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Fall forage production and date of first hollow stem in winter wheat varieties during the 2013-2014 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 Chickasha and Stillwater, OK test sites. Weather data for these two sites are provided in Figures 1 and 2.

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 approximately ½ inch above the soil surface 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

As was the case across most of Oklahoma, our wheat plots were sown into dry topsoil in late September. Soils in southwest and northwest Oklahoma were extremely dry due to multiple years of drought, and wheat pasture was short in these areas of the state. Summer rainfall provided ample subsoil moisture in the central part of the state, but topsoil was largely dry through September. Rains fell across much of the state in October and provided the fuel needed to build wheat pasture. Unfortunately, these October rains would be the only significant rainfall events most of the Oklahoma wheat crop would receive (Figures 1 and 2).

Fall forage production by winter wheat at Stillwater and Chickasha averaged 3,240 and 2,580 pounds per acre, respectively (Tables 2 and 3). As indicated earlier in this publication there was a large group of varieties at Stillwater and Chickasha that produced statistically equivalent forage yield, and producers are encouraged to consider two and three year averages when available.

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 60. Average occurrence of first hollow stem at Stillwater in 2014 was day 77. This was approximately five days later than 2013 and 25 days later than in 2012 and was the result of much cooler than normal temperatures. Unlike previous years, there was only about ten days difference among varieties in occurrence of first hollow stem.

Acknowledgments

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Seed Sources and Abbreviations

AGSECO = AGSECO Inc.
CWRF = Colorado Wheat Research Foundation
KWA = Kansas Wheat Alliance
LCS = Limagrain Cereal Seeds
OGI = Oklahoma Genetics Inc.
OSU = Oklahoma State University
Syngenta = Syngenta Seeds
Watley = Watley Seeds

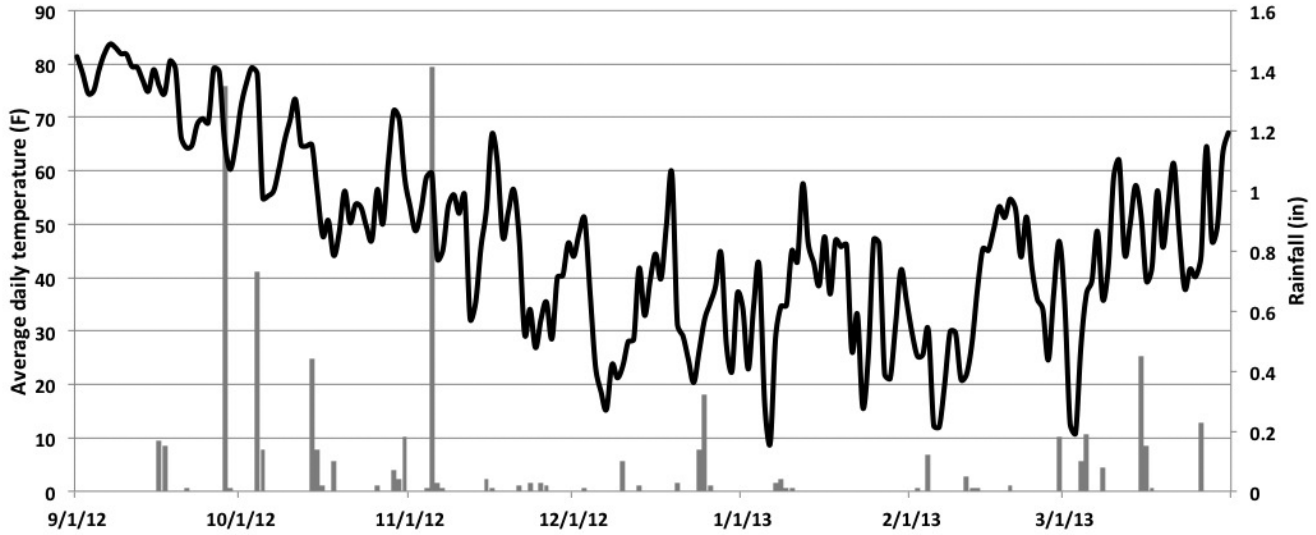

Figure 1. Average daily temperature (line graph) and rainfall (bar chart) from September 1, 2013 to March 31, 2014 at Stillwater, OK. Weather data courtesy Oklahoma Mesonet.

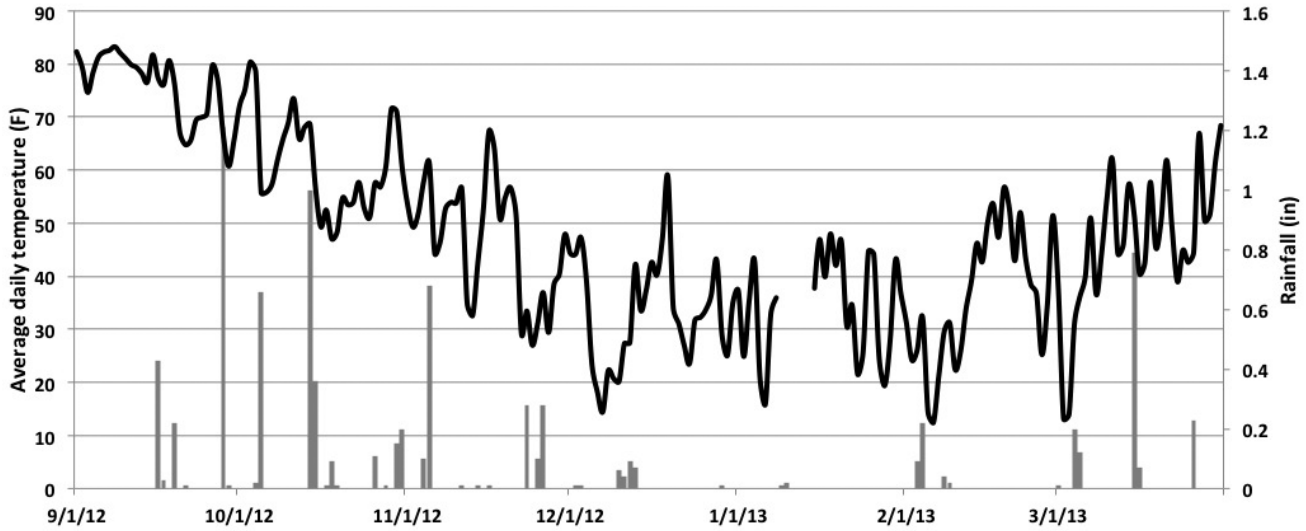

Figure 2. Average daily temperature (line graph) and rainfall (bar chart) from September 1, 2013 to March 31, 2014 at Chickasha, OK. Weather data courtesy Oklahoma Mesonet.

Table 1. Location information.

	Planting date	*Sampling date*	*pH*	*N*	*P*	*K*
Chickasha	09/25/13	12/02/13	6.9	176	54	364
Stillwater	09/20/13	11/26/13	5.6	180	79	311

Table 2. Fall forage production by winter wheat varieties at Stillwater, OK during the 2013-2014 production year.

Source	*Variety*	*2013-2014*	*2-Year*	*3-Year*
		----------lbs dry forage/acre----------		
Syngenta	SY Llano	4,100	-	-
AGSECO	TAM 113	4,090	3,160	3,220
OGI	Billings	3,850	3,200	3,250
LCS	LCS Mint	3,690	-	-
OGI	Duster	3,670	3,180	3,300
OGI	Gallagher	3,650	3,230	3,500
LCS	T154	3,640	3,040	-
Syngenta	Doans	3,610	-	-
WestBred	WB4458	3,610	2,920	-
Syngenta	Jackpot	3,600	3,060	3,150
WestBred	WB-Cedar	3,560	3,240	3,250
OSU	Deliver	3,470	2,770	3,010
WestBred	Winterhawk	3,470	2,780	3,020
OGI	Garrison	3,350	3,100	3,210
Watley	TAM 112	3,230	-	-
OGI	Doublestop CL Plus	3,200	3,020	-
OGI	Pete	3,160	2,810	3,020
Syngenta	CJ	3,130	2,810	2,980
LCS	LCS Wizard	3,120	2,950	-
WestBred	Armour	3,110	3,000	3,100
LCS	LCH11-1117	3,110	-	-
OGI	Centerfield	3,090	2,820	3,120
OGI	OK Bullet	3,090	2,630	2,820
Syngenta	SY Southwind	3,090	-	-
OSU	Endurance	3,080	3,080	3,310
KWA	Everest	3,050	2,810	3,010
Syngenta	Greer	3,040	2,840	2,960
LCS	LCH11-1130	3,040	-	-
LCS	T158	3,020	2,760	3,000
CWRF	Brawl CL Plus	2,980	2,860	-
OGI	Ruby Lee	2,980	2,610	2,900
LCS	T153	2,960	2,840	3,090
OGI	Iba	2,930	2,770	3,030
WestBred	WB-Grainfield	2,910	2,920	-
WestBred	WB-Redhawk	2,850	2,590	-
LCS	LCH11-109	2,750	2,990	-
OGI	OK Rising	2,720	2,720	-
CWRF	Byrd	2,670	2,590	-
OSU Experimentals				
	OK09125	2,800	2,540	-
	Average	**3,240**	**2,900**	**3,110**
	LSD (0.05)	750	500	400

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

Table 3. Fall forage production by winter wheat varieties at Chickasha, OK during the 2013-2014 production year.

Source	*Variety*	*2013-2014*	*2-Year*
		--lbs dry forage/acre--	
OGI	Duster	2,920	2,920
OGI	Gallagher	2,920	3,010
LCS	T158	2,900	2,580
CWRF	Brawl CL Plus	2,830	-
KWA	Everest	2,750	2,750
OGI	Doublestop CL Plus	2,700	-
WestBred	Winterhawk	2,680	-
LCS	LCS Mint	2,660	-
OSU	Endurance	2,630	2,620
WestBred	WB-Cedar	2,590	2,630
CWRF	Byrd	2,540	-
Syngenta	Jackpot	2,540	2,460
WB-Grainfield	WB-Grainfield	2,530	-
WestBred	WB4458	2,520	-
OGI	Iba	2,460	2,460
LCS	LCS Wizard	2,440	-
OGI	Billings	2,420	-
OGI	Ruby Lee	2,420	2,430
OSU	Deliver	2,410	2,200
Syngenta	Greer	2,380	2,480
Syngenta	Doans	2,210	-
OGI	Garrison	2,160	2,220
OSU Experimentals			
	OK09125	2,760	-
	Average	**2,580**	**2,560**
	LSD	430	290

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

Table 4. Occurrence of first hollow stem (day of year) for winter wheat varieties sown in 2013 and measured in 2014 at Stillwater, OK.

Source	*Variety*	*Stillwater*
		--day of year--
Syngenta	SY Llano	72
WestBred	WB-Cedar	72
OGI	Billings	74
Syngenta	CJ	74
KWA	Everest	74
OGI	Gallagher	74
Syngenta	Jackpot	74
OGI	OK Bullet	74
OGI	OK Rising	74
Syngenta	SY Southwind	74
LCS	T153	74
Watley	TAM 112	74
AGSECO	TAM 113	74
WestBred	Armour	77
CWRF	Byrd	77
OSU	Deliver	77
Syngenta	Doans	77
OGI	Duster	77
OSU	Endurance	77
OGI	Garrison	77
Syngenta	Greer	77
LCS	LCH11-109	77
LCS	LCH11-1117	77
LCS	LCH11-1130	77
LCS	LCS Wizard	77
OGI	Pete	77
LCS	T154	77
WestBred	WB-Redhawk	77
WestBred	WB4458	77
WestBred	Winterhawk	77
OGI	Doublestop CL Plus	80
OGI	Iba	80
LCS	LCS Mint	80
OGI	Ruby Lee	80
LCS	T158	80
WestBred	WB-Grainfield	80
CWRF	Brawl CL Plus	83
OGI	Centerfield	83
OSU Experimentals		
	OK11754WF	69
	OK10728W	74
	OK09520	77
	OK08707W-19C13	80
	OK09125	83
	OK10805W	83
	OK10126	86
	Average	**77**

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