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Fall forage production and first hollow stem date for wheat varieties during the 2024–2025 crop year

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Introduction

Fall forage production potential is one of the major considerations in deciding which variety to plant. Dual-purpose wheat producers may find varietal characteristics, such as grain yield after grazing and disease resistance, to be more important selection criteria than an advantage in early 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 a selection criterion that should be considered. For more information on variety characteristics, refer to OSU Fact Sheet PSS-2142 Wheat Variety Comparison Chart.

Fall forage production potential is determined by genetics, management and environmental factors. The purpose of this publication is to quantify some of the genetic differences in wheat forage production potential and grazing duration among the most popular varieties grown in Oklahoma. Management factors, such as planting date, seeding rate and soil fertility, are very influential and sometimes more important than variety selection in determining forage production. Environmental factors, such as rainfall amount and distribution and temperature, also play a large role in dictating how much fall forage is produced. All these factors, along with yield potential after grazing and the individual producer's preferences, will determine which 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 idea of the fall forage production ability of wheat varieties commonly grown throughout Oklahoma. The forage trials were conducted under Oklahoma State University's Small Grains Variety Performance Trials. During the 2024–2025 growing season, forage trials were conducted at the Chickasha and Stillwater test sites. Additionally, first hollow stem measure-

ments were collected at both sites in 2025. Weather data for each location are provided in Figures 1 and 2.

A randomized complete block design with four replications was used at each site. Plots at each location were established in a conventionally tilled seedbed. At planting, 5 gallons per acre of 10-34-0 was applied in seed furrow at Stillwater and Chickasha. Due to severe drought conditions at planting, 0.5 inches of irrigation were applied on Oct. 7, 8, 9 and 17 in Stillwater to support seed germination and emergence. The seeding rate at both locations was 120 pounds per acre. Forage was measured by hand clipping two, 1-m by 1-row samples approximately ½ inch above the soil surface from the interior rows within each plot. There was only one forage sampling date at each location (Table 1). All samples were placed in a forced air dryer after collection for approximately seven days and weighed. Fertility, planting date and forage sampling date information is provided in Table 1.

The Stillwater trial included both ungrazed and simulated grazed plots, while the Chickasha trial consisted of ungrazed plots only. In the simulated grazing treatment, plants were mowed to a height of 2.5 inches on Jan. 3, 15 and 28 as well as Feb. 10 and 28 and March 6 and 12. First hollow stem sampling began at the end of January at both locations and was conducted every three to four days by variety 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 to be at first hollow stem when the average measurement of the 10 plant samples was 1.5 cm (5/8 inch) or greater. For more information on first hollow stem, refer to OSU Fact Sheet PSS-2147 First Hollow Stem: A Critical Wheat Growth Stage for Dual-Purpose Producers.

Results

As indicated in Figures 1 and 2, the 2024–2025 fall forage production season was marked by moderate temperatures and extremely low rainfall. The irrigation applied shortly after planting helped with crop establishment and enabled the crop to take advantage of the rainfall that arrived later in October. This contributed to the moderate level of fall forage production observed in our fields in Stillwater. The average fall forage production at Stillwater was 1,473 lbs/acre, and values ranged from 984 to 2,070 lbs/acre (Table 2). Average forage production at Chickasha was 2,175 lbs/acre, and values ranged from 1,734 to 2,609 lbs/acre (Table 3).

First hollow stem data are reported in day of year (day) format for the winter wheat varieties in Table 4. To provide a reference, keep in mind that March 1 is day 60. The fall and winter months were characterized by dry conditions in Stillwater with temperatures somewhat normal. Supplemental irrigation helped crops to emerge by mid-October (later than usual, but earlier than many places under drought in the state) and resulted in good plant development. The average winter wheat first hollow stem date at Stillwater ungrazed plots was day 77 (March 18). This was 29 days later than 2024 (Feb 17), eight days later than 2023 (March 10) and 12 days later than the 20-year average (March 6). There was a 18-day difference between the earliest and latest varieties at Stillwater compared to a 21-day

difference in 2024 and 14-day difference in 2023. The average winter wheat first hollow stem date for the Chickasha location was 72 (March 13). This was 14 days later than 2024, one day later than 2023 (March 12) and seven days later than the 20-year average (March 6). There was a 14-day difference between the earliest and latest varieties at this location compared to a 13-day difference in 2024 and 11-day difference in 2023.

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Seed sources and abbreviations

AgriPro = AgriPro|Syngenta Seeds
AGSECO = AGSECO Inc.
KWA = Kansas Wheat Alliance
LCS = Limagrain Cereal Seeds
OGI = Oklahoma Genetics Inc.
OSU = Oklahoma State University
PlainsGold = PlainsGold Seeds
WestBred = WestBred Wheat

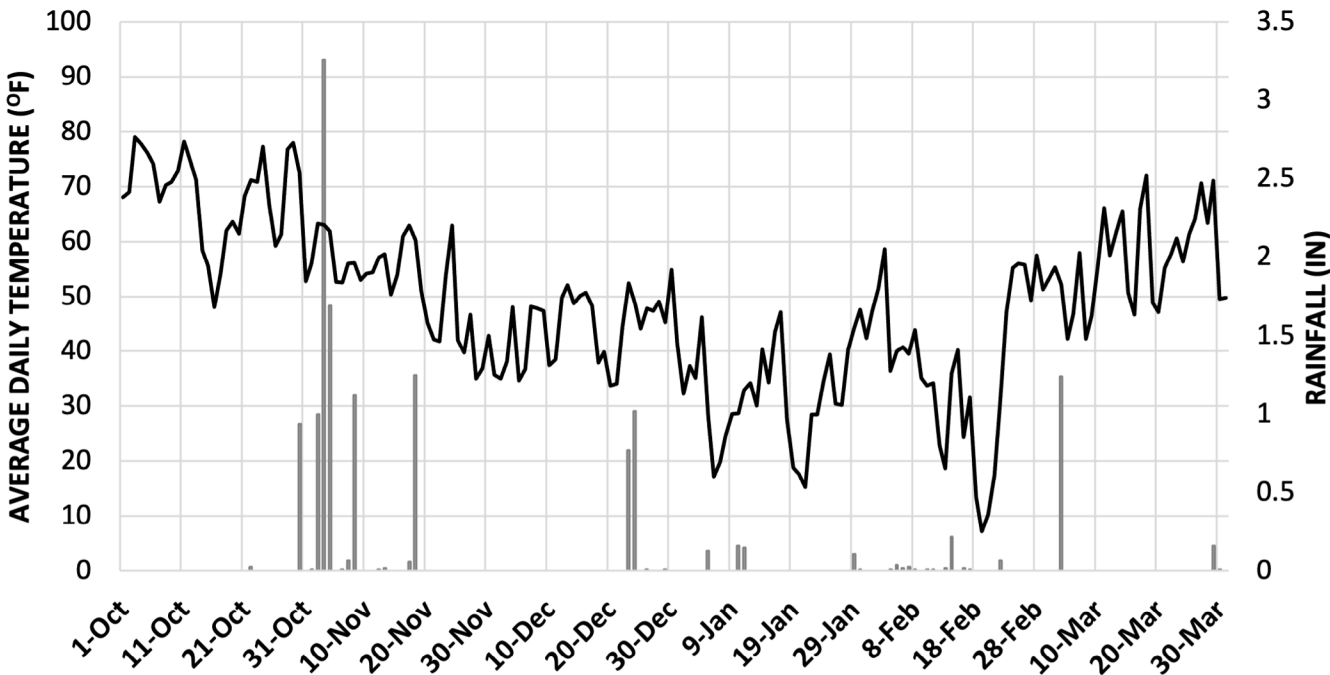


Figure 1. Average daily temperature (line graph) and rainfall (bar chart) from Oct. 1, 2024 to March 31, 2025, at Stillwater. Weather data courtesy Oklahoma Mesonet.

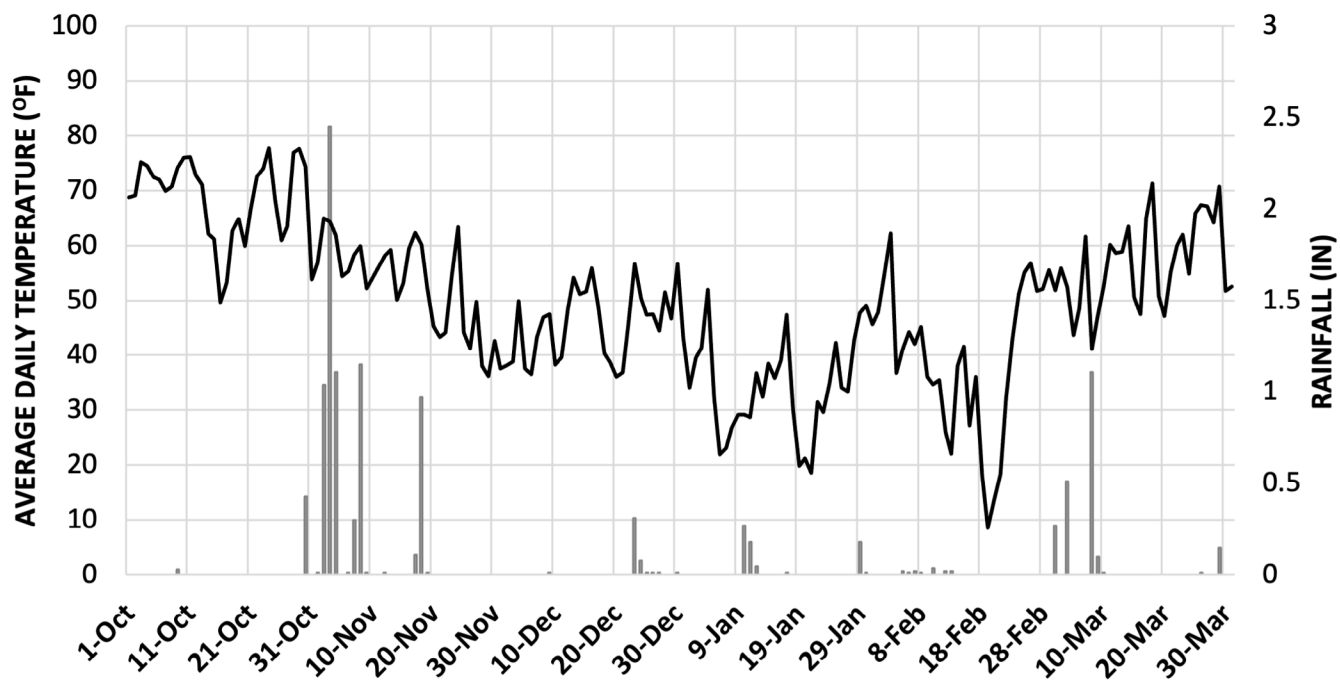


Figure 2. Average daily temperature (line graph) and rainfall (bar chart) from Oct. 1, 2024 to March 31, 2025, at Chickasha. Weather data courtesy Oklahoma Mesonet.

Table 1. The locations, planting and forage sampling dates, and pre-plant soil test information of the trials.

	Planting Date	Sampling Date	pH	nitrate-N (lbs/ac)	STP	STK
Chickasha	10/02/2024	12/10/2024	7.5	113	52	308
Stillwater	10/11/2024	12/09/2024	5.3	30	69	270

Notes: STP: soil test P index; STK: soil test K index.

Table 2. Fall forage production for the winter wheat varieties at Stillwater during the 2024–2025 production year and two, three, and four-year averages.

Licensee	Variety	2024	2-Year	3-Year	4-Year
-----lbs dry forage/acre-----					
OGI	Paradox	2070	2918	2111	2369
OGI	High Cotton	1924	2586	—	—
KWA	KS Providence	1784	2523	—	—
PlainsGold	Kivari AX	1723	3023	—	—
OGI	Scab Stryker	1695	2438	—	—
OGI	Orange Blossom CL+	1683	1844	—	—
Croplan	CP7462	1638	—	—	—
PlainsGold	Sheridan	1631	—	—	—
Westbred	WB4347	1602	—	—	—
Westbred	WB4445CLP	1572	—	—	—
OGI	Showdown	1564	2356	1702	1999
AgriPro	AP Sunbird	1452	—	—	—
AgriPro	AP24 AX	1425	1564	—	—
OGI	Green Hammer	1411	2518	1793	2154
Westbred	WB4422	1370	1924	—	—
LCS	LCS Cowie AX	1364	—	—	—
Croplan	CP7017AX	1334	—	—	—
Armor	AR Turret 25	1330	—	—	—
AGSECO	AG Radical	1261	1669	1281	1717
Westbred	WB4792	1227	2172	1578	2033
OGI	OK Corral	1163	2471	1752	2158
OGI	Strad CL Plus	1097	2003	1405	1870
Armor	AR Iron Eagle 22AX	1036	—	—	—
Croplan	CP7869	984	—	—	—
Experimentals Lines					
OSU	OK21DTR1705-91	1655	—	—	—
OSU	OK23D89076X	1405	—	—	—
OSU	OK20708	1378	1415	—	—
Mean LSD (0.05)		1473	2228	1660	2043
		457	720	414	344

Notes: Shaded values are not statistically different from the highest-yielding variety within a column. Em-dashes "—" = data not available.

Table 3. Fall forage production for the winter wheat varieties at Chickasha during the 2024–2025 production year and two and three-year averages.

Licensee	Variety	2024	2-Year	3-Year
-----lbs dry forage/acre-----				
OGI	High Cotton	2609	1773	—
PlainsGold	Kivari AX	2409	1757	—
OGI	Paradox	2399	—	—
Westbred	WB4347	2364	—	—
Armor	AR Iron Eagle 22AX	2363	—	—
Westbred	WB4445CLP	2333	—	—
OGI	OK Corral	2309	1819	1415
OGI	Green Hammer	2284	1628	1256
LCS	LCS Cowie AX	2243	—	—
PlainsGold	Sheridan	2241	—	—
OGI	Strad CL Plus	2224	1520	1141
Croplan	CP7462	2186	—	—
Armor	AR Turred 25	2179	—	—
OGI	Orange Blossom CL+	2175	—	—
AgriPro	AP Sunbird	2170	—	—
AGSECO	AG Radical	2142	1550	—
AgriPro	AP24 AX	2124	—	—
OGI	Scab Stryker	2102	—	—
Westbred	WB4422	2078	—	—
Croplan	CP7017AX	2019	—	—
Westbred	WB4792	1932	—	—
OGI	Showdown	1908	1377	1095
KWA	KS Providence	1840	1324	—
Croplan	CP7869	1734	—	—
Experimentals				
OSU	OK20708	2377	—	—
OSU	OK21DTR1705-91	2091	—	—
OSU	OK23D89076X	1904	—	—
Mean LSD (0.05)		2175	1594	1227
		471	396	307

Notes: Shaded values are not statistically different from the highest-yielding variety within a column. NS; no statistical differences were detected among varieties within a column. Em-dashes "—" = data not available.

Table 4. Occurrence of first hollow stem (day of year) for the winter wheat varieties sown in 2024 and measured in 2025 at Stillwater and Chickasha.

		Stillwater		Chickasha
Licensee	Variety	Non-Grazed	Grazed	Non-Grazed
-----day of year-----				
PlainsGold	Sheridan	83	86	76
OGI	Strad CL Plus	79	83	72
OGI	Paradox	79	83	72
Armor	AR Turret 25	79	83	72
Croplan	CP7869	79	83	72
LCS	LCS Cowie AX	79	83	72
Westbred	WB4445CLP	79	86	72
OGI	OK Corral	76	86	76
OGI	Green Hammer	76	86	76
OGI	Showdown	76	83	76
OGI	High Cotton	76	83	72
OGI	Scab Stryker	76	86	69
Armor	AR Iron Eagle 22AX	76	83	72
Croplan	CP7017AX	76	83	72
Croplan	CP7462	76	83	76
KWA	KS Providence	76	83	72
Westbred	WB4422	76	83	69
Westbred	WB4792	76	90	72
OGI	Orange Blossom CL+	76	90	72
AgriPro	AP24 AX	72	83	65
AgriPro	AP Sunbird	72	83	72
AGSECO	AG Radical	72	83	65
Westbred	WB4347	72	83	69
AgriPro	Kivari AX	65	83	62
Experimentals				
OSU	OK20708	83	86	76
OSU	OK21DTR1705-91	79	86	72
OSU	OK23D89076X	72	83	65
Average		77	84	72

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