



# Current Report

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## Fall forage production and date of first hollow stem in winter wheat varieties during the 2011-2012 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 it is one that 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 are frequently 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 under the umbrella of the Oklahoma State University Small Grains Variety Performance Tests at our El Reno and Stillwater, OK test sites. Weather data for these two sites are provided in Figures 1 and 2. Please note the difference in scale on the rainfall data.

A randomized complete block design with four replications was used at each site. Forage was measured by hand clipping two 1-m by 1-row samples at random sites within each plot. Samples were then placed in a forced-air dryer for approximately 7 days and weighed. All plots were sown at 120 lb/A in a conventionally-tilled seedbed and received 50 lb/ac of 18-46-0 in furrow at planting. Fertility, planting date, and harvest date information are provided in Table 1.

### Results

Extremely hot and extremely dry. There is no other way to describe the summer of 2011. Oklahoma farmers and ranchers entered the month of September 2011 with almost no soil moisture and extreme heat that quickly dissipated the little rainfall that occurred. Hay supplies were gone along with any remaining pastures, so the desperate need for forage of any kind pushed most producers to roll the dice and dust in wheat for pasture. A break from the extreme heat and a few timely rains in late September allowed wheat to establish itself but did not provide much opportunity for growth. The pattern of just enough moisture to survive persisted throughout the winter in western Oklahoma and the Panhandle.

Central and west-central Oklahoma was a different story. What began as a slow wheat forage year turned into one of the best wheat pasture years in recent memory for farmers and ranchers in this region. Timely rainfall throughout October, November, and December combined with one of the warmest winters on record resulted in rapid forage production and outstanding average daily gains. High levels of residual soil nitrogen (Table 1) left by failed crops in 2011 also spurred wheat forage production onward. In fact, many producers were unable to secure sufficient stocker cattle to keep up with wheat forage.

Fall forage production at Stillwater ranged from 2,980 lbs/ac (TAM 203) to 4,020 lbs/ac (Gallagher) with average

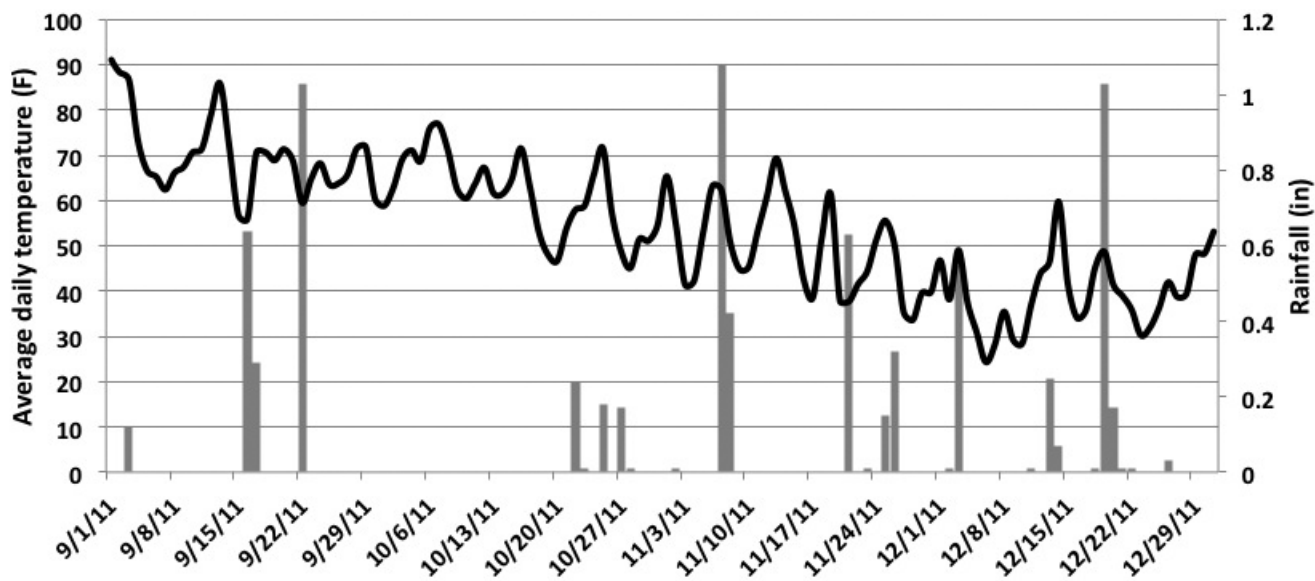


Figure 1. Average daily temperature (line graph) and rainfall (bar chart) from September 1 to December 31, 2011 at Stillwater, OK. Weather data courtesy Oklahoma Mesonet.

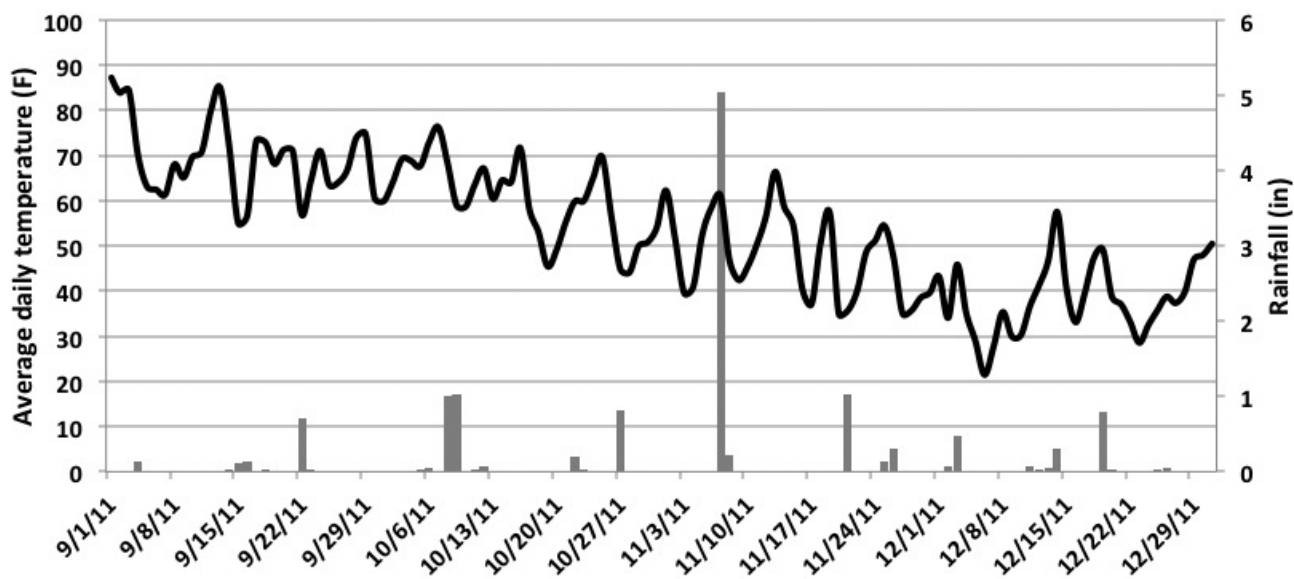


Figure 2. Average daily temperature (line graph) and rainfall (bar chart) from September 1 to December 31, 2011 at El Reno, OK. Weather data courtesy Oklahoma Mesonet.

Table 1. Location information for 2010-2011 OSU wheat forage trials.

	<i>Planting date</i>	<i>Sampling date</i>	<i>pH</i>	<i>N</i>	<i>P</i>	<i>K</i>
El Reno	09/27/11	01/06/12	6.8	119	71	337
Stillwater	09/20/11	12/12/11	5.7	286	157	373

**Table 2. Fall forage production by winter wheat varieties at Stillwater, OK in 2011.**

Source	Variety	2011	2-Year	3-Year	4-Year
-----lbs dry forage/acre-----					
OSU	Gallagher	4,020†	-	-	-
UNL	Mace	3,870	3,230	-	-
CSU	Hatcher	3,830	3,380	-	-
OSU	Endurance	3,770	3,300	3,020	3,000
AgriPro	Fannin	3,760	3,320	3,130	3,240
OSU	Centerfield	3,730	3,260	2,930	3,030
KSU	Jagger	3,680	3,040	2,800	2,910
AgriPro	Doans	3,640	3,240	2,980	3,040
TAMU	TAM 111	3,640	3,170	2,870	2,990
LCS	T153	3,580	-	-	-
OSU	Duster	3,560	3,190	3,060	3,200
OSU	Iba	3,550	3,340	-	-
TAMU	TAM 401	3,520	3,090	2,920	-
OSU	Deliver	3,510	3,090	2,840	2,890
LCS	T-158	3,490	3,150	-	-
OSU	Ruby Lee	3,480	3,210	2,980	-
WestBred	Winterhawk	3,480	3,180	2,830	2,860
OSU	Pete	3,440	3,150	2,880	-
OSU	Garrison	3,430	3,070	2,660	-
KSU	Everest	3,400	2,910	2,600	-
OSU	Billings	3,360	3,160	2,930	-
TAMU	TAM 113	3,340	-	-	-
CSU	Bill Brown	3,330	3,250	-	-
AgriPro	CJ	3,330	-	-	-
AgriPro	Jackpot	3,330	3,040	2,860	2,990
WestBred	Armour	3,310	3,170	2,930	3,050
WestBred	Santa Fe	3,310	3,010	2,870	2,950
WestBred	WB-Cedar	3,280	2,990	-	-
TAMU	TAM 112	3,220	3,070	2,830	2,940
AgriPro	Greer	3,210	3,050	2,750	-
OSU	OK Bullet	3,190	2,950	2,870	2,990
KSU	Fuller	3,120	2,910	2,750	2,880
TAMU	TAM 203	2,980	2,800	2,810	2,850
<b>Average</b>		<b>3,480</b>	<b>3,130</b>	<b>2,870</b>	<b>2,990</b>
LSD		580	420	290	260

† Shaded numbers are not statistically different from the highest-yielding variety within a column.

**Table 3. Fall forage production by winter wheat varieties at El Reno, OK in 2011.**

Source	Variety	2011	2-Year <sup>†</sup>	3-Year
-----lbs. dry forage/acre-----				
OSU	Ruby Lee	2,840‡	-	-
KSU	Jagger	2,770	2,760	2,310
AgriPro	Fannin	2,750	3,300	2,680
WestBred	Armour	2,700	3,190	2,680
OSU	Iba	2,670	-	-
AgriPro	Greer	2,660	3,100	-
KSU	Fuller	2,660	2,820	2,480
OSU	Deliver	2,600	2,880	2,440
WestBred	Santa Fe	2,580	2,850	2,370
OSU	OK Bullet	2,550	3,170	2,680
TAMU	TAM 401	2,540	2,960	-
OSU	Gallagher	2,520	2,670	-
OSU	Pete	2,480	2,720	-
OSU	Billings	2,400	3,060	-
OSU	Duster	2,380	2,940	2,530
OSU	Garrison	2,350	-	-
WestBred	WB-Cedar	2,350	2,730	-
AgriPro	CJ	2,270	-	-
KSU	Everest	2,270	2,800	-
OSU	Endurance	2,240	2,560	2,210
AgriPro	Jackpot	2,160	2,710	2,310
AgriPro	Doans	2,110	2,570	2,330
<b>Average</b>		<b>2,490</b>	<b>2,880</b>	<b>2,460</b>
LSD		550	460	370

† Data were not reported in 2009. 2-year averages include 2010 and 2011 data. 3-year averages include 2008, 2010, and 2011 data.

‡ Shaded cells within a column are not statistically different from the greatest value within that column

production of 3,480 lbs/ac (Table 2). Fall forage production at El Reno was slightly less, but still impressive, and ranged from 2,110 lbs/ac (Doans) to 2,840 lbs/ac (Ruby Lee) with average production of 2,490 lbs/ac (Table 3). As with previous years, there was a large grouping of high-yielding varieties with statistically equal forage production at both sites. This was true for both the single year results and the multi-year averages. Given the wide selection of varieties with suitable fall forage production, dual-purpose producers should also place heavy emphasis on the dual-purpose grain yield potential of these varieties and use grain yield after grazing as a selection tool for choosing among top forage producers.

First hollow stem data are reported in 'day of year' (day) format (Table 4). To provide reference, keep in mind that March 1 is day 61 (2012 is a leap year). Average occurrence of first hollow stem at Stillwater and El Reno in 2012 was day 52 and 55, respectively. This was eleven and nine days earlier than in 2011 and was the result of the warm winter, adequate rainfall, and high levels of residual nitrogen (Table 1, Figures 1 and 2). There was a 39-day range in occurrence of first hollow stem at Stillwater and a 17-day range at El Reno. The wider range of dates of first hollow stem at Stillwater was the result of a broader selection of varieties and more frequent early-season sampling. Even with this variation in date of first hollow stem between locations, the relative rankings of varieties (i.e. early, medium, or late) were fairly consistent.

**Table 4. Occurrence of first hollow stem (day of year) for winter wheat varieties sown in 2011 and measured in 2012 at Stillwater and El Reno, OK.**

<i>Source</i>	<i>Variety</i>	<i>Stillwater</i>	<i>ElReno</i>
-----day of year-----			
AgriPro	Fannin	28	49
KSU	Jagger	33	50
AgriPro	Greer	40	55
TAMU	TAM 112	40	-
CSU	Hatcher	40	-
OSU	Gallagher	40	52
OSU	Billings	46	49
TAMU	TAM 401	46	47
KSU	Fuller	49	45
WestBred	Armour	49	55
OSU	Garrison	49	55
AgriPro	Jackpot	49	55
AgriPro	TAM 203	49	-
CSU	Bill Brown	49	-
WestBred	Santa Fe	51	55
KSU	Everest	51	50
TAMU	TAM 113	51	-
LCS	T153	51	-
OSU	Ruby Lee	52	58
WestBred	Winterhawk	53	-
AgriPro	CJ	53	55
OSU	OK Bullet	55	55
WestBred	WB-Cedar	55	55
AgriPro	Doans	55	69
OSU	Pete	55	58
OSU	Deliver	56	61
OSU	Duster	58	58
OSU	Iba	58	58
TAMU	TAM 111	60	-
AgriPro	AP503 CL2	60	-
OSU	Endurance	62	66
LCS	T158	62	-
OSU	Centerfield	64	-
OSU	2174	64	-
UNL	Mace	67	-

**Experimentals**

	OCW00S063S-1B	28	-
	OK09634	33	-
	OK0986146W	51	-
	OK09125	55	-
	OK08229	56	-
	OK08707W	58	-
	OK08413	60	-
	OK05312	60	-
	OK08328	62	-
	OK09915C	62	-
	<b>Average</b>	<b>52</b>	<b>55</b>

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**Seed donated by:**

AgriPro Wheat, Vernon, TX  
 Colorado Wheat Breeding Program, Ft. Collins, CO  
 Husker Genetics, Lincoln, NE  
 Kansas Wheat Alliance, Manhattan, KS  
 Limagrain Cereal Seeds, Ft. Collins, CO  
 Oklahoma Genetics Inc, Stillwater, OK  
 Watley Seed Company, Spearman, TX  
 WestBred LLC, Haven, KS

**Seed Source Abbreviations**

CSU = Colorado State University  
 KSU = Kansas State University  
 LCS = Limagrain Cereal Seeds  
 OSU = Oklahoma State University  
 UNL = University of Nebraska-Lincoln  
 TAMU = Texas AgriLife Research

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