	-	-	59.6	2
OGI	lba	70	49	37	60.3	2
LCS	LCS Pistol	69	48	-	59.1	5
OSU	Endurance	69	47	35	59.7	2
Syngenta	SY Drifter	69	-	-	60.4	1
OGI	Billings	68	52	38	60.0	1
OGI	Doublestop CL Plus	66	51	39	60.7	2
OGI	Duster	66	46	33	59.7	4
LCS	LCS Wizard	64	43	34	59.9	1
Syngenta	SY Flint	63	-	-	59.5	1
WestBred	WB4458	62	52	40	58.2	1
OGI	Ruby Lee	52	36	30	59.0	2
WestBred	WB-Cedar	48	44	35	54.8	1
Syngenta	SY Llano	37	38	-	60.6	1
Ex	perimentals					
	OK11D25056	75	-	-	60.0	3
	OK09915C-1	66	-	-	60.8	1
	Mean	67	49	37	59.6	2
	LSD (0.05)	12	10	6	1.2	

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a scale from 1 - 5 with 1 indicating no lodging. All plots were treated with 4 oz/ac tebuconazole and 16 oz/ac Lorsban on 4/4/16.

† Variety tested and reported as experimental line OK09125 in the two previous trials.



Union City Wheat Variety Trial

wheat.okstate.edu

Cooperator: Bornemann Farms Ext. Educator: Kyle Worthington

Planting & harvest dates: 10/1/15 & 6/7/16 Previous crop: Wheat

Management: Dual-purpose Soil type: Pond Creek silt loam

Tillage: Conventional Soil test: pH = 6.5, P = 109, K = 313

CCS LCS Mint 73 - 62.0			Grain	Yield	Test Weight
CCS LCS Mint 73 - 62.0 DGI Bentley† 66 53 58.7 DSU Endurance 66 48 60.1 DGI Gallagher 63 56 59.4 DGI Iba 62 51 60.5 Watley TAM 204 60 53 57.3 Syngenta SY Flint 58 - 59.0 WestBred WB-Grainfield 58 - 59.5 LCS LCS Pistol 57 46 59.7 DGI Duster 57 47 59.3 DGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 DGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 DGI Billings 52 45	Source	Variety	2015-16	2-Year	2015-16
OGI Bentley† 66 53 58.7 OSU Endurance 66 48 60.1 OGI Gallagher 63 56 59.4 OGI Iba 62 51 60.5 Watley TAM 204 60 53 57.3 Syngenta SY Flint 58 - 59.0 WestBred WB-Grainfield 58 - 59.5 LCS LCS Pistol 57 46 59.7 OGI Duster 57 47 59.3 OGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 OGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 OGI Billings 52 45 59.0 Syngenta SY Llano 50 46 </td <td></td> <td></td> <td> bu</td> <td>ac</td> <td>lb/bu</td>			bu	ac	lb/bu
OSU Endurance 66 48 60.1 OGI Gallagher 63 56 59.4 OGI Iba 62 51 60.5 Watley TAM 204 60 53 57.3 Syngenta SY Flint 58 - 59.0 WestBred WB-Grainfield 58 - 59.5 LCS LCS Pistol 57 46 59.7 OGI Duster 57 47 59.3 OGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 OGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 OGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 4	LCS	LCS Mint	73	-	62.0
OGI Gallagher 63 56 59.4 OGI Iba 62 51 60.5 Watley TAM 204 60 53 57.3 Syngenta SY Flint 58 - 59.0 WestBred WB-Grainfield 58 - 59.5 LCS LCS Pistol 57 46 59.7 DGI Duster 57 47 59.3 DGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 WestBred WB-Cedar 55 53 58.9 DGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 DGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.	OGI	Bentley†	66	53	58.7
OGI Iba 62 51 60.5 Watley TAM 204 60 53 57.3 Syngenta SY Flint 58 - 59.0 WestBred WB-Grainfield 58 - 59.5 LCS LCS Pistol 57 46 59.7 OGI Duster 57 47 59.3 OGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 OGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 OGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12621	OSU	Endurance	66	48	60.1
Watley TAM 204 60 53 57.3 Syngenta SY Flint 58 - 59.0 WestBred WB-Grainfield 58 - 59.5 LCS LCS Pistol 57 46 59.7 DGI Duster 57 47 59.3 DGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 DGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 DGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - </td <td>OGI</td> <td>Gallagher</td> <td>63</td> <td>56</td> <td>59.4</td>	OGI	Gallagher	63	56	59.4
Syngenta SY Flint 58 - 59.0 WestBred WB-Grainfield 58 - 59.5 LCS LCS Pistol 57 46 59.7 DGI Duster 57 47 59.3 DGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 DGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 DGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK09915C-1 57 - 61.2 </td <td>OGI</td> <td>lba</td> <td>62</td> <td>51</td> <td>60.5</td>	OGI	lba	62	51	60.5
WestBred WB-Grainfield 58 - 59.5 LCS LCS Pistol 57 46 59.7 DGI Duster 57 47 59.3 DGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 DGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 DGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8	Watley	TAM 204	60	53	57.3
LCS LCS Pistol 57 46 59.7 DGI Duster 57 47 59.3 DGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 DGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 DGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8	Syngenta	SY Flint	58	-	59.0
OGI Duster 57 47 59.3 OGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 OGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 OGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8	WestBred	WB-Grainfield	58	-	59.5
OGI Doublestop CL Plus 57 50 58.9 WestBred WB-Cedar 55 53 58.9 OGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 OGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	LCS	LCS Pistol	57	46	59.7
WestBred WB-Cedar 55 53 58.9 OGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 DGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	OGI	Duster	57	47	59.3
OGI Ruby Lee 53 44 56.4 KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 OGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK1D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	OGI	Doublestop CL Plus	57	50	58.9
KWA KanMark 53 - 60.9 LCS LCS Wizard 53 41 60.2 DGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	WestBred	WB-Cedar	55	53	58.9
LCS LCS Wizard 53 41 60.2 DGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	OGI	Ruby Lee	53	44	56.4
OGI Billings 52 45 59.0 Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	KWA	KanMark	53	-	60.9
Syngenta SY Llano 50 46 60.4 WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	LCS	LCS Wizard	53	41	60.2
WestBred WB4458 50 48 58.5 Syngenta SY Drifter 50 - 58.8 Experimentals 72 - 60.0 OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	OGI	Billings	52	45	59.0
Syngenta SY Drifter 50 - 58.8 Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	Syngenta	SY Llano	50	46	60.4
Experimentals OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	WestBred	WB4458	50	48	58.5
OK12716R/W 72 - 60.0 OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	Syngenta	SY Drifter	50	-	58.8
OK12621 61 - 59.6 OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5	E	experimentals			
OK11D25056 60 - 60.8 OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5		OK12716R/W	72	-	60.0
OK09915C-1 57 - 61.2 OK12912C 49 - 58.8 Mean 58 49 59.5		OK12621	61	-	59.6
OK12912C 49 - 58.8 Mean 58 49 59.5		OK11D25056	60	-	60.8
Mean 58 49 59.5		OK09915C-1	57	-	61.2
		OK12912C	49	<u>-</u>	58.8
LSD _(0.05) 8 7 NS		Mean	58	49	59.5
		LSD _(0.05)	8	7	NS

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. NS = not significant.

[†] Variety tested and reported as experimental line OK09125 in last year's trial.



Walters Wheat Variety Trial

wheat.okstate.edu

Cooperator: Kinder Farms

Planting & harvest dates: 9/11/15 & 6/7/16

Management: Dual-purpose

Tillage: No-till

Previous crop: Canola

Soil type: Tillman-Foard complex Soil test: pH = 4.9, P = 100, K = 348

-			Grain Yield		Test Weight	Lodging
Source	Variety	2015-16	2-Year	3-Year	2015-16	2015-16
			bu/ac		lb/bu	1 - 5
Syngenta	SY Flint	43	-	-	54.7	1
OGI	Duster	43	38	37	56.1	1
OGI	Gallagher	40	34	33	55.6	1
LCS	T158	37	-	-	57.7	3
OGI	Doublestop CL Plus	36	34	32	61.2	1
OGI	Bentley†	35	31	30	57.6	4
OGI	lba	32	31	31	55.3	3
LCS	LCS Pistol	31	33	-	54.3	1
Watley	TAM 204	31	29	-	55.2	1
LCS	LCS Wizard	30	-	-	59.1	1
OSU	Endurance	27	26	27	53.4	3
WestBred	Winterhawk	27	32	32	55.1	3
WestBred	WB4458	27	26	26	54.2	2
WestBred	WB-Grainfield	26	30	29	48.2	4
OGI	Ruby Lee	25	23	28	53.1	2
Syngenta	SY Drifter	24	-	-	55.0	2
Syngenta	SY Llano	24	23	-	58.2	1
KWA	KanMark	23	-	-	53.9	3
E	xperimental					
	OK09915C-1	41	-	-	56.9	1
	Mean	32	30	31	55.5	2
	LSD (0.05)	7	6	5	5.5	

Notes: Grain yields adjusted to 12% moisture. Shaded values are not statistically different from the highest value within a column. Lodging on a 1 - 5 scale with 1 indicating no lodging.

[†] Variety tested and reported as experimental line OK09125 in the two previous trials.



2015-2016 Oklahoma Wheat Variety Performance Tests - Heading Date and Plant Height

AUNIY	E							wh	eat.oksta	te.edu
Aspusiu	T1105							Chickasha		Lahoma
AGRICUL	TURE	Altus	Chickasha	Lahoma	Stillwater	Altus	Chickasha	IWM	Lahoma	Fungicide
Source	Variety		50% he	eading			plant heig	ht at harves	t - inches	
KWA	1863	4/8	4/11	4/16	4/12	25	31	31	33	33
AGSECO	AG Robust	4/4	4/11	4/13	4/7	22	24	26	29	28
PlainsGold	Avery	4/9	4/14	4/19	4/13	22	22	31	30	31
OGI	Bentley	4/7	4/11	4/15	4/11	24	33	35	33	32
OGI	Billings	4/1	4/5	4/13	4/5	24	24	31	26	26
PlainsGold	Brawl CL Plus	4/8	4/11	4/15	4/10	26	22	31	34	33
PlainsGold OGI	Byrd Doublestop CL Plus	4/6 4/10	4/11 4/14	4/17 4/17	4/11 4/13	20 23	26 31	28 37	31 31	30 34
OGI	Duster	4/10	4/14	4/17	4/13	24	30	27	29	32
OSU	Endurance	4/10	4/13	4/16	4/13	23	28	33	33	33
KWA	Everest	4/3	4/7	4/12	4/7	17	22	28	27	27
OGI	Gallagher	4/4	4/9	4/15	4/9	22	28	31	28	31
OGI	lba	4/9	4/11	4/16	4/11	24	29	33	30	31
KWA	Joe	4/9	4/13	4/16	4/12	24	35	31	33	33
KWA	KanMark	4/7	4/11	4/16	4/10	19	28	20	29	26
KWA	Larry	4/6	4/11	4/16	4/12	24	28	31	28	30
LCS	LCS Chrome	4/14	4/18	4/20	4/18	26	29	33	35	34
LCS	LCS Mint	4/12	4/14	4/18	4/13	24	26	33	33	32
LCS	LCS Pistol	4/3	4/13	4/15	4/12	20	31	30	31	29
LCS	LCS Wizard	4/11	4/14	4/17	4/18	18	24	28	30	27
Dyna-Gro	Long Branch	4/16	4/19	4/21	4/18	25	28	31	34	36
OGI	NF 101	4/2	4/7	4/13	4/9	20	26	28	26	31
KWA	Oakley CL	4/12	4/14	4/16	4/18	24	31	29	30	33
OGI	OK Rising	4/2	4/13	4/16	4/11	24	31	33	31	31
OGI	Ruby Lee	4/3	4/11	4/14	4/10	20	26	31	30	35
OGI	Stardust	-	-	4/15	4/9	-	-	-	33	31
Syngenta	SY Drifter	4/11	4/14	4/16	4/12	24	31	33	30	30
Syngenta	SY Flint	4/4	4/11	4/15	4/10	27	30	31	30	31
Syngenta	SY Grit	4/7	4/11	4/15	4/9	26	30	31	33	31
Syngenta	SY Llano SY Monument	4/3 4/12	4/7 4/14	4/12 4/18	4/5	21 24	24 24	28 31	24 32	26 31
Syngenta	SY Razor	4/12 4/8	4/14 4/11	4/16 4/15	4/13 4/9	24 26	30	30	32 35	33
Syngenta Syngenta	SY Wolf	4/0	4/11	4/13 -	4/9 -	-	-	-	-	-
LCS	T158	4/6	- 4/11	4/14	- 4/11	18	31	28	32	30
Watley	TAM 112	4/4	4/11	4/13	4/10	20	24	26	33	30
AGSECO	TAM 114	4/11	4/11	4/16	4/11	23	28	28	30	33
Watley	TAM 204	4/9	4/11	4/16	4/11	23	33	26	31	29
KWA	Tatanka	4/6	4/11	4/15	4/11	20	35	28	31	30
WestBred	WB4303	4/2	4/11	4/14	4/6	24	24	30	28	31
WestBred	WB4458	4/2	4/7	4/14	4/6	20	28	31	32	33
WestBred	WB4515	4/11	4/14	4/19	4/13	24	31	29	28	32
WestBred	WB4721	4/14	4/18	4/19	4/13	29	26	31	32	34
WestBred	WB-Cedar	3/31	4/4	4/12	4/6	20	28	30	26	28
WestBred	WB-Grainfield	4/13	4/18	4/18	4/13	24	29	33	31	32
WestBred	Winterhawk	4/8	4/11	4/15	4/11	21	31	30	29	30
KWA	Zenda	4/5	4/11	4/15	4/10	20	24	28	30	29
osu	Experimentals									
	OK09915C-1	4/11	4/18	4/18	4/18	26	28	31	32	33
	OK10126	-	-	-	4/13	-	-	-	-	-
	OK1059060-3	-	-	-	4/11	-	-	-	-	-
	OK11231	-	-	4/18	4/12	-	-	-	31	32
	OK118036R/W	-	-	- 4/45	4/5	-	-	-	-	-
	OK11D25056	4/6	4/11	4/15	4/11	24	26	31	31	28
	OK12621	- 4/6	-	- 4/16	4/9 4/11	-	-	-	-	- 22
	OK12716R/W OK12912C	4/6	- 4/11	4/16 4/15	4/11 4/13	26 -	- 29	- 31	33 35	32 34
	OK12912C OK12DP22002-042	-	4/11	4/15	4/13 4/7	- -	29 -	- -	<i>3</i> 5 -	3 4 -
		-	-	-	4/1	23	28	30	31	31
	Mean					23	20	30	31	31



Current Report

Oklahoma Cooperative Extension Fact Sheets are also available on our website at: osufacts.okstate.edu

Fall forage production and date of first hollow stem in winter wheat varieties during the 2015-2016 crop year

David Marburger Small Grains Extension Specialist Jeff Edwards
Professor and Department Head

Robert Calhoun Senior Agriculturalist

Introduction

Fall forage production potential is just one consideration in deciding which wheat variety to plant. Dual-purpose wheat producers, for example, may find varietal characteristics, such as grain yield after grazing and disease resistance, to be more important selection criteria than slight advantages in forage production potential. Forage-only producers might place more importance on planting an awnless wheat variety or one that germinates readily in hot soil conditions. Ultimately, fall forage production is generally not the most important selection criteria used by Oklahoma wheat growers, but should be considered.

Fall forage production by winter wheat is determined by genetic potential, management and environmental factors. The purpose of this publication is to quantify some of the genetic differences in forage production potential and grazing duration among the most popular wheat varieties grown in Oklahoma. Management factors such as planting date, seeding rate and soil fertility are very influential and frequently are more important than variety in determining forage production. Environmental factors, such as rainfall and temperature, also play a heavy role in dictating how much fall forage is produced. All of these factors, along with yield potential after grazing and the individual producer's preferences, will determine which wheat variety is best suited for a particular field.

Site Descriptions and Methods

The objective of the fall forage variety trials is to give producers an indication of the fall forage production ability of wheat varieties commonly grown throughout the state of Oklahoma. The forage trials are conducted by the Oklahoma State University Small Grains Variety Performance Tests. During the 2015-2016 crop year, the forage trial was only conducted at the Stillwater test site. Weather data for this location is provided in Figure 1.

A randomized complete block design with four replications was used at this site. All plots were sown at 120 pounds per acre in a conventionally tilled seedbed and received 50 pounds per acre of 18-46-0 in furrow at planting. Forage was measured by hand clipping two, 1 meter by 1 row samples approximately ½ inch above the soil surface from the interior rows within each plot. Samples were then placed in a forced-air dryer for approximately seven days and weighed. Fertility, planting date and harvest date information are provided in Table 1.

First hollow stem sampling began in mid-February and continued every three to four days on a by-variety basis until all varieties reached first hollow stem. Plant samples were collected for each variety by digging an 8-inch section of row and selecting 10 plants randomly from this sample. The largest tiller on each

plant was split longitudinally, and the hollow stem below the developing grain head was measured. Varieties were considered at first hollow stem when the average of the 10 plant samples was 1.5 centimeters or greater.

Results

The 2015-2016 wheat forage production season was characterized by adequate fall moisture and mild growing conditions. Most wheat rapidly emerged and received sufficient rainfall through the fall to sustain a bumper forage crop. In fact, plants in many non-grazed fields were abnormally large and phenologically advanced going into winter, and there was some concern about winter-kill. This concern proved to be largely unfounded, and most plants moved to spring green-up without injury. Similar to 2014 and 2015, January and February were dry months for the Southern Plains, and the ample forage growth quickly wicked moisture from the soil. Rain in early March, however, provided grazed wheat the boost needed to recover from grazing injury. Average fall forage production at Stillwater was 2,950 pounds per acre (Table 2), which was 250 pounds per acre more than in 2014 but approximately 300 pounds per acre less than in 2013. The range in forage yield across the varieties was 1,680 pounds per acre.

First hollow stem data are reported in 'day of year' (day) format (Table 3). To provide reference, keep in mind that March 1 is day 60. Given the weather conditions during the first part of 2016, average first hollow stem date at Stillwater in 2016 occurred on this reference point, day 60. This was five days earlier than 2015 and 17 days earlier than 2014. Last year there were 14 days difference between the earliest and latest varieties for first hollow stem. Results for 2016 were similar with 15 days difference between the earliest and latest varieties.

Acknowledgments

The authors want to thank the Oklahoma Wheat Commission and the Oklahoma Wheat Research Foundation for providing partial funding for this research.

Seed Sources and Abbreviations
AGSECO = AGSECO Inc.
KWA = Kansas Wheat Alliance
LCS = Limagrain Cereal Seeds
OGI = Oklahoma Genetics Inc.
OSU = Oklahoma State University
PlainsGold = PlainsGold Seeds
Syngenta = Syngenta Seeds
Watley = Watley Seeds
WestBred = Monsanto Co./WestBred Wheat

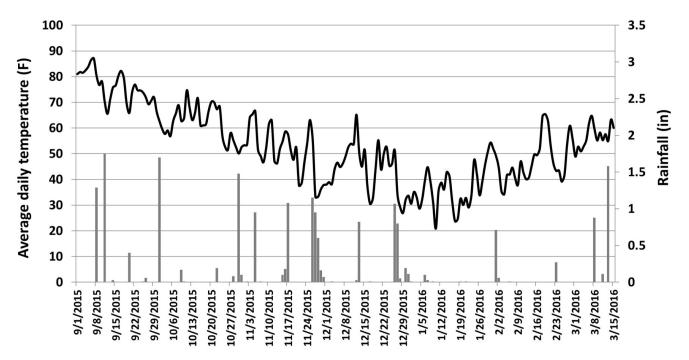


Figure 1. Average daily temperature (line graph) and rainfall (bar chart) from September 1, 2015 to March 15, 2016 at Stillwater, OK. Weather data courtesy Oklahoma Mesonet.

Table 1. Location information.

	Planting date	Sampling date	рН	N	Р	K
Stillwater	09/15/15	12/07/15	6.4	75	75	292

Table 2. Fall forage production by winter wheat varieties at Stillwater, Oklahoma during the 2015-2016 production year.

Source	Variety	2015-2016	2-Year	3-Year	
	_	acre			
OGI	Ruby Lee	3,760	3,310	3,200	
OGI	Gallagher	3,750	3,730	3,700	
KWA	Oakley CL	3,550	3,170	-	
LCS	LCS Pistol	3,550	3,110	-	
OGI	NF 101	3,500	2,950	-	
Syngenta	SY Flint†	3,440	2,760	-	
Dyna-Gro	Long Branch	3,280		-	
LĆS	LCS Wizard	3,280	3,220	3,330	
Syngenta	SY Razor	3,260	-	-	
KWA	Everest	3,250	2,990	3,010	
LCS	T158	3,220	3,130	3,090	
Syngenta	SY Drifter†	3,160	-	-	
KWA	Joe	3,150		-	
PlainsGold	Brawl CL Plus	3,130	2,850	2,890	
OGI	Bentley†	3,070	2,850	2,840	
OGI	Doublestop CL Plus	3,070	2,900	3,000	
Syngenta	SY Llano	3,060	3,230	3,520	
KWA	Tatanka	3,050	-	-	
Watley	TAM 204	3,010	2,920	_	
OGI	Duster	2,970	2,900	3,160	
WestBred	WB4303	2,920	_,000	-	
Syngenta	SY Grit	2,900	-	- -	
OGI	lba	2,880	2,720	2,790	
OSU	Endurance	2,870	2,770	2,870	
AGSECO	TAM 114	2,870	3,100	2,070	
KWA	Zenda	2,830	-	_	
WestBred	WB-Grainfield	2,820	2,710	2,780	
AGSECO	AG Robust	2,810	2,710	2,700	
OGI	Billings	2,800	2,790	3,150	
Watley	TAM 112	2,800	2,800	2,940	
KWA	Larry	2,790	2,000	2,340	
WestBred	WB4515	2,770	_		
PlainsGold	Avery†	2,720	2,480		
Syngenta	SY Monument	2,720	2,470	-	
OGI	OK Rising	2,690	2,730	2,720	
WestBred	WB4721	2,690 2,690	۷,/٥٥	2,120	
westbred KWA	1863		2,740	-	
LCS	LCS Mint	2,690 2,670	•	3 000	
LCS	LCS Chrome†	•	2,770	3,080	
	WB4458	2,610	2,420	2 940	
WestBred		2,580	2,410	2,840	
WestBred	Winterhawk	2,580	2,600	2,890	
PlainsGold	Byrd KanMark	2,560	2,600	2,620	
KWA WaatBrad	KanMark WB Codor	2,530	2,440	- 0.060	
WestBred	WB-Cedar	2,450	2,520	2,860	
OSU Experimental		0.000	0.510		
	OK12621	2,900	2,510	-	
	OK12716R/W OK09915C-1	2,810 2,080	-	- -	
	Mean	2,950	2,840	3,010	
	LSD (0.05)	700	590	490	

Note: Shaded values are not statistically different from the highest-yielding variety within a column.

 $[\]dagger$ Varieties tested and reported as experimental lines in previous trial(s): Avery = CO11D174; Bentley = OK09125; LCS Chrome = LCH13DH-20-87; SY Drifter = AP09T7631; SY Flint = 06BC722#25.

Table 3. Occurrence of first hollow stem (day of year) for winter wheat varieties sown in 2015 and measured in 2016 at Stillwater, OK.

Source	Variety	Stillwater
	-	day of year
KWA	1863	53
OGI	Bentley†	53
OGI	Billings	53
KWA	Everest	53
OGI	Gallagher	53
OGI	lba	53
OGI	NF 101	53
Syngenta	SY Drifter†	53
Syngenta	SY Flint†	53
Syngenta	SY Grit	53
Syngenta	SY Llano	53
Syngenta	SY Razor	53
WestBred	WB4303	53
WestBred	WB4458	53
WestBred	WB4515	53
WestBred	WB4721	53
WestBred	WB-Cedar	53
WestBred	Winterhawk	53
KWA	Zenda	53
AGSECO	AG Robust	57
WestBred	WB-Grainfield	57
PlainsGold	Byrd	60
OGI	Duster	60
KWA	KanMark	60
OGI	OK Rising	60
OGI	Ruby Lee	60
Watley	TAM 112	60
AGSECO	TAM 114	60
Watley	TAM 204	60
PlainsGold	Avery†	64
OGI	Doublestop CL Plus	-
OGI	Stardust†	64
OSU	Endurance	64
KWA	Larry	64
LCS	LCS Chrome†	64
LCS	LCS Mint	64
LCS	LCS Pistol	64
Dyna-Gro	Long Branch	64
KWA	Oakley CL	64
Syngenta	SY Monument	64
LCS	T158	64
KWA	Tatanka	64
PlainsGold	Brawl CL Plus	68
KWA	Joe	68
LCS	LCS Wizard	68
OSU Experimentals		00
	OK118036R/W	53
	OK12DP22002-042	
	OK1059060-3	64
	OK11D25056	64
	OK12621	64
	OK12021 OK10126	68
	OK10120 OK11231	68
	OK11231 OK12716R/W	68
	OK12716H/W OK12912C	68
	OK12912C OK09915C-1	68
	01(099100-1	00

[†] Varieties tested and reported as experimental lines in previous trial(s): Avery = CO11D174; Bentley = OK09125; LCS Chrome = LCH13DH-20-87; Stardust = OK10728W; SY Drifter = AP09T7631; SY Flint = 06BC722#25.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, and Title IX of the Education Amendments of 1972 (Higher Education Act), the Americans with Disabilities Act of 1990, and other rederal and state laws and regulations, does not discriminate on the basis of race, color, national origin, genetic information, sex, age, sexual orientation, gender identity, religion, disability, or status as a veteran, in any of its policies, practices or procedures. This provision includes, but is not limited to admissions, employment, financial aid, and educational services. The Director of Equal Opportunity, 408 Whitehurst, OSU, Stillwater, OK 74078-1035; Phone 405-744-5371; email: eeo@okstate.edu has been designated to handle inquiries regarding non-discrimination policies: Director of Equal Opportunity. Any person (student, faculty, or staff) who believes that discriminatory practices have been engaged in based on gender may discuss his or her concerns and file informal or formal complaints of possible violations of Title IX with OSU's Title IX Coordinator 405-744-9154.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President for Agricultural Programs and has been prepared and distributed at a cost of 20 cents per copy. 0716 GH.