# Fall Forage Production by Winter Wheat Varieties in Oklahoma

**2004**

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## Planting starts with a bang .......ends with a splash!

Wheat planting got off to a roaring start in September of 2004. Most areas of the state had ample moisture for wheat emergence. This was especially true for producers that employed moisture conservation strategies such as no-till or stale seedbed management. Adequate rainfall throughout late September and early October resulted in plentiful wheat forage production in most areas. Frequent, heavy rains beginning in mid-October, however, limited growers' ability to make use of available forage and left them with the difficult decision of whether or not to turn cattle out on saturated wheat fields. In addition, farmers with fields unplanted by mid October were left with very few, if any, opportunities to re-enter the field and finish planting.

Wet conditions in late-October and November also resulted in many yellow fields of wheat. Yellowing of wheat was likely the result of nitrogen deficiency due to leaching and anoxic soil conditions limiting root growth and health.

As a whole, insect pest problems were relatively minor in the fall of 2004. Localized infestations of white grubs were reported, but wide-spread damage was generally not a problem. Bird cherry-oat aphids and to a much lesser extent Greenbugs were present in many early-planted wheat fields, but threshold levels were rarely reached. Other problems reported on a localized basis included Hessian Fly and Wheat Curl Mite activity.

The above-average fall forage production and warm, moist conditions allowed for wide-spread infestation of leaf rust. While leaf rust was present in many early-planted fields, the effect on wheat forage growth was minimal and rust pressure at flag leaf emergence is yet to be determined.

## What is RFP?

This year ***relative forage production (RFP)*** is included as another way of evaluating varieties over the long haul (Table 1). Relative forage production is a standardized measurement in which we divided the yield of each plot by the overall mean on a location by year basis. So, a variety with an RFP of 1 is average in its forage production potential, an RFP less than 1 indicates below-average forage production potential and an RFP greater than 1 indicates above-


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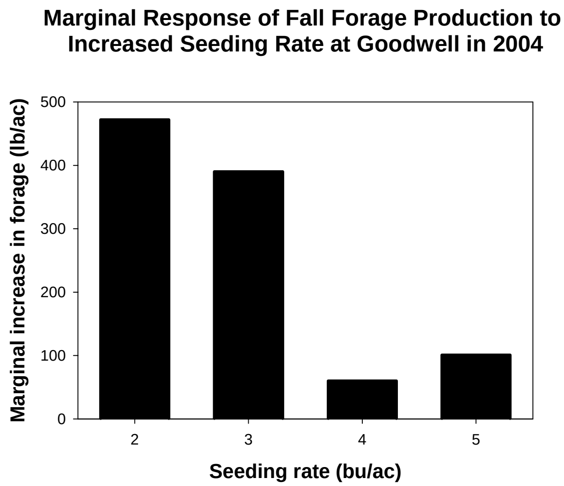
average forage production potential. This reduces the confounding effect of differing forage production potential among years and locations and is a way of ranking varieties using long-term data.

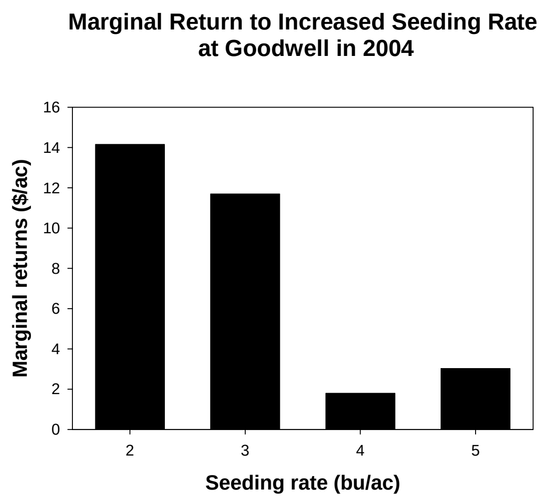
A column listing the number of location-years for each variety is included in addition to RFP (Table 1). The RFP data presented in Table 1 were compiled using fall forage measurements from the OSU variety trials over the past three years. One location in one year constitutes a location-year, so the number of location-years for a variety indicates the number of separate variety trials it has been included in over the past 3 years. It is important to consider the number of location-years a variety has been evaluated, as the greater this number the more reliable the RFP.

## Panhandle seeding-rate experiment

Research conducted in the Panhandle region of Oklahoma over the past few years has indicated that fall forage production is significantly increased by increasing seeding rate (PT 2003-2). The highest seeding rate used in prior experiments, however, was 3 bu/ac; therefore, a study was initiated this year to determine the response of fall wheat forage to increased seeding rates up to 5 bu/ac. The trial was planted September 14 at Goodwell, OK using the variety Intrada

Results from the fall of 2004 indicate that significant marginal increases in total fall forage production can be obtained by increasing seeding rates up to 3 bu/ac, but the feasibility of increased seeding rate depends entirely upon seed costs. For example, if we assume a value of $0.03/lb for forage production, the marginal return for increasing seeding rate from 1 to 2 bu/ac was roughly $14/ac. An additional $12/ac was gained by increasing the seeding rate from 2 to 3 bu/ac, and would likely be




feasible using most seed sources in Oklahoma. Marginal returns past this point, however, were less than $4/ac and would have, at best, been a break-even proposition.

More data are needed to determine if these results are applicable across a wide range of environments and varieties, but the response of increased forage production for seeding rates up to 3 bu/ac look promising for dual-purpose wheat farmers.

## How to compare the varieties

The least significant difference (LSD) values listed at the bottom of each table should be used to make comparisons among varieties. If the difference in forage production between any two varieties is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greater than or equal to the LSD value, those two varieties differ significantly in their forage production ability for that location.

## About the OSU variety trials

The objective of the fall forage wheat variety trials is to give producers an indication of the fall forage production ability of wheat varieties commonly grown throughout the state of Oklahoma. Similar to previous years, the forage trials are conducted under the umbrella of the Oklahoma State University winter wheat variety trials.

Nonirrigated fall forage measurements were taken at variety trials at Marshall, El Reno, Perkins, and Stillwater, OK. Wheat emerged unevenly at the Marshall location, however, and data were not included in this report. Differences in time of emergence were not observed at other locations.

Due to emergence problems at Marshall and re-organization of the OSU variety trials, Perkins was the only location with more than three years of data at a single location (Table 2).

All plots were sown at 120 lb/ac into a conventionally-tilled seedbed and received 50 lb/ac of 18-46-0 in furrow at planting. Additional location information is listed below.A single-sampling-date methodology was used to provide an accurate representation of the forage production ability of varieties tested. Data were collected by hand-clipping wheat plants at the soil surface in two separate one-meter-by-one-row samples. Samples were then dried and weighed.

## Cooperators

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Bornemann Farms, El Reno, Oklahoma

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**For more information visit the OSU small grains web site at *http://pss.okstate.edu/wheat/index.htm***

| Location information | | | | | |
|---|---|---|---|---|---|
| | Planting date | Sampling date | pH | P | K |
| El Reno | 9-20-04 | 12-10-04 | 5.2 | 103 | 277 |
| Perkins | 9-17-04 | 12-02-04 | 6.2 | 41 | 260 |
| Stillwater | 9-16-04 | 12-08-04 | 6.2 | 48 | 304 |

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**Table 1.** Fall forage production and relative forage production (RFP) for winter wheat varieties in Oklahoma in the 2004-2005 crop year.

| Seed source | Variety | Seed mass | Location: El Reno | Location: Perkins | Location: Stillwater | **RFP**† | Location years‡ |
|---|---|---|---|---|---|---|---|
| | | seed/lb | ------fall forage (lb/acre)-------- | | | | |
| Agripro | Fannin | 12,770 | 2,920§ | 3,230 | 4,560 | 1.10 | 6 |
| Oklahoma | Endurance | 16,510 | 2,700 | 2,730 | 4,880 | 1.10 | 3 |
| Oklahoma | Intrada (W) | 14,530 | - | - | 5,010 | 1.08 | 10 |
| Kansas | 2145 | 14,030 | 2,470 | 2,910 | 4,660 | 1.06 | 12 |
| Agripro | Jagalene | 15,030 | 2,380 | 2,710 | 4,320 | 1.05 | 12 |
| Oklahoma | 2174 | 14,080 | 2,450 | 2,230 | 4,190 | 1.02 | 12 |
| Kansas | Jagger | 15,850 | 2,080 | 2,310 | 4,160 | 1.02 | 12 |
| Kansas | Trego (W) | - | - | - | - | 1.02 | 8 |
| Kansas | 2137 | 14,740 | 2,880 | 2,650 | 4,450 | 1.02 | 12 |
| Oklahoma | Deliver | 14,250 | 2,840 | 2,530 | 3,820 | 1.01 | 3 |
| Oklahoma | Ok101 | 13,630 | 2,580 | 2,640 | 4,790 | 0.99 | 12 |
| Oklahoma | Custer | 14,690 | 2,410 | 2,680 | 4,420 | 0.99 | 12 |
| Agripro | Cutter | 12,610 | 2,860 | 3,000 | 4,350 | 0.97 | 12 |
| Oklahoma | Ok102 | 18,310 | 2,280 | 1,990 | 3,880 | 0.95 | 12 |
| Kansas | Overley | 13,930 | 2,340 | 2,080 | 4,540 | 0.95 | 6 |
| Agripro | AP502CL | 13,880 | 2,170 | 2,470 | 4,210 | 0.92 | 6 |
| Agripro | Thunderbolt | 18,760 | 2,080 | 2,340 | 4,090 | 0.87 | 12 |
| Texas | Sturdy 2K | 13,590 | 2,250 | 1,530 | 3,730 | 0.79 | 3 |
| | | **Average** | 2480 | 2500 | 4360 | - | |
| | | **LSD** | 400 | 460 | 630 | 0.09 | |

† Relative forage production is a standardized measurement in which we divided the yield of each plot by the overall mean on a location by year basis.

‡ One location in one year constitutes a location-year, so the number of location-years for a variety indicates the number of separate variety trials it has been included in over the past three years. For example, a variety included at three locations in 2003 and one location in 2004 would have 4 location-years.

§ Shaded cells within a column are not statistically different from the highest-yielding variety within that column



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**Table 2.** Fall forage production for winter wheat varieties sown in 2002, 2003, and 2004 at Perkins, Oklahoma.

| Seed source | Variety | Year 2002 | 2003 | 2004 | 3-Year Average |
|---|---|---|---|---|---|
| | | --------------------------fall forage (lb/acre) | | ------------------------- | |
| Agripro | Jagalene | 3,490[†] | 2,210 | 2,710 | 2,800 |
| Oklahoma | Ok101 | 3,300 | 2,300 | 2,640 | 2,750 |
| Kansas | 2145 | 2,930 | 2,170 | 2,910 | 2,670 |
| Agripro | Cutter | 2,960 | 1,760 | 3,000 | 2,580 |
| Oklahoma | 2174 | 3,210 | 2,190 | 2,230 | 2,540 |
| Kansas | Jagger | 3,230 | 2,080 | 2,310 | 2,540 |
| Oklahoma | Custer | 3,020 | 1,840 | 2,680 | 2,510 |
| Kansas | 2137 | 2,950 | 1,860 | 2,650 | 2,490 |
| Oklahoma | Ok102 | 2,960 | 2,120 | 1,990 | 2,350 |
| Agripro | Thunderbolt | 2,780 | 1,360 | 2,340 | 2,160 |
| | **Average** | 3,080 | 1,990 | 2,550 | 2,540 |
| | **LSD** | 390 | 330 | 460 | 270 |

[†] Shaded cells within a column are not statistically different from the highest-yielding variety within that column


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