

## **Management Practices and Lease Arrangements used by Oklahoma Wheat, Wheat Pasture, and Wheat Pasture Livestock Producers**

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# **Management Practices and Lease Arrangements used by Oklahoma Wheat, Wheat Pasture, and Wheat Pasture Livestock Producers**

## **Abstract**

Winter wheat is grown for three purposes in the Southern Plains, grain-only, forage-only, and as a dual-purpose forage plus grain crop. The USDA's wheat cropping practices survey does not differentiate among the three uses. Little information on actual production practices across use is available. Results of a survey are presented.

## **Introduction**

Wheat can be grown in almost all areas of Oklahoma. In 2000, 75% of the state's cultivated cropland was seeded to winter wheat. The Southern Great Plains region has a unique niche enabling the production of winter wheat for three purposes. Some is grown to produce wheat grain, some is grown exclusively as a forage crop for grazing, and some is grown as a dual-purpose crop to produce both fall-winter forage and grain. The use of winter wheat as a forage-only and dual-purpose crop is important in the agricultural economies of southwestern Kansas, eastern New Mexico, western Oklahoma, southeastern Colorado, and the Texas Panhandle (Epplin et al.; Pinchak et al.; Redmon et al., 1995; Shroyer et al.).

The United States Department of Agriculture (USDA) provides annual estimates of the wheat acres planted and harvested for grain (National Agricultural Statistics Service). However, they do not differentiate among wheat uses. Hence, there are no routine data available from the USDA on the proportion of wheat acres used for each of the three purposes. Similarly, estimates of the number and class of animals stocked on wheat pasture in Oklahoma are also not provided by the USDA.

Research-based recommended wheat production practices differ across intended use. For example, the recommended planting date for wheat that is intended for forage production is two

to six weeks before the recommended planting date for grain-only production. The recommended seeding rate is also greater for forage-only wheat (Krenzer, 2000b). The optimal level of fertilizer may also differ across intended use of wheat. However, since the USDA's wheat cropping practices survey does not differentiate among the three uses, little information on actual production practices is available.

The overall objective of this study is to provide information about production methods, management practices, and lease arrangements used by Oklahoma wheat, wheat pasture, and wheat pasture livestock producers. The specific objectives are to determine the proportion of wheat grown for each of the three purposes, grain-only, forage-only, and dual-purpose; to determine if wheat production practices differ across intended use; to determine production practices used by wheat pasture livestock producers; and to determine characteristics of wheat pasture lease arrangements.

### **Data and Methods**

A questionnaire was mailed to a randomly selected group of Oklahoma wheat producers in March of 2000. A panel of experts from the Oklahoma State University Departments of Animal Science, Plant and Soil Sciences, and Agricultural Economics designed the survey questions. Agricultural statisticians of the Oklahoma Agricultural Statistics Service (OASS) cooperated in making the final edit of the questionnaire form.

A stratified sampling plan was used. The state was divided into six regions to account for the variability of practices due to weather and soil in different parts of Oklahoma. A total of 4,815 producers were randomly selected from the OASS database, approximately 800 from each of the six regions. A total of 1,204 (25%) questionnaires were returned. More than 160 usable responses were received from each of the six regions. The respondents reported that they had

planted 460,997 acres to wheat in the fall of 1999. This was approximately 8% of the total Oklahoma acres of 6.1 million planted for all wheat purposes in the 1999-2000 crop year.

### **Findings**

Table 1 includes a summary of responses to the question, “How many of your 1999-2000 wheat acres were planted for each purpose”. Across the state, 31% was intended for grain-only, 20% for forage-only, and 49% for dual-purpose. The North Central (46%) and Panhandle (45%) regions had the greatest percentages intended for grain-only. The greatest percentage (49%) of acreage intended for forage-only was in the South Central and East region, typically the region with greatest rainfall. The region with the least amount of rainfall, Panhandle, had one of the least percentages (10%) of acreage intended for forage-only. In the West Central region, 61% of the acreage was intended for dual-purpose use.

Table 2 includes a summary of responses to the question, “How many acres of your 1999-2000 wheat crop will actually be used for each purpose”. Across the state 39% was used for grain-only, 22% for forage-only, and 39% for dual-purpose. Since both grain yield and forage yield are affected by planting dates, wheat should be planted at the appropriate time for the desirable intention. When the weather is not favorable for planting during the intended planting date window, producers may be forced to change planting date and actual use of wheat may differ from the original intended use. Sometimes unfavorable weather, such as drought, severe cold or rain, after the planting or during the production season may force producers to modify plans. The percentage (22%) of wheat acreage actually used for forage-only changed very little from the original intention (20%). The main differences were in grain-only and dual-purpose.

In a 1996 survey, only 9% of the wheat acreage was intended for forage-only compared with 20% in 1999 (True et al.). This major change was very likely a response to changes included in the 1996 Federal Agriculture Improvement and Reform (FAIR) Act. At the time of the 1996 survey, farmers were operating under a federal policy that often required wheat grain harvest on a large proportion of the acres planted to maintain wheat program base acres. Since federal payments were tied to wheat program base acres, producers were very reluctant to engage in practices that may have jeopardized wheat program base acres. However, under the 1996 act, producers were given greater flexibility. They were permitted to use wheat base acres to produce forage and still collect federal payments based upon their historical wheat base acres and wheat base grain yield. In addition, use of the land to produce forage did not jeopardize their wheat base acres. Another contributing factor to the relative decrease in acres intended for wheat grain in the 1999-2000 survey was that the 1999 average market year price of \$2.24 per bushel of wheat was the lowest in decades (National Agricultural Statistics Service).

#### *Production Practices across Intended Use of Wheat Acreage*

Wheat producers may vary production practices with intended use. Multiple pairwise comparisons of the means associated with each of the three purposes within each region were conducted (Kuehl; SAS Institute 1999a, 1999b). Statewide, respondents reported the greatest seeding rate of 94 lb/acre for wheat intended for forage-only (Table 3). The seeding rate for wheat intended for grain-only was 77 lb/acre and the seeding rate for wheat intended for dual-purpose was 84 lb/acre. The forage-only average seeding rate was significantly greater than the seeding rates of both grain-only and dual-purpose. The seeding rate for dual-purpose production was significantly greater than that for grain-only. These rates are consistent with recommendations in the sense that a greater seeding rate is recommended for wheat that is

intended for forage relative to wheat intended for grain-only. However, the reported forage-only and dual-purpose rates were lower than rates recommended by state extension specialists (Krenzer, 2000b; Shroyer et al.).

Table 3 also includes the reported average seeding rates across intended use by region. The least averages occurred in the Panhandle region, and the greatest averages occurred in the South Central & East region. Producers in the greater rainfall areas use greater seeding rates.

When asked to report the target and actual fall 1999 wheat planting dates, the respondents often recorded a range of dates for each category. In those cases, the middle date of the range was used for the analysis. The reported average target planting dates show that producers consistently planted forage-only wheat earliest, then dual-purpose wheat, followed by grain-only wheat (Table 4). The state average wheat target planting dates, October 2 for grain-only, September 13 for forage-only, and September 20 for dual-purpose, were significantly different from each other (Table 4).

The average responses to the question of actual average planting date (Table 5) were later than the average target planting dates. Respondents on average, planted wheat intended for grain-only the second week of October. Wheat intended for forage-only was planted during the fourth week of September, and dual-purpose wheat in late September or early October. Statewide averages were significantly different from each other.

Nitrogen is usually the most limiting nutrient associated with wheat forage production (Shroyer et al.). Table 6 includes a summary of the actual nitrogen used across the regions. All the reported forage-only and dual-purpose nitrogen uses were lower than recommendations by a large margin. This suggests that either (i) farmers are under applying nitrogen or (ii) the recommendation relative to nitrogen requirements for livestock production on grazing wheat is

incorrect. It could be that the quantity of nitrogen returned to the field in the form of urine and feces is substantial and that its value is underestimated. Current nitrogen recommendations relative to forage production and use by livestock were derived from wheat plots that were clipped rather than grazed. Additional research may be needed to more precisely determine forage and livestock response to nitrogen on plots that are actually grazed.

#### *Fall and Winter Grazing Practices*

Approximately 90% of the respondents in every region, who checked at least one livestock type provided in the questionnaire, grazed either stocker cattle or cows-and/or replacement heifers on 1999-2000 wheat pasture (Table 7). Other than the combination of stocker cattle and cows-replacement heifers, almost all other responses were checked as only one species. The responses for the state as a whole were 42% for stocker cattle, 22% for cows-replacement heifers, 28% for both stocker cattle and cows-replacement heifers, 1% for sheep, 2% for dairy cattle, 3% for horses, and 1% for other. Stocker cattle had the greatest percentages in all regions except in the West Central region, where most respondents (38%) checked both stocker cattle and cows-replacement heifers.

State average for beginning weight was 460 lb for stocker steers and 447 lb for stocker heifers. On average, the reported rate of gain for steers was greater than the rate of gain for heifers across all regions. The reported state averages were 2.3 lb/day for steers and 2.1 lb/day for heifers. Almost all regions reported gains over 2.0 lb/day. The state stocking rate averages were 2.1 acres/steer and 2.0 acres/heifer. Other statewide stocking rate averages were 3.5 acres/head for cows with fall calves, 3.3 acres/head for cows with spring calves, and 2.9 acres/head for cows only. The reported stocking rates varied across regions.

Krenzer (1994) recommended that grazing should not begin until wheat has developed a coronal root system. The coronal root system, also called secondary root system, anchors the plant, which makes it difficult for grazing animals to uproot it. Furthermore, future growth is not critically affected by leaf removal after this growth stage. In response to the question, “How did you determine when to begin grazing your wheat pasture”, 51% checked visual assessment of top growth (Table 8). This ranged from 32% in the Panhandle to 68% in the South Central & East region. Statewide, 39% reported that they initiated grazing after the root system was anchored. The choice of root system was greatest (60%) in the Panhandle and least (23%) in the South Central & East. Other listed alternatives (calendar date, climate conditions, recommendation of others) were not frequently checked.

Timing of fall-winter grazing termination is critical to successful dual-purpose wheat production. Removing livestock from wheat prior to the first hollow stem growth stage in ungrazed exclosures is important to enable grain production (Croy; Redmon et al., 1996). Studies have shown that net return per acre to a dual-purpose enterprise declines significantly if grazing continues beyond the presence of first hollow stem (Krenzer, 2000b). The stem will not elongate in heavily grazed wheat, hence the first hollow stem stage of growth must be determined in ungrazed wheat of the same variety and planting date as the wheat being grazed (Krenzer, 1994).

Table 9 includes a summary of the responses to the question about the most important factor producers used to determine when to terminate fall-winter grazing. Only 17% of the respondents indicated that they used the first hollow stem stage of ungrazed wheat to terminate grazing, while 14% identified first hollow stem stage of grazed wheat. Though calendar date of the first hollow stem stage can vary considerably from year to year (Christiansen et al.), the

majority (58%) of respondents checked that they used calendar date to determine when to terminate grazing. Very few respondents (2%) relied upon the recommendation of someone else. The responses across regions were similar to the state percentages. Statewide, the average date on which livestock were removed from dual-purpose wheat was March 3.

### *Wheat Pasture Grazing Lease Arrangements*

The USDA reported that 43% of the farmland in the U.S. was operated under lease agreements in 1992 compared with 35% in 1950. An attempt was made to identify some of the common lease arrangements used for wheat pasture grazing in Oklahoma. Wheat pasture leasing may be a good option to many wheat producers, since they can reduce financial risk by not owning the livestock.

The majority (58%) of the respondents, who indicated that they were involved in renting or leasing fall-winter wheat pasture, were wheat producers. These individuals produced the wheat and leased the wheat pasture to someone else. However, 29% were livestock owners, who rented pasture from a wheat producer and stocked their cattle on wheat pasture. In addition, 13% of the respondents checked both livestock owner and wheat producer.

Legal experts recommend that producers have a written wheat pasture lease agreement, preferably drafted by an attorney (Tilley). However, the survey results showed that about 90% of the lease contracts statewide were oral and only 10% were written. In every region, more than 80% of the leases were oral. The majority (63%) reported that the land had been leased for multiple years, while 38% reported a single year lease. On average, the multiple year leases extended for more than seven years.

Some respondents reported a combination of rental pricing methods. This suggests that some producers may have more than one lease arrangement. The methods of rate per

hundredweight per month (\$/cwt/month) and rate per pound of gain (\$/lb of gain) were overwhelmingly popular for renting fall-winter grazing in all regions. The state average fall-winter grazing rental rates were \$2.74 for \$/cwt/month and \$0.32 for the \$/lb of gain method. The most widely used rental method for graze-out acreage was \$/lb of gain, followed by \$/acre/year and \$/cwt/month. Other methods were not common. The state averages were \$74 for \$/acre/year, \$2.84 for \$/cwt/month, and \$0.32 for \$/lb of gain. There were no noteworthy differences between the average rental prices of fall-winter grazing and graze-out for the \$/cwt/month and \$/lb of gain methods.

### **Summary and Conclusions**

Wheat is by far the number one crop in Oklahoma. Because of the soil and climate farmers in Oklahoma and other surrounding states in the Southern Great Plains may produce wheat for three purposes: grain-only, forage-only, and dual-purpose (forage plus grain). The United States Department of Agriculture does not report data on the proportion of wheat acres used for each of the three purposes in Oklahoma. There is also little information available on some important actual wheat production practices, such as seeding rate, planting date, fertilizer application, that vary according to the intended use of wheat.

Successful dual-purpose wheat production requires comprehensive information on interactions between various production and management inputs. While research information is available on specific segments of the overall dual-purpose system, comprehensive evaluation of the economics of alternative production and management strategies are not well documented. The objectives of this study were to determine the proportion of wheat grown for each of the three purposes in Oklahoma, to analyze the production practices across the intended use of

wheat, to identify the livestock management practices on wheat pasture and lease arrangements for wheat pasture grazing in Oklahoma.

A self-administered mail survey of Oklahoma wheat farms was the primary source of data for the study. To account for the variability of practices due to weather and soil, in different parts of Oklahoma, the state was divided into six regions. Regional differences in precipitation affect production and management practices of wheat and livestock producers. Usually, greater rainfall regions use more acreage for wheat forage production. Seeding rates, planting dates, nitrogen use, and stocking rates varied from region to region.

Statewide, the respondents intended to use 31% of the wheat acreage for grain-only, 20% for forage-only and 49% for dual-purpose, but actually ended up using 39%, 22% and 39%, respectively. Weather constraints were probably the main reason for the difference between the intended and the actual percentages. Based upon the survey, in comparison to a 1995-96 survey, the respondents intended and actually used more acreage for forage-only in 1999-2000. The difference may be related to changes in the relative prices of wheat and cattle and to changes resulting from the 1996 Federal Agricultural Improvement and Reform act.

To manage risks and income variability, many wheat producers diversify by using their wheat acreage for more than one purpose. The survey showed that 61% of the respondents intended to grow wheat for more than one purpose. The results also highlight the importance of the use of wheat for forage. Stocker cattle and cows-replacement heifers were by far the most common livestock species that grazed on 1999-2000 wheat pasture.

Leasing wheat pasture is attractive to many. Approximately 90% of the statewide lease contracts were reported to be oral rather than written. This suggests that a substantial amount of trust prevails between landlords and tenants perhaps a result of long-term acquaintances. The

rental method of rate per pound of gain (\$/lb of gain) was a popular arrangement for renting both fall-winter grazing and graze-out acreage. The average rate for both of them was \$0.32/lb of gain.

The study findings enhance understanding of the actual practices of wheat and livestock producers in Oklahoma. This information will be useful in identifying the issues that need to be addressed in extension and research programs. It was determined that producers do differentiate seeding rates, planting dates, and nitrogen uses according to the intended use of wheat. However, in most cases, the differences were not as much as recommended by the research and extension specialists. The reported seeding and nitrogen rates were less than recommended for forage-only and dual-purpose operations by a large margin.

Based upon the responses, the majority of producers do not use recommended indicators to decide on initiation and termination of grazing in the dual-purpose system. All these factors might have contributed to lower than optimal yields and net incomes, especially in the dual-purpose wheat enterprises.

Emphasis on wheat forage as a vital income source will warrant more studies on risk analysis, comparative economic returns and efficient combinations of the potential three uses of wheat production. Wheat variety development research should continue the effort to select dual-purpose varieties for maximization of net income from the production of both forage and grain.. Research on the moral hazard issue in the division of input responsibilities in agricultural lease agreements and its consequences from the economic efficiency point of view need to be addressed. Investment in research and extension programs is critical to improve the profitability and reduce financial risks associated with dual-purpose wheat production.

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**Table 1. Percent of wheat acres planted for intended use of grain-only, forage-only, and dual-purpose by region in Oklahoma, 1999-2000.**

<b>REGION</b>	<b>Grain-only</b>	<b>Forage-only</b>	<b>Dual-Purpose</b>
<b>Panhandle</b>	45	10	45
<b>West Central</b>	16	23	61
<b>Southwest</b>	27	25	48
<b>North Central</b>	46	9	45
<b>Central</b>	16	30	54
<b>South Central &amp; East</b>	30	49	21
<b>STATE</b>	<b>31</b>	<b>20</b>	<b>49</b>

**Table 2. Percent of wheat acres actually used for grain-only, forage-only, and dual-purpose by region in Oklahoma, 1999-2000.**

<b>REGION</b>	<b>Grain-only</b>	<b>Forage-only</b>	<b>Dual-Purpose</b>
<b>Panhandle</b>	53	15	32
<b>West Central</b>	29	25	46
<b>Southwest</b>	36	25	39
<b>North Central</b>	51	11	38
<b>Central</b>	22	30	48
<b>South Central &amp; East</b>	30	49	21
<b>STATE</b>	<b>39</b>	<b>22</b>	<b>39</b>

**Table 3. Average seeding rate across intended use by region (lb/acre).**

<b>REGION</b>	<b>Grain-only</b>	<b>Forage-only</b>	<b>Dual-Purpose</b>
<b>Panhandle</b>	52 <sup>a</sup>	73 <sup>b</sup>	61 <sup>c</sup>
<b>West Central</b>	80 <sup>a</sup>	89 <sup>b</sup>	86 <sup>b</sup>
<b>Southwest</b>	81 <sup>a</sup>	90 <sup>b</sup>	89 <sup>b</sup>
<b>North Central</b>	77 <sup>a</sup>	85 <sup>b</sup>	81 <sup>b</sup>
<b>Central</b>	87 <sup>a</sup>	99 <sup>b</sup>	90 <sup>a</sup>
<b>South Central &amp; East</b>	96 <sup>a</sup>	109 <sup>b</sup>	108 <sup>b</sup>
<b>STATE</b>	<b>77<sup>a</sup></b>	<b>94<sup>b</sup></b>	<b>84<sup>c</sup></b>

Note: Means with common lettered superscript within each row (region) are not statistically different from each other at  $\alpha = 0.05$ .

**Table 4. Target planting date across intended use by region.**

<b>REGION</b>	<b>Grain-only</b>	<b>Forage-only</b>	<b>Dual-Purpose</b>
<b>Panhandle</b>	9/23 <sup>a</sup>	9/9 <sup>b</sup>	9/16 <sup>b</sup>
<b>West Central</b>	9/30 <sup>a</sup>	9/12 <sup>b</sup>	9/20 <sup>c</sup>
<b>Southwest</b>	10/5 <sup>a</sup>	9/16 <sup>b</sup>	9/22 <sup>b</sup>
<b>North Central</b>	10/4 <sup>a</sup>	9/15 <sup>b</sup>	9/22 <sup>c</sup>
<b>Central</b>	10/4 <sup>a</sup>	9/12 <sup>b</sup>	9/20 <sup>c</sup>
<b>South Central &amp; East</b>	10/5 <sup>a</sup>	9/13 <sup>b</sup>	9/15 <sup>b</sup>
<b>STATE</b>	<b>10/2<sup>a</sup></b>	<b>9/13<sup>b</sup></b>	<b>9/20<sup>c</sup></b>

Note: Means with common lettered superscript within each row (region) are not statistically different from each other at  $\alpha = 0.05$ .

**Table 5. Actual 1999 planting date across intended use by region.**

REGION	Grain-only	Forage-only	Dual-Purpose
Panhandle	10/6 <sup>a</sup>	9/27 <sup>a</sup>	9/28 <sup>a</sup>
West Central	10/11 <sup>a</sup>	9/25 <sup>b</sup>	10/3 <sup>a</sup>
Southwest	10/16 <sup>a</sup>	9/28 <sup>b</sup>	10/2 <sup>b</sup>
North Central	10/9 <sup>a</sup>	9/24 <sup>b</sup>	9/29 <sup>c</sup>
Central	10/12 <sup>a</sup>	9/22 <sup>b</sup>	9/26 <sup>b</sup>
South Central & East	10/8 <sup>a</sup>	9/21 <sup>b</sup>	9/24 <sup>b</sup>
<b>STATE</b>	<b>10/10<sup>a</sup></b>	<b>9/24<sup>b</sup></b>	<b>9/30<sup>c</sup></b>

Note: Means with common lettered superscript within each row (region) are not statistically different from each other at  $\alpha = 0.05$ .

**Table 6. Actual average nitrogen applied across intended use by region (lb/acre).**

REGION	Grain-only	Forage-only	Dual-Purpose
Panhandle	42 <sup>a</sup>	50 <sup>a b</sup>	56 <sup>b</sup>
West Central	66 <sup>a</sup>	63 <sup>a</sup>	64 <sup>a</sup>
Southwest	67 <sup>a</sup>	72 <sup>a</sup>	74 <sup>a</sup>
North Central	63 <sup>a</sup>	66 <sup>a</sup>	69 <sup>a</sup>
Central	67 <sup>a</sup>	74 <sup>a</sup>	74 <sup>a</sup>
South Central & East	75 <sup>a</sup>	78 <sup>a</sup>	88 <sup>a</sup>
<b>STATE</b>	<b>63<sup>a</sup></b>	<b>69<sup>b</sup></b>	<b>69<sup>b</sup></b>

Note: Means with common lettered superscript within each row (region) are not statistically different from each other at  $\alpha = 0.05$ .

**Table 7. Fall-winter wheat pasture use by livestock type, 1999-2000 (%).**

<b>REGION</b>	<b>Stocker Cattle</b>	<b>Cows and/or Replacement Heifers</b>	<b>Both Stocker Cattle and Cows/Replacement Heifers</b>	<b>Sheep</b>	<b>Dairy Cattle</b>	<b>Horses</b>	<b>Other</b>
<b>Panhandle</b>	56	24	18	0	1	0	1
<b>West Central</b>	35	19	38	2	1	5	0
<b>Southwest</b>	37	24	34	1	1	2	1
<b>North Central</b>	52	18	24	1	0	2	3
<b>Central</b>	40	21	28	2	4	4	1
<b>South Central &amp; East</b>	41	28	21	1	4	4	1
<b>STATE</b>	<b>42</b>	<b>22</b>	<b>28</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>

**Table 8. Factors that producers used to determine when to begin grazing wheat (%).**

<b>REGION</b>	<b>Calendar Date</b>	<b>Assessment Of Top Growth</b>	<b>Climate Conditions</b>	<b>Anchored Root System</b>	<b>Recommendations</b>	<b>Other</b>
<b>Panhandle</b>	0	32	8	60	0	0
<b>West central</b>	3	41	6	48	0	2
<b>Southwest</b>	2	59	4	34	0	1
<b>North Central</b>	5	41	6	45	1	2
<b>Central</b>	3	58	6	31	0	2
<b>South Central &amp; East</b>	1	68	5	23	1	2
<b>STATE</b>	<b>2</b>	<b>51</b>	<b>6</b>	<b>39</b>	<b>0</b>	<b>2</b>

**Table 9. Factors that producers used to determine when to terminate fall-winter grazing (%).**

<b>REGION</b>	<b>Calendar Date</b>	<b>First hollow stem stage of ungrazed wheat</b>	<b>First hollow stem stage of grazed wheat</b>	<b>Recommendations of others</b>	<b>Other</b>
<b>Panhandle</b>	47	25	13	0	14
<b>West central</b>	60	18	14	1	7
<b>Southwest</b>	68	11	13	3	5
<b>North Central</b>	57	22	12	2	7
<b>Central</b>	57	14	15	3	11
<b>South Central &amp; East</b>	50	13	13	2	22
<b>STATE</b>	<b>58</b>	<b>17</b>	<b>14</b>	<b>2</b>	<b>10</b>

**Table 10. Lease agreements for fall-winter wheat pasture grazing.**

REGION	Livestock	Wheat		Oral	Written	Average	One-year	Multi-year	Average
	Owner %	Producer %	Both %	Lease %	Lease %	Acres	Lease %	Lease %	year of Multi- year Lease
<b>Panhandle</b>	35*	50*	15*	96	4	432	35	65	9.23
<b>West Central</b>	21	68	12	90	10	259	41	59	6.64
<b>Southwest</b>	24	67	9	83	17	321	28	72	8.00
<b>North Central</b>	26	62	12	89	11	325	52	48	8.25
<b>Central</b>	46	42	13	91	9	212	44	56	5.60
<b>South Central &amp; East</b>	30	50	20	91	9	297	21	79	6.87
<b>STATE</b>	<b>29</b>	<b>58</b>	<b>13</b>	<b>90</b>	<b>10</b>	<b>303</b>	<b>38</b>	<b>63</b>	<b>7.42</b>

\* Example: In the Panhandle region, 35% of the respondents were the livestock owner, 50% were the wheat producer and 15% were both.