

Kansas Irrigation Leases

Department of Agricultural Economics



Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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Irrigation Leases

An irrigation lease is a contract by which property is conveyed for a term of years for a specified rent. This guide illustrates crop-share irrigation lease inputs and costs for center-pivot and flood-irrigation systems.

Lease Contract

The lease contract should be in writing to protect all parties in case of death, divorce, termination of the lease, etc. Written leases clarify to each party (landlord and tenant) their specific responsibilities as to furnishing resources, sharing expenses, sharing receipts, and determining how each party is compensated for unexhausted resources upon termination of the lease.

Equitable Lease

Sharing income and expenses varies from lease to lease. Variation in leasing arrangements is expected because the ownership of resources by landlords and tenants may vary for different leases. The following examples illustrate different landlord and tenant contributions toward production and the resulting equitable crop share of each party. Generally, variable crop inputs such as fertilizer, irrigation energy, and drying should be shared in the same proportion as the crop is shared.

Establishing a Crop Share Arrangement

Irrigated farming is a business involving the combination of land, irrigation equipment, machinery, labor, management and other inputs to produce crops. In a lease arrangement, 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 lease. An equitable lease should be developed using some basic rules or principles. Five important principles include:

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

Irrigation Lease Worksheet and Examples

An irrigation lease worksheet is provided in Table 1 for calculating landlord and tenant expense contributions and crop share percentages. Table 2 illustrates five center-pivot crop share lease situations according to the irrigation components furnished by the landlord or tenant. These scenarios show how landlord and tenant percentage contributions vary when landlords contribute a) land only, b) land and well, c) land, well, pump and gearhead, d) land, well, pump, gearhead and power unit, and e) land, well, pump, gearhead, power unit and irrigation system. In these examples, labor, crop machinery, seed (less a technology fee), crop fuel, miscellaneous and management costs are paid by the tenant. Given these landlord-tenant expense contributions, to have an equitable lease the remainder of the variable expenses (lines 25 to 33), the crop, and government payments should be shared in the same percentages as indicated on lines 24 and 33 of Table 2. Table 3 provides the same type of lease analysis information for a flood irrigation system.

Additional Information

For more information on irrigation crop share lease arrangements, see NCR Publication 148 *Irrigation Crop Share and Cash Rental Arrangements for Your Farm*. Additional information on lease arrangements and lease forms can be obtained from local Research and Extension offices.

Table 1. Irrigation Lease Worksheet

Irrigation System Type _____		Location _____					
Line	Value			Rate or Life	Per Acre Charge ²	Your Farm	
	Total	Per Acre ¹				Landlord	Tenant
1. Land (Undeveloped)	\$ _____	\$ _____	×	.055	\$ _____	\$ _____	\$ _____
2. Land Real Estate Tax			×	.005	\$ _____	\$ _____	\$ _____
3. Land Development	\$ _____	\$ _____	×	.055	\$ _____	\$ _____	\$ _____
4. Development Real Estate Tax			×	.055	\$ _____	\$ _____	\$ _____
5. Well (_____ ft.)	\$ _____	\$ _____	×	.06	\$ _____	\$ _____	\$ _____
6. Well Depreciation			÷	15 yr	\$ _____	\$ _____	\$ _____
7. Pump	\$ _____	\$ _____	×	.06	\$ _____	\$ _____	\$ _____
8. Pump Depreciation			÷	15 yr	\$ _____	\$ _____	\$ _____
9. Gearhead	\$ _____	\$ _____	×	.06	\$ _____	\$ _____	\$ _____
10. Gearhead Depreciation			÷	15 yr	\$ _____	\$ _____	\$ _____
11. Power Unit/Meter/Connectors	\$ _____	\$ _____	×	.040	\$ _____	\$ _____	\$ _____
12. Power Unit/Meter Depreciation			÷	7 yr	\$ _____	\$ _____	\$ _____
13. Irrigation System: _____	\$ _____	\$ _____	×	.040	\$ _____	\$ _____	\$ _____
14. Irrigation System Depreciation			÷	10 yr	\$ _____	\$ _____	\$ _____
15. Irrigation Equipment Repairs ³	XXX	\$ _____	×	.01 - .02	\$ _____	\$ _____	\$ _____
16. Irrigation Equipment Insurance ³			×	.0025	\$ _____	\$ _____	\$ _____
17. Irrigation Labor	XXX	_____ hrs.	×	\$ ____/hr	\$ _____	\$ _____	\$ _____
18. Seed (less technology fee) ⁴			×		\$ _____	\$ _____	\$ _____
19. Custom Hire/Machine Expense	XXX	\$ _____	÷		\$ _____	\$ _____	\$ _____
20. Other Non-machinery Labor			×	\$ ____/hr	\$ _____	\$ _____	\$ _____
21. Miscellaneous Charge	XXX	\$ _____	×		\$ _____	\$ _____	\$ _____
22. Management Charge ⁵				.02	\$ _____	\$ _____	\$ _____
23. Cost Subtotal (Lines 1 - 22)					\$ _____	\$ _____	\$ _____
24. Percent Inputs Contributed =	<u>Line 23 Landlord (Tenant)</u> <u>Line 23 Per Acre Charge</u>				100%	_____ %	_____ %
<u>Other Shared Crop Inputs</u>	It is suggested that expenses on lines 25 - 33 are shared in the same proportion as crop inputs are contributed (as indicated on line 24)				\$ _____	\$ _____	\$ _____
25. Seed Technology Fee ⁴					\$ _____	\$ _____	\$ _____
26. Irrigation Fuel					\$ _____	\$ _____	\$ _____
27. Herbicide					\$ _____	\$ _____	\$ _____
28. Insecticide					\$ _____	\$ _____	\$ _____
29. Fertilizer					\$ _____	\$ _____	\$ _____
30. Crop Consulting					\$ _____	\$ _____	\$ _____
31. Crop Insurance					\$ _____	\$ _____	\$ _____
32. Drying	\$ _____	\$ _____	\$ _____				
33. Operating Interest	\$ _____	\$ _____	\$ _____				
34. TOTAL ALL COSTS (Line 23 plus lines 25-33)					\$ _____	\$ _____	\$ _____
35. Percent Share of All Input Costs & Crop Share					100%	_____ %	_____ %
Percent Crop Share = <u>Line 34 Landlord (Tenant)</u> <u>Line 34 Per Acre Charge</u>							

¹ Per acre value are based on number of acres irrigated, which may be 126 acres for a center pivot.

² Obtain "Per Acre Charge" by multiplying, or dividing, per acre value by rate or life.

³ Irrigation equipment repairs and insurance can be calculated using percentages of new cost or actual farm records.

⁴ Seed technology fee is the additional cost of genetically modified seed over regular seed.

⁵ Management charge based on average investment in land, land development, irrigation equipment, and crop machinery.

Table 2. Center Pivot Irrigation Crop Share Leases (Example Corn)* Sample Landlord Tenant Share Arrangements

Alternative Scenarios					System A indicates landlord contributes only land—Col’s B, C, D, and E indicate landlord furnishes additional items. L indicates Landlord’s share, T indicates Tenant’s share of expenses.											
					A		B		C		D		E			
Line	Item	Value ¹		Rate ²	Per Ac. Annual Charge	Land Only ³		Add Well		Add Pump and Gearhead		Add Power Unit		Add System		
		Total Acres	Per Acre			L	T	L	T	L	T	L	T	L	T	
Land Costs																
1	Land (Undeveloped)	\$92,736	\$736.00	5.50%	\$40.48	\$40.48		\$40.48		\$40.48		\$40.48		\$40.48		
2	Land Real Estate Tax ⁴			0.50%	5.27	5.27		5.27		5.27		5.27		5.27		
3	Land Development															
4	Dev. Real Estate Tax ⁴															
Irrigation Investment Costs																
5	Well (300’) ⁵	18,995	150.75	6.00%	9.05		9.05	9.05		9.05		9.05		9.05		
6	Well Depreciation			15 yrs	10.05		10.05	10.05		10.05		10.05		10.05		
7	Pump	17,431	138.34	6.00%	8.30		8.30		8.30	8.30		8.30		8.30		
8	Pump Depreciation			15 yrs	9.22		9.22	9.22		9.22		9.22		9.22		
9	Gearhead	3,570	28.33	6.00%	1.70		1.70	1.70		1.70		1.70		1.70		
10	Gearhead Depreciation			15 yrs	1.89		1.89	1.89		1.89		1.89		1.89		
11	Power Unit/Meter/Connectors	5,950	47.22	4.00%	1.89		1.89	1.89		1.89		1.89		1.89		
12	Power Depreciation			7 yrs	6.75		6.75	6.75		6.75		6.75		6.75		
13	Irrigation System	45,473	360.90	4.00%	14.44		14.44	14.44		14.44		14.44		14.44		
14	Irr. System Depreciation			10 yrs	36.09		36.09	36.09		36.09		36.09		36.09		
15	Irrigation Equipment Repair	790	6.27		6.27		6.27	6.27		6.27		6.27			6.27	
16	Irr. Equipment Insurance		1.81	0.25%	1.81		1.81	0.38	1.44	0.72	1.09	0.91	0.90	1.81	0.00	
17	Irrigation Labor		0.50	10.00	5.00		5.00	5.00		5.00		5.00		5.00		
18	Seed (less technology fee) ⁶				9.28		9.28	9.28		9.28		9.28		9.28		
19	Custom Hire/Machine Expense		105.79		105.79		105.79	105.79		105.79		105.79		105.79		
20	Other Non-machinery Labor		0.50	10.00	5.00		5.00	5.00		5.00		5.00		5.00		
21	Miscellaneous Costs				10.00		10.00	10.00		10.00		10.00		10.00		
22	Management Charge ⁷		1,462	2.00%	29.23		29.23	29.23		29.23		29.23		29.23		
23	Cost Subtotal				317.50	45.75	271.75	65.22	252.28	86.68	230.82	95.50	222.00	146.93	170.57	
24	Percent Inputs Contributed					14%	86%	21%	79%	27%	73%	30%	70%	46%	54%	
Other Shared Crop Inputs																
25	Seed Technology Fee ⁶				37.12	5.35	31.77	7.63	29.49	10.13	26.99	11.17	25.95	17.18	19.94	
26	Irrigation Fuel				70.68	10.18	60.50	14.52	56.16	19.30	51.38	21.26	49.42	32.71	37.97	
27	Herbicide				31.23	4.50	26.73	6.42	24.81	8.53	22.70	9.39	21.84	14.45	16.78	
28	Insecticide				37.89	5.46	32.43	7.78	30.11	10.35	27.55	11.40	26.50	17.54	20.36	
29	Fertilizer				48.30	6.96	41.34	9.92	38.38	13.19	35.11	14.53	33.77	22.35	25.95	
30	Crop Consulting				6.50	0.94	5.56	1.34	5.16	1.77	4.73	1.96	4.54	3.01	3.49	
31	Crop Insurance				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
32	Drying				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
33	Operating Interest		6 mo.	8%	17.72	2.55	15.17	3.64	14.08	4.84	12.88	5.33	12.39	8.20	9.52	
34	TOTAL ALL COSTS				566.94	81.83	486.11	116.66	451.28	155.05	412.90	170.83	397.11	262.83	305.12	
35	% Share of All Crop Inputs (Equitable % Crop Share)					14%	86%	21%	80%	27%	73%	30%	70%	46%	54%	
						LL	Tenant	LL	Tenant	LL	Tenant	LL	Tenant	LL	Tenant	

* Information obtained from MF-836, "Irrigation Capital Requirements and Energy Costs," and MF-585, "Center Pivot Irrigated Corn Cost-Return Budget." For other crops, change labor and variable cost values.

¹ Total and per acre values are based on 126 acre center pivot. These values assume the other 34 acres will have dryland crop production, and thus be produced under a dryland crop lease.

² Interest charge of 6 percent against investment in land and land development. An interest charge of 4.5 percent against total new investment cost is equal to an interest charge of 9 percent against the average investment cost spread over the useful life of the well, pump, gearhead, power unit, and center pivot sprinkler irrigation system.

³ Lease arrangement feasible only for a tenant with long-term written lease.

⁴ Real estate tax is computed on the value of land, land development, well, pump, and gearhead. In above example, landlord is assumed to pay all real estate taxes.

⁵ Well depths vary from 100 to 600 feet, which will affect pumping costs.

⁶ The extra cost of genetically modified seed corn relative to regular seed corn is classified as a "seed technology fee", and designated as an input to be shared. This is done to compensate parties for changes in herbicide or insecticide expenses associated with the use of genetically modified seed.

⁷ Management fees are calculated as a percentage of total capital managed. In this case total capital managed includes investment in land, land development, and irrigation equipment.

Table 3. Flood Irrigation Crop Share Leases (Example Corn)* Sample Landlord-Tenant Share Arrangements

Alternative Scenarios					System A indicates landlord contributes only land—Col’s B, C, D, and E indicate landlord furnishes additional items. L indicates Landlord's share, T indicates Tenant’s share of expenses.										
					A		B		C		D		E		
Line	Item	Value ¹		Rate ²	Per Ac. Annual Charge	Land Only ³		Add Well		Add Pump and Gearhead		Add Power Unit		Add System	
		Total Acres	Per Acre			L	T	L	T	L	T	L	T	L	T
Land Costs															
1	Land (Undeveloped)	\$128,640	\$804.00	5.50%	\$44.22	\$44.22		\$44.22		\$44.22		\$44.22		\$44.22	
2	Land Real Estate Tax ⁴			0.50%	5.27	5.27		5.27		5.27		5.27		5.27	
3	Land Development														
4	Dev. Real Estate Tax ⁴														
Irrigation Investment Costs															
5	Well (300') ⁵	19,000	118.75	6.00%	7.13		7.13	7.13		7.13		7.13		7.13	
6	Well Depreciation			15 yrs	7.92		7.92	7.92		7.92		7.92		7.92	
7	Pump	16,467	102.92	6.00%	6.18		6.18		6.18	6.18		6.18		6.18	
8	Pump Depreciation			15 yrs	6.86		6.86		6.86	6.86		6.86		6.86	
9	Gearhead	4,533	28.33	6.00%	1.70		1.70		1.70	1.70		1.70		1.70	
10	Gearhead Depreciation			15 yrs	1.89		1.89		1.89	1.89		1.89		1.89	
11	Power Unit/Meter/Connectors	5,950	37.19	4.00%	1.49		1.49		1.49		1.49		1.49		1.49
12	Power Depreciation			7 yrs	5.31		5.31		5.31		5.31		5.31		5.31
13	Irrigation System	5,258	32.86	4.00%	1.31		1.31		1.31			1.31		1.31	
14	Irr. System Depreciation			10 yrs	3.29		3.29		3.29		3.29		3.29		3.29
15	Irrigation Equipment Repair	706	4.41		4.41		4.41		4.41		4.41		4.41		4.41
16	Irr. Equipment Insurance		0.80	0.25%	0.80		0.80	0.30	0.50	0.55	0.25	0.72	0.08	0.80	0.00
17	Irrigation Labor		1.00	10.00	10.00		10.00		10.00		10.00		10.00		10.00
18	Seed (less technology fee) ⁶				9.28		9.28		9.28		9.28		9.28		9.28
19	Custom Hire / Machine Expense		111.32		111.32		111.32		111.32		111.32		111.32		111.32
20	Other Non-machinery Labor		0.50	10.00	5.00		5.00		5.00		5.00		5.00		5.00
21	Miscellaneous Costs				10.00		10.00		10.00		10.00		10.00		10.00
22	Management Charge ⁷		1,124	2.00%	22.48		22.48		22.48		22.48		22.48		22.48
23	Cost Subtotal				265.85	49.49	216.36	64.83	201.02	81.71	184.14	88.68	177.17	93.36	172.49
24	Percent Inputs Contributed					19%	81%	24%	76%	31%	69%	33%	67%	35%	65%
Other Shared Crop Inputs															
25	Seed Technology Fee ⁸				37.12	6.91	30.21	9.05	28.07	11.41	25.71	12.38	24.74	13.04	24.08
26	Irrigation Fuel				67.62	12.59	55.03	16.49	51.13	20.78	46.84	22.55	45.07	23.75	43.87
27	Herbicide				31.23	5.81	25.42	7.62	23.61	9.60	21.63	10.42	20.81	10.97	20.26
28	Insecticide				37.89	7.05	30.84	9.24	28.65	11.65	26.25	12.64	25.25	13.31	24.59
29	Fertilizer				48.30	8.99	39.31	11.78	36.52	14.85	33.45	16.11	32.19	16.96	31.34
30	Crop Consulting				6.50	1.21	5.29	1.59	4.91	2.00	4.50	2.17	4.33	2.28	4.22
31	Crop Insurance				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	Drying				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	Operating Interest		6 mo.	8%	15.86	2.95	12.91	3.87	12.00	4.88	10.99	5.29	10.57	5.57	10.29
34	TOTAL ALL COSTS				510.38	95.20	416.18	124.70	386.68	157.18	354.20	170.57	340.80	179.58	331.80
35	% Share of All Crop Inputs					19%	82%	24%	76%	31%	69%	33%	67%	35%	65%
	(Equitable % Crop Share)					LL	Tenant	LL	Tenant	LL	Tenant	LL	Tenant	LL	Tenant

*Information obtained from MF-836, "Irrigation Capital Requirements and Energy Costs," and MF-578, "Flood Irrigated Corn Cost-Return Budget." For other crops, change labor and variable cost values. ¹ Total and per acre values are based on a 160 acre gated pipe irrigation system. ² Interest charge of 6 percent against investment in land and land development. An interest charge of 4.5 percent against total new investment cost is equal to an interest charge of 9 percent against the average investment cost spread over the useful life of the well, pump, gearhead, power unit, gated pipe, and crop machinery. ³ Lease arrangement feasible only for a tenant with long-term written lease. ⁴ Real estate tax is computed on the value of land, land development, well, pump, and gearhead. In above example, landlord is assumed to pay all real estate taxes. ⁵ Well depths vary from 100 to 600 feet, which will affect pumping costs. ⁶ The extra cost of genetically modified seed corn relative to regular seed corn is classified as a "seed technology fee", and designated as an input to be shared. This is done to compensate parties for changes in herbicide or insecticide expenses associated with the use of genetically modified seed. ⁷ Management fees are calculated as a percentage of total capital managed. In this case total capital managed includes investment in land, land development, irrigation equipment, and crop machinery.

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