



Agricultural Experiment Station and Cooperative Extension Service

# Trends in Irrigated Crop Lease Arrangements on Kansas Farms

Report of Progress 811



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## **TRENDS IN IRRIGATED CROP LEASE ARRANGEMENTS ON KANSAS FARMS\***

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### **ABSTRACT**

Over 91% of the agricultural producers in the northwest, southwest, and south central Kansas Farm Management Associations (KFMA) lease part or all of the land, frequently from more than one landlord. Of the producers that produce crops under irrigation, approximately 75% lease irrigated cropland. Therefore, crop lease arrangements are important. A survey of irrigated crop lease arrangements was conducted to obtain information for 1997 from a sample of agricultural producers enrolled in the northwest, southwest, and south central regions of the KFMA program. A total of 90 completed questionnaires was obtained, representing 27.4% of all farms that rented irrigated cropland and 57.0% of the operations typed as irrigated farms. The survey results were compared with similar surveys taken in 1988 and 1994. The most common type of landlord-tenant crop-share lease in northwest Kansas was a 25-75% arrangement, whereas the 33.3-66.7% crop production share percentage was the most prevalent in southwest and south central Kansas. The average landlord's percentage share of crop production ranged from 29.2% in the northwest to 38.1% in south central. Government payments were shared at a percentage similar to the landlord's share of crop production. The shared percentage for fertilizer costs was similar to the landlord's share of the crop, with lower shared percentages for chemicals. Application costs for these inputs also were shared, as well as irrigation fuel and seed expenses. The landlord's share of crop production increased slightly from 1988 to 1997. The share of input costs paid by the landlord were similar for 1997, 1994, and 1988, although the landlord paid a higher percentage of fertilizer and herbicide application expenses in 1997 compared to the other 2 years. In comparison to 1994, tenants owned a lower percentage of all irrigation equipment in 1997. Also, cash-only leases were more prevalent in 1997 compared to 1988 and 1994.

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## INTRODUCTION

Rental arrangements for irrigated cropland vary widely across localities and farming areas. The land can vary from undeveloped to land leveled for flood irrigation. Additionally, the landlord can own the well, pump, gearhead, and delivery system or any combination of these assets. Thus, each irrigation lease should be different depending on the quality and quantity of the various assets contributing to production. Traditional nonirrigated leases may be of little help in determining fair and equitable irrigation arrangements.

Over 91% of the agricultural producers in the northwest, southwest, and south central Farm Management Associations (KFMA) lease part or all of the land they operate (Table 2). Of the producers that produce crops under irrigation, approximately 75% lease irrigated cropland. Partial ownership is the dominant arrangement at 82.7% of all farms, whereas complete tenant operations account for 9.6%.<sup>1</sup> Given that most producers lease irrigated land from more than one landlord, the importance of irrigated crop lease arrangements is obvious.

## TYPE OF LEASE ARRANGEMENT

Landlords and tenants can choose from several types of rental arrangements. In addition to crop share, the lease agreement can be a crop-share/cash, straight cash, or flexible cash arrangement. Crop-share and cash-rent arrangements have both advantages and disadvantages. Some points to consider in deciding what type of rental arrangement to use are outlined in the following discussion.

### Advantages of Crop-Share Arrangements

1. Compared to cash rents, less operating capital may be “tied up” by the tenant when the landlord shares costs.
2. Management can be shared by an experienced landlord and tenant, resulting in more effective decisions.
3. Sales of crops can be timed for tax management. Likewise, purchased inputs can be timed to shift expenses for tax purposes.
4. Risks from low yields or prices, as well as profits from high yields or prices, are shared by the two parties.
5. Unlike cash leases, a “material participation” crop-share lease satisfies the predeath “equity intent” test requirements for special-use valuation for federal estate tax purposes. A crop-share lease does not satisfy all predeath eligibility requirements. A cash-rent lease will not work. Also, the landlord can build a Social Security base through “material participation.”<sup>2</sup>

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<sup>1</sup>Larry N. Langemeier, “Farm Management Data Bank Documentation”, Staff Paper 97-2, Department of Agricultural Economics, Kansas State University, Manhattan, KS, April, 1997.

<sup>2</sup>Crop-share rental income is excluded from self-employment income unless the landlord “materially participates” in the production of agricultural products or production management. Material participation is necessary to build a Social Security base and may be necessary if special-use valuation is to be used for federal estate tax purposes. However, material participation can cause Social Security payments to be decreased for eligible persons.

### **Disadvantages of Crop-Share Arrangements**

1. The landlord's income will be variable because of yield and price variations and changes in shared production-input costs. This can be a particularly important concern for landlords in retirement.
2. Accounting for shared expenses must be maintained.
3. Marketing decisions must be made by the landlord, except for nonmaterial participation crop-share leases.
4. The need for tenant and landlord to discuss annual cropping practices and to make joint management decisions is greater.
5. As prices, government policies, and technology change, the lease should be reviewed for fairness. Sharing arrangements may need to be changed.
6. A "material participation" crop-share lease can reduce Social Security benefits in retirement.<sup>2</sup>

### **Advantages of Cash Renting**

1. Less landlord managerial input is required than with other leasing arrangements, and perhaps none. The tenant is allowed a relatively free hand in making management decisions.
2. Reduced involvement decreases the possibility of friction between the landlord and tenant concerning management decisions.
3. Concern about accurate division of crops and expenses is reduced or eliminated.
4. The landlord does not have to handle the marketing of crops. However, the landlord will not receive additional profits from high yields or prices.
5. Fixed cash rent lessens the landlord's concern about variations in prices and yields. The tenant bears all price, cost, and production risks.
6. For those interested in drawing Social Security payments, cash renting greatly reduces the likelihood that the landlord will be considered a "participating landlord." Also, cash rent can be received without affecting Social Security payments.

### **Disadvantages of Cash Renting**

1. A cash-rent amount acceptable to both parties can be difficult to determine.
2. Once a cash-rent rate is set, a change in the rental rate can be difficult to negotiate in response to changes in prices and costs.
3. In average or above-average years, the landlord can receive less net income than from crop-share rents. However, additional profits from high yields or prices will not occur.
4. The landlord has fewer opportunities for income tax management. Under a share arrangement and cash reporting of taxable income, the amount of taxable income can be shifted some through timing of crop sales before or after the end of the year. Similarly, purchase of fertilizer and seed for the next growing season can be made in the closing months of any tax year to reduce taxable income.
5. There may be an increased danger the tenant will "mine" the land. However, competition for land and appropriate requirements in a written lease can minimize this problem.
6. The landlord has little opportunity to build a base for Social Security payments because of the difficulty in establishing acceptable evidence of material participation. This may not be a concern to retired landlords.
7. Risk from price and yield variations is assumed by the tenant.
8. To value the farmland in the landlord's estate at its use value rather than its fair-market value for estate tax purposes, the following two requirements must be met:
  - (a) Before the landlord dies, the tenant of a cash-rent lease must be a member of the landlord's family.
  - (b) After the landlord's death, the heirs must not cash lease the use-value land, not even to a family member.

9. Eligibility for paying federal estate tax in installments over 15 years after death could be jeopardized. Land rented through a cash-rent lease does not constitute an interest in a closely held business, which the decedent must have at the time of death to be eligible to pay federal estate tax in installments. Only crop-share leases qualify as interest in a closely held business.

## LEASE PRINCIPLES

Irrigated farming is a business involving the combination of land, irrigation equipment, machinery, labor, and other inputs and management to produce crops. Each of these inputs is owned or contributed by different parties. Payment for the inputs should be proportional to the value contributed toward production. Equitable payment to each party is the reason for developing a fair lease. An equitable lease should be developed using some basic rules or principles. Five important principles to follow include:

1. Variable expenses that increase yields should be shared in the same percentage as the crop is shared.
2. Share arrangements should be adjusted to reflect the effect new technology has on costs and returns.
3. Both the landlord and tenant should share total returns in the same proportion as they contribute resources.
4. Tenants and landlords should be compensated at the termination of the lease for the undepreciable balance of long-term investments.
5. Communication should be maintained between the landlord and tenant.

***Principle No. 1.*** Variable expenses that increase yields should be shared in the same percentage as the crop is shared.

Variable inputs are those used in production, such as seed, fertilizer, herbicides, insecticides, irrigation fuel, crop fuel, harvesting, drying, and hauling. Some inputs, such as fertilizer, are directly yield-increasing. Sharing these costs in the same percentage as the crop encourages the parties to use optimal amounts of the input so as to maximize net returns to the total business operation (Table 1).

For the most profitable production, fertilizer should be added until the marginal cost of the last unit just equals the marginal return. As illustrated in Table 1, an owner-operator would apply three units of fertilizer to achieve a 190-bushel yield, because at that point, the added crop value would equal the added \$25 cost of the third unit of fertilizer.

With a 50-50 share arrangement, the tenant and landlord also will find the most profitable use to be three units of fertilizer, because the \$25 fertilizer cost also will be shared 50-50. Thus, the \$12.50 of added cost will equal the \$12.50 added return for the tenant or landlord.

However, if the tenant is required to pay all of the fertilizer cost but receives only 50 percent of the crop, the most profitable use of fertilizer would be two units (see Table 1). From an economic standpoint, failure to share yield-increasing inputs in the same proportion as yields are shared tends to reduce yields and resultant income. Irrigation fuel, as a measure of the amount and cost of water applied, is another yield-increasing item that should be shared by the landlord and tenant.

In contrast, the failure to share non-yield-increasing variable expenses likely will not affect earnings. For example, the failure to share the cost of fuel for tillage or harvest operations probably will not cause the tenant to avoid performing these operations. Thus, if the landlord and tenant wish to adjust variable expense contributions so as to operate on a certain percentage basis, then those inputs that are not yield-related should be used to make the needed adjustments.

**Principle No. 2.** Share arrangements should be adjusted to reflect the effect new technology has on costs and returns. Substitution occurs when one input can be used to replace another input. For example, chemical weed control can replace cultivation. If such substitution occurs, a determination must be made concerning whether the landlord or tenant will pay for the chemicals. The answer to this question depends on the type of inputs involved.

1. Yield-increasing inputs--These inputs should be shared by the landlord and tenant in the same percentage as the crop is shared.
2. True substitution inputs--These inputs should be paid by the party responsible for the item in the original lease.
3. Inputs that are both yield-increasing and substitution--The lease needs to address this situation.

**Principle No. 3.** Both the landlord and tenant should share total returns in the same proportion as they contribute resources.

If a landlord contributed 50 percent of total resources and the tenant 50 percent, then a 50-50 sharing of the crop would be equitable. All inputs should be valued, including management and risk.

Historically, crop-share leasing has been influenced strongly by customary arrangements in the area. Similarly, customary share arrangements change little over time, even though the relative values of land, machinery, irrigation components, labor, and management have changed markedly.

Thus, it is important for the landlord and tenant to establish their contributions according to the actual operation, rather than on the basis of customary arrangements in the area.

**Principle No. 4.** Tenants and landlords should be compensated at the termination of the lease for the undepreciated balance of long-term investments.

If a fair compensation arrangement cannot be developed, the party that will likely control a particular investment at the termination of the lease should make the contribution with regard to that asset. For example, the landlord usually pays for the cost of a well. However, if the tenant covers the cost of the well, the lease should provide for a method of calculating the payment to the tenant for the remaining value of the well when the lease is terminated.

**Principle No. 5.** Communication should be maintained between the landlord and tenant.

If the lease does not follow the first four leasing principles, the farming operation may not be functioning at maximum economic efficiency. This can result in one party gaining at the expense of the other.

However, strict adherence to these four principles will not achieve an equitable lease agreement if excellent communication does not exist between the tenant and landlord. Therefore, securing a good tenant and making necessary adjustments to the lease agreement so as to provide an attractive business operation may well be the keys to the landlord maximizing profits.

In turn, the tenant needs to have a lease agreement that provides for an excellent working relationship with the landlord and thus allows for utilization of all the farm's resources to achieve maximum economic returns.

In this study, irrigated crop lease arrangements in western and south central Kansas were analyzed relative to the following two principles: (1) proper sharing of inputs, especially yield-increasing inputs and (2) sharing all crops alike. The relative values of resources contributed by each party were not determined, therefore, the question of whether current irrigated crop-share leases provide for the sharing of production in the same proportion as resources was not answered.

## PROCEDURES

A survey of irrigated crop lease arrangements was conducted to obtain information for 1997 from a sample of agricultural producers enrolled in the northwest, southwest, and south central regions of the Kansas Farm Management Association (KFMA) program.<sup>3</sup> These three regions make up 92.1% of the irrigated cropland operated by producers in the KFMA program. A total of 90 completed questionnaires was obtained, representing 27.4% of all farms that rented irrigated cropland and 57.0% of the operations categorized as irrigated farms. Additional data were derived from the Kansas Farm Management Data Bank regarding other farm characteristics, such as land ownership.<sup>4</sup>

## RESULTS

Table 3 provides information on the distribution of types of irrigated crop leases for the three regions. Crop-share leases were most common (77.5%) followed by cash only leases (22.5%). The cash-only lease was the most frequent in the south central region. No other lease types were used by the agricultural producers surveyed in 1997. In comparison, crop-share leases comprised 80.7% and 82.8% of all leases in the 1994 and 1988 surveys, respectively (Table 4).

Approximately 56.7% of the leases were between relatives, with the lowest percentage in the northwest (Table 5). Only 21.1% of the tenants lived on the leased land and none in northwest Kansas. An average of 34.1% of the leases were written. South central Kansas had the highest proportion of written leases, whereas only 23.3% of the leases were written in the southwest. In comparison, the 1994 survey of irrigated lease arrangements indicated the following: 55.4% of the leases were between relatives, 12.9% of the tenants lived on the rented tracts, and 36.1% of the leases were written (Table 6). The average length of time the specific tracts of land surveyed had been leased was 12.9 years. In most cases, land was rented from more than one landlord, averaging 2.10 landlords per farm. This compares with 2.03 and 3.20 landlords per farm for 1994 and 1988, respectively (Table 6).

Wells were the sources of irrigation water for all of the rented tracts. Average well depth ranged from a low of 96 feet in the south central to 255 feet in the southwest, with the wells in south central having the largest capacity at 835 gallons power minute (Table 7). The center pivot was the most common (60.0%) irrigation system in the south central, whereas the low volume center pivot was most prevalent (60.0%) in the northwest. Natural gas was the most used fuel source for the power unit in the northwest

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<sup>3</sup>Extension Agricultural Economists with the Farm Management Associations collected the lease arrangement surveys during farm visits with cooperating agricultural producers in the Kansas Farm Management Association program.

<sup>4</sup>Larry N. Langemeier, Farm Management Data Bank Documentation, Staff Paper 97-2, Department of Agricultural Economics, Kansas State University, Manhattan, Kansas, 1997.



and southwest, although electricity, natural gas, and diesel were all common fuel sources in south central Kansas.

Information on cash rent for irrigated and nonirrigated cropland was obtained from a limited sample of cash only lease arrangements.<sup>5</sup> Cash rents per acre averaged \$68.20 and \$31.84 for irrigated and nonirrigated cropland, respectively (Table 8).<sup>6</sup> The highest cash rent per acre for irrigated tracts was in the northwest, whereas south central had the highest cash rent per acre for nonirrigated land.

The landlord's share of repair expenses for irrigation equipment was over 54% for the pump/gearhead, with the share for all other equipment repair being less than 33% (Table 9). In comparison, the landlord's shares of repair expenses in 1994 were all higher, ranging from 13.9% higher for pump/gearhead to 4.1% for center pivot (Table 10). Table 11 provides information on the landlord's ownership share of specific irrigation equipment. Landlords owned 85.4% of the wells and 58.5% and 54% of the pump/gearhead and buried pipe, respectively. Less than 36% of the center pivots, power units, and gated pipe were owned by landlords. Tenants owned a larger percentage of all irrigation equipment in 1994 compared to 1997 (Table 12). Table 13 shows that landlords owned a slightly larger percentage of center pivots, power units, and buried pipe in 1997 compared to 1994 in south central Kansas.

Table 14 provides information on the distribution of crop-share leases based on the landlord's percent of crop production share. The most common type of landlord-tenant crop-share lease in northwest Kansas was a 25-75% arrangement, whereas the 33.3-66.7% arrangement was most prevalent in southwest and south central Kansas. In south central, 48.5% of the irrigated tracts were leased on a 40-60% or 50-50% landlord-tenant crop-share arrangement. The average landlord's percentage share of crop production ranged from 29.2% in the northwest to 38.1% in south central (Table 15). Government payments were shared at similar percentages.

Tables 16-19 show the distribution of crop-share leases based on crop share received and input costs paid by the landlord for various crops.<sup>7</sup> The shared percentage of fertilizer costs was most similar to the landlord's share of the crop, especially in the southwest and south central regions. The lower shared percentage of fertilizer paid by the landlord compared to the landlord's share of the crop production in the northwest--18.3% versus 29.5%--shows the influence of a large number of landlord-tenant lease arrangements of 25-75%. In comparison, the landlords' share of the crop and shared percentage fertilizer costs were almost identical in south central Kansas.

Table 20 provides information on the average landlord's share of crop production and input costs by crop and for all crops for the three regions combined. The shared percentages for fertilizer costs were similar to the landlords' shares of the crops, with lower shared percentages for chemicals. Application costs for these inputs also were shared, as well as irrigation fuel and seed expenses. Other inputs were

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<sup>5</sup>Information was not obtained on the type and/or class of land leased.

<sup>6</sup>In comparison, the Kansas State Board of Agriculture reported cash rents paid per acre of \$80.20 and \$33.36 for irrigated and nonirrigated cropland, respectively, in 1996. Kansas Agricultural Statistics, Kansas State Board of Agriculture, U.S. Department of Agriculture, Topeka, Kansas.

<sup>7</sup>A crop was not considered in the analysis unless it was included in at least five completed questionnaires.

shared at a very low level by the landlord.

Table 21 shows the average landlords' shares of crop production and input costs for all crops for the combined northwest, southwest, and south central regions for the years 1997, 1994, and 1988. The landlords' share of crop production increased slightly from 1988 to 1997. The shares of input costs paid by landlords were similar for the 3 years, although landlords paid a higher percentage of fertilizer and herbicide application expenses in 1997 compared to 1994 and 1988.

## CONCLUSIONS

The landlord's share of crop production ranged from 38.1% in south central to 29.2% in northwest. One-third sharing of the crop was the primary lease arrangement for southwest and south central Kansas, whereas in northwest Kansas a one-fourth sharing of the crop was the most common crop-share lease. Crop-share lease arrangements of 40-60% and 50-50% also were common in the south central region. The crop-share difference between all crops was only .6% in south central Kansas. Government payments were shared at a percentage similar to the landlord's share of crop production, with the largest difference being 1.8% in northwest and southwest Kansas.

Fertilizer was the most commonly shared input, with the shared percentage being similar to the landlord's share of the crop. The differences between the landlord's shares of the crop and fertilizer ranged from 11.2% in northwest Kansas to 0% for corn and wheat in the south central region. The lower percentage share of fertilizer paid by the landlord in northwest Kansas was a result of the dominant crop-share lease being 25-75%.

Herbicide and insecticide costs, as well as application expenses, were shared by landlords, but at a lower percentage than fertilizer. The landlord also paid significant percentages of irrigation fuel and seed expenses. Other input costs were shared at a very low level by the landlord.

The landlord's share of crop production increased slightly (1.1%) from 1988 to 1997. The shares of input costs paid by landlords were similar for the years 1997, 1994, and 1988, although landlords paid higher percentages of fertilizer and herbicide application expenses in 1997.

In regard to general lease characteristics, the number of landlords per farm, the number of years the irrigation tract was rented, percent of leases written, and percent of tenants related to the landlord were very similar in 1997 and 1994 surveys. The percentage of tenants that live on the irrigated tract increased 8.2% between 1994 and 1997. The landlord's percentage shares of irrigation equipment ownership and repair expenses were lower in 1997 compared to 1994. In northwest Kansas, the use of more 25-75% landlord-tenant crop-share leases has resulted in a lower percentage share of input costs and irrigation equipment repair expenses paid by the landlord.

The low level of the landlord's sharing of the variable inputs, other than fertilizer and chemicals, could be related to customary lease arrangements in a region. However, one of the basic principles of a good lease is the sharing of production in the same proportion as resources contributed. If sharing of crop production is not based on the relative value of the resources contributed by the landlord and tenant, then lease adjustments should be made related to the sharing of such inputs as harvesting, drying, and hauling costs.

**TABLE 1. EFFECT OF FERTILIZER COST-SHARE ARRANGEMENT ON MOST PROFITABLE LEVEL OF FERTILIZER USE**

Units Fertilizer per Acre	Crop Yield (Bushels per Acre)	Crop Value Per Acre (\$2.50 per Bushel)		100% Of Added Crop Value	Fertilizer Cost per Added Unit	50% of Added Crop Share
0	135	\$337.50				
1	160	\$400.00	↘	\$62.50	\$25.00	\$31.25
2	180	\$450.00	↗	\$50.00	\$25.00	\$25.00 <sup>1</sup>
3	190	\$475.00	↗	\$25.00	\$25.00 <sup>2</sup>	\$12.50 <sup>3</sup>
4	195	\$487.50	↘	\$12.50	\$25.00	\$6.25
5	198	\$495.00	↗	\$7.50	\$25.00	\$3.75
6	195	\$487.50	↘	(\$7.50)	\$25.00	(\$3.75)

<sup>1</sup>Tenant will apply only two units of fertilizer when paying all of the fertilizer costs and receiving 50 percent of the crop.

<sup>2</sup>Owner-operator will apply 3 units of fertilizer.

<sup>3</sup>Tenant and landlord will apply 3 units of fertilizer when sharing fertilizer cost in same proportion as the crop.

**TABLE 2. PERCENTAGES OF NORTHWEST, SOUTHWEST, AND SOUTH CENTRAL FARM MANAGEMENT ASSOCIATION FARMS UTILIZING RENTED LAND IN THEIR OPERATIONS, 1996\***

Region	Total Acres Operated	Crop Acres Operated	Nonirrigated Crop Acres	Irrigated Crop Acres**
			(percent)	
Northwest	90.1	86.0	85.6	67.7
Southwest	94.3	93.0	89.5	78.5
South Central	93.8	93.3	93.0	76.4
Average	92.9	91.2	90.6	74.6

\*Source: Larry N. Langemeier and Fredrick D. DeLano, The Annual Report, 1996, Department of Agricultural Economics, Kansas State University, Manhattan, Kansas.

\*\*Percent of farms with irrigated cropland.

**TABLE 3. DISTRIBUTION OF LEASE TYPES FOR IRRIGATED FARMS, 1997**

Region	Cash Only	Crop-Share Only
	(percent)	
Northwest	17.9	82.1
Southwest	17.1	82.9
South Central	28.9	71.1
Average	22.5	77.5

**TABLE 4. COMPARISON OF LEASE TYPES AND NUMBERS OF LANDLORDS IN 1997, 1994, AND 1988\***

Year	Lease Type		
	Cash Only	Crop-Share Only	Other
	(percent)		
1997	22.5	77.5	0.0
1994**	15.1	80.7	4.2
1988***	11.8	82.8	6.2

\*Values for 1997 are for the northwest, southwest, and south central regions, whereas the values for 1994 and 1988 are for the state.

\*\*Source: Larry N. Langemeier, Martin L. Albright, and Fredrick D. DeLano, Crop Lease Arrangements on Kansas Farm Management Association Farms, Report of Progress 757, Kansas Agricultural Experiment Station, Kansas State University, Manhattan, Kansas, 1996.

\*\*\*Source: Larry N. Langemeier, Crop Lease Arrangements on Kansas Farms, Report of Progress 616, Kansas Agricultural Experiment Station, Kansas State University, Manhattan, Kansas, 1991.

**TABLE 5. GENERAL LEASE CHARACTERISTICS OF IRRIGATED LAND RENTED, 1997**

Region	Number Landlords/Farm	Years Land Rented	Written Lease		Related to Landlord		Tenant Lives on Farm	
			Yes	No	Yes	No	Yes	No
			(percent)		(percent)		(percent)	
Northwest	1.87	10.6	33.3	66.7	40.0	60.0	0.0	100.0
Southwest	2.53	16.1	23.3	76.7	56.7	43.3	23.3	76.7
South Central	1.89	11.9	41.9	58.1	62.2	37.8	26.7	73.3
Average	2.10	12.9	34.1	65.9	56.7	43.3	21.1	78.9

**TABLE 6. COMPARISON OF GENERAL LEASE CHARACTERISTICS FOR IRRIGATED LAND RENTED IN 1997, 1994, AND 1988**

Region	Number Landlords/Farm	Years Land Rented	Written Lease		Related to Landlord		Tenant Lives on Farm	
			Yes	No	Yes	No	Yes	No
			(percent)		(percent)		(percent)	
1997	2.10	12.9	34.1	65.9	56.7	43.3	21.1	78.9
1994*	2.03	13.3	36.1	63.9	55.4	44.6	12.9	87.1
1988**	3.20	12.5	36.7	63.3	36.0	64.0	14.6	85.4

\*Source: Larry N. Langemeier, Martin L. Albright, and Fredrick D. DeLano, Crop Lease Arrangements on Kansas Farm Management Association Farms, Report of Progress 757, Kansas Agricultural Experiment Station, Kansas State University, Manhattan, Kansas, 1996.

\*\*Source: Larry N. Langemeier, Crop Lease Arrangements on Kansas Farms, Report of Progress 616, Kansas Agricultural Experiment Station, Kansas State University, Manhattan, Kansas, 1991.

**TABLE 7. GENERAL CHARACTERISTICS OF WELLS, IRRIGATION SYSTEMS, AND POWER UNITS ON LEASED IRRIGATED CROPLAND, 1997**

Item	Northwest	Regions	
		Southwest	South Central
Wells:			
Depth	251	(feet) 255	96
Capacity	750	<u>gallons per minute</u> 709	835
(percent)			
Irrigation System:			
Center Pivot	26.7	34.4	60.0
L.V. Pivot	60.0	43.7	6.7
Gated Pipe	13.3	21.9	33.3
(percent)			
Power Unit:			
Electric	13.3	15.4	39.5
Natural Gas	86.7	69.2	30.2
L.P.	0.0	0.0	4.7
Diesel	0.0	15.4	25.6

**TABLE 8. CASH RENT PAID PER ACRE FOR IRRIGATED AND NONIRRIGATED CROPLAND, 1997**

Region	Irrigated Cropland	Nonirrigated Cropland
Northwest	\$74.84	\$26.32
Southwest	72.98	29.31
South Central	60.37	34.37
Average	\$68.20	\$31.84

**TABLE 9. LANDLORD'S PERCENTAGE SHARE OF IRRIGATION EQUIPMENT REPAIRS, 1997**

Equipment	Average	Regions		
		Northwest	Southwest	South Central
		(percent)		
Center Pivot	25.6	16.7	7.4	41.3
Power Unit	32.2	16.7	7.4	54.8
Pump/Gearhead	54.3	73.3	33.3	61.3
Gated Pipe	24.9	3.3	3.7	49.8

**TABLE 10. COMPARISON OF LANDLORD'S PERCENTAGE SHARES OF IRRIGATION EQUIPMENT REPAIRS IN 1997 AND 1994\***

Equipment	1997	1994**
		(percent)
Center Pivot	25.6	29.8
Power Unit	32.2	36.3
Pump/Gearhead	54.3	68.2
Gated Pipe	24.9	29.9

\*Values are for northwest, southwest, and south central regions.

\*\*Source: Larry N. Langemeier, Martin L. Albright, and Fredrick D. DeLano, Crop Lease Arrangements on Kansas Farm Management Association Farms, Report of Progress 757, Kansas Agricultural Experiment Station, Manhattan, Kansas, 1996.

**TABLE 11. LANDLORD'S OWNERSHIP PERCENTAGE SHARE OF IRRIGATION EQUIPMENT, 1997**

Equipment	Average	Regions		
		Northwest	Southwest	South Central
		(percent)		
Well	85.4	86.7	81.5	87.5
Center Pivot	28.7	30.0	14.8	37.5
Power Unit	36.0	23.3	11.1	57.5
Pump/Gearhead	58.5	80.0	40.7	62.5
Gated Pipe	24.4	0.0	7.4	45.0
Buried Pipe	54.0	83.3	30.6	58.8

**TABLE 12. COMPARISON OF LANDLORD'S OWNERSHIP PERCENTAGE SHARES OF IRRIGATION EQUIPMENT IN 1997 AND 1994\***

Equipment	1997	1994**
	(percent)	
Well	85.4	92.2
Center Pivot	28.7	48.0
Power Unit	36.0	45.3
Pump/Gearhead	58.5	75.4
Gated Pipe	24.4	43.8
Buried Pipe	54.0	67.3

\*Values are for northwest, southwest, and south central regions.

\*\*Source: Larry N. Langemeier, Martin L. Albright, and Fredrick D. DeLano, Crop Lease Arrangements on Kansas Farm Management Association Farms, Report of Progress 757, Kansas Agricultural Experiment Station, Manhattan, Kansas, 1996.

**TABLE 13. COMPARISON OF LANDLORD'S OWNERSHIP PERCENTAGE SHARES OF IRRIGATION EQUIPMENT FOR SOUTH CENTRAL KANSAS IN 1997 AND 1994**

Equipment	1997	1994*
	(percent)	
Well	87.5	92.3
Center Pivot	37.5	36.7
Power Unit	57.5	51.9
Pump/Gearhead	62.5	69.2
Gated Pipe	45.0	66.7
Buried Pipe	58.8	57.5

\*Source: Larry N. Langemeier, Martin L. Albright, and Fredrick D. DeLano, Crop Lease Arrangements on Kansas Farm Management Association Farms, Report of Progress 757, Kansas Agricultural Experiment Station, Manhattan, Kansas, 1996.

**TABLE 14. DISTRIBUTION OF CROP SHARE LEASES BASED ON LANDLORD'S PERCENT OF CROP PRODUCTION SHARE**

Region	% Share of Crop Production					
	20.0	25.0	33.3	40.0	50.0	Other
Northwest	7.1	57.2	28.6	--	7.1	--
Southwest	6.5	25.7	48.4	13.0	3.2	3.2
South Central	--	2.9	45.7	25.7	22.8	2.9
Average	3.8	21.3	43.8	16.3	12.5	2.3



**TABLE 15. LANDLORD'S PERCENTAGE SHARES OF CROP PRODUCTION AND GOVERNMENT PAYMENTS, 1997**

Region	Landlord's % Share	
	Crop Production	Government Payments
	(percent)	
Northwest	29.2	27.4
Southwest	32.9	31.1
South Central	38.1	37.5
Average	33.9	32.5

**TABLE 16. CROP-SHARE LEASES ACCORDING TO AVERAGE CROP SHARE RECEIVED AND INPUT COSTS PAID BY LANDLORD BY CROP, NORTHWEST, 1997**

Landlord's Share and Costs	Corn
% Crop to Landlord	29.5
% Paid by Landlord	
Fertilizer	18.3
Fertilizer Appl.	4.7
Herbicide	13.2
Herbicide Appl.	8.0
Insecticide	13.2
Insecticide Appl.	4.9
Seed	8.7
Irrigation Fuel	5.2
Other	5.9

**TABLE 17. CROP-SHARE LEASES ACCORDING TO AVERAGE CROP SHARE RECEIVED AND INPUT COSTS PAID BY LANDLORD BY CROP, SOUTHWEST, 1997**

Landlord's Share and Costs	Corn	Wheat
% Crop to Landlord	33.2	31.9
% Paid by Landlord		
Fertilizer	30.8	28.7
Fertilizer Appl.	28.0	25.7
Herbicide	26.9	19.6
Herbicide Appl.	23.5	12.6
Insecticide	28.6	10.8
Insecticide Appl.	26.5	9.2
Seed	5.5	7.5
Irrigation Fuel	15.7	9.7
Other	7.2	--

**TABLE 18. CROP-SHARE LEASES ACCORDING TO AVERAGE CROP SHARE RECEIVED AND INPUT COSTS PAID BY LANDLORD BY CROP, NORTHWEST AND SOUTHWEST COMBINED, 1997**

Landlord's Share and Costs	Corn	Wheat
% Crop to Landlord	32.0	30.8
% Paid by Landlord		
Fertilizer	27.3	25.1
Fertilizer Appl.	21.6	22.4
Herbicide	23.1	18.0
Herbicide Appl.	19.2	13.0
Insecticide	24.3	7.7
Insecticide Appl.	20.5	6.6
Seed	6.4	5.4
Irrigation Fuel	12.8	7.0
Other	6.8	--

**TABLE 19. CROP-SHARE LEASES ACCORDING TO AVERAGE CROP SHARE RECEIVED AND INPUT COSTS PAID BY LANDLORD BY CROP, SOUTH CENTRAL, 1997**

Landlord's Share and Costs	Corn	Wheat	Soybeans
% Crop to Landlord	38.3	37.9	38.5
% Paid by Landlord			
Fertilizer	38.3	37.9	34.8
Fertilizer Appl.	26.4	22.7	25.2
Herbicide	28.2	29.4	34.7
Herbicide Appl.	24.8	22.7	26.5
Insecticide	24.9		8.9
Insecticide Appl.	22.4		7.2
Seed	9.9	6.7	8.5
Irrigation Fuel	18.5	9.6	19.7
Other	4.9	--	3.3

**TABLE 20. CROP-SHARE LEASES ACCORDING TO AVERAGE CROP SHARE RECEIVED AND INPUT COSTS PAID BY LANDLORD BY CROP, ALL REGIONS, 1997**

Landlord's Share and Costs	All Crops*	Corn	Wheat	Soybeans	Grain Sorghum
% Crop to Landlord	33.9	33.9	32.2	36.6	36.3
% Paid by Landlord					
Fertilizer	30.2	30.3	26.9	32.7	34.4
Fertilizer Appl.	22.5	22.9	22.5	24.3	8.2
Herbicide	24.5	24.5	19.6	32.6	16.5
Herbicide Appl.	20.0	20.7	14.3	25.4	16.5
Insecticide	19.9	24.5	6.7	10.1	15.0
Insecticide Appl.	17.0	21.0	5.7	8.6	6.7
Seed	7.4	7.3	5.6	9.1	2.7
Irrigation Fuel	14.1	14.4	7.3	19.5	13.1
Other	4.7	6.3	--	2.9	--

\*Includes two leases for pinto beans and three leases for alfalfa.

**TABLE 21. LANDLORD'S AVERAGE SHARE OF CROP PRODUCTION AND INPUT COSTS PAID FOR ALL IRRIGATED CROPS BETWEEN 1997, 1994, AND 1988\***

Landlord's Share and Costs	Year		
	1997	1994**	1988***
% Crop to Landlord	33.9	33.9	32.8
% Paid by Landlord			
Fertilizer	30.2	29.0	27.6
Fertilizer Appl.	22.5	16.9	15.0
Herbicide	24.5	23.8	18.3
Herbicide Appl.	20.0	17.5	10.7
Insecticide	19.9	23.7	16.8
Insecticide Appl.	17.0	17.7	11.3
Seed	7.4	7.3	5.4
Irrigation Fuel	14.1	16.9	12.2
Other	4.7	7.6	6.2

\*Values for 1997 and 1994 are for the northwest, southwest, and south central regions, whereas the values for 1988 are for the state.

\*\*Source: Larry N. Langemeier, Martin L. Albright, and Fredrick D. DeLano, Crop Lease Arrangements on Kansas Farm Management Association Farms, Report of Progress 757, Kansas Agricultural Experiment Station, Kansas State University, Manhattan, Kansas, 1996.

\*\*\*Source: Larry N. Langemeier, Crop Lease Arrangements on Kansas Farms, Report of Progress 616, Kansas Agricultural Experiment Station, Kansas State University, Manhattan, Kansas, 1991.

**Kansas State University Agricultural Experiment Station and Cooperative Extension Service, Manhattan 66506**  
**SRP 811** **May 1998**

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