



Agricultural publication G530 — Revised June 16, 1996

Rental Agreements for Irrigated Land

Raymond E. Massey

Department of Agricultural Economics, University of Missouri-Columbia

William W. Casady

Department of Agricultural Engineering, University of Missouri-Columbia

Arriving at a fair rental agreement can be difficult. It is made more difficult when operating expenses and irrigation equipment are considered. This guide is designed to help landowners and tenants develop and evaluate both cash rent and crop-share rental agreements for irrigated land.

Because development of the water supply is a permanent improvement on real estate, landowners usually own the facilities. However, ownership of the irrigation equipment can vary. The landowner can own the equipment; the tenant can lease or own the equipment; or they can jointly own the equipment. Rental agreements for irrigated farmland should be designed to consider the ownership of this equipment. The critical concern of any rental arrangement is that each party be compensated for its contribution to the production process.

Characteristics of a good share lease

A good lease (1) results in each party being paid according to its relative contributions to production, (2) defines the responsibilities of each party, (3) defines who will provide various inputs, (4) prevents each party from making a profit at the other party's expense, and (5) recognizes and accommodates the peculiarities of each situation.

This guide provides direction for valuing the contributions of each party. When the value of each party's contribution is understood, deciding on the specifics of the lease, including whether to have a cash lease or a crop-share lease, follows more logically.

When defining the responsibilities of each party, it is important to discuss all aspects of the land management and production process. For example, determine ahead of time how much buffer strip the tenant must leave surrounding an irrigation lake, the water level necessary before any pumping is permitted or any other practices necessary to ensure the long-term usefulness of the water supply. It is advisable for the landowner and the tenant to obtain a standardized leasing form. These forms list many of the responsibilities that should be discussed. Even if some items on the form are not pertinent to a particular lease, they provide an opportunity for the tenant and landowner to discuss items they may have otherwise overlooked.

As the particular aspects of each lease are considered, the tenant and the landowner should be able to arrive at a mutually beneficial arrangement. A traditional lease might work in some situations but not in others. Leases allow for a great deal of flexibility if both landowner and tenant are willing to negotiate to accomplish their needs and desires.

Determining the contributions of tenant and landowner

A fair lease requires that the contributions of each party be identified and assigned a dollar value. These contributions are land, labor, capital, management and variable costs. The contributions of each party can be summarized in tabular form (Table 1).

Table 1. Contribution worksheet.

Item	Annual charge =	Landowner's contribution +	Operator's contribution
Land			
Real estate tax			
Land maintenance			
Irrigation equipment			
Crop machinery costs			
Labor			
Management			
Fertilizer			
Seed			
Crop machinery fuel			
Chemicals			
Irrigation fuel			
Harvesting			
Hauling			
Drying			
Crop insurance			
Overhead and operating capital			
Totals			
Landowner share			
Operator share			

Land

Land is the major contribution of the landowner. A lease for irrigated land needs to consider the value of

the land and water supply (well or irrigation lake) separately from the value of the irrigation facilities. Property tax records and depreciation schedules show the value of the irrigation equipment separately from the value of the land and water supply. Land sales frequently list the value of the bare land and the equipment attached to the land. Understand that although these records assist in distinguishing between the value of the land and the value of the irrigation facilities, they do not necessarily reflect the true value of either. A depreciation schedule may indicate that the value of a water supply is zero when the well or irrigation lake still has productive and market value.

Land is usually valued at its fair market value. The market price of nearby land of comparable worth will give an idea of the value of the land. If the land is near a city or resort and has a market value higher than its agriculturally productive value, do not use its market value — use its productive value.

The landowner should earn a reasonable rate of return on the value of the land. This rate of return should approximate what the landowner could earn if he or she sold the land and invested the money elsewhere. For example, if the land is valued at \$750 per acre and the desired rate of return is 6 percent, the annual charge for the land would be \$45 per acre.

Other costs associated with land are real estate taxes and land maintenance costs. A well-designed irrigation lake should have low maintenance costs. Siltation is the primary cause of the eventual failure of an irrigation lake to provide enough water for irrigation. The quality of the watershed that feeds the lake is the primary factor affecting the rate of siltation and the useful life of an irrigation lake. Buffer strips should be maintained near the lake to slow siltation. The landowner needs to stipulate to the tenant the minimum buffer strip permissible to continue leasing the land.

Repairs and depreciation associated with permanent buildings and fences should be considered landowner contributions only if the buildings and fences are used in the production of crops.

Capital

Capital is the resource associated with machinery investment and short-term operating funds. When the lease is for irrigated land, machinery investment includes the irrigation equipment and the crop machinery used to produce the crop. The tenant usually provides the crop machinery. Irrigation equipment can be provided by either party or by both.

Care must be taken not to count the value of the irrigation equipment twice by including it in the market value of the land and then again separately as an equipment investment. If the land is valued as irrigated land, then the well, reservoir and other permanent facilities should not be counted again as a capital contribution. If the land is valued as dry land (or land with irrigation potential), the value of the irrigation facilities and equipment must be determined and assigned to the contributing parties. Table 2 gives an example of how to determine the annual cost of an irrigation system. The annual cost factor referenced in Table 2 combines depreciation and interest on the investment.

Table 2. Irrigation investment (assumes 9 percent interest on investment).

Item	Value ¹ (\$)	Life (years) ¹	Annual cost factor ¹	Annual cost ¹ (\$)
Well or irrigation lake	12,000	20	0.095	1,140
Column pipe	8,000	16	0.1075	860
Pump	5,000	16	0.1075	537.50
Pump base, engine stand	1,500	20	0.095	142.50
Fuel tank, filter and line	2,000	16	0.1075	215
Power unit	8,500	10	0.145	1,232.50
Pipe and fittings	5,500	10	0.145	797.50
Sprinkler system				
Electric generator		16	0.1075	
Leveling or land shaping				
Reuse system	10,000	20	0.095	950
Reservoir, sump pit	2,000	20	0.095	190
Total for 100 acres irrigated				6,065
Total per acre		100	number of acres	60.65
¹ All values in this table are for illustration only. They do not necessarily reflect the true cost of inputs.				

The ownership costs of the machinery and equipment investment are depreciation, interest on investment, repairs, taxes and insurance. Table 3 provides an annual cost factor for computing the depreciation and interest charge. For example, if the life of the equipment is expected to be 10 years and a 9 percent return on investment is desired, multiply the purchase price by 0.1450 to arrive at the annual depreciation and interest charge.

Table 3 assumes that straight-line depreciation is used. Depreciation computed for tax purposes usually overstates true depreciation. The depreciation of machinery should reflect the true decrease in value of the machinery due to use.

Table 3. Annual depreciation and interest cost factors.

Interest (%)	Cost factors at various years of expected equipment life							
	6	8	10	12	14	16	18	20
6	0.1966	0.1550	0.1300	0.1133	0.1014	0.0925	0.0855	0.0800
7	0.2016	0.1600	0.1350	0.1183	0.1064	0.0975	0.0905	0.0850
8	0.2066	0.1650	0.1400	0.1233	0.1114	0.1025	0.0955	0.0900
9	0.2116	0.1700	0.1450	0.1283	0.1164	0.1075	0.1005	0.0950
10	0.2166	0.1750	0.1500	0.1333	0.1214	0.1125	0.1055	0.1000
11	0.2216	0.1800	0.1550	0.1383	0.1264	0.1175	0.1105	0.1050
12	0.2266	0.1850	0.1600	0.1433	0.1314	0.1225	0.1155	0.1100

Interest is charged on the average value of the machinery over its life. The interest charged on the machinery investment is usually the current cost of borrowed money.

Repair cost is the estimated annual repair cost of the machinery over its life. Be careful not to charge the cost of a repair only to the year it is incurred. Taxes and insurance are the actual costs incurred for these items.

Operating capital is the compensation to a party for the use of its money to purchase variable inputs. The tenant would charge interest on the value of labor, management, fuel and any variable inputs purchased in the production process. The landowner is compensated for operating capital only if providing some of the variable inputs. Operating capital is not charged on fixed assets such as the value of land and equipment or variable costs shared by the landowner and tenant.

Labor

Labor is a contribution of the tenant. A guide for estimating the value of labor is the usual wage paid to full-time farm employees in the community. Credit for experience and decision making is included in the management contribution.

Management

Management contribution is the value of the manager's expertise and time spent in decision making. Placing a value on management is difficult and will result from bargaining between the two parties. A general guide for placing a value on management is 7 to 10 percent of expected gross income.

Irrigation farming requires a higher level of management and supervision than dryland farming. If a percentage of expected gross income is used, the management will receive a higher dollar compensation due to the higher expected yield under irrigation farming.

Usually the tenant is credited with labor and management. Occasionally the landowner is involved in either labor or management, or both, and should be compensated for such contributions. Landowners

who are retired should be careful in involving themselves in labor and management because it can cause the income from rental to be considered earned income. Earned income is subject to Social Security taxes and can reduce the amount of Social Security payments to which a retired person is entitled. A good tax adviser can provide advice to the landowner so that the lease income is taxed as an investment and is not subject to Social Security taxes.

Variable costs

Variable costs are production costs that vary with production, such as fertilizer, seed, chemicals, machinery repairs and fuel. Frequently variable costs such as fertilizer and seed are split in the same proportion as output is split. For computing a fair lease, only the variable costs **not** split in the same proportion as output need to be valued.

Cash rental determination

Cash rental rates for cropland, including irrigated cropland, are usually set by some form of negotiation between the landowner and one or more tenants wishing to rent the land. Many times a bidding process is used, and the highest bidder receives the land for that bid price.

Knowing the value of each party's contribution provides information useful in determining cash rental rates. The landowner benefits by knowing how much rent is needed to meet an investment alternative. If the rental rates are insufficient, the landowner may consider selling the land and investing the money in other ways that will achieve investment goals. The landowner can also determine how much of the rental payment is needed to pay expenses such as taxes and insurance and how much is available for living expenses.

The tenant benefits from knowing the value of each party's contribution by understanding how much room for negotiation exists. The tenant understands the expenses of the landowner and the importance of a reasonable return on the landowner's investment in land and facilities. The tenant also understands that there is an upper limit to the cash rent that can be paid. Beyond a certain point, paying more rent may help acquire more land but not more income.

Crop-share rental arrangements

In traditional crop-share leases, the landowner incurs all the expenses associated with land ownership and the tenant provides all the labor, equipment and fuel for production. It is common to share variable costs, such as seed, fertilizer, pesticides and drying, in the same way that crop yields are shared. Sharing variable costs ensures that the tenant will not use less of the inputs than is generally considered appropriate for production.

Changes in modern production practices are affecting the way landowners and tenants are approaching leases. As tenants replace tillage with chemical control of weeds, some landowners have resisted sharing the cash costs of herbicides. They contend that weed control has traditionally been the responsibility of the tenant and that it should continue to be so. The misunderstanding is not so much one of whether the landowner should share chemical costs but of understanding that each party should be compensated for the value of its contribution.

Whether the landowner refuses or agrees to share the cash costs of herbicides, the relative contributions

of the landowner and the tenant should be computed to determine if both parties are properly being compensated for the inputs they do contribute. The important point is not who contributes what but that the contributor is adequately compensated.

Another development affecting leases is the increased use of custom contractors to perform key production activities such as chemical spraying and harvest. Traditionally, the tenant performed these activities and was compensated by valuing the capital, labor and management associated with them. This tradition remains a powerful argument that the tenant should continue to bear the full cost of custom contracting. However, some are asking whether custom hire expenses should be split between the landowner and the tenant. Either party can pay all the expenses of custom contracting, or these expenses can be shared between the parties. Again, it is important that each party is compensated for its relative contribution to the production process.

Changes in production practices and changes in the contributions of landowner and tenant are good reasons to reevaluate the contributions of each party. If the expenses of one party increase relative to the expenses of the other, then the leasing arrangement should change to reflect it. By reevaluating the contributions of landowner and tenant, it might be found that the lease arrangement should be updated to reflect the new situation.

Resolution of these issues will ultimately rest in the bargaining position of each party. The landowner may have other potential tenants who are willing to meet his or her demands that the tenant pay all the expenses and therefore avoid having to pay for increased inputs. On the other hand, the tenant may be able to persuade the landowner that contributing more by paying for some of the inputs results in receiving a larger share of the harvest.

Irrigation investments can complicate a lease arrangement. The simplest arrangement is when the landowner owns all the irrigation equipment and considers its value as discussed above. When the tenant owns part of the irrigation equipment the lease is complicated.

The complication is not in valuing the contribution of each because that is done as if only one owned the system. Now instead of one receiving credit for that contribution, both do. The problem occurs when the tenant is expected to purchase a system to use on rented land. The tenant would justifiably hesitate to purchase irrigation equipment for use on land being rented on an annual basis. If the lease is not renewed, the tenant may have no use for the irrigation equipment. Writing a lease for 5 to 10 years would alleviate some of this concern.

Irrigation requires additional fertilizer, seed, labor and fuel. Sharing these costs between parties may lead to better economic decisions than having only one party bear all the cost. Also, sharing repair costs reduces careless handling of irrigation equipment or continued use of worn-out irrigation equipment.

Negotiating the agreement

Each party should attempt to estimate the total contribution of both parties to the production process. Filling out Table 1 in this guide will aid in estimating the contributions of the parties. Local University Extension centers can provide cost-of-production budgets to estimate expenses.

Undoubtedly, the tenant and landowner will come up with different values on the contribution. This is where negotiating skills enter. Both parties should be prepared to justify the values they placed on each contribution. Interest on investment and management compensation are areas where a party has

subjectively assigned a value and may have to revise expectations to arrive at a mutually agreeable rental arrangement.

When a lease is agreed upon, each party should expect to make a reasonable return for its investment and not an undue return at the expense of the other party. The lease should include safeguards to prevent one party from taking advantage of the other.

The duration of the lease is an area where one party can take advantage of the other. If the lease is for only one year, the tenant is justifiably hesitant to incur the cost of liming land or repairing land improvements such as terraces. The tenant is guaranteed the benefit for only one year, after which the landowner can refuse the tenant farming privileges. Expenses that have benefits lasting more than the lease term should be paid by the landowner. Under a year-to-year lease, the landowner should pay for liming of the land. If the lease is for 5 years, either party can incur the expense or both parties can share the expense. The paying party can expect to be compensated over the life of the lease.

The tenant should not have incentive to allow long-term problems to develop. The tenant should not allow the value of the land to be degraded by permitting an excessive weed infestation, undue soil erosion or environmental liability. A long-term lease causes the tenant to have more concern for the long-term productivity of the land.

A good lease should be simple. An extremely complex lease can lead to frustration and misunderstanding. If the landowner-tenant relationship includes both irrigated and nonirrigated land, then make sure the differences are clearly understood by each party. Establish everything in writing.

Another important factor is the level of relationship between the tenant and the landowner. Trust between parties and long-term, successful working relationships are often worth more than a specific dollar amount in annual rent. It is often better to take a little less percentage of the yield while dealing with someone you trust and respect than to fight for every penny and create tension.

Example

Table 4 provides an example of a 60/40 crop-share lease on 100 acres of irrigated land. The landowner wants a 6 percent return on land valued at \$750 without irrigation facilities. In other words, \$750 is the price a neighbor would be likely to receive for the sale of dry cropland. The annual charge for the land is \$45. From tax records, the landowner knows that real estate taxes will be \$10 per acre. The value of the irrigation equipment is computed in Table 2; each item of the system is valued and multiplied by its annual cost factor (found in Table 3).

The interest rate used on the irrigation equipment is 9 percent. The interest rate on land was only 6 percent. The lower interest rate on land reflects the landowner's expectation that the value of the land will appreciate about 3 percent per year. The 3 percent appreciation plus the 6 percent return give the landowner a 9 percent return for both land and irrigation equipment.

The example shows the landowner providing all the irrigation investment. This need not always be the case. If the tenant owned the power unit, pipes and fittings, the value of these items would be assigned to the tenant and the \$61 contribution of the landowner would be lowered appropriately.

The crop machinery costs are difficult to estimate and are an important area of negotiation between the parties to a lease. The costs depend on the machinery being used and the total number of acres under

production. The tenant probably has records to support an estimate of the hourly cost of crop machinery. The landowner may not have access to these records and may need to use crop budgets or custom rates to get estimates. Crop budgets and custom rates are available at local extension offices.

Labor, management and the other variable costs of production are also estimated based on either records or budgets. Table 4 shows values for labor, management, fuel and operating capital. These are items that the tenant is exclusively providing.

Table 4 does not show values for fertilizer, seed, chemicals, irrigation fuel, harvesting, hauling, drying and crop insurance. Fertilizer, seed, chemicals and irrigation fuel and hauling are costs that the landowner and tenant will share in the same ratio as the crop is shared. Harvesting was considered part of the equipment complement of the tenant and has therefore been included in the equipment, labor and fuel charges on the worksheet. The landowner and tenant will individually be responsible for purchasing crop insurance and drying their portion of the grain.

The table shows the landowner contributing 64 percent of the cost of production and the tenant contributing 36 percent. The lease would probably become either a 60/40 or a 2/3-1/3 lease. This need not be the case. Once the landowner and tenant have agreed on their respective contributions, the exact percentage computed can define the final agreement. One or 2 percent of the value of production can be the difference between profit and loss in some years. On the other hand, losing a good lease over 1 or 2 percent of the split might be foolhardy. The table is a tool to help each party get a ballpark figure of what a fair lease would be. It must be understood that the exact contribution of each party is uncertain and that the final arrangement will be determined through negotiation.

Table 4. Contribution worksheet for furrow-irrigated corn.

Item	Annual charge ¹	Landowner's contribution	Operator's contribution
Land	\$45	\$45	
Real estate tax	\$10	\$10	
Land maintenance			
Irrigation equipment	\$61	\$61	
Crop machinery costs	\$38		\$38
Labor	\$10		\$10
Management	\$8		\$8
Fertilizer			
Seed			
Crop machinery fuel	\$8		\$8
Chemicals			
Irrigation fuel			
Harvesting			
Hauling			
Drying			
Crop insurance			
Overhead and operating capital	\$2		\$2
Totals	\$182	\$116	\$66
Landowner share		64%	
Operator share			36%
¹ All values in this table are for illustration only. They do not necessarily reflect the true cost of inputs.			

[To order](#), request G530, *Rental Agreements for Irrigated Land* (75 cents).



This guide is also available in Portable Document Format. Click the PDF button to the left to get it. For information about PDF files, see the XPLOR [PDF help page](#).

Copyright 1998 University of Missouri. Published by [University Extension](#), University of Missouri-Columbia. Please use our [feedback form](#) for questions or comments about this or any other publication contained on the XPLOR site. Make sure you note the publication number in your inquiry.

Issued in furtherance of Cooperative Extension Work Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. Ronald J. Turner, Director, Cooperative Extension Service, University of Missouri and Lincoln University, Columbia, Missouri 65211. • University Extension does not discriminate on the basis of race, color, national origin, sex, religion, age, disability or status as a Vietnam era veteran in employment or programs. If you have special needs as addressed by the Americans with Disabilities Act and need this publication in an alternative format, write ADA Officer, Extension and Agricultural Information, 1-98 Agriculture Building, Columbia, MO 65211, or call (573) 882-7216. Reasonable efforts will be made to accommodate your special needs.