



Current Report

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Fall forage production and date of first hollow stem in winter wheat varieties during the 2014-2015 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 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 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/A of 18-46-0 in furrow at planting. Fertility, planting date and harvest date information are provided in Table 1.

Results

A few timely rains make a world of difference for fall wheat forage production. Most wheat was sown into limited topsoil moisture with little or no subsoil moisture to serve as a backup. There were few large rainfall events in the fall of 2014, but the smaller, timely rainfalls that fell across much of Oklahoma were just enough to build and maintain an adequate bumper fall wheat forage crop. Average fall forage production at Stillwater was 2,700 lb/A, approximately 500 lb/A less than in 2013 (Table 2). Average fall forage production at Chickasha was 3,520 lb/A approximately 1,000 lb/A more than in 2013 (Table 3). While the forage production at both locations (approximately 90 miles apart) would be considered very good by any standards, the difference in production between the locations illustrates that slight differences in planting date and rainfall can have an impact on forage production.

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 2015 was day 65. This was 12 days earlier than 2014 and seven days earlier than in 2013. In 2014, there was only 14 days difference between the earliest and latest varieties in terms of first hollow stem. In contrast, there was 30 days separating the earliest and latest varieties in 2015 and some varieties reached first hollow stem earlier (e.g. Winterhawk) or later (e.g. Pete) than normal. Occurrence of first hollow stem is governed by several variety specific factors, so it is difficult to identify a single cause for the deviation from normal in first hollow stem rankings.

Acknowledgments

The authors want to thank the Oklahoma Wheat Commission and the Oklahoma Wheat Research Foundation for providing partial funding for this research.

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
TAMU = Texas Agrilife Research
Watley = Watley Seeds

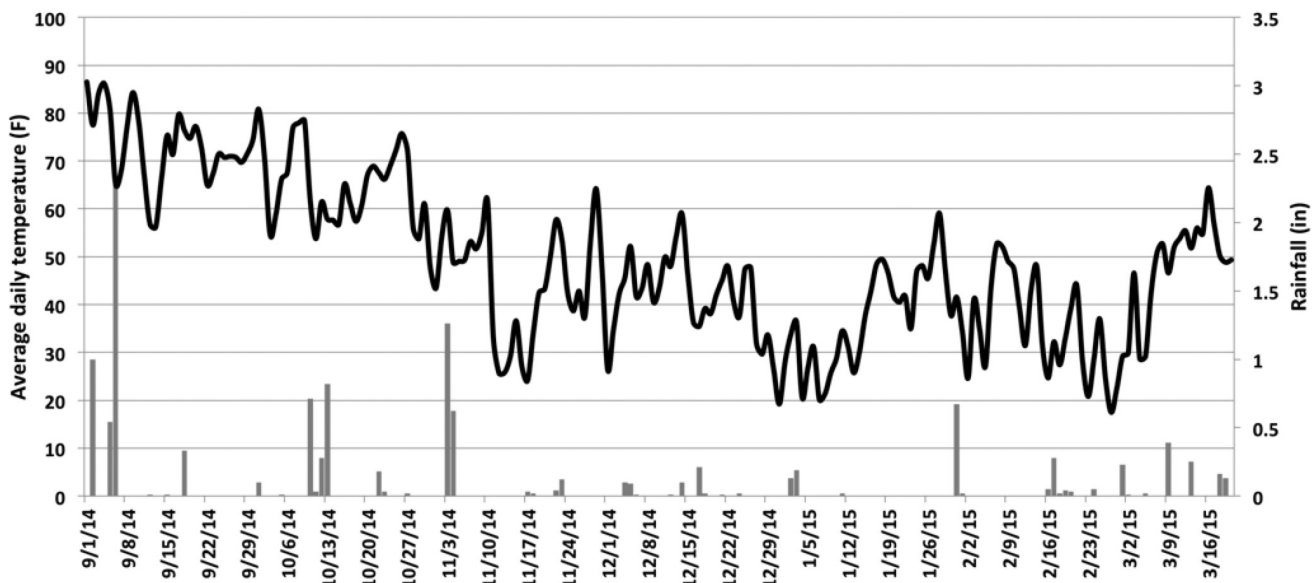


Figure 1. Average daily temperature (line graph) and rainfall (bar chart) from September 1, 2014 to March 20, 2015 at Stillwater, OK. Weather data courtesy Oklahoma Mesonet.

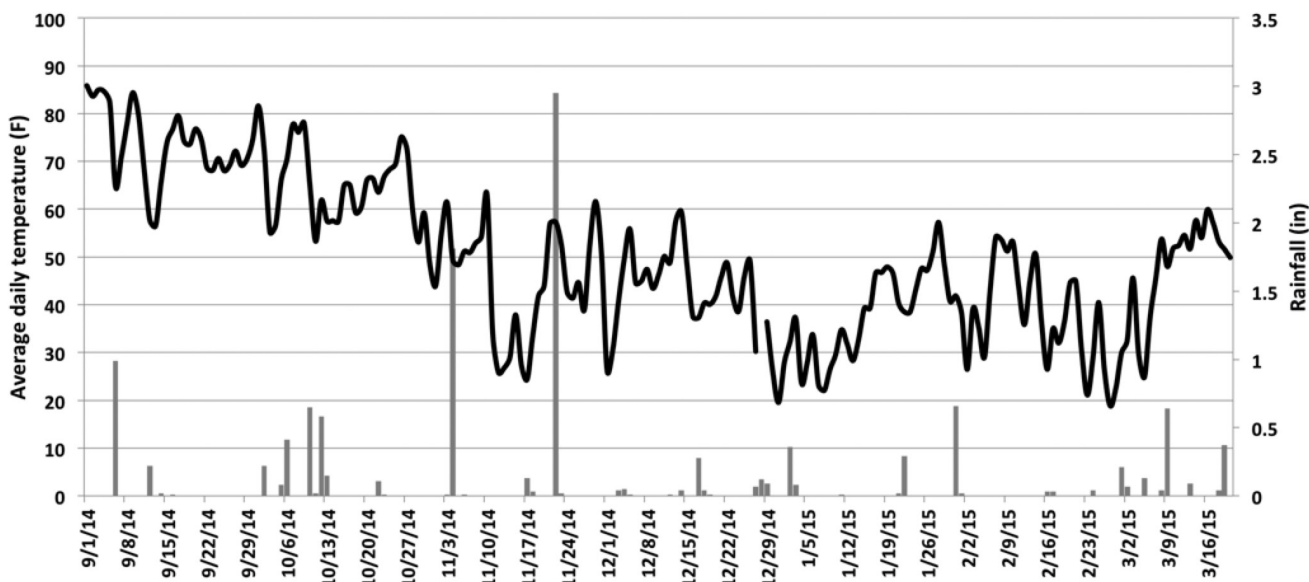


Figure 2. Average daily temperature (line graph) and rainfall (bar chart) from September 1, 2014 to March 20, 2015 at Chickasha, OK. Weather data courtesy Oklahoma Mesonet.

Table 1. Location information.

| | <i>Planting date</i> | <i>Sampling date</i> | <i>pH</i> | <i>N</i> | <i>P</i> | <i>K</i> |
|------------|----------------------|----------------------|-----------|----------|----------|----------|
| Chickasha | 09/17/14 | 12/08/14 | 6.9 | 151 | 65 | 404 |
| Stillwater | 09/24/14 | 12/11/14 | 5.5 | 133 | 58 | 283 |

Table 2. Fall forage production by winter wheat varieties at Stillwater, OK during the 2014-2015 production year.

| Source | Variety | 2014-2015 | 2-Year | 3-Year |
|-------------------------------|--------------------|--------------|--------------|--------------|
| -----lbs dry forage/acre----- | | | | |
| OGI | Gallagher | 3,920 | 3,770 | 3,420 |
| TAMU | TAM 114 | 3,440 | - | - |
| OGI | OK Rising | 3,350 | 2,990 | - |
| KWA | 1863 | 3,290 | - | - |
| OGI | Billings | 3,150 | 3,550 | 3,190 |
| Syngenta | SY Llano | 3,130 | 3,680 | - |
| Watley | TAM 112 | 3,090 | 3,170 | - |
| LCS | T158 | 3,090 | 3,050 | 2,850 |
| LCS | T153 | 3,060 | 3,000 | 2,900 |
| OGI | Garrison | 3,040 | 3,220 | 3,080 |
| OGI | Duster | 3,010 | 3,390 | 3,130 |
| OSU | Endurance | 2,990 | 3,040 | 3,050 |
| LCS | LCS Wizard | 2,980 | 3,060 | 2,990 |
| LCS | LCS Mint | 2,940 | 3,370 | 2,980 |
| LCS | LCH13DH-14-91 | 2,870 | - | - |
| Syngenta | Greer | 2,840 | 2,950 | 2,840 |
| KWA | Oakley CL | 2,810 | - | - |
| Watley | TAM 204 | 2,810 | - | - |
| OGI | Ruby Lee | 2,800 | 2,900 | 2,670 |
| OGI | Centerfield | 2,790 | 2,960 | 2,810 |
| OGI | Doublestop CL Plus | 2,780 | 3,020 | 2,950 |
| Syngenta | Jackpot | 2,760 | 3,240 | 2,980 |
| OSU | Deliver | 2,730 | 3,150 | 2,760 |
| PlainsGold | Byrd | 2,720 | 2,690 | 2,630 |
| OGI | Pete | 2,670 | 2,950 | 2,770 |
| AGSECO | TAM 113 | 2,670 | 3,480 | 3,020 |
| PlainsGold | Brawl CL Plus | 2,650 | 2,840 | 2,800 |
| OGI | NF101 | 2,590 | - | - |
| OGI | Iba | 2,580 | 2,780 | 2,720 |
| AGSECO | Hot Rod | 2,580 | - | - |
| LCS | LCS Pistol | 2,550 | 2,830 | 2,960 |
| WestBred | Winterhawk | 2,540 | 3,070 | 2,720 |
| KWA | Everest | 2,520 | 2,820 | 2,730 |
| LCS | LCH13DH-20-87 | 2,470 | - | - |
| Syngenta | SY Southwind | 2,470 | 2,820 | - |
| WestBred | WB-Grainfield | 2,400 | 2,690 | 2,780 |
| KWA | KanMark | 2,380 | - | - |
| WestBred | WB-Redhawk | 2,370 | 2,640 | 2,530 |
| WestBred | WB-Cedar | 2,360 | 3,040 | 3,000 |
| LCS | T154 | 2,300 | 3,070 | 2,840 |
| WestBred | WB4458 | 2,270 | 3,030 | 2,740 |
| Syngenta | SY Flint | 2,270 | - | - |
| Syngenta | SY Monument | 2,160 | - | - |
| PlainsGold | CO11D174 | 2,030 | - | - |
| OSU Experimentals | | | | |
| | OK10126 | 3,160 | - | - |
| | OK11D25056 | 2,610 | - | - |
| | OK13625 | 2,600 | - | - |
| | OK09125 | 2,430 | 2,640 | 2,510 |
| | OK12621 | 2,090 | - | - |
| | OK1059060-2C14 | 1,870 | - | - |
| | OK11231 | 1,770 | - | - |
| Average | | 2,700 | 3,060 | 2,870 |
| LSD (0.05) | | 940 | 590 | 430 |

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 2014-2015 production year.

| Source | Variety | 2014-2015 | 2-Year | 3-Year |
|-------------------------------|----------------|--------------|--------------|--------------|
| -----lbs dry forage/acre----- | | | | |
| LCS | T154 | 3,990 | - | - |
| OGI | Gallagher | 3,890 | 3,400 | 3,310 |
| Syngenta | SY Llano | 3,800 | - | - |
| OGI | NF101 | 3,790 | - | - |
| WestBred | WB-Redhawk | 3,770 | - | - |
| OGI | Duster | 3,730 | 3,330 | 3,190 |
| OGI | Doublestop | | | |
| CL Plus | | 3,720 | 3,210 | - |
| OGI | Garrison | 3,670 | 2,920 | 2,700 |
| KWA | Everest | 3,640 | 3,190 | 3,040 |
| PlainsGold | Byrd | 3,630 | 3,090 | - |
| OSU | Endurance | 3,610 | 3,120 | 2,950 |
| PlainsGold | Brawl CL Plus | 3,570 | 3,200 | - |
| WestBred | WB-Cedar | 3,550 | 3,070 | 2,940 |
| LCS | LCS Pistol | 3,540 | - | - |
| LCS | LCS Wizard | 3,530 | 2,990 | - |
| OGI | Pete | 3,480 | - | - |
| Watley | TAM 204 | 3,310 | - | - |
| OGI | Billings | 3,270 | 2,850 | - |
| OGI | Iba | 3,220 | 2,840 | 2,720 |
| WestBred | WB4458 | 3,210 | 2,860 | - |
| Syngenta | Jackpot | 3,200 | 2,870 | 2,710 |
| Syngenta | Greer | 3,180 | 2,780 | 2,710 |
| OGI | Ruby Lee | 2,740 | 2,580 | 2,540 |
| OSU Experimentals | | | | |
| | OK09125 | 3,500 | 3,130 | - |
| | OK1059060-2C14 | 3,450 | - | - |
| Average | | 3,520 | 3,030 | 2,880 |
| LSD | | 760 | 400 | 280 |

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 2014 and measured in 2015 at Stillwater, OK.

| Source | Variety | Stillwater |
|--------------------------|--------------------|------------|
| --day of year-- | | |
| Syngenta | SY Llano | 49 |
| WestBred | WB-Cedar | 49 |
| WestBred | WB-Redhawk | 49 |
| LCS | LCH13DH-14-91 | 49 |
| OGI | Gallagher | 57 |
| KWA | Everest | 57 |
| Syngenta | Jackpot | 57 |
| WestBred | Winterhawk | 57 |
| LCS | T153 | 57 |
| LCS | T154 | 57 |
| LCS | LCS Pistol | 57 |
| Watley | TAM 112 | 57 |
| OGI | NF101 | 61 |
| WestBred | WB4458 | 61 |
| PlainsGold | Brawl CL Plus | 61 |
| KWA | 1863 | 64 |
| Syngenta | SY Flint | 64 |
| LCS | LCS Mint | 64 |
| Watley | TAM 204 | 64 |
| AGSECO | TAM 113 | 64 |
| TAMU | TAM 114 | 64 |
| PlainsGold | Byrd | 64 |
| KWA | KanMark | 68 |
| Syngenta | SY Southwind | 68 |
| Syngenta | Greer | 68 |
| PlainsGold | CO11D174 | 68 |
| OGI | Billings | 71 |
| OGI | Duster | 71 |
| OGI | Iba | 71 |
| KWA | Oakley CL | 71 |
| AGSECO | Hot Rod | 71 |
| WestBred | WB-Grainfield | 71 |
| LCS | LCS Wizard | 71 |
| LCS | LCH13DH-20-87 | 71 |
| OSU | Deliver | 75 |
| OGI | Ruby Lee | 75 |
| OGI | Garrison | 75 |
| OGI | Doublestop CL Plus | 75 |
| Syngenta | SY Monument | 75 |
| LCS | T158 | 75 |
| OGI | OK Rising | 78 |
| OSU | Endurance | 79 |
| OGI | Pete | 79 |
| OGI | Centerfield | 79 |
| OSU Experimentals | | |
| | OK13625 | 49 |
| | OK0986130-7C13 | 49 |
| | OK10126 | 57 |
| | OK11755W | 57 |
| | OK11231 | 61 |
| | OK10728W | 64 |
| | OK09125 | 71 |
| | OK1059060-2C14 | 71 |
| | OK11D25056 | 75 |
| | OK12621 | 75 |
| | OK08P707W-19C13 | 75 |
| Average | | 65 |

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