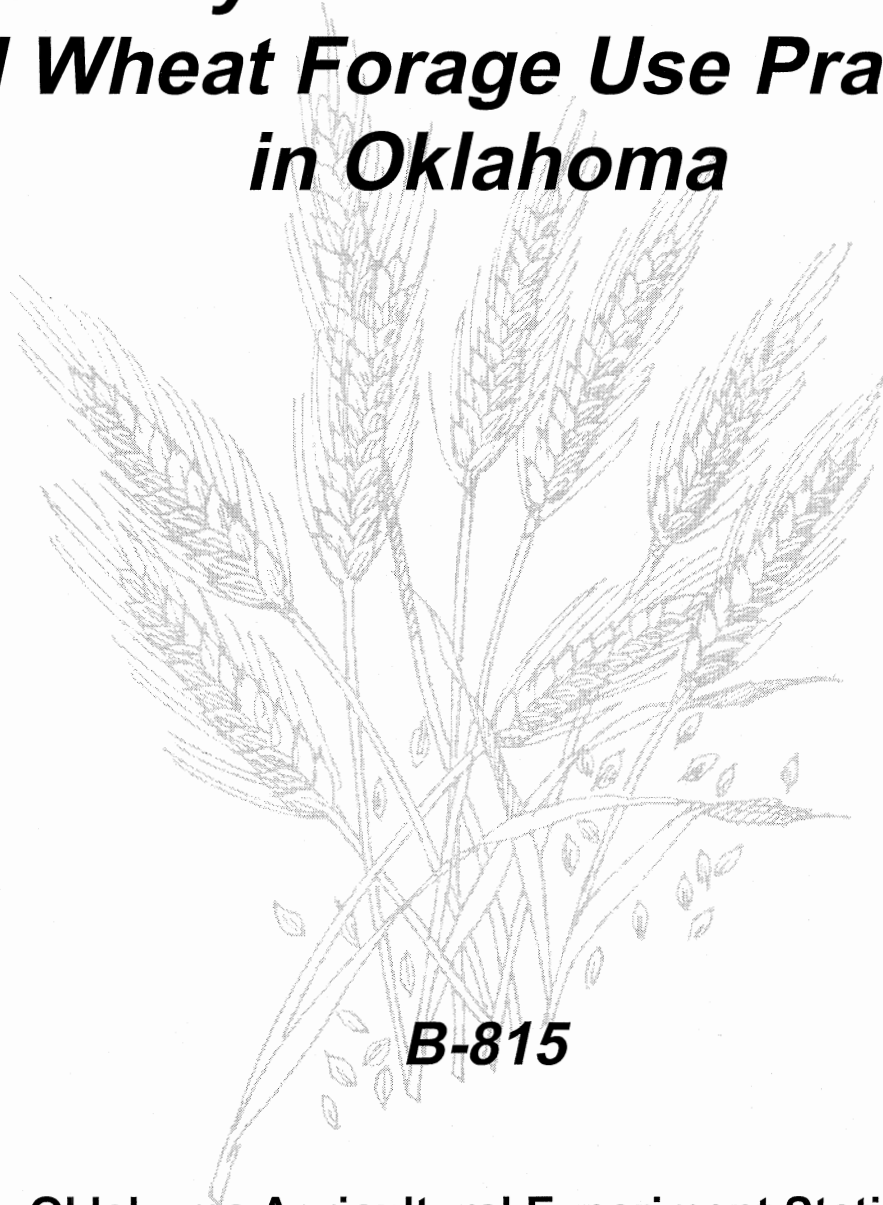


***A Survey of Wheat Production
and Wheat Forage Use Practices
in Oklahoma***



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**Oklahoma Agricultural Experiment Station
Division of Agricultural Sciences and Natural Resources
Oklahoma State University**

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A Survey of Wheat Production and Wheat Forage Use Practices in Oklahoma

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Introduction

Winter wheat may be grown as a forage-only crop, as a grain-only crop, or as a dual-purpose winter forage and grain crop (Christiansen, et al., 1989; Fitzgerald et al., 1995; Redmon et al., 1995; Saberi, 1993; Washko, 1947). However, in the United States no differentiation in use has been made in data collected and reported by the United States Department of Agriculture (USDA 2000). USDA provides annual estimates of the acres planted to wheat and the acres harvested for wheat grain. However, they do not report the proportion of wheat acres used for each of the three purposes (grain-only; forage-only; forage and grain). They also do not report the total number of acres that are winter grazed, and they do not provide estimates of the number and class of animals stocked on wheat pasture. The USDA provides annual estimates of the cost to produce wheat grain. However, they do not differentiate between wheat grain produced in a grain-only system and wheat grain produced in a forage and grain system. Pinchak et al. (1996) estimate that 30 to 80% of the wheat acres in the Southern Great Plains are grazed and that 10 to 20% are used exclusively for forage and grazed out. However, precise estimates of the quantity of land seeded to wheat in the Southern Plains that is also grazed by livestock during the fall and winter are not available.

Winter wheat production and livestock grazing on wheat pasture constitute a major component of the Southern Plains agricultural economy (Christiansen, et al., 1989; Fitzgerald et al., 1995; Redmon et al., 1995; Saberi, 1993; Washko, 1947). Winter wheat grazing is important to the agri-

cultural economies of Kansas (Shroyer et al., 1993), New Mexico (Ralphs et al., 1997), Oklahoma (Redmon et al., 1995), and Texas (Pinchak et al., 1996). Many light weight calves are shipped to the Southern Plains from the Southeast, Midwest, and West to graze winter pastures (Brorsen et al., 1994). After wintering on wheat pasture, these calves are fed to slaughter weight in feedlots in the Southern Plains.

Production of wheat for both forage and grain, and grazing of wheat, is a complicated process involving the interaction of livestock production with wheat grain production. A number of research projects have been conducted that address management practices for specific components of the overall production system. Historically, wheat variety development efforts in the region have concentrated on grain production (Carver et al., 1991; Winter and Thompson, 1990). Research has also been conducted to evaluate grazing initiation and termination (Krenzer, 1995; Winter and Thompson, 1990). Stocker cattle research has focused on bloat (Andersen et al., 1987; Bartley et al., 1975; Horn and Frost, 1982), supplementation (Andrae et al., 1995; Coulibaly et al., 1996; Horn et al., 1995) and efforts to develop self-limiting supplements containing an ionophore (Paisley and Horn, 1996; Paisley et al., 1997). However, little effort has been devoted to determine comprehensive strategies to optimize returns to a farm family's resources devoted to the production of winter wheat and livestock grazing on wheat pasture.

An informal survey of Oklahoma state extension personnel, farmers, and others was conducted in 1973-74 by Harwell et al. (1976) to obtain information regarding wheat grazing practices. Walker et al. (1988) conducted a formal but nonrandom survey of 48 selected producers in the summer of 1987. These surveys provided

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information regarding wheat-grazing practices used by the selected group of farmers, but were not random and did not provide information regarding the proportion of wheat used for each of the three purposes. Since the data were not drawn from a representative sample of wheat producers, the information could not be used to conduct hypothesis tests regarding differences in production practices across intended use.

Some wheat production practices are similar for the three production classifications. For example, the same machinery may be used for tillage, seeding, and grain harvesting. However, some economically important production and management practices may differ depending upon the intended use of the crop. At a given location, wheat intended for forage-only should be seeded earlier in the fall than wheat intended for grain-only (Winter and Musick, 1993). A higher seeding rate is recommended for a forage-only relative to a grain-only crop (Krenzer, 1995). Some work has been conducted to evaluate differences in performance of varieties across use (Carver et al., 1991; Fitzgerald et al., 1995). Thus, the most economical variety, planting date, fertility program, weed control system, and seeding rate may differ depending upon intended use (Krenzer et al., 1992). However, little more than anecdotal information is available regarding actual production practices.

Objectives

The objectives of the research reported in this bulletin are to determine practices used by producers. One specific objective is to determine the proportion of Oklahoma wheat grown for each of the three purposes, and determine if wheat production practices differ across intended use. Another purpose is to determine wheat pasture livestock management practices and wheat pasture leasing arrangements. The results of the study provide information regarding production practices. The report will provide guidance for research and extension workers to focus their efforts on the economically important practices that deviate substantially from recommendations.

Procedure

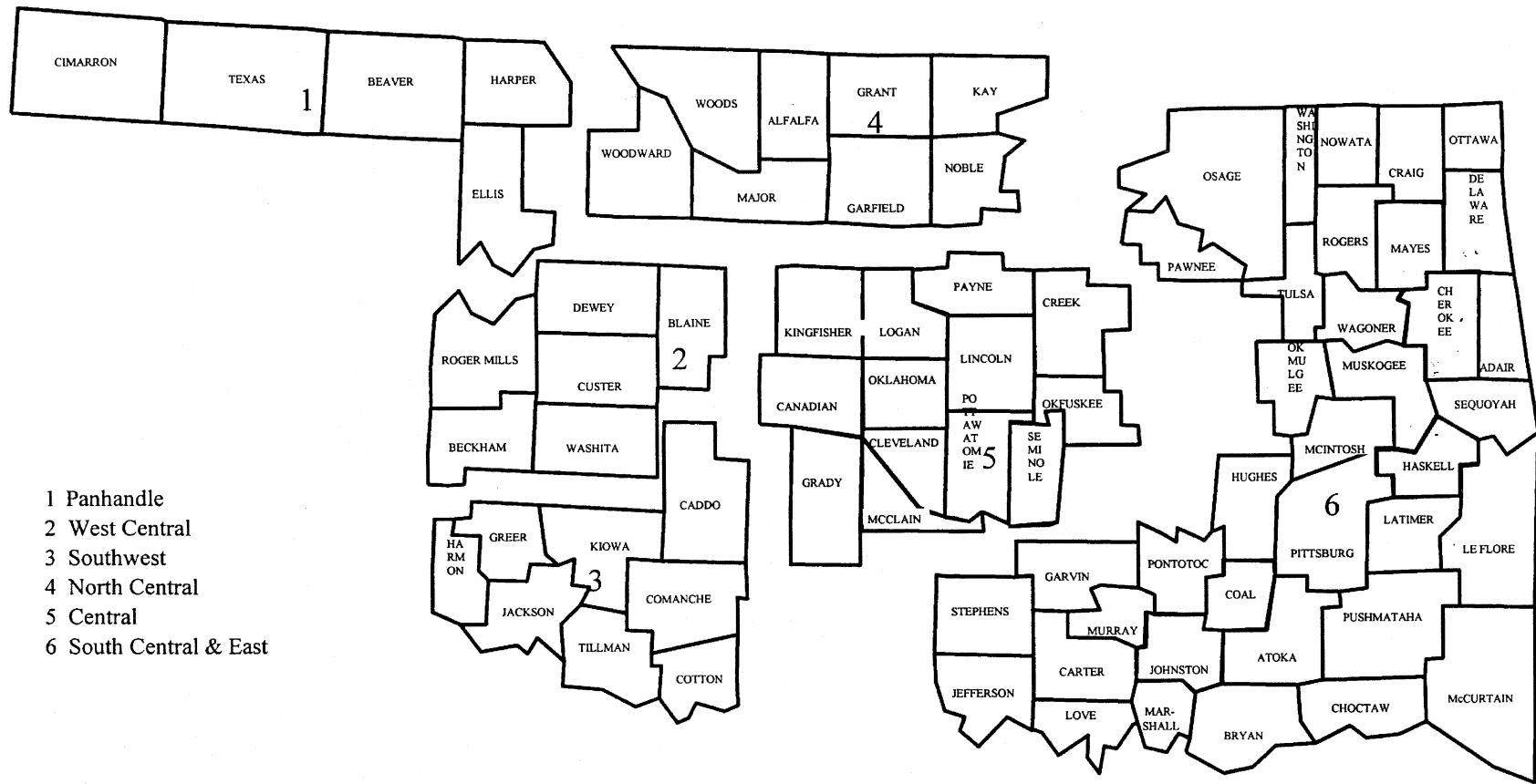
A preliminary survey form was developed, tested, and revised. The final edit of the questionnaire was conducted in cooperation with agricultural statisticians of the Oklahoma Agricultural Statistics Service (OASS). For purposes of the mailed survey, the state was divided into six regions (Figure 1). Five of these regions correspond with the five Oklahoma crop reporting districts—Panhandle, West Central, Southwest, North Central, and Central. The sixth region included the four remaining crop reporting districts—South Central, Northeast, East Central, and Southeast. A copy of the questionnaire is included in the Appendix.

A sample of 4,801 Oklahoma producers was randomly drawn from the OASS database. Approximately 800 producers were selected from each of the six regions. Surveys were mailed in March of 1996. A reminder postcard was mailed one week after the survey. A total of 971 usable surveys were returned—20% of the total mailed. More than 150 responses were received from each of the five major wheat producing regions. Analysis of variance and multiple mean comparison procedures were used to determine if production practices differed across intended use and across region (SAS, 1988).

Weather

The Palmer Drought Severity Index (PDSI) is a meteorological index used to assess the severity of dry or wet spells of weather. Monthly PDSI values are generated by the U.S. Weather Bureau for each crop reporting district. PDSI values range from 0 to -0.5 = normal; -0.5 to -1.0 = incipient drought; -1.0 to -2.0 = mild drought; -2.0 to -3.0 = moderate drought; -3.0 to -4.0 = severe drought. Similar adjectives are attached to positive values of wet spells.

August and September of 1995 were abnormally wet in the major wheat producing regions of Oklahoma (North Central Oklahoma PDSI = 4.87 in August and 4.47 in September). This abnormally wet weather was followed by abnor-



- 1 Panhandle
- 2 West Central
- 3 Southwest
- 4 North Central
- 5 Central
- 6 South Central & East

Figure 1. Oklahoma Wheat Producing Regions

Source: Regions 1 through 5 correspond with agricultural statistics districts as defined by the Oklahoma Agricultural Statistics Service. Region 6 includes four districts: South Central, Northeast, East Central, and Southeast.

mally dry weather and by February of 1996 the North Central Oklahoma PDSI had declined to -1.56 indicating a mild drought (National Climate Data Center). The wet weather in September delayed planting of wheat intended for forage only and dual purpose use. For most of the state, this wet weather was followed by a drought that extended through much of the 1995-96 growing season. In some locations delayed planting followed by limited rainfall reduced fall and winter forage production to less than historical averages.

Wheat Production Practices

Table 1 includes the number of returned surveys, respondents' wheat acres, total Oklahoma wheat acres, and the percent of the total wheat acres included in the survey by region. A total of seven million Oklahoma acres were planted to wheat during the fall of 1995 for the 1996 wheat crop. The 971 survey respondents farmed 6% of these acres.

Table 2 includes a summary of responses to the following question: "How many of your 1995-96 wheat acres were planted for each purpose: grain only (never intended to graze the wheat); full-season grazing (planned to graze from November through May with no grain harvest intended); grain plus forage (planned to graze

in the fall and winter and harvest the grain). For the state, 25% of the acres were intended for grain-only production, 9% for forage-only, and 66% for forage and grain. In the North Central region 37% was intended for grain-only production. In the South Central and East, 41% was intended for forage-only production. In the West Central region, 84% was intended for dual purpose use. However, only 26% was intended for dual purpose use in the South Central and East.

Producers were also asked how the acres were actually used for the 1995-96 season. These re-

Table 2. Percent of wheat planted for intended use of grain-only, forage-only, and forage and grain by region in Oklahoma, 1995-96.

<i>Region</i>	<i>Grain-only</i>	<i>Forage-only</i>	<i>Forage and Grain</i>
Panhandle	33%	4%	63%
West Central	10%	5%	84%
Southwest	16%	16%	68%
North Central	37%	5%	58%
Central	19%	10%	70%
South Central & East	33%	41%	26%
State	25%	9%	66%

Table 1. Number of responses, number of acres included in survey, and size of survey relative to total acreage.

<i>Region</i>	<i>Responses</i>	<i>1996 Wheat Acres of Respondents</i>	<i>Total 1996 Oklahoma Wheat Acres</i>	<i>Percent of Total Acres Included in Survey</i>
Panhandle	179	78,105	1,070,000	7
West Central	172	75,536	1,090,000	7
Southwest	153	69,493	1,400,000	5
North Central	169	95,871	2,150,000	4
Central	175	50,719	823,000	6
South Central & East	123	22,129	467,000	5
Total	971	391,853	7,000,000	6

sults are summarized in Table 3. Producers reported that they had intended to use 66% of the acres for forage and grain but ended up using only 41% for that purpose. No question on the survey instrument was designed to determine why actual acreage differed from intentions. However, the difference between intended and actual use may be attributed to the weather. A wet summer delayed planting for most of the state. This was followed by a drought that extended through much of the 1995-96 growing season. In some locations, late planting followed by limited rainfall reduced fall and winter forage production to less than historical averages.

Farmers reported that they had intended to use 25% for grain-only. They actually used 50% for grain-only. Both the intended use and actual use reported for forage-only was 9%. Thus, the data show that farmers did not harvest for grain 9% of the acres (630,000 acres) seeded to wheat. They planned to harvest 91% for grain, and had planned to graze 60% of the wheat intended for grain harvest. However, only 45% of the wheat harvested for grain was grazed.

Ten percent indicated that they planted a crop such as rye or ryegrass with wheat on some wheat acres (Table 4). A seed combination was used on 3% of the total acres. In other words, about a third of the land seeded to produce forage-only was not exclusively seeded to wheat. About 16%

Table 3. Percent of wheat used for grain-only, forage-only, and forage and grain by region in Oklahoma, 1995-96.

<i>Region</i>	<i>Grain-only</i>	<i>Forage-only</i>	<i>Forage and Grain</i>
Panhandle	61%	4 %	35%
West Central	44 %	9%	47%
Southwest	38%	15 %	47%
North Central	59%	3%	37%
Central	46 %	10 %	44%
South Central & East	39 %	37 %	23%
State	50%	9%	41%

Table 4. Percent of respondents who indicated that a crop such as rye or ryegrass was planted with wheat on some acres and percent of total wheat acres that included a mixture.

<i>Region</i>	<i>Did you plant any other crop with the wheat, such as rye or ryegrass? Yes</i>	<i>Wheat acres that included a combination</i>
Panhandle	3.4%	0.9%
West Central	8.2%	2.8%
Southwest	4.7%	0.5%
North Central	7.3%	2.7%
Central	14.3%	4.5%
South Central & East	26.3%	15.9%
State	9.9%	2.9%

of the "wheat" acres planted in the South Central and East region included some crop in combination with wheat. This confirms that some land seeded to wheat and reported as wheat in the agricultural statistics was never intended to be harvested as a grain crop.

Table 5 includes a summary of the actual average nitrogen applied per acre across intended use by region and for the state. Statistical analysis was conducted to determine if nitrogen application differed across intended use and across region. An average of 78 lbs./acre of actual nitrogen was applied to acres intended for forage-only production. This quantity was greater (P < 0.05) than that reported for grain-only (66 lbs./acre) and forage and grain production (70 lbs./acre). The amount applied to acres intended for both forage and grain and grain-only is not statistically different in any region or at the state level.

The greatest reported level of nitrogen use is for forage-only production in the South Central and East region (99 lbs./acre). These are the regions of highest rainfall and the regions of greatest

Table 5. Actual average nitrogen applied across intended use by region in Oklahoma, 1995-96 (lb/acre).

<i>Region</i>	<i>Grain-only</i>	<i>Forage-only</i>	<i>Forage and Grain</i>
Panhandle	55 ^{a†}	39 ^a	55 ^a
West Central	62 ^a	61 ^a	74 ^a
Southwest	80 ^a	75 ^a	74 ^a
North Central	59 ^b	77 ^a	68 ^{ab}
Central	66 ^b	83 ^a	75 ^{ab}
South Central & East	87 ^a	99 ^a	78 ^a
State	66 ^b	78 ^a	70 ^b

† Means with a common lettered superscript within region (row) are not different at P £ 0.05.

expected benefits from the use of nitrogen. It is also the region in which 41% was intended for forage-only use. The least amount of nitrogen use (39 lbs./acre) is reported for the forage-only acres in the Panhandle—the most arid region.

Table 6 includes a summary of seeding rates across intended use by region. In all regions the seeding rate is greater (P £ 0.05) for wheat intended for forage-only than for wheat intended for grain-only. In the North Central, Central, South Central, and East regions the seeding rate is greater (P £ 0.05) for wheat intended for forage and grain than for wheat intended for grain-only. The greatest reported average seeding rate is for the relatively high rainfall South Central and East Region for each intended use. Alternatively, the lowest average seeding rate is reported for the relatively low rainfall Panhandle region.

The state average reported forage-only seeding rate of 90 lbs./acre is greater (P £ 0.05) than the state average reported seeding rate of 79 lbs./acre for the forage and grain acres. The reported rate for forage and grain is greater than that reported for the grain-only acres (72 lbs./acre).

Respondents were asked to report their target and actual 1995-96 wheat planting dates. Results for the target date are reported in Table 7. Significantly different (P £ 0.05) state average

Table 6. Average seeding rate across intended use by region (lb/acre).

<i>Region</i>	<i>Grain-only</i>	<i>Forage-only</i>	<i>Forage and Grain</i>
Panhandle	48 ^{b†}	59 ^a	54 ^{ab}
West Central	78 ^b	86 ^a	83 ^{ab}
Southwest	81 ^b	88 ^a	84 ^{ab}
North Central	69 ^b	79 ^a	76 ^a
Central	85 ^b	94 ^a	90 ^a
South Central & East	96 ^b	110 ^a	107 ^a
State	72 ^c	90 ^a	79 ^b

† Means with a common lettered superscript within region (row) are not different at P £ 0.05.

Table 7. Target planting date across intended use by region.

<i>Region</i>	<i>Grain Only</i>	<i>Forage Only</i>	<i>Forage and Grain</i>
Panhandle	9/16 ^{a†}	9/03 ^c	9/11 ^b
West Central	9/24 ^a	9/09 ^c	9/17 ^b
Southwest	10/02 ^a	9/18 ^b	9/22 ^b
North Central	9/29 ^a	9/10 ^c	9/17 ^b
Central	9/30 ^a	9/11 ^c	9/16 ^b
South Central & East	10/06 ^a	9/07 ^c	9/17 ^b
State	9/27 ^a	9/10 ^c	9/17 ^b

† Means with the same single letter within region (row) are not different at P £ 0.05.

target planting dates of September 10, September 17, and September 27 were reported for forage-only, forage and grain, and grain-only uses. In each region, the target planting date is significantly later for grain-only than for forage-only. In all regions but the Southwest, the target planting date is significantly later for forage and grain than for forage-only. These data suggest that, on the average, farmers plant wheat intended for

forage-only first, followed by that intended for both forage and grain. Wheat intended for grain-only production is planted last. This would enable farmers who plant some wheat for each purpose to use their tillage and planting machinery over a relatively long period of time. The average difference between the mean planting dates for forage-only and grain-only is 17 days.

Weather patterns often prevent producers from conducting field operations, including planting, when they would prefer to do so. Actual planting dates for the 1995-96 crop are reported in Table 8. The state average actual planting date for the forage-only crop of September 23 was earlier ($P \leq 0.05$) than that for the forage and grain crop which was October 1. The average planting date for the grain-only crop was October 7. The average difference between the actual mean planting dates for the forage-only and grain-only crop of 14 days was similar to the average mean difference reported for the targeted planting dates.

Results show that 72% of the producers indicated that grain yield was either the first, second, or third most important characteristic determining what varieties to plant. Forage yield was the next most popular characteristic with 52% of the producers reporting it as either the first, second, or third most important character-

istic (Table 9). In the Southwest region 78% of the producers indicated that grain yield was either the first or second most important characteristic. But, in the South Central and East region only 46% of producers indicated grain yield to be the first or second most important characteristic compared to forage yield (62%).

Producers were asked to rank the sources of information in order of importance when selecting which wheat variety to plant. The following choices were provided: area test plot results, results of neighboring fields, seed availability, past performance on my farm, research publications, area extension service, seed company information, and other. Eighty-two percent of the respondents indicated that past performance was either the first, second, or third most important source of information when determining the varieties to plant. Neighboring fields (58%) was the second most popular source of information. Area test plot results (47%), seed availability (46%), and research publications (38%) were also important sources of information (Table 10).

Early jointing or the first sign of jointing in wheat is an important stage in wheat growth especially for forage and grain producers. Redmon et al. (1996) show that wheat grain yields are substantially reduced if grazing continues after early jointing. Producers were asked which answer best describes their understanding of what the term "early jointing" means in reference to wheat production. The following choices were provided: joint or node above soil, developing head at or above soil, hollow stem above roots, or not familiar with the term. Krenzer (1997) defines the earliest stage of jointing to occur when hollow stem can be identified above the roots. The results from this question indicate that 76% of the dual-purpose (forage and grain) producers were not able to correctly identify the jointing stage of wheat (Table 11).

Diversification in livestock and crop production is often prescribed as a means to manage risk and pest problems, and effectively manage and use unique land, capital, and labor resources. Diversification for income risk management is most effective when the crop and livestock production portfolio includes activities with nega-

Table 8. Actual 1995 planting date across intended use by region.

<i>Region</i>	<i>Grain Only</i>	<i>Forage Only</i>	<i>Forage and Grain</i>
Panhandle	9/28 ^a †	9/20 ^a	9/24 ^a
West Central	10/05 ^a	9/26 ^b	10/04 ^a
Southwest	10/16 ^a	9/29 ^c	10/08 ^b
North Central	10/05 ^a	9/22 ^c	9/28 ^b
Central	10/10 ^a	9/23 ^c	10/01 ^b
South Central & East	10/14 ^a	9/17 ^c	9/28 ^b
State	10/7 ^a	9/23 ^c	10/1 ^b

† Means with the same single letter within region (row) are not different at $P \leq 0.05$.

Table 9. Characteristics of wheat used to determine variety chosen. (Percent for each choice.)

	<i>Panhandle</i>			<i>West Central</i>			<i>Southwest</i>			<i>North Central</i>			<i>Central</i>			<i>South Central & East</i>			<i>State</i>		
	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>
Grain Yield	39	20	8	60	6	6	58	20	3	53	17	5	43	21	7	28	18	3	47	19	6
Forage Yield	13	16	5	17	30	14	20	27	10	15	17	7	31	24	5	46	16	5	22	22	8
Past Success	6	6	10	6	5	14	6	7	22	6	7	10	5	9	13	7	9	21	6	7	14
Test Weight	4	10	13	6	12	14	5	9	16	9	17	11	4	11	15	3	11	7	5	12	13
Drought	16	15	13	2	6	5	2	10	6	2	5	7	1	5	6	1	6	4	5	8	7
Winter Hardy	4	8	14	2	5	5	1	5	6	1	5	7	4	7	11	6	9	13	3	6	9
Disease	3	3	7	1	4	9	2	6	5	5	5	11	3	6	9	2	7	8	3	5	8
Other	2	0	1	1	1	1	2	0	1	2	0	1	1	0	0	4	1	3	2	0	1
Height	4	5	4	1	5	3	1	2	4	0	3	8	1	4	4	1	5	7	1	4	5
Insect	3	3	4	1	4	4	1	2	3	1	3	5	1	4	6	1	7	7	1	4	5
pH Tolerance	1	0	1	2	1	8	0	2	1	1	3	11	2	1	6	2	1	4	1	1	6
Lodging	1	1	2	1	2	3	0	2	3	1	2	3	3	1	6	0	2	3	1	2	3
Coleoptile	1	3	5	1	2	4	1	1	3	1	4	5	0	1	2	0	2	5	1	2	4
Shattering	1	2	3	0	1	2	0	2	3	1	2	3	1	1	0	0	1	1	1	2	2
Late Frost	1	2	2	1	1	3	0	0	3	0	3	3	0	1	3	1	3	1	1	2	3
Maturity	1	3	4	0	2	3	0	5	8	1	5	1	1	2	6	0	2	7	0	3	4
Pedigree	1	0	3	0	1	3	0	1	2	1	1	2	0	0	2	0	2	3	0	1	2

Table 10. Sources of information used to determine which variety of wheat to plant. (Percent for each choice.)

	<i>Panhandle</i>			<i>West Central</i>			<i>Southwest</i>			<i>North Central</i>			<i>Central</i>			<i>South Central & East</i>			<i>State</i>			
	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	<i>#1</i>	<i>#2</i>	<i>#3</i>	
Past																						
Performance	65	17	10	43	23	16	57	22	8	40	25	18	48	24	8	49	16	6	50	21	11	
Test Plot	14	8	8	18	14	10	10	17	12	25	15	8	20	11	11	12	7	19	17	15	15	
Neighboring																						
Fields	8	37	21	14	28	20	16	32	14	15	27	17	11	25	24	7	20	26	12	28	18	
Seed Avail.	5	16	26	7	14	23	8	9	32	6	13	19	9	18	25	16	23	18	8	15	23	
Research Pub.	4	13	16	11	13	14	7	12	24	8	10	23	8	9	22	9	11	18	8	11	19	
Extension																						
Service	2	3	14	5	5	9	3	4	4	3	6	8	1	7	7	3	12	6	3	6	8	
Seed Company																						
Info.	1	6	4	2	2	8	1	4	5	2	3	6	2	5	4	3	9	8	2	4	6	
Other	1	0	0	0	0	1	0	1	1	1	0	2	1	0	0	1	1	1	1	0	1	

Table 11. Percentage for each definition of “early jointing” responses across intended use by region.

Region	Develop-			
	Joint or Node Above Soil	ing Head Above Soil	Hollow Stem Above Roots	Not Familiar
GRAIN ONLY				
Panhandle	35%	25%	21%	19%
West Central	16%	21%	11%	53%
Southwest	50%	8%	8%	33%
North Central	30%	19%	11%	41%
Central	38%	13%	13%	38%
South Central & East	47%	20%	13%	20%
State	34%	20%	15%	31%
FULL SEASON GRAZING				
Panhandle	60%	40%	0%	0%
West Central	30%	30%	0%	40%
Southwest	20%	20%	30%	30%
North Central	0%	50%	50%	0%
Central	12%	4%	38%	46%
South Central & East	18%	18%	20%	44%
State	19%	17%	23%	40%
FORAGE PLUS GRAIN				
Panhandle	35%	21%	31%	13%
West Central	36%	18%	23%	23%
Southwest	29%	27%	21%	23%
North Central	34%	22%	19%	26%
Central	28%	22%	31%	19%
South Central & East	33%	28%	11%	28%
State	32%	22%	24%	21%

tively correlated net returns. Negative correlation occurs in years when the returns from one of the activities is relatively low and the returns from an alternative activity are relatively high. In this case, producing a combination of the activities could reduce the variability in net returns over time. Oklahoma farmers could diversify by producing some wheat for forage-only, some wheat for forage and grain, and some wheat for grain-only uses. However, historical farm level data are not available to determine the expected consequences of a diversified portfolio (combination of the three uses) on farm income and variability of income.

Table 12 includes a summary of the percentage of producers in each region, and for the state, and their purposes for growing wheat. More than 73% of those responding indicated that they had intended to grow wheat on their farm for one use. Almost 45% indicated that all the wheat on their farm was intended to be used as a dual-purpose forage and grain crop. In the current context dual purpose is defined as a “single” use. However, producers may view dual-purpose use as a diversification strategy. Seventeen percent indicated that they only grew wheat to produce grain, and twelve percent responded that they grow wheat to produce forage. Only 27% indicated that they grew wheat for more than one of the three uses. Most of these respondents (13%

Table 12. The percent of wheat producers in each region who indicated that they intended to grow wheat for one or for more than one use (%).

Region	Grain-only	Forage	Intended Use				
			Forage & Grain	Grain-only For-only	Grain-only Forage & Grain	Forage-only Forage & Grain	Grain-only Forage-only Forage & Grain
Panhandle	30†	4	46	1	11	5	2
West Central	12	8	50	2	13	11	4
Southwest	10	7	50	3	12	10	8
North Central	20	2	48	1	19	5	5
Central	11	16	46	1	12	11	3
South Central & East	16	47	17	2	7	11	1
State	17	12	44	2	13	9	4

† Row totals may not sum to 100 due to rounding errors.

of the total) indicated that they planted some wheat for grain-only and some for forage and grain. Four percent indicated that they planted some for each of the three uses.

Livestock Production Practices

It was determined that livestock grazed 50% of Oklahoma wheat acres during the 1995-96 growing season. Steers and heifers were stocked on two-thirds of the pastured wheat acres. Cows and replacement heifers were placed on 26% of the acres grazed. The remaining acreage was grazed by sheep (1%), dairy cattle (2%), horses (3%), and other livestock (1%) (Table 13). The highest percentage of wheat grazed by stocker cattle for the 1995-96 growing season was 76% in the North Central region. In the West Central and South Central and East regions, 62% of the acres were grazed by stocker cattle. Cows and replacement heifers grazed more than one-third of the wheat acres in the West Central region but only 20% in the North Central region.

The USDA does not provide estimates of the number and class of animals grazed on wheat pasture. Using the results from the survey and statistics from the Oklahoma Department of Agriculture, an estimate of the number of stocker steers and stocker heifers was derived. Statewide

there were over 518,000 stocker steers (Table 14) and 350,000 stocker heifers (Table 15) on Oklahoma wheat pasture. The North Central region had the highest number of steers with 135,615, while the Panhandle region recorded the fewest steers with 61,963. The Southwest region (83,700) reported the most heifers compared with the Panhandle (42,922). These numbers may have been influenced by the dry weather that persisted throughout the growing season. The lack of moisture may have influenced forage yield and affected the grazing practices used by producers.

Fall and Winter Grazing Practices

Table 16 includes the average beginning weight of steers and heifers when placed on wheat in the fall. The state average was 466 lbs. for steers and 459 lbs. for stocker heifers. The beginning weight for steers ranged from 445 lbs. in the Southwest region to 483 lbs. in the North Central and Central regions. Beginning weight for heifers ranged from 442 lbs. in the West Central region to 485 lbs. in the North Central region. The table also includes the average reported steer and heifer rate of gain. The reported state average rate of gain was 1.9 pounds per day (lbs./d) for steers and 1.8 lbs./d for heifers. The rate of gain for steers was a consistent 1.9 lbs./d across all regions except the Panhandle re-

Table 13. Fall/Winter wheat pasture use by livestock type, 1995-96 (%).

<i>Region</i>	<i>Stocker Cattle</i>	<i>Cows and Replacement Heifers</i>	<i>Sheep</i>	<i>Dairy Cattle</i>	<i>Horses</i>	<i>Other</i>
Panhandle	68 [†]	22	0	3	6	1
West Central	62	34	0	0	2	2
Southwest	69	27	0	0	3	1
North Central	76	20	1	3	0	1
Central	63	25	3	1	6	2
South Central & East	62	30	0	7	2	0
State	67	26	1	2	3	1

[†] Row totals may not sum to 100 due to rounding errors.

Table 14. Estimated number of stocker steers on Oklahoma wheat pasture fall/winter 1995-96.

<i>Region</i>	<i>Total 1996 Oklahoma Wheat Acres</i>	<i>Percent used for Forage †</i>	<i>Wheat Acres Used for Forage</i>	<i>Percent used by Stocker Steers</i>	<i>Wheat Acres Stocked with Stocker Steers</i>	<i>Stocking Rate Acres/Steer</i>	<i>Calculated Number of Steers</i>
Panhandle	1,070,000	39	417,300	49	204,477	3.3	61,963
West Central	1,090,000	56	610,400	40	244,160	3.0	81,387
Southwest	1,400,000	62	868,000	39	338,520	3.0	112,840
North Central	2,150,000	41	881,500	40	352,600	2.6	135,615
Central	823,000	54	444,420	40	177,768	2.5	71,107
South Central & East	467,000	61	284,870	34	96,855	1.5	64,571
State	7,000,000	50	3,500,000	40	1,400,000	2.7	518,519

† Includes both forage and grain and forage only.

Table 15. Estimated number of stocker heifers on Oklahoma wheat pasture fall/winter 1995-96.

<i>Region</i>	<i>Total 1996 Oklahoma Wheat Acres</i>	<i>Percent used for Forage †</i>	<i>Wheat Acres Used for Forage</i>	<i>Percent used by Stocker Heifers</i>	<i>Wheat Acres Stocked with Stocker Heifers</i>	<i>Stocking Rate Acres/Heifer</i>	<i>Calculated Number of Heifers</i>
Panhandle	1,070,000	39	417,300	36	150,228	3.5	42,922
West Central	1,090,000	56	610,400	22	134,288	3.1	43,319
Southwest	1,400,000	62	868,000	27	234,360	2.8	83,700
North Central	2,150,000	41	881,500	28	246,820	3.1	79,619
Central	823,000	54	444,420	22	97,772	1.8	54,318
South Central & East	467,000	61	284,870	32	91,158	1.5	60,772
State	7,000,000	50	3,500,000	26	910,000	2.6	350,000

† Includes both forage and grain and forage only.

Table 16. Fall/Winter grazing cattle weights, rates of gain, and stocking rate.

	<i>Beginning Weight Steers (lbs)</i>	<i>Beginning Weight Heifers (lbs)</i>	<i>Rate of Gain Steers (lbs/day)</i>	<i>Rate of Gain Heifers (lbs/day)</i>	<i>Stocking Rate Steers (acres/hd)</i>	<i>Stocking Rate Heifers (acres/hd)</i>	<i>Stocking Rate Cows with Fall Calves (acres/hd)</i>	<i>Stocking Rate Cows with Spring Calves (acres/hd)</i>	<i>Stocking Rate Cows Only (acres/hd)</i>
Panhandle	459	452	1.8	1.6	3.3	3.5	4.0	3.0	2.0
West Central	459	442	1.9	1.7	3.0	3.1	4.2	4.3	4.3
Southwest	445	448	1.9	1.7	3.0	2.8	4.6	4.0	5.0
North Central	483	485	1.9	2.0	2.6	3.1	2.6	3.9	2.1
Central	483	465	1.9	1.7	2.5	1.8	2.6	3.1	2.8
South Central & East	461	458	1.9	1.7	1.5	1.5	2.9	3.0	0.7
State	466	459	1.9	1.8	2.7	2.6	3.6	3.7	3.1

gion that reported 1.8 lbs./d.

Rate of gain for heifers varied across regions from 1.6 lbs./d in the Panhandle to 2.0 lbs./d in the North Central region.

Stocking rate depends upon forage availability and climate conditions. The stocking rate varied widely across regions of the state, perhaps due to differences in climate. The reported average statewide stocking rate was 2.7 acres per steer and 2.6 acres per heifer. The South Central and East region receives significantly more rainfall than the Panhandle region. In a typical year, more wheat forage is produced per acre in the South Central and East region than in the Panhandle. With more forage available, producers can stock the wheat more heavily. The results from the survey show that the South Central and East region had an average stocking rate of 1.5 acres per steer and heifer (0.67 head per acre). The Panhandle region had a stocking rate of 3.3 acres per steer (0.30 head per acre) and 3.5 acres per heifer (0.29 head per acre).

Receiving Programs

Producers were asked if they used a receiving program for their cattle prior to placement on wheat. The list of potential responses included using their own receiving program, using a commercial receiving program, purchasing cattle preconditioned, or use of no program (see question 16 on survey form). Only 40% used a receiving program, 35% used their own program, and 5% used a commercial receiving program (Table 17). Commercial programs were most common in the North Central region. No program was used by 56% of those surveyed, while 4% purchased their cattle preconditioned. Statewide, producers' personal conditioning programs averaged 24 days at a cost of \$22/head. Commercial programs averaged 24 days at a cost of \$23/head (Table 18). In the North Central region, 14% of the respondents reported using a commercial program with an average cost of \$25 for 23 days.

Table 19 includes a summary of feeding programs used during receiving for those producers who reported a personal program. The most widely used program included grass hay plus a

high-energy supplement. This program was used by 22% of the producers across the state. Grass hay plus a high-protein supplement was fed by 21% of the producers statewide. The third most popular feeding program was grass hay alone, used by 12% of the producers. Grass hay was the primary feed for receiving programs. It was used by 55% of the producers statewide and by 61% of the North Central producers.

Table 17. Receiving strategies (in percentage) reported by stocker producers.

Region	Own Program	Commercial Receiving †	Pre-conditioned Cattle	No Program
Panhandle	46%	0%	3%	51%
West Central	40%	4%	4%	53%
Southwest	32%	3%	7%	58%
North Central	35%	14%	2%	49%
Central	31%	6%	5%	59%
South Central & East	28%	4%	4%	65%
State	35%	5%	4%	56%

† This column reports the percentage of respondents indicated use of a "commercial receiving program" on question 16 of the survey.

Table 18. Stocker cattle receiving program days and cost.

Region	Personal Program		Commercial Receiving Program	
	Days	Cost (\$/Hd)	Days	Cost (\$/Hd)
Panhandle	24.7	22.04	†	†
West Central	21.1	23.29	16.3	23.45
Southwest	24.4	24.03	30.0	25.50
North Central	24.3	21.82	23.1	25.18
Central	24.8	21.18	22.4	14.67
South Central & East	25.8	15.46	33.0	26.55
State	24.0	21.85	23.6	23.07

† No respondents in the Panhandle region reported the use of a commercial program.

Table 19. Stocker cattle feeding program during receiving (%).†

<i>Region</i>	<i>Grass Hay Alone</i>	<i>Silage</i>	<i>Alfalfa Hay Alone</i>	<i>Silage Plus Supplement</i>	<i>Grass Hay plus High-Protein Supplement</i>	<i>Mixed Ration Self-fed</i>	<i>Grass Hay plus High-Energy Supplement</i>	<i>Mixed Ration Hand-fed</i>	<i>Alfalfa plus High-Energy Supplement</i>	<i>Other</i>
Panhandle	6 %	0%	3%	0%	16%	0%	22%	16%	0%	6%
West Central	7%	0%	7%	0%	24%	7%	20%	9%	2%	17%
Southwest	5%	0%	0%	0%	13%	3%	26%	8%	8%	18%
North Central	10%	0%	4%	0%	22%	6%	29%	6%	6%	6%
Central	25%	0%	9%	0%	25%	7%	18%	13%	7%	2%
South Central & East	14%	0%	0%	0%	22%	3%	19%	19%	0%	8%
State	12%	0%	4%	0%	21%	5%	22%	11%	4%	9%

†Row totals may not sum to 100 due to rounding errors.

Grazing initiation is an important production decision. Producers were asked how they determine when to begin grazing wheat. The following choices were provided: calendar date, top growth of the wheat, root system development, climate conditions, recommendations of others, and grazing program provisions. Table 20 includes a summary of responses to the question. Top growth of the wheat was the most frequently cited, receiving 37% of the producer responses. Root system development was the second most frequently cited factor, receiving 35% of the producer responses. Fifteen percent indicated that grazing initiation was determined by calendar date.

Table 21 includes a summary of responses to a question regarding the type of supplement fed

to stocker steers and heifers while on wheat pasture. The survey results indicated that producers used a variety of supplementation strategies. A mineral supplement was fed by 57% of respondents. Hay was fed by 55%, and wheat straw was fed as a supplement by 22% of the producers.

Table 22 includes a summary of responses regarding supplementation strategies for cows and replacement heifers. Of the survey respondents, 65% reported that they used hay to supplement wheat pasture. A mineral supplement was used by 39% of the producers. A protein supplement was used by 25% of them. Tables 21 and 22 show in detail the supplements used by region and the average for the state for stocker cattle and cows and replacement heifers.

Table 20. Percent for factors that producers use to determine when to begin grazing wheat.[†]

<i>Region</i>	<i>Calendar Date</i>	<i>Top Growth</i>	<i>Climate Conditions</i>	<i>Root System</i>	<i>Recommendations</i>	<i>Other</i>
Panhandle	13%	29%	7%	46%	1%	4%
West Central	15%	32%	8%	43%	0%	3%
Southwest	14%	40%	9%	33%	0%	4%
North Central	12%	30%	12%	42%	1%	4%
Central	16%	41%	11%	30%	0%	2%
South Central and East	20%	50%	7%	18%	0%	6%
State	15%	37%	9%	35%	0%	3%

[†] Row totals may not sum to 100 due to rounding errors.

Table 21. Percentages of different types of supplement fed to stocker cattle on wheat pasture as reported by those who fed a supplement (%).

<i>Region</i>	<i>None</i>	<i>Hay</i>	<i>Protein</i>	<i>Mineral</i>	<i>Wheat Straw</i>	<i>High Fiber Energy</i>	<i>High Starch Energy</i>	<i>Other</i>
Panhandle	6%	56%	13%	59%	22%	9%	6%	19%
West Central	2%	54%	13%	52%	33%	2%	9%	15%
Southwest	0%	58%	18%	53%	24%	3%	5%	13%
North Central	0%	53%	14%	69%	29%	6%	14%	10%
Central	7%	55%	16%	59%	18%	5%	4%	7%
South Central & East	8%	56%	14%	44%	3%	11%	3%	8%
State	4%	55%	15%	57%	22%	6%	7%	12%

Rumensin® (monensin) and Bovatec® (lasalocid) are ionophores that may be fed to improve rate of gain of stocker cattle. In a recent study, Paisley and Horn (1998) reported that monensin is more effective than lasalocid in decreasing both the incidence and severity of bloat in cattle grazing wheat pasture. Bloat can be a problem on wheat pasture especially during periods of rapid wheat growth. Bloat Guard® (poloxalene) is a product approved for the prevention of bloat in cattle. The responses show that 39% of the producers statewide used at least one of the three products. Table 23 details the use of these products by producers across region.

The information shown in Table 24 shows that the primary reasons for feeding a supplement to wheat pasture stockers are to provide additional roughage (30%) and nutrients (36%) and to improve average daily gain (23%). Producers also indicated that roughage (46%) and nutrients (30%) are the two primary reasons for feeding a supplement to cows and replacement heifers (Table 25).

Producers were asked to indicate the most important factors that determine when to terminate grazing wheat. The provided list of choices included calendar date, jointing of ungrazed wheat, jointing of grazed wheat, recommendations of others, and something other than the choices provided. Almost half of producers (47%) indicated that calendar date was the fac-

tor that determined grazing termination. Jointing of ungrazed wheat received 12% of the responses, while jointing of grazed wheat received 17%. Something other than the choices provided, received 23% of the producer responses (Table 26). The state average grazing termination date on fields intended for grain harvest was March 3. This ranged from February 27 in the Southwest to March 10 in the Panhandle (Table 27).

Producers were asked: "How many years out of 10 does fall/winter grazing negatively affect wheat yields?" The state averaged 5 years. This suggests that producers believe that fall/winter grazing of wheat will reduce wheat grain yields in five of ten years. Alternatively, grazing is not expected to reduce grain yield in half of the years.

Spring Grazing (Graze-out) Practices

Table 28 includes information regarding wheat grazing during the graze-out period. The average beginning weight was 545 lbs. for steers and 523 lbs. for heifers. The reported average rate of gain was 2.2 lbs./d for steers and 2.1 lbs./d for heifers. The stocking rate for steers averaged 1.5 acres per steer (0.67 steers per acre) and ranged from 2.5 acres per steer (0.40 steers per acre) in the Panhandle region to 1.2 acres per steer (0.63 steers per acre) in the South Central and East region. The stocking rate for heifers also averaged 1.5 acres per heifer (0.67 heifers per acre) and ranged

Table 22. Percentages of different types of supplement fed to cows and replacement heifers on wheat pasture.

<i>Region</i>	<i>None</i>	<i>Hay</i>	<i>Protein</i>	<i>Mineral</i>	<i>Wheat Straw</i>	<i>High Fiber Energy</i>	<i>High Starch Energy</i>	<i>Other</i>
Panhandle	0%	56%	33%	56%	44%	0%	0%	0%
West Central	18%	55%	32%	32%	5%	5%	0%	9%
Southwest	8%	68%	32%	32%	24%	4%	0%	4%
North Central	0%	69%	15%	54%	31%	0%	0%	23%
Central	4%	71%	21%	42%	17%	0%	0%	0%
South Central & East	14%	71%	14%	36%	7%	0%	0%	14%
State	8%	65%	25%	39%	19%	2%	0%	7%

Table 23. Producers who reported the use of Bovatec®, Poloxalene, and Rumensin® and reasons for use by region (% of respondents who reported having stocker steers on wheat).

	<i>Panhandle</i>	<i>West Central</i>	<i>Southwest</i>	<i>North Central</i>	<i>Central</i>	<i>South Central & East</i>	<i>State</i>
Bovatec®	31 [†]	9	21	24	34	8	22
for gain	80 [†]	50	50	75	79	67	71
for bloat	50 [†]	50	50	83	53	33	57
Poloxalene	9	7	8	8	14	8	9
full season	33	33	0	25	0	0	13
high risk	67	67	100	100	75	100	87
Rumensin®	9	4	5	4	16	14	9
for gain	67	100	100	0	78	80	77
for bloat	100	100	0	100	100	40	82
Total	50	20	34	37	64	31	39

[†] For example, 31% of the producers in the Panhandle who responded to the survey used Bovatec®. Of that 31%, 80% of the producers indicated that they used Bovatec® to enhance gain and 50% used Bovatec® for bloat prevention. Totals over 100% are due to producers selecting both uses for the supplements in question 19 of the survey.

Table 24. Primary reasons producers gave for feeding a supplement to stocker cattle on wheat pasture (%).

	<i>Nutrients</i>	<i>Energy</i>	<i>Roughage</i>	<i>ADG</i>	<i>Stocking Density</i>	<i>Other</i>
Panhandle	33%	12%	27%	21%	27%	6%
West Central	46%	7%	33%	15%	15%	11%
Southwest	26%	21%	29%	21%	18%	13%
North Central	39%	4%	27%	24%	22%	4%
Central	45%	5%	29%	36%	21%	4%
South Central & East	19%	8%	33%	17%	19%	11%
State	36%	9%	30%	23%	21%	8%

Table 25. Primary reasons producers gave for feeding a supplement to cows and replacement heifers on wheat pasture (%).

	<i>Nutrients</i>	<i>Energy</i>	<i>Roughage</i>	<i>ADG</i>	<i>Stocking Density</i>	<i>Other</i>
Panhandle	44%	0%	56%	11%	0%	11%
West Central	41%	9%	32%	5%	0%	9%
Southwest	36%	12%	52%	12%	8%	8%
North Central	31%	8%	46%	15%	23%	31%
Central	17%	8%	50%	0%	4%	4%
South Central & East	14%	14%	43%	0%	21%	7%
State	30%	9%	46%	7%	8%	10%

Table 26. Factors that producers use to determine when to terminate grazing (%).

<i>Region</i>	<i>Calendar Date</i>	<i>Jointing Ungrazed Wheat</i>	<i>Jointing Grazed Wheat</i>	<i>Recommendations of Others</i>	<i>Other</i>
Panhandle	36%	17%	14%	0%	33%
West Central	46%	14%	18%	1%	21%
Southwest	48%	11%	18%	0%	23%
North Central	50%	11%	15%	2%	22%
Central	53%	13%	18%	1%	14%
South Central & East	40%	7%	18%	0%	34%
State	47%	12%	17%	1%	23%

Table 27. Spring 1996 grazing termination date used by producers who planned to harvest grain.

<i>Region</i>	<i>Date</i>
Panhandle	March 10
West Central	March 5
Southwest	February 27
North Central	March 1
Central	March 4
South Central & East	March 7
State	March 3

from 2.1 acres per heifer (0.48 heifers per acre) in the Panhandle region to 1 acre per heifer (1 heifer per acre) in the Central region. The stocking rate averaged 2.5 acres per cow (0.40 cows per acre) for cows with fall calves, 1.9 acres per cow (0.53 cows per acre) for cows with spring calves, and 1.6 acres per cow (0.625 cows per acre) for cows without calves.

Producers were asked to respond to the following question: "At what point in the season did you determine the percentage of your total acres that would be grazed out?" The following alternative responses were provided: prior to planting; at planting; during the fall/winter grazing season; when livestock was removed from fall/winter pasture; or other. Table 29 includes a summary of the regional and overall response to the question. Statewide, 41% of the producers indicated that they determined the percentage

of acres to be grazed out prior to planting. This ranged from 28% in the Southwest to 65% in the South Central and East. Twenty-five percent of the producers reported that they determine the percentage of graze-out acres during the fall/winter-grazing season.

Producers were asked to rank the top three factors that influenced their decisions regarding the number of acres to graze out. Eight potential factors were listed including: cattle prices; wheat price; lack of moisture; government programs; hail or high winds; available capital to purchase cattle; income from pasture leasing; other. Results are summarized in Table 30. Cattle price was listed by 74% as either the first, second, or third most important factor. Wheat price was cited by 70% as either the first, second, or third most important factor that determines the number of graze-out acres. Lack of moisture was the third most frequently cited factor with 57% of the producers listing it as the first, second, or third most important factor regarding the number of acres grazed out.

Half of the respondents from the Panhandle indicated that lack of moisture was either the first or second most important factor. In the South Central and East regions, 24% indicated that lack of moisture was either first or second most important factor. In the West Central region, 66% of the producers indicated that wheat price was either the first or second most important factor. However, only 40% of the producers in the Panhandle region indicated that wheat price was either the

Table 28. Graze-out period cattle weights, rates of gain, and stocking rate operation during graze-out period.

<i>Region</i>	<i>Beginning Weight Steers (lbs)</i>	<i>Beginning Weight Heifers (lbs)</i>	<i>Rate of Gain Steers (lbs/day)</i>	<i>Rate of Gain Heifers (lbs/day)</i>	<i>Stocking Rate Steers (ac/hd)</i>	<i>Stocking Rate Heifers (ac/hd)</i>	<i>Stocking Rate - Cows with Fall Calves (ac/hd)</i>	<i>Stocking Rate - Cows with Spring Calves (ac/hd)</i>	<i>Stocking Rate Cows Only (ac/hd)</i>
Panhandle	478	486	1.8	1.8	2.5	2.1	†	1.8	†
West Central	560	580	2.5	3.0	1.6	1.9	1.8	1.6	2.
Southwest	530	513	2.1	2.0	1.5	1.5	4.3	1.6	3.0
North Central	586	566	2.1	2.0	1.3	1.1	2.0	1.4	0.9
Central	573	515	2.3	2.1	1.6	1.0	1.1	2.2	†
South Central & East	508	497	2.0	2.0	1.2	1.4	2.0	3.2	0.5
State	545	523	2.2	2.1	1.5	1.5	2.5	1.9	1.6

† Indicates no responses.

Table 29. When the percentages of wheat acres to be grazed-out were determined (%).

	<i>Prior to Planting</i>	<i>At Planting</i>	<i>During Grazing Season</i>	<i>At End of Winter Grazing</i>	<i>Other</i>
Panhandle	46%	11%	21%	4%	18%
West Central	40%	4%	21%	17%	19%
Southwest	28%	4%	38%	14%	16%
North Central	33%	3%	31%	19%	14%
Central	33%	10%	29%	21%	7%
South Central & East	65%	10%	12%	12%	2%
State	41%	7%	25%	15%	12%

first or second most important factor that determines the number of graze-out acres.

Leasing Practices

Producers have the choice of stocking wheat pasture with cattle that they own, or leasing the pasture to someone else. When entering into a lease arrangement, there are several decisions to be made. The lease contract can be oral or written. It also can be annual or multi-year. The financial arrangement of the lease can be based on rate of gain, fixed rate per acre, profit sharing, or a combination of these.

Of those producers who indicated that they participated in a fall/winter wheat pasture grazing lease, 60% were tenants and 40% were landlords. In the Central region, 71% of the producers reporting were landlords whereas, in the West Central region, only 46% were landlords. State-wide, 82% of the lease arrangements were oral contracts and 18% were written contracts. The South Central and East region reported the highest percentage of written contracts at 28%. Producers reported that 81% of the lease contracts were annual and 19% were multi-year (Table 31). The West Central region reported the highest annual lease rate (89%).

The tenant and landlord have certain responsibilities under the lease arrangement. These responsibilities vary dramatically across individual contracts. However, the average response for the state indicates that the tenant was prima-

rily responsible for checking livestock, salt and minerals, fencing labor, supplemental feeding, and supplemental pasture. The landlord was primarily responsible for fencing materials, fertilizer cost, and water. In general, the landlord primarily supplied resources that would stay with the land, whereas the tenant supplied resources that primarily benefited the cattle. The results are summarized in Table 32.

The average wheat pasture rental price for fall/winter grazing for the 1995-96 growing season was determined to be \$0.31/lb of gain (Table 33). The price ranged from \$0.29/lb of gain in the Central region to \$0.34/lb of gain in the North Central region. The rental price for graze-out acreage also averaged \$0.31/lb of gain. The only regions deviating from \$0.31/lb of gain were the Panhandle and North Central regions, each having an average of \$0.32/lb of gain (Table 34).

Additional Findings

It was determined that land included in the total farming operation, producers owned 45% and leased 55% (Table 35). The land owned by the producers ranged from 59% in the South Central and East region to 39% in the Panhandle.

Producers were asked if they were members of the Oklahoma Wheat Growers Association (OWGA), Oklahoma Grain and Stocker Producers (OGSP), or the Oklahoma Cattlemen's Association (OCA). Producers who completed the survey indicated their membership in these

Table 30. Factors that influenced the number of graze-out acres (%).

	<i>Panhandle</i>			<i>West Central</i>			<i>Southwest</i>			<i>North Central</i>			<i>Central</i>			<i>South Central & East</i>			<i>State</i>		
	<i>#1's</i>	<i>#2's</i>	<i>#3's</i>	<i>#1's</i>	<i>#2's</i>	<i>#3's</i>	<i>#1's</i>	<i>#2's</i>	<i>#3's</i>	<i>#1's</i>	<i>#2's</i>	<i>#3's</i>	<i>#1's</i>	<i>#2's</i>	<i>#3's</i>	<i>#1's</i>	<i>#2's</i>	<i>#3's</i>	<i>#1's</i>	<i>#2's</i>	<i>#3's</i>
Cattle Prices	19	26	15	26	23	26	19	37	26	26	29	7	30	32	14	29	34	21	25	31	18
Wheat Prices	14	26	15	26	40	13	28	27	16	15	39	21	28	34	14	21	26	5	23	33	14
Lack of Moisture	28	22	20	24	10	23	19	14	29	18	13	17	15	12	24	10	14	42	19	13	25
Other	11	0	0	11	4	6	15	0	3	26	8	10	11	4	0	27	6	5	17	4	4
Gov't Programs	14	13	10	4	6	26	9	10	16	8	5	28	9	8	22	6	6	11	8	8	20
Income from Pasture Leasing	8	0	10	7	6	3	9	4	10	8	5	10	2	0	5	6	6	0	6	4	7
Capital Availability	3	9	15	0	2	3	0	0	0	0	0	0	4	8	19	0	9	16	1	4	8
Hail or High Winds	3	4	15	2	8	0	2	8	0	0	0	7	0	2	3	0	0	0	1	4	4

Table 31. Lease arrangements for wheat pasture grazing (%).

<i>Region</i>	<i>Tenant</i>	<i>Landlord</i>	<i>Oral Contract</i>	<i>Written Contract</i>	<i>Annual Lease</i>	<i>Multi-year Lease</i>	<i>Related to Other Party</i>
Panhandle	69%	31%	83%	17%	76%	24%	36%
West Central	46%	54%	84%	16%	89%	11%	26%
Southwest	57%	43%	83%	17%	75%	25%	24%
North Central	53%	47%	84%	16%	81%	19%	45%
Central	71%	29%	84%	16%	84%	16%	39%
South Central & East	70%	30%	72%	28%	75%	25%	19%
State	60%	40%	82%	18%	81%	19%	32%

organizations statewide as being OWGA (15%), OGSP (1%), OCA (22%), OWGA and OGSP (0%), OWGA and OCA (10%), OGSP and OCA (0%), OWGA, OGSP, and OCA (1%), and none (51%) (Table 36). However, the majority of the producers who completed the survey reported that they were not members of any of these associations. Most respondents who reported membership in the Oklahoma Wheat Growers Association indicated that wheat was primarily produced on their farms for grain-only (Table 37). Thirty-five percent of respondents who indicated production of wheat for full season forage indicated membership in the Oklahoma Cattlemen's Association. Also, 16% of those reporting dual-purpose wheat production indicated membership in the Oklahoma Cattlemen's Association. Producers placing animals on their wheat are more likely to be members of a cattle association than producers who do not place animals on their wheat fields. Producers only harvesting grain are more likely members of wheat associations than producers placing animals on their wheat fields.

Discussion

The vast majority of Oklahoma's cropland is seeded to winter wheat. Wheat may be used to produce either grain or forage, or to produce both forage and grain. However, historically no differentiation in use has been made in data collected and reported by the USDA. The objectives for this research were to determine practices used by producers. One specific objective was to determine the proportion of Oklahoma

wheat grown for each of the three purposes and to determine if wheat production practices differ across intended use.

A comprehensive survey of Oklahoma farmers was conducted. The survey data confirm that Oklahoma producers plant some wheat to be used as a forage-only crop, some to be used as a grain-only crop, and some as a dual purpose forage and grain crop. For the 1995-96 growing season, 9% was intended for forage-only, 25% for grain-only, and 66% for forage and grain. One-third of the crop intended to be used only for forage was seeded in combination with one or more crops such as rye or ryegrass.

Producers use different seeding rates, planting dates, and nitrogen levels depending upon the intended use. In many respects wheat for grain-only is managed differently than wheat for forage-only. While the same machinery may be used to prepare the seedbed and seed the crop, the seeding rate, fertility program, and planting date may be different. Other production practices, not covered in the survey, such as weed and pest control may also differ depending on the intended use. If considered as separate crops, wheat for forage-only would be the third largest crop in the state in terms of acres, following wheat for forage and grain, and wheat for grain-only. The USDA could provide a more comprehensive and useful picture of crop production in the Southern Plains by collecting and reporting wheat production data differentiated by use. For example, the USDA wheat production costs and return estimates are not specific to use. One

Table 32. Tenant and landlord responsibilities under lease arrangements for wheat pasture grazing (%).

	<i>Panhandle[†]</i>			<i>West Central</i>			<i>Southwest</i>			<i>North Central</i>			<i>Central</i>			<i>South Central & East</i>			<i>State</i>		
	<i>T</i>	<i>L</i>	<i>B</i>	<i>T</i>	<i>L</i>	<i>B</i>	<i>T</i>	<i>L</i>	<i>B</i>	<i>T</i>	<i>L</i>	<i>B</i>	<i>T</i>	<i>L</i>	<i>B</i>	<i>T</i>	<i>L</i>	<i>B</i>	<i>T</i>	<i>L</i>	<i>B</i>
Checking Livestock	79	11	11	80	10	10	64	7	29	83	13	4	82	6	12	65	26	9	76	11	13
Salt & Minerals	86	14	0	78	11	11	74	15	11	78	22	0	90	3	6	73	23	5	80	14	6
Fencing Materials	46	50	4	37	55	8	38	55	7	64	36	0	35	56	9	26	70	4	40	54	6
Fencing Labor	59	30	11	44	36	19	48	41	11	71	24	5	61	27	12	55	41	5	55	33	11
Fertilizer Cost	25	57	18	18	49	33	24	59	17	36	45	18	32	35	32	42	46	13	28	48	23
Supplemental Feeding	81	15	4	77	11	11	76	20	4	91	9	0	90	7	3	64	36	0	80	16	4
Supplemental Pasture	68	26	5	63	19	19	54	38	8	88	12	0	62	31	8	53	42	5	64	28	8
Water	46	43	11	38	47	15	50	46	4	59	36	5	33	50	17	36	59	5	43	47	10
Other	100	0	0	67	0	33	50	50	0	100	0	0	67	0	33	0	0	0	73	9	18

[†] T represents the tenants' (livestock owner) responsibility; L represents the landlords' responsibility; B represents both parties' responsibility. Totals may not sum to 100 due to rounding errors.

Table 33. Wheat pasture rental price for fall/winter grazing.

<i>Region</i>	<i>Obs. †</i>	<i>\$/acre/ year</i>	<i>Obs.</i>	<i>\$/cwt/ month</i>	<i>Obs.</i>	<i>\$/lb of gain</i>	<i>Obs.</i>	<i>\$/head/ month</i>
Panhandle	3	10	18	2.27	5	0.31	1	8.00
West Central	4	27	21	2.43	10	0.32	0	.
Southwest	2	35	7	2.32	16	0.31	4	5.56
North Central	1	6	12	2.77	5	0.34	1	3.00
Central	5	30	11	2.59	8	0.29	3	5.17
South Central & East	8	38	1	2.25	11	0.31	1	6.00
State	23	29	70	2.46	55	0.31	10	5.48

† Obs. is the number of observations.

Table 34. Wheat pasture rental price for 1996 graze-out acreage.

<i>Region</i>	<i>Obs. †</i>	<i>\$/acre</i>	<i>Obs.</i>	<i>\$/cwt/ month</i>	<i>Obs.</i>	<i>\$/lb of gain</i>	<i>Obs.</i>	<i>\$/head/ month</i>
Panhandle	5	26	4	2.31	7	0.32	1	15.00
West Central	7	74	7	2.50	7	0.31	*	*
Southwest	5	69	2	2.25	13	0.31	*	*
North Central	3	41	3	3.00	3	0.32	2	6.75
Central	4	50	4	2.50	7	0.31	*	*
South Central & East	7	33	1	2.25	8	0.31	1	9.00
State	31	50	21	2.50	45	0.31	4	9.38

† Obs. is the number of observations.

* Indicates no responses.

Table 35. Total farming operation acres owned and leased.

<i>Region</i>	<i>Total Acres</i>	<i>Percent Owned</i>	<i>Percent Leased</i>
Panhandle	310,000	39	61
West Central	206,000	49	51
Southwest	168,798	46	54
North Central	176,919	40	60
Central	134,389	46	54
South Central & East	121,998	59	41
State	1,118,104	45	55

Table 36. Survey respondents who indicated membership in OWGA, OGSP, and OCA (%).

<i>Region</i>	<i>OWGA[†]</i>	<i>OWGA & OGSP[†]</i>	<i>OWGA & OCA[†]</i>	<i>OGSP & OGSP</i>	<i>OWGA & OCA</i>	<i>OCA</i>	<i>OGSP & OCA</i>	<i>None</i>
Panhandle	13%	0%	15%	0%	7%	1%	0%	65%
West Central	15%	1%	19%	0%	10%	0%	0%	55%
Southwest	12%	0%	14%	0%	8%	0%	0%	65%
North Central	18%	1%	11%	1%	5%	0%	1%	63%
Central	11%	1%	21%	1%	11%	1%	1%	54%
South Central & East	7%	0%	27%	0%	2%	1%	0%	64%
State	13%	1%	18%	0%	8%	0%	0%	61%
Wheat Acres Planted [*]	15%	1%	22%	0%	10%	0%	1%	51%

[†] OWGA refers to the Oklahoma Wheat Growers Association.

OGSP refers to the Oklahoma Grain and Stocker Producers.

OCA refers to the Oklahoma Cattlemen's Association.

^{*} Proportion of wheat acres reported by survey respondents classified by reported membership. For example, 15% of the total wheat acres reported were farmed by respondents who indicated membership in OWGA.

Table 37. Survey respondents classified by intended use of wheat who indicated membership in OWGA, OGSP, and OCA (%).

<i>Region</i>	<i>OWGA[†]</i>	<i>OWGA & OGSP[†]</i>	<i>OWGA & OCA[†]</i>	<i>OGSP & OGSP</i>	<i>OWGA & OCA</i>	<i>OCA</i>	<i>OGSP & OCA</i>	<i>None</i>
GRAIN ONLY								
Panhandle	20%	0%	4%	0%	6%	0%	0%	71%
West Central	35%	0%	0%	0%	5%	0%	0%	60%
Southwest	21%	0%	0%	0%	0%	0%	0%	79%
North Central	23%	0%	6%	0%	6%	0%	0%	65%
Central	22%	0%	11%	0%	11%	0%	0%	56%
South Central & East	25%	0%	13%	0%	0%	0%	0%	63%
State	23%	0%	5%	0%	5%	0%	0%	66%
FULL SEASON GRAZING								
Panhandle	0%	0%	71%	0%	0%	0%	0%	29%
West Central	0%	0%	71%	0%	0%	0%	0%	29%
Southwest	10%	0%	30%	0%	10%	0%	0%	50%
North Central	0%	33%	0%	0%	0%	0%	0%	67%
Central	4%	0%	42%	0%	0%	0%	0%	54%
South Central & East	2%	0%	31%	0%	2%	2%	0%	63%
State	3%	1%	35%	0%	1%	1%	0%	58%
FORAGE PLUS GRAIN								
Panhandle	12%	0%	17%	0%	8%	1%	0%	62%
West Central	13%	1%	23%	0%	17%	0%	0%	46%
Southwest	10%	0%	14%	0%	10%	0%	0%	67%
North Central	17%	1%	11%	1%	4%	0%	0%	65%
Central	9%	1%	14%	1%	14%	0%	1%	59%
South Central & East	11%	0%	28%	0%	6%	0%	0%	56%
State	12%	1%	16%	0%	10%	0%	0%	60%

[†]Oklahoma Wheat Growers Association, Oklahoma Grain and Stocker Producers, Oklahoma Cattlemen's Association.

consequence is that estimates do not appropriately reflect the production costs and returns for either grain only production or for forage and grain production.

Since producers manage wheat differently depending upon intended use, it may be appropriate for experiment station studies to be differentiated across intended use. Historically, wheat variety selection programs have been conducted to serve the wheat for grain-only crop. By this measure, two of the three most important crops in the state have not had a variety selection program.

It was also determined that only 27% of Oklahoma producers diversify by producing some wheat for forage-only, some wheat for forage and grain, and some wheat for grain-only. This suggests a need for data acquisition and analysis necessary to determine risk efficient combinations of the three wheat uses.

The survey identified several production practices that deviate substantially from research-based recommendations. For example, it is recommended that animals should not be stocked on wheat until the coronal root system has developed (Redmon et al., 1995; Krenzer, 1995; Shroyer et al., 1993). However, only 35% indicated that they used root system development to determine when to initiate grazing. For most of the state the ideal planting date for grain-only wheat is in October (Epplin, Hossain, and Krenzer). However, respondents reported a target date for planting grain-only wheat of September 27.

Producers who purchase cattle to place on wheat pasture are faced with a high-risk period while the cattle get acclimated to their new environment. The receiving period is one of the most stressful times during an animal's life (Lalman, 1997). It is recommended that producers use a receiving program for stockers. However, 60% of the producers did not use a receiving program. Since producer's resources differ, there is no single nutritional program recommended for the receiving period. A general recommendation suggests receiving diets be designed to maximize intake and provide greater concentrations of required nutrients.

It is recommended that a wheat pasture lease agreement be in writing, preferably drafted by an attorney (Tilley, 1988). Survey results indicate that only 18% of the producers have written contracts.

Cattle grazing wheat pastures are at risk for bloat (Bartley et al., 1975). It is recommended that the cattle be given a bloat preventative while grazing wheat pastures. However, the results show that only 39% of the producers use one of the products listed in the survey.

Grazing termination on wheat intended for grain harvest is a decision with important economic consequences. Grazing too late in the spring will reduce wheat yield. Removing livestock earlier than necessary will result in less overall weight gain. Redmon et al. (1996) concluded that grazing should be terminated when ungrazed wheat of the same variety and planting date begins the earliest stage of jointing. The earliest stage of jointing occurs when the hollow stem begins to elongate. If grazing occurs after this period, grain yields may be reduced more than one bushel per day. Almost half (47%) of the producers responded that they used calendar date to determine when to remove livestock from wheat intended for grain harvest. Only 12% indicated that they used jointing of ungrazed wheat to determine when to remove livestock. The lack of conformance between research based recommendations regarding both grazing initiation and grazing termination for wheat intended for grain harvest suggest an opportunity for extension education.

More than half (55%) of the land farmed by survey respondents was leased. In the 1995-96 season more than 860,000 stockers grazed fall/winter wheat pasture in Oklahoma, of which 60% were steers. More than a fifth (21%) of producers who grew dual-purpose wheat reported that they were not familiar with the term "early jointing."

An additional survey of producers should be conducted to confirm the results of this study. Where substantial differences in production practices differ, research and economic analysis will be necessary to determine economic consequences and if the differences matter. For proper

management of the unique wheat pasture resources, it will be essential to continue research programs to develop appropriate management strategies and extension education programs to extend the research information.

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APPENDIX SURVEY FORM

Dear Producer:

The 1995-96 growing season has not been favorable for wheat pasture production throughout most of Oklahoma. Information requested in this survey will be used by Oklahoma State University and Oklahoma Agricultural Statistics Service to document the consequences of the weather problems and to support wheat production and wheat pasture grazing research programs. Please complete the questionnaire to the best of your ability and return in the enclosed envelope. Information provided will be confidential. Thank you for your assistance.

F. M. Epplin
Agricultural Economist

Barry L. Bloyd
State Statistician

1. In what county or counties do you farm? _____
2. How many total acres are included in your farming operation? (cropland, pastureland, woodland, CRP, other land) _____ acres
3. Of these total acres how many do you:

<input type="checkbox"/> own? _____ acres <input type="checkbox"/> lease? _____ acres	4. Are you a member of? (Check all that apply.) <input type="checkbox"/> Oklahoma Wheat Growers Association <input type="checkbox"/> Oklahoma Grain and Stocker Producers <input type="checkbox"/> Oklahoma Cattlemen's Association
--	--
5. How many acres of wheat did you plant in the Fall of 1995?
6. Did you plant any other crop with the wheat, such as rye or ryegrass? yes no
 If yes, what else did you plant with the wheat? _____
 On how many of your wheat acres did you use this combination? _____
7. What wheat commodity program option did you exercise for the 1995-96 crop year?
 regular option 0-85 0-92
 did not participate in wheat commodity program other
8. Rank the following **characteristics** in order of importance when determining the varieties you plant. (Rank the top three with 1 being most important)

___ forage yield	___ grain yield	___ aluminum or low pH tolerance
___ test weight	___ coleoptile length	___ winter hardiness
___ drought tolerance	___ late frost tolerance	___ insect resistance
___ height of plant	___ past success	___ disease resistance
___ maturity	___ pedigree (parentage)	___ shattering reputation
___ lodging	___ other (specify)	
9. Rank the following **sources of information** as to their importance when selecting which variety of wheat to plant. (Rank the top three with 1 being most important)

___ area test plot results	___ results of neighboring fields	___ seed availability
___ past performance on my farm	___ research publications	___ area extension service
___ seed company information	___ other (specify)	
10. Which of the following best describes your understanding of what the term "early jointing" means in reference to wheat production? (Check one.)
 - growth stage when I can feel a joint or node above the soil surface
 - growth stage where the developing head is at or above the soil surface
 - growth stage when hollow stem can first be identified above the roots
 - I am not familiar with what "early jointing" means

11. Based on the following definitions, how many of your 1995-96 wheat acres were planted for each purpose:
- _____ Acres **Grain Only.** Never intended to graze the wheat.
 _____ Acres **Full-season Grazing.** Planned to graze from Nov through May with no grain harvest.
 _____ Acres **Grain plus Forage.** Planned to graze in the fall and winter and harvest the grain.

12. How many acres of your 1995-96 wheat crop will actually be used for each purpose?

Grain Only ____ acres **Full-season Grazing** ____ acres **Grain plus Forage** ____ acres

13. This item deals with the variation of production practices according to intended use of the wheat acreage. Please complete the information for each of the uses identified in item **11**. Only fill in the column(s) that applies to your operation.

	<u>Grain only</u>	Full-season Grazing	<u>Grain plus Forage</u>
a. seeding rate (lbs/acre)	_____	_____	_____
b. planting dates:			
- target date	_____	_____	_____
- actual date	_____	_____	_____
c. variety(s) planted	_____	_____	_____
d. actual nitrogen (lbs/acre)	_____	_____	_____
or lbs/acre of			
anhydrous ammonia (82-0-0)	_____	_____	_____
ammonium nitrate (33-0-0)	_____	_____	_____
urea (46-0-0)	_____	_____	_____
liquid nitrogen (32-0-0)	_____	_____	_____
diammonium phosph (18-46-0)	_____	_____	_____
other	_____	_____	_____

This section of the survey deals with aspects of your fall/winter grazing program. If you did not graze small grain in the 1995-96 season please skip to item 27.

14. What species of livestock did you graze on 1995-96 wheat pasture? (check all that apply)
- stocker cattle cows and/or replacement heifers sheep
 dairy cattle horses other

15. Which of the following best describes your 1995-96 fall/winter operation?
- | | <u>Average Beginning
Weight</u> | <u>Stocking Rate</u> | <u>Rate of Gain (lbs/day)</u> |
|--|-------------------------------------|----------------------|-------------------------------|
| <input type="checkbox"/> stocker steers | _____ lbs | _____ acres/steer | _____ |
| <input type="checkbox"/> stocker heifers | _____ lbs | _____ acres/heifer | _____ |
| <input type="checkbox"/> cows with fall calves | | _____ acres/cow | |
| <input type="checkbox"/> cows with spring calves | | _____ acres/cow | |
| <input type="checkbox"/> cows only | | _____ acres/cow | |
| <input type="checkbox"/> other | | _____ acres/animal | _____ |

16. Did you use a receiving program (either your own or a commercial one) for the stocker cattle that you purchased? (check one)
- yes, my own receiving program _____ days at _____\$/head
 yes, a commercial receiving program _____ days at _____\$/head
 no, I purchase my cattle pre-conditioned
 no, I don't use a receiving program

17. Which of the following best describes your feeding program during receiving?
- | | |
|---|---|
| <input type="checkbox"/> grass hay alone | <input type="checkbox"/> silage |
| <input type="checkbox"/> alfalfa hay alone | <input type="checkbox"/> silage plus supplement |
| <input type="checkbox"/> grass hay plus a high-protein supplement | <input type="checkbox"/> a complete mixed ration that is a self-fed |
| <input type="checkbox"/> grass hay plus a high-energy supplement | <input type="checkbox"/> a complete mixed ration that is hand-fed daily |
| <input type="checkbox"/> alfalfa hay plus high-energy supplement | <input type="checkbox"/> other |

18. How did you determine when to begin grazing your wheat pasture?

- calendar date beginning date _____
- visual assessment of top growth
- climate conditions
- after root system was "anchored"
- recommendation of others
- grazing provision for set-aside acres
- other

19. Which of the following best describes the type of supplement that you fed to livestock on wheat pasture? (Check all that apply.)

- none hay
- protein supplement mineral supplement
- wheat straw and/or other low-quality roughage
- high-fiber (i.e. wheat middling, soybean hull, etc.) energy supplement
- high-starch (grain-based) energy supplement
- Rumensin (monensin) to increase gain to decrease bloat
- Bovatec (lasalocid) to increase gain to decrease bloat
- poloxalene during full season during high bloat risk periods
- a mineral supplement Which mineral(s)? _____
- other

20. What is the primary reason that you fed a supplement to livestock on wheat pasture?

- to provide supplemental nutrients such as minerals to provide additional energy
- to provide additional roughage to maintain an ideal average daily gain
- to increase stocking density during the fall/winter grazing other

21. How did you determine when to terminate fall/winter grazing?

- calendar date jointing stage of ungrazed wheat
- jointing stage of grazed wheat recommendation of someone else
- other

22. What calendar date did you remove the livestock from the wheat that you plan to harvest for grain?

23. How many years out of 10 does fall/winter grazing negatively affects wheat yields? ____ years

This section of the survey deals with aspects of grazing during the graze-out period. If you are not grazing-out small grain in 1996 please skip to item 27.

24. Which best describes your graze-out operation?

- | | <u>Average Beginning</u> | <u>Graze-out</u> | <u>Graze-out</u> |
|--|--------------------------|----------------------|-------------------------------|
| | <u>Graze-out Weight</u> | <u>Stocking Rate</u> | <u>Rate of Gain (lbs/day)</u> |
| <input type="checkbox"/> stocker steers | _____ lbs | _____ acres/steer | _____ |
| <input type="checkbox"/> stocker heifers | _____ lbs | _____ acres/heifer | _____ |
| <input type="checkbox"/> cows with fall calves | | _____ acres/cow | |
| <input type="checkbox"/> cows with spring calves | | _____ acres/cow | |
| <input type="checkbox"/> cows only | | _____ acres/cow | |
| <input type="checkbox"/> other | | _____ acres/animal | _____ |

25. At what point in the season did you determine the percentage of your total wheat acres that would be grazed out?

- prior to planting
- during the fall/winter grazing season
- at planting
- when livestock were removed from fall/winter pasture
- other

26. Rank the top three factors (with "1" being the highest) that influence your decision on how many, if any, acres you graze-out each year.

- cattle prices
- wheat prices
- lack of moisture
- available capital to purchase cattle
- hail or high winds
- government programs
- other
- income from pasture leasing

The following items deal with lease arrangements for wheat pasture grazing. If you did not rent or lease wheat pasture then go to item 32. If you were involved in wheat pasture rental then please answer the following items concerning your most typical fall/winter grazing lease.

27. For this agreement, (check one for each item)

- a. you are tenant landlord How many acres are under this agreement? _____ acres
- b. the lease is oral written How many years have these acres been leased? _____ years
- c. the lease is annual multi-year
- d. are you a relative of the other party? yes no

28. The most recent rental price for fall/winter grazing was/is (Use the one blank with appropriate units)

- a. \$/acre/year \$ _____
- b. \$/acre/month \$ _____
- c. \$/cwt/month \$ _____
- d. \$/lb of gain \$ _____
- e. \$/head/month \$ _____
- f. other \$ _____

29. Under the price you gave in the previous item, who is responsible for the following services? (check all that apply)

	<u>Tenant</u>	<u>Landlord</u>	<u>Both</u>		<u>Tenant</u>	<u>Landlord</u>	<u>Both</u>
a. checking livestock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	b. salt and minerals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. fencing materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	d. fencing labor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. fertilizer cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	f. supplemental feeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. supplemental pasture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	h. water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

30. If you have other lease agreements and arrangement(s), please specify the nature of your situation and the terms that apply. _____

31. The most recent rental price for graze-out acreage was/is (use the one blank with appropriate units)

- a. \$/acre/year \$ _____
- b. \$/acre/month \$ _____
- c. \$/cwt/month \$ _____
- d. \$/lb of gain \$ _____
- e. \$/head/month \$ _____
- f. other \$ _____

32. Thank you for your cooperation. In the space provided below, please provide your ideas concerning what research topics in the area of wheat production and wheat pasture grazing should be given highest priority.

