Risk and Returns to Landlords and Tenants from Alternative Leasing Arrangements*

Robert O. Burton, Jr., Kevin C. Dhuyvetter,
Terry L. Kastens and Jenna R. Tajchman**

* Selected paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Mobile, Alabama, February 1-5, 2003. Kansas Agricultural Experiment Station Contribution No. 03-254-A. Appreciation is expressed to Dr. David L. Regehr, Extension Specialist and Researcher, Weed Science, Kansas State University, for help specifying the machinery and herbicide inputs. Any remaining errors are the responsibility of the authors.

** Professor, Professor, Associate Professor, and student, respectively, Department of Agricultural Economics, Kansas State University, Manhattan, KS 66506-4011

Abstract

Risks and Returns to Landlords and Tenants From Alternative Leasing Arrangements

Based on 20 years of yields and prices, expected annual net returns and variability of returns are measured for landlords and tenants under provisions of the 2002 Farm Bill for a representative crop rotation in North Central Kansas under alternative leasing arrangements and with conventional and no-tillage.

Risk and Returns to Landlords and Tenants from Alternative Leasing Arrangements

Agriculture continues to change at a rapid pace because of technological advancements, changing farm size and structure, farm programs, and land tenure. Because of these changes, information about alternative crop leasing arrangements continues to be in high demand by producers and landlords. Furthermore, traditional crop share arrangements are becoming less common as landowners and tenants search for arrangements that fit their increasingly unique situations.

The market ultimately determines specific rental rates. However, when advising individual landowners and tenants on terms of leases, the approach used is typically the contribution approach. The 1999 *Nonirrigated Farm Lease Arrangement Survey*, conducted by Kansas Agricultural Statistics and the Land Use Value Project at Kansas State University, indicated that 67% of the respondents lease land and that fixed cash, crop share, and net share lease arrangements represented 94.7% of the types of leases (Tsoodle and Wilson). The 33%/67% landlord/tenant crop share was the most common lease.

The first objective of this paper is to measure the net returns and variability of net returns (over a 20-year period) to landlords and tenants under the 2002 farm bill for a representative crop rotation in North Central Kansas under alternative leasing arrangements. A second objective is to compare the net returns and variability of net returns of the alternative leasing arrangements under conventional tillage and no-till.

The three cropland leasing arrangements to be analyzed include cash, crop share and net share. The fixed cash lease generally requires an annual fixed payment to the landlord. For crop share, the landlord and tenant each share a predetermined proportion of the crop and of specified input costs. The inputs for which costs are shared are usually yield enhancing inputs such as

fertilizer and herbicides. Sharing the crop and the cost of yield enhancing inputs in the same proportions provides motivation for both the landlord and the tenant to use profit maximizing levels of the inputs. For the net share lease, the landlord receives a predetermined proportion of the crop without paying any input costs.

Conventional tillage verses no-tillage has inspired interest and controversy. Both can produce benefits and costs to a producer. However, no-tillage and reduced tillage offer potential advantages, such as conservation of soil moisture, possibly resulting in higher yields, and the ability to utilize more acres, thus spreading fixed costs of machinery and management over a larger amount of output. Moreover, no-tillage and reduced tillage may help producers conform to government program conservation requirements and, therefore, contribute to receipt of government payments (Watson).

Many questions arise when trying to establish crop and cost shares in order to maintain an equitable lease arrangement when changing tillage practices. The tenant and landlord must decide what costs associated with the new tillage system will be shared and at what percentage so that both will have incentive to use profit maximizing levels of inputs. New tillage practices have the potential to be beneficial to both the tenant and landlord; however, terms of leases may need to be adjusted to maintain equitable leases as tillage practices change.

The Farm Security and Rural Investment Act of 2002, also known as the 2002 Farm Bill, became law in May of 2002 (Dumler and Lubben). It is a combination of provisions from the 1990 and 1996 Farm Bills and is scheduled to last through 2007. The 2002 Farm Bill is complex and payments to individual producers will vary as their production history, farm situation, and individual decisions vary. A brief description of the three major types of payments to producers follows. First, fixed direct payments under the 2002 Farm Bill replace the production flexibility

payments or Agriculture Market Transition Act (AMTA) payments under the previous Farm Bill. The fixed payment is guaranteed to producers who participate in the new farm program, regardless of crops planted (except you cannot plant fruits or vegetables) or the market price. Second, market loss assistance payments under the previous Farm Bill are replaced by new payments called counter-cyclical payments or CCPs (Otte). The counter-cyclical payment adjusts automatically, paying when the U.S. market price drops below the U.S. target price minus the fixed payment. The payment increases when prices are low and decreases (or vanishes) when prices are high. This payment is calculated by subtracting the direct payment and the higher of either the market price or loan rate from the target price. Similar to the fixed payment, the CCPs are independent of crops planted. Finally, similar to previous Farm Bills, loan deficiency payments are paid to program participants if the local market price falls below the local loan rate. With the dramatic changes in tillage practices and government programs, it is important to compare alternative lease arrangements in terms of net income and riskiness for landlords and tenants.

Data and Methods

The leasing arrangements considered are cash rent, crop share, and net share. Twenty years of budgets (1982-2001) are prepared for a representative crop rotation in Mitchell County, Kansas. The crop rotation chosen is a three-year rotation consisting of two years of wheat and one year of grain sorghum. Crop production in this area is predominately nonirrigated with wheat and grain sorghum being the two major crops. Kansas Agricultural Statistics Service data for 2001 indicate that in Mitchell County, wheat accounted for 56 percent of acres harvested and sorghum for grain accounted for 26 percent of acres harvested. Specification of yields at the

county level limits the loss of variability in yield that could result if the average yield represented a larger geographical area.

Annual crop budgets measure costs and net returns for both the landlord and tenant. County average yields for Mitchell County were taken from National Agricultural Statistics Service data. Mitchell County Kansas is located in the state's North Central Crop Reporting District. North Central District average prices were taken from Kansas Agricultural Statistics Service (KASS) data. Machinery costs were based on Kansas Custom Rates from KASS. Farming practices, as well as herbicide and fertilizer application rates, were based on information developed for a recent masters thesis at Kansas State University (Stucky). These practices were discussed and adjusted after consultations with a weed science extension specialist and researcher at Kansas State University (Regehr). Herbicide prices are taken from Regehr, et al. Mitchell County cash rent and land values are from Dhuyvetter, Kastens, and Taylor. The landlord's property tax was 0.72 percent of land value (Featherstone, Kastens and Dhuyvetter). Other inputs and prices were based on the October 2000 Kansas Farm Management & Marketing Handbook (Department of Agricultural Economics). Costs in the budgets represent a 2001 price level.

Because crop yields have trended upward over time and because we intend for the budgets to represent the current or recent situation for future planning, 1982-2000 yields were adjusted to a 2001 yield level. These yields were adjusted by adding the difference between actual and linear trend yields to the county average yields.

Calculation of government program payments under the 2002 Farm Bill is complex and individual farm payments will be affected by factors such as individual situations, historical data, and operator decisions such as what yields to use to determine program yields. Annual payments

were budgeted based on historical yields and price data as follows. We assumed that all acres budgeted were included in the program base. The program yield for direct and counter-cyclical payments was based on the 1998-2001 Mitchell County average yields for planted acres multiplied by 0.935 as required by the Farm Bill when producers use updated program yields from historical county averages. Direct payments were calculated as 85 percent of the payment yield multiplied by the direct payment rate. The counter-cyclical payment rate was based on the target price minus the fixed payment rate minus the higher of the national loan rate or the national market price (NASS 1986, 1992, and 2002). For years in which the North Central Crop Reporting District price was less than the Mitchell County loan rate, a loan deficiency payment was calculated based on the difference between the Mitchell County loan rate and the North Central Crop Reporting District average price multiplied by the county average yield. Because of the complexity of the 2002 Farm Bill and our use of average data (especially market year average prices), our calculated government payments would not be exactly accurate for an individual producer. However, as with the other information in our budgets, they are representative of current expected payments based on historical prices and historical yields (with yields adjusted to a 2001 level).

For each crop, the no-tillage budgets had lower machinery costs and higher herbicide costs than the conventional tillage budgets. When the same county average yields were used for both tillage systems, average net returns per acre ($-2.90) for no-tillage were $1.37 lower than average net returns for conventional tillage ($-1.53). Traditionally, conventional tillage has been the dominant system in North Central Kansas; so county average yields likely represent conventional tillage. However, some farmers in the area are switching to no-tillage, suggesting

that they are finding no-tillage to be more profitable than conventional tillage, perhaps in part because of higher yields.

An equitable lease is typically defined as a lease that has the landlord and tenant sharing revenues in the same proportion as they share expenses. Recent data indicate that a one-third (33%), two-thirds (67%) landlord/tenant share is the predominant crop-share lease in North Central Kansas (Tsoodle and Wilson). However, we did not have data to specify an equivalent net share lease. We specified the Mitchell County cash rent at $45.20/acre based on Dhuyvetter, Kastens, and Taylor. Nonmachinery labor and miscellaneous cost in our budgets are somewhat arbitrary. These two cost items were specified to make the cash rent and crop share lease internally consistent

The equitable shares for crop share and net share leases were determined based on the crop budgets and the relative contribution of both parties. For the conventional tillage crop share lease; revenues, fertilizer cost, and herbicides costs were all shared at 33 percent for the landlord and 67 percent for the tenant. For the no-tillage crop share lease, revenues and fertilizer costs were shared at 33 percent for the landlord and 67 percent for the tenant and herbicides costs were shared at 83 percent for the tenant and 17 percent for the landlord. Such an arrangement might arise if the landlord and tenant had previously had a 33/67 percent conventional tillage crop share lease. When the tenant switches to no-tillage, he or she pays 100 percent of the additional herbicides that replace machinery operations that were used with conventional tillage. Finally, under the net share leases the tenant pays all crop production expenses and the landlord/tenant share conventional tillage revenues at 26.3%/73.7% and no-tillage revenues at 26.1/73.9 percent.

The transition from wheat to grain sorghum in the second and third year of the wheat-wheat-grain sorghum rotation requires about a 9 month fallow between the harvest of wheat and

the planting of grain sorghum. During the fallow period weeds can be controlled by machinery tillage operations (conventional tillage) or by herbicide applications (no-tillage). Our lease arrangements require the tenant to pay all of the fallow costs.

Results and Discussion

Results for each rental arrangement in terms of net returns for each crop and the three-year rotation average net returns are reported in Tables 1 through 4. Risk (standard deviation) associated with the 20 years of net returns is reported and 20 years of three-year rotation average net returns is also reported. Results suggest that wheat is more profitable and less risky than grain sorghum. However, because crop rotation breaks up pest and disease cycles, continuous production of one crop would likely result in lower yields and/or higher costs than the yields and costs associated with the crop in a rotation. Thus, it probably is not appropriate to compare the economics of individual crops in a cropping system. Therefore, presentation and discussion of results is focused on the three-year rotation average net returns and on the standard deviations associated with the three-year rotation averages.

Tenant with Conventional Tillage

Net returns for the tenant represent economic profit. However, as mentioned above, some of the costs that are somewhat arbitrary were reduced to make the rental arrangements equitable. To the extent this $9.50 reduction in cost eliminated costs that are actually incurred, net returns may be overestimated.

Results for the tenant with conventional tillage illustrate the expected relationship between cash and share rental arrangements and risk. With the cash lease, the tenant assumes all the production and market risk and has the largest standard deviation, $31.80, which is about 1.5

times as large as the standard deviation under the share rental arrangements. The crop share rental arrangement had the lowest standard deviation, $20.57. The net share arrangement was a close second, with a standard deviation of $22.85. Results suggest that during 1982-2001 the average farmer in North Central Kansas averaged negative net returns under each rental arrangement considered. Although there were large negative net returns in some years, the 20-year average loss was small and the difference in 20-year average losses among the rental arrangements was small. The cash rental arrangement had the largest 20-year average loss -$1.35. However, that loss was only 50 cents greater than the -$0.85 20-year average net return for the crop share rental arrangement that had the largest (least negative) 20-year average net return.

In summary, the cash rental arrangement exhibited the greatest risk and lowest net returns. However, it also had the highest individual year three-year rotation average in 1996. The crop share rental arrangement had the lowest risk and largest (smallest loss) net return. The net share rental arrangement was close to the crop share arrangement in terms of risk and net returns.

Landlord with Conventional Tillage

Net returns for the landlord represent gross returns to land less property tax and any shared inputs. Thus, net returns for the landlord is a measure of cash flow. Our results indicate that cash rent offers the largest net return $40.25/acre with zero risk (Table 3). As expected, crop share, which involves the landlord sharing both revenues and some expenses, offers the largest risk, a three-year rotation average standard deviation of $11.25 and a rotation average net return of $39.76, only 49 cents less than the net return for the cash rental arrangement. The extremes in the annual three-year rotation average illustrate the riskiness of crop share rental arrangement to

the landlord. With 1996 average yields, prices, and government payments, the landlord's net return, at $50.01/acre is almost $19.00/acre greater than the cash rent net return. However, in 1989, the landlord's net return is $13.05/acre, about $27.00/acre less than the net return with cash rent. From the risk standpoint, the net share rental arrangement is a little better for the landlord than the crop share arrangement. The three-year rotation average net share standard deviation is $8.96, about $2.00 lower than the crop share standard deviation. The three-year rotation average net return for net share is about 20 cents larger than the net return for crop share.

Tenant with No-Tillage

As with conventional tillage, results for the tenant with no-tillage indicate that cash rent is worst and crop share is best (Table 2). Cash rent has the largest three-year rotation average standard deviation, $31.57. This is about 1.5 times as large as the standard deviation for either crop share ($20.42) or net share ($22.75). Cash rent also has the largest three-year rotation average loss (-$4.71). This is about $1.50 greater than the -$3.16 loss for share rent, which was the most profitable rental arrangement for the tenant. Cash rent again had the best and the worst income years for the tenant. In 1989, the cash rent arrangement lost about $85/acre on the three-year rotation. In 1996, the cash rent arrangement showed a three-year rotation average net income of almost $56/acre.

Landlord with No-Tillage

As with conventional tillage, with no-tillage the landlord has the largest net return ($40.25) and no risk with the cash rental arrangement. Compared to returns with cash rent, net returns are lower with crop share and net share, but not much lower. Three-year rotation average crop share returns were $1.28 lower and net share returns were $1.17 lower than returns with cash rent. Net share was the least risky share rental arrangement for the landlord with a three-

year rotation average standard deviation of $8.83. The three-year rotation average standard deviation for crop share was only $2.34 larger than the standard deviation for net share.

Conclusions

This research confirms the well-known principle that in a risky business such as crop production, tenants tend to be better off if they share income risk with landlords. With both conventional and no-tillage, risk to the tenant with a cash lease was about 1.5 times the risk with either share lease. The cash lease also had the smallest income. However, differences among the three rental arrangements, in three-year rotation average net returns, were small. In terms of risk and returns, the crop share arrangement was better for the tenant than the net share arrangement. But the differences between the crop share and net share arrangements were much smaller than the differences between the cash rental and the two share rental arrangements. Thus, for tenants who have landlords not wanting to pay bills, this may be an attractive alternative compared to cash rent.

The cash rental arrangement will generally be preferred by landlords, who are risk averse, because the cash lease results in no production or market risk to landlords. However, differences among the three rental arrangements average net returns to landlords were small. Sharing both the crop and the cost of some of the inputs was a little more risky and resulted in a slightly higher income for landlords than sharing the crop only.

Comparing conventional and no-tillage, returns and conclusions relative to the net returns and riskiness of the three rental arrangements were essentially identical. Switching from conventional to no-tillage involves substitution of herbicides for machinery operations to control weeds. In our budgeting analysis, this resulted in a little higher costs of production and a little

lower net returns for no-tillage. In our analysis, we assumed that yields were the same for both methods of tillage. Higher yields for either system would tend to favor the system with the higher yields. In order to work with equitable leases, we found that we had to use slightly different shares of the inputs for the two tillage systems with the crop share arrangement and slightly different shares of the crop for the two tillage systems with the net share arrangement. Maintaining equitable leases will continue to be an important issue for landlords and tenants as tillage and other crop production practices change.

References

Department of Agricultural Economics. *Kansas Farm Management & Marketing Handbook*. K-State Research and Extension, Manhattan, KS, October 2000.

Dhuyvetter, K., T. Kastens, and M. Taylor. "Kansas Land Values and Cash Rents at the County Level." Kansas State Univ., Dept. of Agri. Econ., Dec. 2002.

Dumler, Troy and Lubben, Brad. "Commodity Program Decisions: As Simple as 1,2,3?" Paper presented at the 2002 Risk and Profit Conference, August 15-16, 2002, Manhattan, KS.

Featherstone, A.M., T.L. Kastens and K.C. Dhuyvetter. "Western U.S. Farmland Markets: What Drives Price Differences?" Presented at the 2002 annual meeting of the AAEA, Long Beach, California, July 29-31, 2002

Kansas Agricultural Statistics Service. Farm Facts 2001-2002. P.O. Box 3534, Topeka, KS.

Kansas Agricultural Statistics Service. 2001 Kansas Custom Rates. P.O. Box 3534, Topeka, KS.

Kansas Agricultural Statistics Service/Releases & Publications/Historical Monthly District Crop Prices. Http://www.nass.usda.gov/ks/prices/distprdat.htm. Oct. 7, 2002.

National Agricultural Statistics Service. *Agricultural Statistics 1986*. U.S. Government Printing Office, Washington, D.C. 1986.

National Agricultural Statistics Service. *Agricultural Statistics 1993*. U.S. Government Printing Office, Washington, D.C. 1993.

National Agricultural Statistics Service. *2002 Agricultural Statistics*. From http://www.usda.gov/nass/pubs/agstats.htm

National Agricultural Statistics Service. "Agricultural Statistics Data Base Quick Stats," http://www.nass.usda.gov:81/ipedb/. Oct. 10, 2002.

Otte, John. "2002 Farm Bill Basics: A Brand-New Game." *Kansas Farmer*. July 2002 pg. M8.

Regehr, D.L. Extension Specialist and Researcher, Weed Science, Kansas State Univ. Research and Extension, Personnel Communications, 2002 and 2003.

Regehr, D.L., D.E. Peterson, P.D. Ohlenbusch, W.H. Fick, P.W. Stahlman, and R.E. Wolf. "*Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland, 2001*." Kansas State Univ., Agri. Exp. Sta. and Coop. Ext. Svc., Jan. 2001.

Stucky, T.J. "Tradeoff Analysis Between Water Quality and Net Returns in Central and Eastern Kansas." M.S. Thesis, Kansas State Univ., 2000.

Tsoodle, L. J. and E. A. Wilson. "Nonirrigated Crop-share Leasing Arrangements in Kansas." Dept. of Agri. Econ. Kansas State Univ. Manhattan, KS, Aug. 2000.

Watson, Steve (Editor). "*Kansas No-Till Handbook*." Kansas State Univ. Agri. Exp. Sta. and Coop Ext. Svc., Nov. 1999.

Table 1. Tenant Net Returns ($/Acre) with Conventional Tillage and Cash, Crop Share, and Net Share rental Arrangements

	Cash				Crop Share				Net Share			
Year	First Year Wheat	Second Year Wheat	Third Year Sorghum	Three Year Rotation Average	First Year Wheat	Second Year Wheat	Third Year Sorghum	Three Year Rotation Average	First Year Wheat	Second Year Wheat	Third Year Sorghum	Three Year Rotation Average
1982	6.71	6.71	-5.60	2.61	6.36	6.36	-7.69	1.68	9.14	9.14	-12.95	1.78
1983	42.80	42.80	-44.15	13.82	29.51	29.51	-30.72	9.43	34.92	34.92	-39.13	10.24
1984	18.70	18.70	-26.82	3.53	13.86	13.86	-20.23	2.50	17.56	17.56	-27.25	2.62
1985	4.34	4.34	4.10	4.26	4.43	4.43	-1.41	2.48	7.12	7.12	-5.98	2.75
1986	-6.31	-6.31	17.50	1.63	-2.30	-2.30	5.79	0.40	-0.40	-0.40	2.48	0.56
1987	21.90	21.90	73.38	39.06	15.61	15.61	44.47	25.23	19.60	19.60	44.65	27.95
1988	-13.55	-13.55	-39.34	-22.15	-7.02	-7.02	-27.67	-13.90	-5.64	-5.64	-35.72	-15.67
1989	-97.15	-97.15	-33.11	-75.80	-60.90	-60.90	-23.99	-48.60	-65.55	-65.55	-31.53	-54.21
1990	36.26	36.26	-42.81	9.90	25.01	25.01	-30.99	6.34	30.01	30.01	-39.07	6.98
1991	-22.79	-22.79	-78.87	-41.48	-13.02	-13.02	-54.87	-26.97	-12.29	-12.29	-65.43	-30.00
1992	-1.25	-1.25	25.36	7.62	1.17	1.17	11.54	4.63	3.39	3.39	8.66	5.15
1993	-39.98	-39.98	-29.81	-36.59	-23.98	-23.98	-23.97	-23.98	-24.51	-24.51	-30.84	-26.62
1994	4.98	4.98	12.82	7.59	5.00	5.00	3.31	4.44	7.71	7.71	-0.45	4.99
1995	5.90	5.90	-25.30	-4.50	6.36	6.36	-19.48	-2.25	8.98	8.98	-26.35	-2.80
1996	35.97	35.97	99.14	57.03	26.45	26.45	61.93	38.28	31.09	31.09	63.81	42.00
1997	61.74	61.74	-13.18	36.77	41.87	41.87	-12.42	23.77	48.62	48.62	-18.26	26.33
1998	37.14	37.14	3.79	26.02	25.29	25.29	-2.66	15.97	30.41	30.41	-7.03	17.93
1999	26.22	26.22	-13.36	13.03	18.35	18.35	-13.22	7.83	22.66	22.66	-18.93	8.80
2000	-9.86	-9.86	-105.74	-41.82	-4.56	-4.56	-70.56	-26.56	-2.92	-2.92	-83.38	-29.74
2001	-22.05	-22.05	-38.66	-27.59	-12.30	-12.30	-28.81	-17.80	-11.57	-11.57	-36.49	-19.88
Average	4.49	4.49	-13.03	-1.35	4.76	4.76	-12.08	-0.85	7.42	7.42	-17.96	-1.04
Std. Dev.	34.97	34.97	46.40	31.80	22.61	22.61	29.82	20.57	25.12	25.12	33.18	22.85

Table 2. Tenant Net Returns ($/Acre) with No-Tillage and Cash, Crop Share, and Net Share rental Arrangements

	Cash				Crop Share				Net Share			
Year	First Year Wheat	Second Year Wheat	Third Year Sorghum	Three Year Rotation Average	First Year Wheat	Second Year Wheat	Third Year Sorghum	Three Year Rotation Average	First Year Wheat	Second Year Wheat	Third Year Sorghum	Three Year Rotation Average
1982	10.51	-6.60	-0.18	1.24	11.16	-3.64	-5.39	0.71	13.27	-3.85	-7.13	0.76
1983	46.61	29.49	-38.73	12.46	34.31	19.52	-28.42	8.47	39.13	22.01	-33.40	9.25
1984	22.50	5.38	-21.40	2.16	18.67	3.87	-17.93	1.54	21.72	4.60	-21.48	1.61
1985	8.15	-8.97	9.52	2.90	9.23	-5.57	0.88	1.51	11.25	-5.87	-0.14	1.75
1986	-2.51	-19.62	22.92	0.26	2.50	-12.30	8.08	-0.57	3.70	-13.42	8.36	-0.45
1987	25.70	8.58	0.07	11.45	20.42	5.62	-5.99	6.68	23.77	6.65	-7.55	7.62
1988	-9.75	-26.87	-70.91	-35.84	-2.22	-17.02	-50.16	-23.13	-1.55	-18.66	-57.33	-25.85
1989	-93.34	-110.46	-51.35	-85.05	-56.10	-70.90	-37.55	-54.85	-61.64	-78.76	-43.26	-61.22
1990	40.06	22.95	-43.72	6.43	29.81	15.02	-32.93	3.97	34.20	17.09	-38.02	4.42
1991	-18.99	-36.10	-47.57	-34.22	-8.21	-23.01	-35.23	-22.15	-8.22	-25.34	-40.64	-24.73
1992	2.56	-14.56	30.78	6.26	5.97	-8.82	13.84	3.66	7.51	-9.61	14.55	4.15
1993	-36.17	-53.29	-24.40	-37.95	-19.17	-33.97	-21.67	-24.94	-20.48	-37.60	-25.07	-27.72
1994	8.79	-8.33	18.24	6.23	9.81	-4.99	5.60	3.47	11.84	-5.28	5.42	3.99
1995	9.70	-7.41	-19.88	-5.86	11.16	-3.64	-17.18	-3.22	13.10	-4.01	-20.57	-3.83
1996	39.78	22.66	104.56	55.67	31.25	16.45	64.23	37.31	35.28	18.16	69.84	41.09
1997	65.54	48.42	-7.76	35.40	46.68	31.88	-10.13	22.81	52.87	35.75	-12.46	25.39
1998	40.95	23.83	9.20	24.66	30.09	15.30	-0.36	15.01	34.61	17.49	-1.19	16.97
1999	30.02	12.90	-7.94	11.66	23.16	8.36	-10.92	6.87	26.84	9.72	-13.13	7.81
2000	-6.06	-23.18	-100.33	-43.19	0.24	-14.55	-68.26	-27.52	1.17	-15.94	-77.79	-30.85
2001	-18.25	-35.37	-33.24	-28.95	-7.49	-22.29	-26.51	-18.76	-7.50	-24.62	-30.75	-20.96
Average	8.29	-8.83	-13.61	-4.71	9.56	-5.23	-13.80	-3.16	11.54	-5.57	-16.59	-3.54
Std. Dev.	34.97	34.97	43.10	31.57	22.61	22.61	27.53	20.42	25.20	25.20	30.78	22.75

Table 3. Landlord Net Returns ($/Acre) with Conventional Tillage and Cash, Crop Share, and Net Share rental Arrangements

	Cash				Crop Share				Net Share			
Year	First Year Wheat	Second Year Wheat	Third Year Sorghum	ThreeYear Rotation Average	First Year Wheat	Second Year Wheat	Third Year Sorghum	ThreeYear Rotation Average	First Year Wheat	Second Year Wheat	Third Year Sorghum	ThreeYear Rotation Average
1982	40.25	40.25	40.25	40.25	40.61	40.61	42.34	41.19	37.82	37.82	47.60	41.08
1983	40.25	40.25	40.25	40.25	53.55	53.55	26.82	44.64	48.13	48.13	35.23	43.83
1984	40.25	40.25	40.25	40.25	45.09	45.09	33.66	41.28	41.39	41.39	40.68	41.15
1985	40.25	40.25	40.25	40.25	40.17	40.17	45.77	42.04	37.47	37.47	50.33	41.76
1986	40.25	40.25	40.25	40.25	36.25	36.25	51.97	41.49	34.35	34.35	55.27	41.32
1987	40.25	40.25	40.25	40.25	46.54	46.54	69.17	54.08	42.55	42.55	68.98	51.36
1988	40.25	40.25	40.25	40.25	33.73	33.73	28.59	32.02	32.34	32.34	36.64	33.77
1989	40.25	40.25	40.25	40.25	4.01	4.01	31.14	13.05	8.65	8.65	38.67	18.66
1990	40.25	40.25	40.25	40.25	51.51	51.51	28.43	43.82	46.51	46.51	36.51	43.18
1991	40.25	40.25	40.25	40.25	30.48	30.48	16.25	25.74	29.75	29.75	26.81	28.77
1992	40.25	40.25	40.25	40.25	37.84	37.84	54.07	43.25	35.62	35.62	56.95	42.73
1993	40.25	40.25	40.25	40.25	24.26	24.26	34.41	27.64	24.79	24.79	41.28	30.29
1994	40.25	40.25	40.25	40.25	40.23	40.23	49.77	43.41	37.52	37.52	53.52	42.85
1995	40.25	40.25	40.25	40.25	39.80	39.80	34.44	38.01	37.18	37.18	41.30	38.55
1996	40.25	40.25	40.25	40.25	49.79	49.79	77.46	59.01	45.13	45.13	75.59	55.28
1997	40.25	40.25	40.25	40.25	60.12	60.12	39.49	53.24	53.37	53.37	45.33	50.69
1998	40.25	40.25	40.25	40.25	52.11	52.11	46.70	50.31	46.99	46.99	51.07	48.35
1999	40.25	40.25	40.25	40.25	48.12	48.12	40.12	45.45	43.81	43.81	45.83	44.48
2000	40.25	40.25	40.25	40.25	34.95	34.95	5.07	24.99	33.31	33.31	17.89	28.17
2001	40.25	40.25	40.25	40.25	30.50	30.50	30.40	30.47	29.77	29.77	38.08	32.54
Average	40.25	40.25	40.25	40.25	39.98	39.98	39.30	39.76	37.32	37.32	45.18	39.94
Std. Dev.	0.00	0.00	0.00	0.00	12.37	12.37	16.64	11.25	9.86	9.86	13.26	8.96

Table 4. Landlord Net R
eturns ($/Acre) with No-Tillage and Cash, Crop Share, and Net Share rental Arrangements

	Cash				Crop Share				Net Share			
Year	First Year Wheat	Second Year Wheat	Third Year Sorghum	Three Year Rotation Average	First Year Wheat	Second Year Wheat	Third Year Sorghum	Three Year Rotation Average	First Year Wheat	Second Year Wheat	Third Year Sorghum	Three Year Rotation Average
1982	40.25	40.25	40.25	40.25	39.60	37.28	45.46	40.78	37.49	37.49	47.20	40.73
1983	40.25	40.25	40.25	40.25	52.54	50.22	29.95	44.24	47.73	47.73	34.93	43.46
1984	40.25	40.25	40.25	40.25	44.08	41.76	36.78	40.87	41.04	41.04	40.34	40.81
1985	40.25	40.25	40.25	40.25	39.16	36.85	48.89	41.63	37.15	37.15	49.91	41.40
1986	40.25	40.25	40.25	40.25	35.24	32.92	55.09	41.08	34.04	34.04	54.81	40.96
1987	40.25	40.25	40.25	40.25	45.53	43.22	46.31	45.02	42.19	42.19	47.87	44.08
1988	40.25	40.25	40.25	40.25	32.71	30.40	19.50	27.54	32.05	32.05	26.67	30.26
1989	40.25	40.25	40.25	40.25	3.00	0.68	26.45	10.04	8.55	8.55	32.16	16.42
1990	40.25	40.25	40.25	40.25	50.49	48.18	29.46	42.71	46.11	46.11	34.55	42.26
1991	40.25	40.25	40.25	40.25	29.47	27.15	27.92	28.18	29.48	29.49	33.33	30.77
1992	40.25	40.25	40.25	40.25	36.83	34.51	57.19	42.84	35.30	35.31	56.48	42.36
1993	40.25	40.25	40.25	40.25	23.25	20.93	37.53	27.24	24.56	24.56	40.93	30.02
1994	40.25	40.25	40.25	40.25	39.22	36.91	52.89	43.01	37.19	37.20	53.07	42.49
1995	40.25	40.25	40.25	40.25	38.79	36.47	37.56	37.61	36.85	36.85	40.95	38.22
1996	40.25	40.25	40.25	40.25	48.77	46.46	80.58	58.60	44.75	44.75	74.98	54.83
1997	40.25	40.25	40.25	40.25	59.11	56.79	42.62	52.84	52.92	52.93	44.95	50.27
1998	40.25	40.25	40.25	40.25	51.10	48.78	49.82	49.90	46.59	46.59	50.65	47.94
1999	40.25	40.25	40.25	40.25	47.11	44.79	43.24	45.05	43.43	43.44	45.44	44.10
2000	40.25	40.25	40.25	40.25	33.94	31.63	8.19	24.59	33.02	33.02	17.72	27.92
2001	40.25	40.25	40.25	40.25	29.49	27.17	33.52	30.06	29.50	29.50	37.76	32.25
Average	40.25	40.25	40.25	40.25	38.97	36.66	40.45	38.69	37.00	37.00	43.24	39.08
Std. Dev.	0.00	0.00	0.00	0.00	12.37	12.37	15.61	11.17	9.78	9.78	12.35	8.83