



Current Report

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Fall forage production and date of first hollow stem in winter wheat varieties during the 2009-2010 crop year

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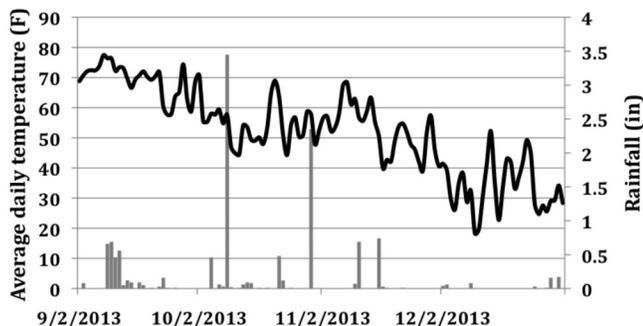
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Introduction

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.

Figure 1. Average daily temperature (line graph) and rainfall (bar chart) from Sept. 1, 2009 to Dec 31, 2009, Stillwater, Okla.



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 Oklahoma. The forage trials are conducted under the umbrella of the Oklahoma State University winter wheat variety trials at the El Reno and Stillwater, OK test sites. Due to extremely wet conditions this year, however, no data were collected from the El Reno site. Weather data for the Stillwater site is provided in Figure 1.

A randomized complete block design with four replications was used at each site. Forage was measured by hand clipping two 1-meter by 1-row samples at random sites within each plot. Samples were then placed in a forced-air dryer for approximately seven 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

Varieties that have been consistent top-performers during the years were in the top yield grouping once again in 2009 (Table 2). The fact that nine out of the 26 commercially-available wheat cultivars tested were statistically equivalent in terms of forage yield indicates that farmers have a wide variety of choices when it comes to dual-purpose wheat cultivars.

Average occurrence of hollow stem was 71 days after January 1, which was approximately ten days later than typical (Table 3). This delay in onset of first hollow stem was primarily due to wet and cold conditions during most of the winter months. In addition to overall later occurrence of first hollow stem, some varieties moved places in the relative rankings. Endurance, for example, is almost always one of the last varieties to reach first hollow stem, but was medium-late this year. TAM 203 is generally an early-medium first hollow stem variety, but was late this year. The presence of wheat soil borne mosaic virus in the plot area probably explains some of the abnormalities in susceptible varieties, and there are likely several physiological and morphological plant controls impacted by the cold, wet winter. It is likely the relative occurrence of first hollow stem will be closer to normal next year.

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	9/21/2009	11/30/2009	5.1	126	104	318

Table 2. Fall forage production by winter wheat varieties at Stillwater, OK in 2009.

<i>Source</i>	<i>Variety</i>	<i>2009</i>	<i>2-Year</i>	<i>3-Year</i>	<i>4-Year</i>
-----lbs dry forage/acre-----					
TAMU	TAM 203	2,830	2,910	2,520	-
OSU	Duster	2,810	3,220	2,920	2,790
AgriPro	Fannin	2,770	3,150	2,790	2,700
OSU	OK Bullet	2,700	3,020	2,740	2,620
WestBred	Santa Fe	2,600	2,880	2,450	2,340
TAMU	TAM 401	2,570	-	-	-
KSU	Overley	2,560	2,980	2,630	2,530
WestBred	Shocker	2,530	3,080	2,690	2,570
AgriPro	Jackpot	2,520	2,940	2,620	-
AgriPro	Doans	2,480	2,850	2,520	2,490
OSU	Billings	2,460	-	-	-
OSU	Endurance	2,450	2,700	2,410	2,370
WestBred	Armour	2,440	-	-	-
AgriPro	Art	2,430	-	-	-
KSU	Fuller	2,430	2,860	2,520	2,510
WestBred	Keota	2,380	2,900	-	-
OSU	Deliver	2,350	2,680	2,460	2,480
TAMU	TAM 112	2,340	2,810	-	-
KSU	Jagger	2,320	2,790	2,290	2,260
OSU	Pete	2,320	-	-	-
TAMU	TAM 111	2,280	2,810	2,560	2,500
OSU	Centerfield	2,270	2,810	2,680	2,610
AgriPro	Jagalene	2,270	2,730	2,330	2,330
AgriPro	Greer	2,150	-	-	-
WestBred	Winterhawk	2,130	2,540	-	-
KSU	Everest	1,980	-	-	-
Experimentals					
	OK05526	2,520	-	-	-
	OK07231	2,470	-	-	-
	OK05511	2,400	-	-	-
	STARS 0601W	2,200	-	-	-
	OK06618	2,190	-	-	-
	OK05312	1,990	-	-	-
	OK05212	1,840	-	-	-
Average		2,390	2,880	2,570	2,510
LSD		340	290	230	190

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

Table 3. Occurrence of first hollow stem (day of year) for winter wheat varieties sown in 2009 and measured in 2010 at Stillwater, Okla.

<i>Variety</i>	<i>Stillwater</i>
	---day of year---
TAM 401	40
Fannin	49
Jagger	62
Overley	62
Santa Fe	62
Shocker	62
Greer	62
Jagalene	66
Fuller	66
Billings	66
Guymon	68
OK Bullet	70
Jackpot	70
Armour	70
Everest	71
TAM 112	71
OK Rising	73
Duster	76
Endurance	76
Winterhawk	76
Aspen	78
Doans	80
TAM 203	82
Deliver	82
Pete	82
Art	82
Centerfield	83
Keota	83
TAM 111	83
Mace	88
Average	71

As mentioned in the introduction, fall forage production is only one parameter to be considered when choosing a dual-purpose wheat variety. Date of first hollow stem, for example, will determine how long fall forage production can be utilized into the spring and should be considered in conjunction with fall forage production. Varieties such as TAM 401 and Fannin are outstanding forage producers, but also have very early dates of first hollow stem. Varieties such as Doans and Endurance are not consistently as good of forage producers as TAM 401 and Fannin, but are above-average forage producers and much later to first hollow stem. Dual-purpose producers should consider these two parameters in conjunction with grain yield after grazing before making a variety choice.

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