

# Negotiating New Lease Arrangements with the Transition to Direct Seed Intensive Cropping Systems

Clark F. Seavert  
Extension Economist  
Oregon State University

Changes in agricultural production, technology and markets have had a substantial impact on farm business organization and land tenure arrangements. Increased mechanization, better seeds, use of farm chemicals, irrigation improvements and other factors have increased labor productivity dramatically making it possible for one farm family to operate a much larger farm unit. More recently the changing from a fallow winter wheat crop rotation to a continuous cropping system has raised many questions about lease arrangements.

The traditional lease type in the Mid-Columbia region of Oregon has been the crop share lease, as shown in [Table 1](#). The landowner would provide the land, one-third of the fertilizer, herbicide expenses and crop and hail insurance, and pays the property taxes associated with the property. The tenant would provide the machinery and pay all of the other production costs. In return the landowner and tenant would split the receipts on a one-third/two-thirds basis, the landowner receiving the former. One would characterize this lease as equitable because the landowner is providing one-third of the inputs and receiving one-third of the receipts. Each party will share the wheat receipts in the same proportion as their expenditures and gain or lose profits in the same proportion. This is what I would classify as an equitable lease

## EQUITY IN A FARM LEASE

The most perplexing question in farm leasing is the appropriate share a landowner and tenant will receive in a certain cropping system. Most agree that a lease should be fair and equitable. An equitable lease is one that compensates the tenant and the landowner in the same proportion as each contributes to the resources of the farming business. Generally, there is a mutual desire by the tenant and landowner to share returns fairly in negotiating a lease agreement. One way of resolving this potential problem is for the tenant and landowner to periodically determine their respective contributions and adjust the lease agreement accordingly.

In calculating an equitable lease, the use of an enterprise budget is a helpful tool. An enterprise budget includes all the costs and returns associated with producing one enterprise in some particular manner. Enterprise budgets determine the cost-of-production of a commodity on a per basis unit. Together a tenant and landowner should complete enterprise budgets to estimate income and decide on the contribution of each. Table's 1 and 2 are examples of enterprise budgets for a fallow/winter wheat crop and a continuous cropping system utilizing a minimum tillage production practice. After enterprise budgets are prepared the contributions of each party are estimated.

Most input's that make up an equitable lease are easy to calculate. They are paid by either party and are easily identified. Three determinants that make calculating an equitable lease difficult is that of land, machinery, and operator labor. Land and machinery are difficult to calculate because they depreciate in value over time. The following sections are only suggestions on a few methods to calculate land, machinery, and operator labor. These suggestions may calculate a more equitable lease for the parties involved.

## Land Valuation

Land is difficult to calculate because each landowner has their own conception of what the value might be on their property. This value may include sentimental values rather than reflecting true productive values. A tenant rents only the productive value of land. Only the landowner gains from any speculative value above productive value. Productive value rather than market value is used by assessors in some states for tax purposes. The

assessor's value then is a good estimate of the landowner's contribution of land. This productive value multiplied by the interest rate on saving certificates or a similar safe rate could be used to estimate the landowner's annual land contribution. In other states using a fair market value for the land is appropriate to establish its worth in the lease. In Table's 1 and 2 a 6 percent rate of return is used on the landowner's investment in the land multiplied by its market value of \$370 per acre.

### **Machinery Valuation**

Machinery is usually provided by the tenant. An estimated value is needed to evaluate the contribution made by the provider of the machinery or equipment. This is a similar problem to that of land contribution. A satisfactory value that can be agreed upon by both parties is needed. The current market value of the machine should be used. This may be estimated by:

1. The landowner and tenant agreeing on a reasonable value. This may be satisfactory if both parties are familiar with used machinery prices in the area.
2. Use of an as is estimate by machinery dealers associations.
3. Estimates from the agricultural extension service or from agricultural experiment stations. "The Cost Of Owning And Operating Farm Machinery in the Pacific Northwest"; Willett, Gayle; Bob Smathers, PNW Extension Publication, Idaho, Washington, Oregon 346, September, 1997.
4. Use the custom rates paid in your area, subtracting the operators labor and management, as an opportunity cost to the machinery. Publications of custom rates can be obtained from local extension offices. "Custom Rates For Idaho Agricultural Operations - 1986," Miscellaneous Series No. 67, R.V. Withers, Agricultural Experiment Station, College of Agriculture, University of Idaho. "Custom Rates for Oregon Agriculture, 1988." T.L. Cross, Agricultural and Resource Economics, Oregon State University.

The machinery in Table's 1 and 2 were calculated by the third recommendation of using the costs of production studies from Oregon State University and using the estimate of machinery costs for a typical wheat farm in the Mid-Columbia area.

### **Operator or Landowner Labor Valuation**

Both parties should be compensated for their labor involved in a lease. This labor is usually not valued any higher than what a tenant or landowner would pay for a qualified person to perform his or her duties on the farm. This value of labor usually reflects the higher paid farm workers in an area.

### **EVALUATING LEASES WITH CHANGES IN CROPPING SYSTEMS**

Many growers in the Mid-Columbia region have expressed interest in changing from the custom-fallow winter wheat crop rotation to a continuous cropping system utilizing a minimum tillage practice. With the help of Sandy Macnab, OSU Extension Cereal Crops agent in Wasco and Sherman counties, we developed an equitable lease arrangement for those growers interested in changing cropping system. [Table 2](#) shows the results of changing from a one-third/two-thirds share crop lease to a one-fourth/three-fourths lease with the landowner sharing in the same inputs as in the first lease but now only paying one-fourth rather than one-third of those costs. The landowner contributes one-fourth of the expenses and receives one-fourth of the receipts. If the estimates of yield and price are correct each party now receives profits and losses in proportion to their financial risks.

### **RISK ASSOCIATED WITH LEASE ARRANGEMENTS**

Today's farmers face greater financial risks than in the past because of the increased size of their businesses, greater use of purchased inputs, greater financial needs and increased dependence upon world markets. Therefore, in selecting lease shares, it is important to recognize that they vary in terms of the relative amount of risk assumed by the tenant and landowner.

[Table 3](#) shows a sensitivity analysis of possible yield or price changes among the equitable lease arrangements for the fallow/winter wheat rotation and the continuous cropping system. With expected yield and prices, the landowner and tenant receive negative profits per acre with the one-third/two-thirds crop share lease and not until there is a 10 percent increase in yield or price does the tenant make a positive return on investment. The one-fourth/three-fourth crop share lease with continuous cropping does allow both parties a positive return on investment except if there is a 10 percent decrease in yield or price. In both situations the landowner and tenant share in the risks of wheat production equally and share in profits and losses in the same manner.

[Table 4](#) shows the affects of the tenant with a one-third/two-thirds crop share lease in a fallow/winter wheat rotation changing to the continuous cropping system without changing to a one-fourth/three-fourth crop share lease. Both parties receive a positive return on investment but the landowner receives a greater share of the receipts than expenses. Of course both parties gain in profits with an increase in yield or price but the downside has tremendous consequences. If there is a 10 percent decrease in yield or price the landowner still receives a positive return on investment (about \$6 per acre) but the tenant losses \$17 per acre with this lease type.

Lease equity is of great importance. Both parties often assume that reliance on customary leasing terms will result in an equitable lease. Both parties should be compensated for their contributions in a lease, whether it is a cash rent or a crop-share lease.

If an equitable lease is calculated and neither party receives a positive return on their investment the value of their inputs must be evaluated. The landowner might receive a lower rate of return than expected on land to make the lease feasible and the tenant may have to receive a lower rate for equipment use to make the lease equitable as well. Each party must be willing to give and take in constructing an equitable lease arrangement and assessing the equity of the lease periodically is paramount for good landowner-tenant relations.

<b>Table 1. Winter Wheat, Conventional, Mid-Columbia Area, \$/Acre Economic Costs and Returns</b>									
						<i>Tenant</i>		Tenant	Landowner
GROSS INCOME	Quantity		Unit			<i>Percent</i>	Total	Share	Share
Winter Wheat	45.00		Bushels			67%	\$ 168.75	\$ 113.06	\$ 55.69
Total GROSS Income							\$ 168.75	\$ 113.06	\$ 55.69
		<i>Tenant</i>		<i>Tenant</i>		<i>Tenant</i>		Tenant	Landowner
VARIABLE COSTS	Labor	<i>Percent</i>	Machinery	<i>Percent</i>	Materials	<i>Percent</i>	Total	Share	Share
Moldboard Plow (.33x)	\$ 0.59	100%	\$ 1.66	100%	\$ 0.00	100%	\$ 2.25	\$ 2.25	\$ 0.00
Chisel Plow (.67x)	0.62	100%	0.89	100%	0.00	100%	1.51	1.51	0.00
Cultivate (1.5x)	0.87	100%	2.00	100%	0.00	100%	2.87	2.87	0.00
Rod Weed (2x)	0.91	100%	2.10	100%	0.00	100%	3.01	3.01	0.00
Crop Production									
Fertilizer	0.00	100%	0.00	100%	13.32	67%	13.32	8.88	4.44
Drill Seed	0.81	100%	3.33	100%	9.75	100%	13.89	13.89	0.00
Herbicides	0.32	100%	0.85	100%	17.97	67%	19.14	13.15	5.99
Harvest Operations									
Combine	0.79	100%	1.51	100%	0.00	100%	2.30	2.30	0.00
Hauling Costs	1.62	100%	1.34	100%	0.00	100%	2.96	2.96	0.00
Other Charges									
Pickup & Trucks	0.00	100%	2.54	100%	0.00	100%	2.54	2.54	0.00
Other Machinery	0.00	100%	1.03	100%	0.00	100%	1.03	1.03	0.00
Miscellaneous	4.47	100%	1.00	100%	5.00	100%	10.47	10.47	0.00
Interest: Operating Capital	0.00	100%	0.00	100%	1.26	100%	1.26	1.26	0.00
Total VARIABLE COSTS	11.00		18.25		47.30		76.55	66.12	10.43
						<i>Tenant</i>		Tenant	Landowner
VARIABLE CASH COSTS					Unit	<i>Percent</i>	Total	Share	Share
Machinery and Equipment Insurance					acre	100%	\$ 4.00	\$ 4.00	\$ 0.00
Pickups & Truck Insurance					acre	100%	0.37	0.37	0.00
Crop - Hail & Fire Insurance					acre	67%	2.50	1.67	0.83
Conservation Practices					acre	0%	0.30	0.00	0.30
Property Insurance, etc.					acre	0%	0.10	0.00	0.10
Property Taxes					acre	0%	6.00	0.00	6.00
Total CASH Costs							\$ 13.27	\$ 6.04	\$ 7.23
NON-CASH Costs									
Machinery and Equipment Depreciation, Interest & Housing					acre	100%	\$ 41.72	\$ 41.72	\$ 0.00
Pickups, Trucks & ATV's Depreciation, Interest & Housing					acre	100%	6.22	6.22	0.00
Other Machinery – Depreciation & Interest					acre	100%	2.74	2.74	0.00
Land Charge - 6% of Market Value, After Tax					acre	0%	44.40	0.00	44.40
Total NON-CASH Costs							\$ 95.08	\$ 50.68	\$ 44.40
Total FIXED COSTS							\$ 108.35	\$ 56.72	\$ 51.63
Total of All Costs Per Acre							\$ 184.90	\$ 122.84	\$ 62.06
<b>PERCENTAGE THAT EACH PARTY HAS CONTRIBUTED TO TOTAL COSTS:</b>								<b>66.43%</b>	<b>33.57%</b>
RETURN OVER TOTAL COSTS							\$ (16.15)	\$ (9.77)	\$ (6.37)

<b>Table 2. Winter Wheat, Minimum Till-Continuous Cropping, Mid-Columbia Area, \$/Acre Economic Costs &amp; Returns</b>									
						<i>Tenant</i>		Tenant	Landowner
GROSS INCOME	Quantity		Unit			<i>Percent</i>	Total	Share	Share
Winter Wheat	38.00		Bushels			75%	\$ 142.50	\$ 106.87	\$ 35.63
Total GROSS Income							\$ 142.50	\$ 106.87	\$ 35.63
		<i>Tenant</i>		<i>Tenant</i>		<i>Tenant</i>		Tenant	Landowner
VARIABLE COSTS	Labor	<i>Percent</i>	Machinery	<i>Percent</i>	Materials	<i>Percent</i>	Total	Share	Share
Fertilizer	\$ 0.00	100%	\$ 0.00	100%	\$ 13.32	75%	\$ 13.32	\$ 9.99	\$ 3.33
Direct Seed Drill	0.74	100%	10.91	100%	9.75	100%	21.40	21.40	0.00
Herbicides	0.32	100%	0.93	100%	11.13	75%	12.38	9.60	2.78
Harvest Operations									
Combine	0.79	100%	2.69	100%	0.00	100%	3.48	3.48	0.00
Hauling Costs	1.62	100%	1.34	100%	0.00	100%	2.96	2.96	0.00
Other Charges									
Pickup & Trucks	0.00	100%	2.54	100%	0.00	100%	2.54	2.54	0.00
Other Machinery	0.00	100%	0.52	100%	0.00	100%	0.52	0.52	0.00
Miscellaneous	4.47	100%	1.00	100%	5.00	100%	10.47	10.47	0.00
Interest: Operating Capital	0.00	100%	0.00	100%	1.12	100%	1.12	1.12	0.00
Total VARIABLE COSTS	7.94		19.93		40.32		68.19	62.08	6.11
						<i>Tenant</i>		Tenant	Landowner
VARIABLE CASH COSTS					Unit	<i>Percent</i>	Total	Share	Share
Machinery and Equipment Insurance					acre	100%	\$ 2.48	\$ 2.48	\$ 0.00
Pickups & Truck Insurance					acre	100%	0.19	0.19	0.00
Crop - Hail & Fire Insurance					acre	75%	2.00	1.50	0.50
Property Insurance, etc.					acre	0%	0.10	0.00	0.10
Property Taxes					acre	0%	3.00	0.00	3.00
Total CASH Costs							\$ 7.77	\$ 4.17	\$ 3.60
NON-CASH Costs									
Machinery and Equipment Depreciation, Interest & Housing					acre	100%	\$ 22.75	\$ 22.75	\$ 0.00
Pickups, Trucks & ATV's Depreciation, Interest & Housing					acre	100%	3.11	3.11	0.00
Other Machinery – Depreciation & Interest					acre	100%	1.37	1.37	0.00
Land Charge - 6% of Market Value, After Tax					acre	0%	22.20	0.00	22.20
Total NON-CASH Costs							\$ 49.43	\$ 27.23	\$ 22.20
Total FIXED COSTS							\$ 57.20	\$ 31.40	\$ 25.80
Total of All Costs/Acre							\$ 125.39	\$ 93.48	\$ 31.91
<b>PERCENTAGE THAT EACH PARTY HAS CONTRIBUTED TO TOTAL COSTS:</b>								<b>74.55%</b>	<b>25.45%</b>
RETURN OVER TOTAL COSTS							\$ 17.11	\$ 13.40	\$ 3.71

**Table 3. Net Projected Returns Per Acre With Equitable Leases for a Fallow/Winter Wheat Rotation (1/3-2/3 Lease) and Continuous Cropping (25-75 Lease) System**

	Fallow/Winter Wheat		Continuous Cropping	
	Landowner	Tenant	Landowner	Tenant
10% Increase in Price or Yield	\$ (0.81)	\$ 1.53	\$ 7.28	\$ 24.08
Projected Price and Yield	(6.37)	(9.77)	3.71	13.40
10% Decrease in Price or Yield	(13.06)	(23.34)	(3.41)	(7.98)

**Table 4. Net Projected Returns Per Acre for a Fallow/Winter Wheat Rotation (1/3-2/3 Lease) But Changing to a Continuous Cropping System without Evaluating the Changes to the Sharing of Inputs.**

	Fallow/Winter Wheat		Continuous Cropping	
	Landowner	Tenant	Landowner	Tenant
10% Increase in Price or Yield	\$ (0.81)	\$ 1.53	\$ 19.82	\$ 11.54
Projected Price and Yield	(6.37)	(9.77)	15.11	2.00
10% Decrease in Price or Yield	(13.06)	(23.34)	5.71	(17.10)