



Current Report

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

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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

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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

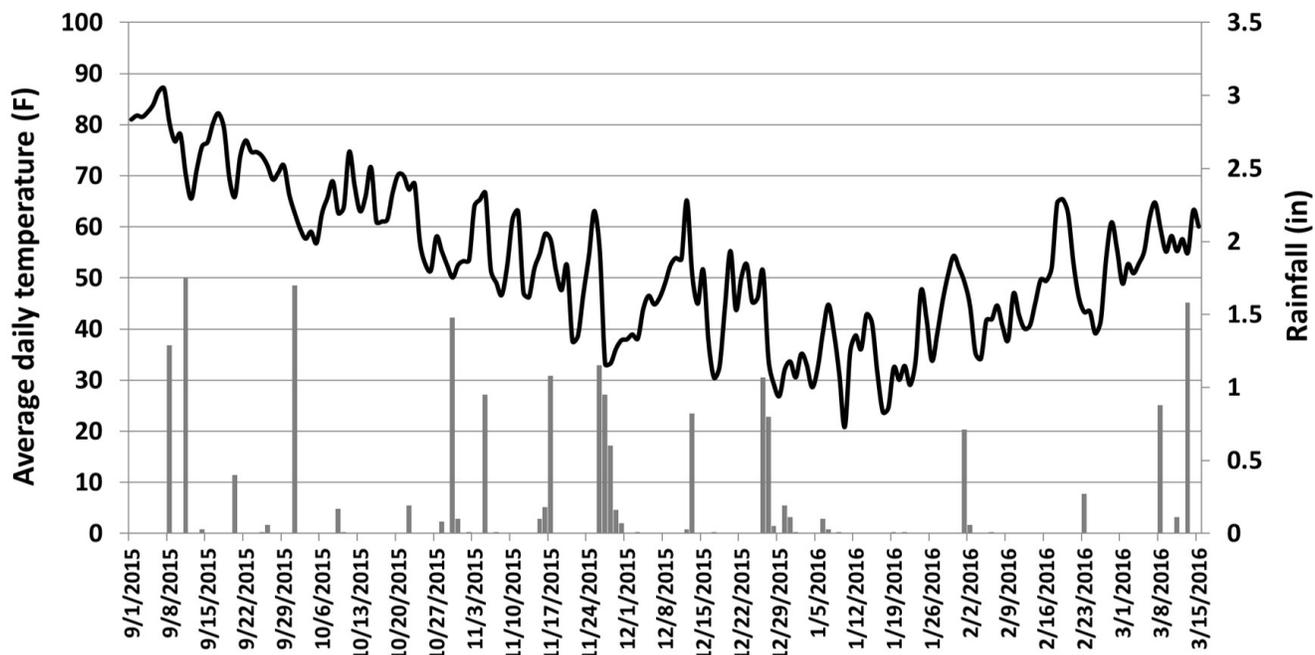


Figure 1. Average daily temperature (line graph) and rainfall (bar chart) from September 1, 2015 to March 15, 2016 at Stillwater, OK. Weather data courtesy Oklahoma Mesonet.

Table 1. Location information.

	<i>Planting date</i>	<i>Sampling date</i>	<i>pH</i>	<i>N</i>	<i>P</i>	<i>K</i>
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
-----pounds dry forage per 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	-	-
LCS	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	-	-
Syngenta	SY Grit	2,900	-	-
OGI	Iba	2,880	2,720	2,790
OSU	Endurance	2,870	2,770	2,870
AGSECO	TAM 114	2,870	3,100	-
KWA	Zenda	2,830	-	-
WestBred	WB-Grainfield	2,820	2,710	2,780
AGSECO	AG Robust	2,810	-	-
OGI	Billings	2,800	2,790	3,150
Watley	TAM 112	2,800	2,800	2,940
KWA	Larry	2,790	-	-
WestBred	WB4515	2,770	-	-
PlainsGold	Avery†	2,720	2,480	-
Syngenta	SY Monument	2,710	2,470	-
OGI	OK Rising	2,690	2,730	2,720
WestBred	WB4721	2,690	-	-
KWA	1863	2,690	2,740	-
LCS	LCS Mint	2,670	2,770	3,080
LCS	LCS Chrome†	2,610	2,420	-
WestBred	WB4458	2,580	2,410	2,840
WestBred	Winterhawk	2,580	2,600	2,890
PlainsGold	Byrd	2,560	2,600	2,620
KWA	KanMark	2,530	2,440	-
WestBred	WB-Cedar	2,450	2,520	2,860
OSU Experimentals				
	OK12621	2,900	2,510	-
	OK12716R/W	2,810	-	-
	OK09915C-1	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.

† 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.

<i>Source</i>	<i>Variety</i>	<i>Stillwater</i>
		<i>--day of year--</i>
KWA	1863	53
OGI	Bentley†	53
OGI	Billings	53
KWA	Everest	53
OGI	Gallagher	53
OGI	Iba	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	64
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		
	OK118036R/W	53
	OK12DP22002-042	60
	OK1059060-3	64
	OK11D25056	64
	OK12621	64
	OK10126	68
	OK11231	68
	OK12716R/W	68
	OK12912C	68
	OK09915C-1	68
	Average	60

† 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.

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