



Montana farm leasing and current use valuations of Montana farm estates
by Theodore David Paschke

A thesis submitted in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE
in Applied Economics
Montana State University
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Abstract:

The leasing of agricultural lands is important to Montana farming and ranching. Over 75. percent of both the State's total agricultural land and harvested cropland was leased in 1974. Those renting farms, part-owners and tenants, comprised 53.8 percent of all Montana's farm operators in 1974. Information regarding prevailing Montana farm rental practices is therefore important to aid in lease formulation for other farms. And as farm leasing is important in "current use" valuations, estate tax reducing measures allowed by the Tax Reform Act of 1976, such data are increasingly valuable.

A survey to gather such information was conducted in six counties assumed representative of Montana, dryland and irrigated farming areas. Total survey response was 21.35 percent with a usable response rate of 16.97 percent.

Data summary found share rental to be more predominant than cash rental in the study area. Those share rental agreements reported were characterized by rather standard crop- and expense-sharing patterns in both dryland and irrigated cases. What variation in sharing arrangements which did exist was largely unexplained by landlord-renter relation or by average crop yield. There was a wide range in those dryland and irrigated cash rents reported. The large deviation in such rents was largely attributed to various factors and characteristics of the farms studied. This largely precluded any conclusions regarding typical or recommended cash rents.

Analyses to test for equity of those customary crop- and expenses sharing arrangements found were conducted. Such testing showed the typical mode of irrigated share leasing discovered to be approximately equitable. Dryland share leasing deviated somewhat from an equitable division of crops in comparison to cost contributions.

The study next related survey findings regarding leasing practices and farming in the study area to estate taxation. Alternate procedures by which "current use" valuations could be secured in the study area and Montana were suggested. The study concluded considering possible effects of such valuations.

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September 13, 1978

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Approved:


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MONTANA STATE UNIVERSITY
Bozeman, Montana

September, 1978

ACKNOWLEDGEMENTS

My graduate study has indeed been a growing experience. During this time many people have helped and guided me, a few of which deserve special recognition. My major advisor, Won Koo, was special as a friend and one willing to learn with me. And how can I adequately express my thanks to Mom and my step-dad, Henry? I can't.

The aforementioned growth came professionally, but especially spiritually. In this, my Brothers and Sisters were so important in radiating Jesus' love and helping me come to know Him.

To all these and many more, while they may never read this work, I extend heartfelt thanks.

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ABSTRACT

The leasing of agricultural lands is important to Montana farming and ranching. Over 75 percent of both the State's total agricultural land and harvested cropland was leased in 1974. Those renting farms, part-owners and tenants, comprised 53.8 percent of all Montana's farm operators in 1974. Information regarding prevailing Montana farm rental practices is therefore important to aid in lease formulation for other farms. And as farm leasing is important in "current use" valuations, estate tax reducing measures allowed by the Tax Reform Act of 1976, such data are increasingly valuable.

A survey to gather such information was conducted in six counties assumed representative of Montana dryland and irrigated farming areas. Total survey response was 21.35 percent with a usable response rate of 16.97 percent.

Data summary found share rental to be more predominant than cash rental in the study area. Those share rental agreements reported were characterized by rather standard crop- and expense-sharing patterns in both dryland and irrigated cases. What variation in sharing arrangements which did exist was largely unexplained by landlord-renter relation or by average crop yield. There was a wide range in those dryland and irrigated cash rents reported. The large deviation in such rents was largely attributed to various factors and characteristics of the farms studied. This largely precluded any conclusions regarding typical or recommended cash rents.

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Chapter 1

INTRODUCTION

American farms are becoming fewer in number, larger in size, and more sophisticated in the operational techniques used. While such changes may vary from region to region and state to state, Montana agriculture has also felt this general transformational trend. Montana farms have fallen in number from about 42,000 in 1940 to about 22,500 in 1976.¹ And farm size has grown during the same period as the average farm increased in size from 1,111 to 2,665 acres. Accompanying these changes has been a rise in the value of assets employed in the typical Montanan's farm. The years from 1940 to 1974 saw the average investment in Montana farmland and farm buildings increase from \$8,373 to \$298,070.² Whatever one attributes this inflation³

¹ Montana Department of Agriculture and Statistical Reporting Service-U.S.D.A., Montana Agricultural Statistics, County Statistics, (Helena, Montana, published biennially).

² U.S. Department of Commerce, Bureau of the Census, 1974 Census of Agriculture, Vol. 1, Part 20 (Washington: Government Printing Office, 1977). The 1974 Census defines a farm as ". . . to include all land on which agricultural operations were conducted at any time in the census year under a day-to-day control to an individual management and from which \$1,000 or more of agricultural products were sold during the census year." (Places normally producing \$1,000 of revenue were also included.)

³ The index of prices paid by farmers for all items, interest, taxes and wages rose from 36 in 1940 to 160 in 1974 (1967 = 100). This represents a change of 460 percent (169/36). Thus, the \$8,373 in 1940 corresponds to an investment of \$39,260.37 in 1967 while \$298,077 in 1974 is \$176,372.78 in "real" 1967 dollars. Thus, the effective increase in investment was \$137,103.41.

to, speculation or growth and modernization, managing the average Montana farm is a position of significant financial responsibility. This responsibility generally falls upon three types of farm operators.

Aside from full-owners, those owning and operating their own land, agricultural operators can be classified as either part-owners or tenants. Part-owners are those operating their land and renting supplemental acreage while tenants own no land, renting all the land they operate.

Those renting farms, part-owners and tenants, have long been important to Montana agriculture. They represented 56.5 percent of all farm operators in 1930, and comprised 53.8 percent in 1974. But even these figures do not show the amount of land operated by those involved in land rental. Table 1 clearly shows how much of Montana's agricultural land is rented, representing three to five times the land operated under full-ownership.

Thus, as much of Montana's farmland is leased and many of the State's farm operators are involved in farm rental, relevant questions arise regarding the contractual methods used in leasing Montana farm lands. Questions about methods of cost and return sharing in rental and how these arrangements vary with each farm rented become significant. Also, farm rental information is a cornerstone in the valuation of farm estates for estate taxation.

Table 1

All Agricultural Land and Harvested Cropland,
With Type of Operator, in Montana
for Selected Census Years

Farms and Ranches	1974	1969	1964
A) <u>All Agricultural Land:</u>	<u>Acres:</u>	<u>Acres:</u>	<u>Acres:</u>
Full-Owners	14,138,107 (23%)	11,968,129 (19%)	9,456,150 (16%)
<u>Land Rented:</u>			
Part-Owners	43,760,198 (70%)	46,306,983 (74%)	44,183,500 (75%)
Tenants	4,260,046 (7%)	4,643,135 (7%)	4,974,450 (9%)
<u>Total:</u>	<u>62,158,351</u>	<u>62,918,247</u>	<u>58,614,100</u>
B) <u>Harvested Cropland:</u>			
Full-Owners	2,035,024 (24%)	1,646,207 (21%)	1,623,750 (21%)
<u>Land Rented:</u>			
Part-Owners	5,697,443 (68%)	5,554,098 (70%)	5,154,250 (68%)
Tenants	694,415 (8%)	736,898 (9%)	853,215 (11%)
<u>Total:</u>	<u>8,426,881</u>	<u>7,937,203</u>	<u>7,631,215</u>

Source: U.S. Department of Commerce, Bureau of the Census, 1974 Census of Agriculture, Vol. I, Part 20 (Washington: Government Printing Office, 1977).

This greatly adds importance to data regarding farm leasing.

Study Objectives

This study deals with Montana farm leasing practices.

Considering the varying opinions to be discussed in the literature review regarding farm leasing theory and its application, this work largely avoids such considerations. The objectives of this study are to:

- 1) gather data so as to identify prevalent Montana farm leasing practices, analyze them from a standpoint of equity, and test whether factors such as average crop yield or landlord-renter relation affect lease determination, and
- 2) provide information necessary, if possible, for "current use" valuations of Montana farm estates. Included in this objective is study of the structure of existing "current use" legislation and its possible effects upon American agriculture.

The accomplishment of the first objective will provide information for comparison of individual lease agreements to prevailing arrangements. It will also aid individuals in farm lease formulation. Fulfillment of the first objective will also provide the data to achieve the second objective.

Literature Review

Much literature has been addressed to supposed agricultural leasing problems. This review is restricted to material concerning United States agriculture and especially that dealing with crop-farm leasing. First, both favorable and unfavorable opinions regarding leasing theory, economic theory concerning farm leasing, are presented. Next, the review deals with other literature showing how economics is actually applied to farm lease formulation.

Consideration of the relevance of agricultural leasing to federal estate taxes concludes the review.

Farm Leasing: In Theory and In Practice. Earl Heady's description of a "perfect lease" is representative of leasing theory literature proposing a model for farm lease structure.^{4,5} Assuming competition on the farm rental scene and using the pricing system as a means to monitor consumer preferences, Heady's model seeks to maximize social benefits. Farm profit is thus maximized. This is to be accomplished with proper leasing practices which accommodate

⁴Earl O. Heady, Economics of Agricultural Production and Resource Use (Englewood Cliffs, N.J.: Prentice-Hall, 1952), pp. 587-638.

⁵Earl O. Heady, "Economics of Farm Leasing Systems," Journal of Farm Economics, XXIX (August, 1947).

a theoretically perfect farming system. Such a system results in 1) the most efficient organization of productive resources as gauged by market prices, and 2) an equitable division of product. Heady defines efficiency as resulting in firm profit maximization. Equity is the division of proceeds in relation to the quantity and marginal productivity of resources each party contributes.

Another study of leasing theory, by Virgil Hurlburt, states those leasing conditions he feels are necessary to promote efficient and equitable operations as,⁶

Incentive Condition 1. The share of the factor of variable input must be the same as the share of output of product obtained from it.

Incentive Condition 2. The shares of all products must be the same.⁸

Incentive Condition 3. Each resource owner must receive the full share of the product earned by each unit of resource he contributes..

⁶Virgil L. Hurlburt, Farm Rental Practices and Problems in the Midwest, Agricultural Experiment Station Research Bulletin 416 (Ames, Iowa, 1954).

⁷E. O. Heady and Harald R. Jensen, Farm Management Economics (Englewood Cliffs, N.J.: Prentice-Hall), pp. 556-559 exemplify Hurlburt's comment.

⁸By "the same", Hurlburt is referring to equal percentage share of products from all farm enterprises (i.e. if renter receives 2/3 of the wheat, he must receive 2/3 of all other crops, too).

Incentive Condition 4. Each resource owner must have opportunity to receive return on investment made in one production period but not forthcoming until a subsequent period.⁹

Heady utilizes a Hicksian graphical presentation to clarify his discussion as he delves into several areas pertinent to farm rental, especially share rental. Heady contends share rental, that leasing where the renter gives the landlord a portion of the farm's produce as his rental payment, has great potential for problems in determining proper resource-use intensity, delegating individual responsibility, and in intra-firm resource allocation.

Next nonshare, cash rental is studied. It is considered the near-model leasing arrangement in allowing the operator expanded latitude of freedom and nearly total receipt of benefits accruing to his efforts. But a problem arises. The cash rental fee, being a fixed commitment, heightens operator risk and uncertainty, thus theoretically bringing suboptimal operation.

Closing, Heady proposes flexible cash agreements whereby adjustment factors to account for changing yields and prices are integrated.

⁹ E. O. Heady, Economics of Agricultural Production and Resource Use (Englewood Cliffs, N.J.: Prentice-Hall, 1952), pp. 614-616 will help the reader understand Hurlburt's condition more fully.

into the cash rental plan. In alleviating some renter risk, the flexible cash lease is selected as a system most likely to promote the most efficient use of agricultural resources and equitable sharing of farm production in leasing.

While some like Heady and Hurlburt propose theoretical solutions to supposed agricultural leasing imperfections, others question this application of economic theory.

Elefson re-examined and tested hypotheses of leasing theory.¹⁰ He found 1) empirical evidence failed to support theoretical hypotheses and 2) there were "flaws in the theory" as it provided an inadequate rationale for real world phenomena and was unable to predict the consequences of actions taken in actual farming situations. These failings reportedly arose from 1) the fact leasing theory, like all theory, is based upon abstractions from reality, 2) the circularity of reasoning involved when a landlord's return is based upon his contribution of land as these returns in turn help determine land value, and 3) the several diverse and often highly personal considerations influencing agricultural land use.

A blunter attack upon theory's applicability to leasing comes

¹⁰ Vern Elefson, "Economics of Agricultural Leasing" (Doctoral dissertation, University of Minnesota, 1965).

from John Frey.¹¹ Frey states ". . . explanatory theory needs to be grounded in reality before a study of obstacles (to economic optimization) can be made." And he adds, "It is possible in theory to derive such formulations (speaking of theoretical ideals) but suffice to say, this kind of theory may be getting far ahead of any workable understanding of the real world."

Not totally discounting the use of theory, others suggest leasing theory needs amending to take account of personal attributes and desires.

While that literature described in the preceding seems addressed to professional economists, much other material has been prepared for a non-professional audience. It is intended for those actually engaged in farm rental. This literature utilizes basic theoretical concepts regarding personal incentives and applies them to the farm level.

Of prime importance is translation of theoretical concepts of sharing risks, revenues, and costs, to the working level. This allows discussion from an economic standpoint of the relative advantages and disadvantages of various lease types.

¹¹ John C. Frey, "Discussion: Obstacles to Economic Determination of Farm Rents," Rent Theory, Problems and Practices. Northcentral Regional Research Publication #139 (Columbia: University of Missouri, 1962), pp. 63-67.

Cash rental plans employ a fixed cash payment made for the use of a farm with the renter receiving all the farm's produce while paying all expenses excepting those few usually paid by the landlord, i.e. property tax. Advantages attributed to cash rental are 1) a steady income is assured the landlord with a minimum of his supervision required, 2) more independence is afforded the renter, 3) lease simplicity allows less chance for controversy, and 4) the renter receives most of the returns accruing to his managerial efforts and labor. On the other hand, the fact 1) a renter may be encouraged to exploit a farm, 2) the fixed rental fee, in transferring risk from landlord to renter, lowers the landlord's long-term income and jeopardizes the latter's security, and 3) that cash rents are difficult to adjust over time in relation to changing costs and returns, are all seen as disadvantages of cash rental. Flexibility clauses can be added to partially alleviate the last two faults mentioned.

Crop-share rental also has inherent traits of varied desirability. In 1) decreasing the renter's risk and the amount of capital he need employ, 2) allowing the landlord to accept some risk and thus raise his long-run income, and 3) allowing a good landlord input into the decision process, a share lease is seen as advantageous. Perceived disadvantages arise as 1) farm uniqueness may necessitate a special

agreement, and 2) it may be difficult to get landlord and renter to concur on operational methods, needed improvements, and delegation of responsibility.

Assessing these advantages and drawbacks, the landlord and renter are advised to select that leasing plan suited to their personal goals and objectives as well as the farm involved. An agreement, once negotiated, should be put in writing.

A conclusion common to such literature is a study of the "contributions approach" to farm leasing. This method, concentrating on equity, encourages sharing returns in relation to those assets contributed by each party. Values are imputed to the landlord's and renter's fixed assets in order to attribute a rate of return to them in compensation for investment opportunity cost. And then allowance is made for depreciation of those fixed assets contributed. Record is also kept on the full value of whatever variable inputs each party contributes.

With the preceding calculations accomplished, the landlord and renter are encouraged to divide production proceeds in proportion to their contributions.

The above, indirectly utilizing theoretical postulates of equity, appeals to common sense but is not totally void of problems. It can easily be seen there is ample room for disagreement whenever

two parties must agree on "fair" asset value and returns merited.¹²

Agricultural Leasing and Federal Estate Taxes. As the magnitude of finances commonly invested and utilized in a farm or ranch increases, federal estate tax considerations become more important. In studying federal estate taxation one must first consider that property subject to the tax, the gross estate. This includes all property such as stocks, bonds, checking accounts, farmland, or any other assets owned by the decedent at the time of his death.

For example, assume a farmer dies leaving his heirs the estate depicted in Table 2.

¹² Publications representative of the literature pertaining to the actual application of economic concepts to the working farm leasing level as last described are:

- A) Marshall Harris, Your Crop-Share-Cash Farm Lease, U.S.D.A. Miscellaneous Publication #838 (Washington: Government Printing Office, 1961).
- B) Marshall Harris, Your Cash Farm Lease, U.S.D.A. Miscellaneous Publication #826 (Washington: Government Printing Office, 1961).
- C) Walter E. Chryst and John F. Timmons, Adjusting Farm Rents to Changes in Prices, Costs, and Production, Special Report #9 Agricultural Experiment Station (Ames: Iowa State College, 1955).
- D) Philip A. Henderson, Is Your Lease Fair?, U.S.D.A. Northcentral Regional Publication 9 (University of Wisconsin).

Table 2

A Hypothetical Gross Farm Estate
and the Resultant Estate Tax Due

<u>Asset</u>	<u>Value Subject to Estate Tax</u>
A) 500 shares XYZ Corp. @ \$10/share	\$ 5,000
B) Checking account, \$3,000 balance	3,000
C) Automobile, \$4,300 market value	4,300
D) Farm machinery, \$60,000 market value	60,000
E) 320 acres farmland, 2 machine sheds, dwelling, \$480,000 market value	480,000
<u>Gross Estate:</u>	\$552,300*

ESTATE TAX DUE: \$175,151.

*It is assumed the Marital Deduction is not secured.

In this case all assets in the decedent's estate are valued at market value for estate taxation.

Some believe this valuation scheme assigns real farm property (land, buildings, and some other fixed farm improvements) a heightened value incommensurate with its value as a producing agricultural entity, this caused by inflation resulting from factors such as nonagricultural

development and expectations of price appreciation. Such factors, in raising the land's taxable value, consequently increase estate taxes. This in turn is seen to accentuate the fact estate taxes complicate transfer of agricultural estates, inhibiting continual family operation of a farm or even sometimes precluding it by necessitating farm sale to simply meet the estate tax obligation.

The Tax Reform Act of 1976 includes provisions to partially overcome this. Farm real property can now be valued for estate purposes on the basis of "current use" -- its use in an enterprise producing and marketing agricultural produce. While complex in specifying rules governing "current use" valuations, the law allows two methods for the valuation.

The easiest of the two procedures involves a capitalization process whereby gross cash rental fees less property taxes are divided by the effective interest rate on all new Federal Land Bank loans. To use this procedure, the law requires the gross cash rental rate be from ". . . comparable land used for farming purposes and located in the locality. . .,"¹³ of the estate being valued.

Returning to the gross farm estate in Table 2, assume a farm comparable to it would have generated a net cash rental revenue

¹³Internal Revenue Code § 2032A(e)(7)(A).

(total gross cash rental return less property taxes) of \$24,000. Further assume the effective Federal Land Bank loan rate was nine and one-half percent. Table 3 shows the effect upon the federal estate taxes due by the decedent's heirs should the farmland, buildings, and dwellings be valued using "current use" procedures.

Table 3

A Hypothetical Gross Farm Estate and the Estate Tax Due With Real Farm Assets Valued Using "Current Use" Procedures

<u>Assets</u>	<u>Value Subject to Estate Tax</u>
A) 500 shares XYZ Corp. @ \$10/share	\$ 5,000
B) Checking account, \$3,000 balance	3,000
C) Automobile, \$4,300 market value	4,300
D) Farm machinery, \$60,000 market value	60,000
E) 320 acres farmland, 2 machine sheds, dwelling, "current use" value using cash rent capitalization is <u>\$24,000</u> .095	<u>252,631.58</u>
Gross Estate:	\$324,931.58*

ESTATE TAX DUE: \$96,276.74

*It is assumed the Marital Deduction is not secured.

A "current use" valuation of the real farm property in this hypothetical case would reduce the gross estate significantly. This would, of course, reduce the estate tax burden due by the decedent's heirs, the reduction being \$78,874.26 in this example.

Of key importance in this "current use" valuation of the hypothetical farm in this case was data regarding gross cash rental fees for comparable farms. When such gross cash rental rate data are not available, or where the estate's executor so chooses, the Code allows an alternative valuation plan, a multiple factor approach. This second method values the decedent's real property by:

- A) capitalization of income which the property would be expected to generate as a farm under prudent management, considering normal cropping patterns, and soil and land attributes,
- B) capitalization of fair rental value,
- C) assessed land values in states allowing valuation considering productive value as a farm,
- D) comparable sales where urban and metropolitan areas do not exert a significant influence on land value, and

E) any factor fairly valuing the property.¹⁴

While different than the simple cash rental capitalization process, the multiple factor approach can be used to accomplish a similar end. Either of the two methods can be used to reduce a gross farm or ranch estate's value by as much as \$500,000. Thus, such reductions provide potentially huge estate tax reductions.

Of clear importance to both valuation procedures, especially that first described, is information regarding farm rental.^{15,16,17,18}

¹⁴ Internal Revenue Code § 2032A(e)(8).

¹⁵ Neil E. Harl, Farm Estate and Business Planning (Skokie, Illinois: Agri-Business Publications), pp. 26-53.

¹⁶ Jon D. Wheeler, "The Special Use Valuation Procedure, The Estate Tax Payment Rules for Estates with Closely-Held Business, and the Miscellaneous Estate and Gift Tax Provisions of the Tax Reform Act of 1976" (Helena, Montana: Galusha, Higgins, and Galusha), pp. 1-12. (Mimeographed).

¹⁷ Michael D. Boehlje and Neil E. Harl, "Use Valuation Under the 1976 Tax Reform Act: Problems and Implications" (Ames, Iowa: Iowa State University) pp. 1-44. (Mimeographed).

¹⁸ An added note: Current use valuations can be secured in nonfarm estates where the decedent's estate was run as what the tax law terms a "closely-held" business. This work chooses to center on those "current use" valuations of farm estates.

Chapter 2

METHODOLOGY

Montana Farm Leasing Survey

Selection of Study Area. Six Montana counties were chosen as the study area to gather the desired data (see Figure 3). Selection criteria included consideration of geographical dispersion and farm type. Richland and Yellowstone Counties were selected as being representative of intensive irrigated crop farming (sugar beets, beans, corn, hay, small grains) while including some nonirrigated dryland farming. Three counties clustered in the State's northcentral region - Hill, Chouteau, and Fergus - were picked to represent dryland wheat and small grain production. Sheridan County provided an area of dryland durum, spring wheat, and other small grain production. All counties would provide a look at dryland pasture leasing.¹⁹

Sample Base. Consultation with state and county Agricultural Stabilization and Conservation officials provided the main sample base list of farm renters in the survey area. The list provided the names of those tenants and part-owners participating in current

¹⁹ Montana Department of Agriculture and Statistical Reporting Service-U.S.D.A., Montana Agricultural Statistics, County Statistics, (Helena, Montana, published biennially) provides information regarding Montana cropping practices.

[illegible]

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wheat and feed grain price support programs. This was the only list of renters' names available and was incomplete, in only supplying the following approximate percentages of all renters in each county - Hill (89 percent), Chouteau (98 percent), Fergus (85 percent), Yellowstone (62 percent), Richland (88 percent), and Sheridan (99 percent)²⁰ - the list was assumed sufficient in size. Further, it was assumed those renters participating in A.S.C.S. programs would use rental practices similar to nonparticipants.

Use of Mail Survey. Convenience and economy dictated using a mail survey questionnaire.

Richland and Yellowstone Counties contain both dryland and irrigated farm leasing of which the distribution and percentage of each was unknown. Any method of sampling only part of the renters listed in these counties thus posed the possibility of inadvertently biasing questionnaire mailings to either dryland or irrigated farm renters with the consequent omission of the other type of renter. Therefore, all those renters in Yellowstone and Richland Counties were surveyed. This eliminated any chance of biasing survey mailing

²⁰ The "approximate" percentages of renters' names supplied by the A.S.C.S. comes by dividing the number of names of farm tenants and part-owners in 1977 county A.S.C.S. files by the total number indicated for each county by the 1974 Census of Agriculture. (U.S. Department of Commerce, Bureau of the Census, 1974 Census of Agriculture, Vol. 1, Part 20 (Washington: Government Printing Office, 1977)).

toward either type of renter.

As the other four counties are nearly exclusively dryland farming areas, another sampling method was permissible: every second renter was systematically selected to receive the questionnaire. This population halving enabled further reduction of financial and time expenditures, yet introduced no selection biases.²¹

Questionnaire Design. The survey questionnaire sought to acquire a descriptive picture of each unit rented. First of all, "parcel" and "cropland" were carefully defined. The definition of cropland arose from an assumption any land in dryland pasture would generally be of a lower productive nature than its croppable counterpart, thus its use as pasture. In the case of irrigated farms, the same general assumption was utilized in concluding pasture, even while irrigated, would be lower in productivity than land supporting conventional crops or hay in a crop rotation.

Inquiry into a supposed willing buyer's offer and willing seller's tender was included to give a look into market value. An average of the two estimates would be used if any subsequent calculation of market value was desired.

²¹ Earl R. Babbie, The Practice of Social Research (Belmont, Cal.: Wadsworth Publishing Co., Inc., 1975), pp. 154-155.

Under type of rental, crops were specified as either dryland or irrigated on the chance a crop would be produced on each of the two land types under different arrangements. Average yields were sought to provide a picture of relative average productivities from farm to farm.

Lastly, other details were sought to give a full description of the parcel leased and those individuals involved.²²

Questionnaire Administration. Two mailings of the questionnaire were made. The initial mailing was to all those to be surveyed with a followup mailing to initial nonrespondents.

Radio station and County Extension personnel cooperated in promoting response during initial and follow-up surveys.

Data Summarization, Analysis and Application

Data Summarization. With nearly all responses lacking in provision of some details, a major criterion used in judging a questionnaire unusable was absence of yield information. This was because yields were assumed to be the most easily identifiable determinant of rental rates, whether share or cash. Any surveys with large blocks of unfurnished information were also excluded from data summarization.

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A copy of the questionnaire utilized is contained in Appendix A.

Another means of judging a questionnaire unusable was the form of the lease reported. If a lease was extraordinarily unique so as to make meaningful comparison with other leases difficult, it was omitted from the summary. This decision was made in light of the study objective to identify prevalent Montana farm leasing practices and their determinants.

Only those cases of cash rental where rent was paid on a per acre basis were included in the data summary. Arrangements where a lump sum fee was paid to rent a parcel containing both pasture and cropland were excluded from the study. Such agreements do not permit the sort of simple comparative analysis intended in this study.

Responses were summarized by breaking them down according to parcels. Whenever a respondent rented two parcels, each was analyzed separately. Thus, all summarization statistics represented in the following are based upon the number of parcels, not respondents. Whenever a reply contained information for more than two parcels, such data, if sufficiently complete, was included in the data analyses. No biases are believed to have arisen from such inclusions.

All summarizations were conducted on only those parcels rented from private individuals. Information concerning the rental of publicly owned land such as State of Montana or Bureau of Indian

Affairs lands was not considered.²³ Such selection was made because only private leases are of interest in the area of estate tax considerations. And only private lease information was assumed of use to aid landlords and renters in negotiating lease terms.

Of the analyses made, some were conducted on individual counties, others on aggregated counties. In Richland and Yellowstone Counties, where replies came from both irrigated and dryland farms, each type was studied separately.

If a parcel contained both irrigated and dryland farming, each respective portion was analyzed with land of a like type. As both computations were conducted separately, such a procedure did not pose a problem of double counting.

Data Analysis and Application. Analyses were made to examine the relationship between crop-share plan and factors assumed to weigh in its determination. Kendall's tau testing checked for the existence of a statistical relationship while indicating the nature of relationship, if present.²⁴ Next, a simple summary found the customary cost- and crop-sharing arrangement for dryland and irrigated leasing

²³For a discussion of the rental of State of Montana grazing lands see: David Karsten Gaarder, "State Entrusted Grazing Lands: A Study of Regulation and Price" (Master's thesis, Montana State University, 1977).

²⁴Appendix B contains a brief description of Kendall's tau test.

in each county. Cash rental rate data and the interpretation of such data was considered next.

The above data, regarding customary crop- and cost-sharing arrangements, was utilized in contributions approach analyses of crop-share leasing within the study area. The analyses were conducted for both hypothetical irrigated and dryland farms operated under the typical crop-sharing plan.

Next, survey findings were related to "current use" legislation. Included were recommendations regarding the use of the estate valuation measures and consideration of the present structure of the law.

Lastly, foreseen effects of the aforementioned estate valuation provisions of the Tax Reform Act of 1976 upon American agriculture were considered.

Chapter 3

STATISTICAL EVALUATION OF EXISTING LEASING SYSTEM IN STUDY AREA

Response

Overall questionnaire response from all six counties surveyed was 22.7 percent (Table 4), including those indicating they did not rent any farmland. Adjustment for these nonrenters reduced the gross sample base to 1597, with 341 tenants and part-owners responding for a 21.35 percent return rate. Omission of those returns providing incomplete information eliminated 70 percent of the returns, bringing an average usable response rate of 16.97 percent.

While such a low response rate poses the question of whether a nonresponse bias was incurred in the sampling, no conclusion can be reached in that area. Insufficient sociological data with regard to survey respondents precludes testing for such a bias.

The usable response was sufficient in size to enable Kendall's tau analysis of crop-share rental determinants for most crops. The low incidence of cash rental, as noted later, precluded such analysis of cash rental determinants.

Type of Lease, Cash or Share

Tables 5 and 6 summarize the returns in terms of cash or crop-share leasing. Cash leases are broken down to show the type of land

Table 4

Questionnaire Response Rate of Farm Leasing Survey in
Six-County Study Area, Montana, 1977-78

County	Total Sent	Non- renters	Net Sample Base	Adjusted Response Rate	Unusable Surveys	Surveys Used
Chouteau	305	9	<u>296</u>	28.7%	22	63 (21.3%)
Fergus	204	6	<u>198</u>	18.0%	8	28 (14%)
Hill	235	4	<u>231</u>	24.3%	17	39 (16.9%)
Sheridan	225	4	<u>221</u>	23.5%	10	43 (19%)
Yellowstone	332	3	<u>DRYLAND:</u>		5	23 (7%)
			<u>329</u>			
			<u>IRRIGATED:</u>		2	24 (7%)
				16.0%	7	47 (14%)
Richland	324	2	<u>DRYLAND:</u>		6	39 (12%)
			<u>322</u>			
			<u>IRRIGATED:</u>		0	13 (4%)
				17.9%	6	52 (16%)
TOTALS	1625	28	1597	21.35%	70	271 (16.97%)

rented in each case: cropland, pasture, or both.

Crop-share agreements dominated in both dryland and irrigated leasing, representing 84 and 70 percent of the dryland and irrigated renters reporting, respectively. Cash leasing was used in 16 percent of the dryland cases and 30 percent of the irrigated cases. The increased percentage incidence of cash leasing in irrigated areas is attributed to the generally lower precipitation risk characteristic of irrigated crop farming as compared to dryland farming. Irrigated farming, in generally providing more stable crop returns, reduces the risk connected with the fixed cash rental fee.

The highest concentration of cash leases for both dryland and irrigated cases was found in Yellowstone County with 36 and 41 percent, respectively. With the exception of Fergus County's 33 percent of cash leasing, all other counties reported less than a 20 percent incidence of cash leasing.

Crop-Sharing Terms and Landlord-Renter Relation

For the tau tests of the relationship between crop-sharing terms and landlord-renter relation, crops were analyzed separately due to the different shares often received for different crops under the same lease. The tests were conducted at a five percent level of significance.

Table 5

Type of Lease, Cash or Crop-Share, in Dryland Leasing
in Six-County Study Area, Montana, 1977-78

<u>Dryland Leasing:</u>					
County	Cropland Cash Leases	Pasture Cash Leases	Cash Leases of Cropland and Pasture	Total Cash Leases	Crop-Share Leases
Yellowstone	2	10	1	13 (36%)	23 (64%)
Richland	2	3	4	9 (19%)	39 (81%)
Sheridan	2	3		5 (9%)	49 (91%)
Hill		1	1	2 (4%)	44 (96%)
Chouteau	5	1		6 (8%)	69 (92%)
Fergus		8	3	11 (33%)	22 (67%)
	11	26	9	46 (16%)	246 (84%)

Table 6

Type of Lease, Cash or Crop-Share, in Irrigated Leasing
in Richland and Yellowstone Counties, Montana 1977-78

Irrigated Leasing:

County	Cropland Cash Leases	Pasture Cash Leases	Total Cash Leases	Crop-Share Leases
Yellowstone	9	5	14 (41%)	20 (59%)
Richland	2		2 (10%)	18 (90%)
	11	5	16 (30%)	38 (70%)

The Dryland Case. The tests in dryland leasing indicated the absence of any statistically significant relationship in all cases except for barley (Table 7). There is a tendency for a lease between nonrelatives to allow the renter a larger share of the barley crop as compared to when the landlord and renter are related. While no exact interpretation of this relationship's strength can be imputed to the tau value of .14956, the relationship seems weak.

The Irrigated Case. Tau tests (Table 8) were impossible for beet top sharing and also in the case of corn for grain sharing. Similar but less powerful tests, the chi-square test and Fisher's exact test,²⁵ found corn for grain and beet top sharing statistically independent from landlord-renter relation. All other crop-share terms were independent from landlord-renter relation except wheat, barley, and hay. For all three crops there was a weak tendency for related renters to receive a larger crop share.

Crop-Sharing Terms and Average Crop Yield

As in the preceding analyses, tau tests were conducted to examine those factors believed to affect the crop-share plan used. In this case, average crop yield was tested to ascertain whatever

²⁵G. David Garson, Handbook of Political Science Methods (Boston, Mass.: Holbrook Press, Inc., 1971), pp. 130-142."

Table 7

Test for Relationship of Crop-Share Plan and Landlord-Renter
Relation for Dryland Leasing in Six-County Study Area,
Montana, 1977-78

Irrigated Crop	Kendall's Tau Statistic	Significance Level	Hypothesis Accepted at 95% Confidence
Wheat	.09213	.05660	accept H_0
Barley	.14956	.00903	reject H_0 , accept H_a
Oats	.12306	.11098	accept H_0
Hay	-.08090	.29604	accept H_0
Straw	.19204	.16482	accept H_0

Key: H_0 : Crop-share plan and landlord-renter relation are
statistically independent.

H_A : Crop-share plan and landlord-renter relation are not
statistically independent.

Table 8

Test for Relationship of Crop-Share Plan and Landlord-Renter Relation
in Irrigated Leasing in Richland and Yellowstone Counties,
Montana, 1977-78

Irrigated Crop	Kendall's Tau Statistic	Significance Level	Hypothesis Accepted at 95% Confidence
Wheat	-.21551	.00946	reject H_0 , accept H_A
Barley	-.20988	.00636	reject H_0 , accept H_A
Oats	-.07284	.34744	accept H_0
Straw	.00000	.50000	accept H_0
Hay	-.19976	.01621	reject H_0 , accept H_A
Corn Silage	-.12842	.18519	accept H_0
Corn for Grain	-.69136	N.C.	-----
Sugar Beets	-.28497	.04151	accept H_0
Beet Tops	-.63246	N.C.	-----
Beans	-.15364	.16423	accept H_0

Key: H_0 : Crop-share plan and landlord-renter relation are statistically independent.

H_A : Crop-share plan and landlord-renter relation are not statistically independent.

N.C. = Not Computable

Note: A. The chi-square test statistic for the relationship of corn for grain sharing and landlord-renter relation was .92314 with 2 degrees of freedom. Thus, H_0 was accepted.
B. The Fisher's exact test statistic of the relationship between beet top sharing and landlord-renter relation was .33333. Therefore, H_0 was accepted.

relationship it might have to crop sharing.

The Dryland Case. Average crop yield and crop-share plan were found statistically independent in all cases at a five percent level of significance (Table 9).

The Irrigated Case. In the case of semi-dwarf wheat no tau test was possible to test the null hypothesis (Table 10). Chi-square²⁶ testing found average yield of semi-dwarf wheat and crop-share plan to be statistically independent. Tau testing accepted the null hypothesis at a five percent level of significance for all other crops except corn silage. In that case there is a slight tendency for the renter to receive a larger crop-share for higher yielding corn silage crops.

Customary Crop- and Expense-Sharing Arrangements

Dryland Crop-Sharing. Table 11 shows the standard crop-sharing arrangement characterizing those dryland leases which were reported. The landlord and renter usually receive one third and two thirds, respectively, of the wheat, barley, or oats grown. The only variation of this occurs in Hill County where oats is shared in a one-quarter/three-quarter arrangement.

The renter normally receives all small grain straw in all

²⁶ Ibid.

Table 9

Test for Relationship of Crop-Share Plan and Average
Crop Yield in Dryland Leasing in
Six-County Study Area, Montana, 1977-78

Dryland Crop	Kendall's Tau Statistic	Significance Level	Hypothesis Accepted at 95% Confidence
Winter Wheat	.00062	.49517	Accept H_0
Spring Wheat	.17531	.10521	Accept H_0
Durum Wheat	-.30748	.03520	Accept H_0
Barley	.03056	.28995	Accept H_0
Oats	.00000	.50000	Accept H_0

Key: H_0 : Crop-share plan and average crop yield are statistically independent.

H_A : Crop-share plan and average crop yield are not statistically independent.

Table 10

Test for Relationship of Crop-Share Plan and Average Crop Yield
In Irrigated Leasing in Richland and Yellowstone Counties,
Montana, 1977-78

Irrigated Crop	Kendall's Tau Statistic	Significance Level	Hypothesis Accepted at 95% Confidence
Semi-dwarf Wheat	-.48980	N.C.	N.A.
Spring Wheat	-.04734	.38996	Accept H_0
Barley	-.07848	.23947	Accept H_0
Oats	.12457	.16540	Accept H_0
Hay	.00000	.50000	Accept H_0
Corn Silage	.27984	.01914	Reject H_0 , Accept H_A
Sugar Beets	.13061	.24074	Accept H_0
Beans	-.09053	.29381	Accept H_0

Key: H_0 : Crop-share plan and average crop yield are statistically independent.

H_A : Crop-share plan and average crop yield are not statistically independent.

N.C.: Not Computable

N.A.: Not Ascertainable

Note: The chi-square test statistic for the relationship of crop-share plan and average semi-dwarf wheat yield was 6.99999 with 3 degrees of freedom. H_0 was accepted.

Table 11

Share of Crop Normally Received by Renter in Dryland Leases
in Six-County Study Area, Montana, 1977-78

		Wheat		Barley		Oats		Straw	
		Renter's Share	% so Responding	Renter's Share	% so Responding	Renter's Share	% so Responding	Renter's Share	% so Responding
<u>Yellowstone County:</u>									
Landlord:	A) nonrelative, private	2/3	89%	2/3	93%	2/3	100%	A11	43%
	B) relative, private	2/3	75	2/3	84	2/3	100	1/2	50
	C) all, private	2/3	85	2/3	90	2/3	100	<u>A11</u> 1/2	<u>36</u> 36
<u>Richland County:</u>									
Landlord:	A) nonrelative, private	2/3	65	2/3	71	2/3	58	A11	75
	B) relative, private	2/3	58	2/3	62	2/3	60	A11	73
	C) all, private	2/3	62	2/3	63	2/3	59	A11	74
<u>Sheridan County:</u>									
Landlord:	A) nonrelative, private	2/3	33	2/3	36	2/3	67	A11	100
	B) relative, private	2/3	70	2/3	57	2/3	83	A11	100
	C) all, private	2/3	55	2/3	49	2/3	78	A11	100
<u>Hill County:</u>									
Landlord:	A) nonrelative, private	2/3	54	3/4	53	3/4	71	A11	63
	B) relative, private	2/3	52	2/3	60	3/4	100	A11	100
	C) all, private	2/3	53	2/3	57	3/4	63	A11	73
<u>Chouteau County:</u>									
Landlord:	A) nonrelative, private	2/3	70	2/3	73	2/3	63	A11	70
	B) relative, private	2/3	65	2/3	79	2/3	63	2/3	50
	C) all, private	2/3	68	2/3	75	2/3	63	A11	57
<u>Fergus County:</u>									
Landlord:	A) nonrelative, private	2/3	96	2/3	95	2/3	100	A11	71
	B) relative, private	2/3	100	2/3	75	N/S	N/S	A11	100
	C) all, private	2/3	96	2/3	92	2/3	100	A11	72
<u>Six-County Average:</u>									
	A) nonrelative, private	2/3	68	2/3	70	2/3	68	A11	67
	B) relative, private	2/3	65	2/3	68	2/3	74	A11	63
	C) all, private	2/3	67	2/3	70	2/3	70	A11	66

Key: N/ S = Not Ascertained

counties excepting Yellowstone County. There, most renters related to the landlord usually receive all straw while their nonrelated counterparts receive one-half the straw.

Dryland Expense Sharing. Survey findings indicate a rather standardized approach to cost sharing (Tables 12, 13, and 14). Considering Table 12, the renter in all six counties usually bears all grainseed, combining, and grain-hauling expenses. For the latter two expenses, the renter combines and transports the landlord's share of the crop to whatever storage facilities are used on the farm, or to town for storage or sale. For five of the six counties, about one-half to three-quarters of those responding furnish all fertilizer used. Nearly all the rest indicate sharing fertilizer costs in the same manner as the crop fertilized is shared with the landlord. In the remaining county, Yellowstone, things were reversed with 70 percent indicating they share fertilization expenses with their landlord while 22 percent of the renters furnish all fertilizer.

A nearly unanimous response indicates landlords most often pay the property tax.

Two basic replies were found with regard to crop and hail insurance. Most often the landlord and renter each insures his own respective share of the crop (indicated in the Table by the renter insuring "H/S"). Should either opt to not insure his crop share, the other party could insure the whole crop and receive all benefits. Only

Table 12

Share of Expenses Normally Paid by Renter in Dryland Leasing Between
Private Parties (for both related & unrelated individuals)
in Six-County Study Area, Montana, 1977-78

	Yellowstone County		Richland County		Sheridan County		Hill County		Chouteau County		Fergus County		Six-County Dryland Summary	
	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding
Grainseed	All	100%	All	95%	All	74%	All	98%	All	97%	All	100%	All	93%
Combining	All	100	All	90	All	79	All	98	All	99	All	100	All	94
Grain Hauling	All	100	All	96	All	85	All	98	All	100	All	96	All	95
Fertilizer	All S/C	22 70	All S/C	75 25	All S/C	62 23	All S/C	72 25	All S/C	58 38	All S/C	50 42	All S/C	59 34
Property Tax	None	95	None	97	None	97	None	94	None	100	None	100	None	97
Federal Crop Insurance	All H/S	52 48	All H/S	71 21	H/S	77	H/S	100	H/S	83	H/S	89	H/S	76
Hail Insurance	All H/S	59 41	All H/S	47 53	H/S	71	H/S	100	H/S	89	H/S	90	H/S	79
Hay Harvesting	All H/S	75 25	All	100	All	100	All	100	All H/S	78 22	All	92	All	93
Hired Labor	All	100	All	100	All	97	All	100	All	93	All	100	All	98
Building Maintenance	None All	57 43	None All	33 67	None All	28 56	None All	40 60	None All	47 41	None All	43 43	None All	40 53

Key: H/S = Renter's share
S/C = Same as crop share

Table 13

Share of Expenses Normally Paid by Renter in Dryland Leasing Between Private Parties
(for unrelated individuals) in Six-County Study Area,
Montana, 1977-78

	Yellowstone County		Richland County		Sheridan County		Hill County		Chouteau County		Fergus County		Six-County Dryland Summary	
	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding	Paid by Renter	% so respo- nding
Grainseed	All	95%	All	95%	All	78%	All	100%	All	96%	2/3	100%	All	95%
Combining	All	100	All	90	All	83	All	100	All	96	2/3	100	All	96
Grain Hauling	All	90	All	95	All	88	All	100	All	100	2/3	98	All	96
Fertilizer	All S/C	25 63	All S/C	85 15	All S/C	56 31	All S/C	84 16	All S/C	55 45	All S/C	50 50	All S/C	61 32
Property Tax	All	94	None	100	None	93	None	93	None	100	None	100	None	97
Federal Crop Insurance	All H/S	40 60	All H/S	87 13	All H/S	17 83	H/S	100	All H/S	13 79	H/S	87	All H/S	20 76
Hail Insurance	All H/S	42 58	All H/S	69 31	All H/S	17 75	H/S	100	All H/S	10 87	All H/S	13 87	All H/S	21 77
Hay Harvesting	All	71	All	100	All	100	All	100	All	75	All	91	All	90
Hired Labor	All	100	All	100	All	93	All	100	All	94	All	100	All	97
Building Maintenance	None	100	All None	67 33	All None	25 50	All None	50 50	All None	60 40	All None	40 60	None	54

Key: H/S = Renter's share
S/C = Same as crop share

Table 14

Share of Expenses Normally Paid by Renter in Dryland Leasing Between
Private Parties (for related individuals) in Six-County Study Area, Montana, 1977-78

	Yellowstone County		Richland County		Sheridan County		Hill County		Chouteau County		Fergus County		Six-County Dryland Summary	
	Paid by renter	% so respo- nding	Paid by renter	% so respo- nding	Paid by renter	% so respo- nding	Paid by renter	% so respo- nding	Paid by renter	% so respo- nding	Paid by renter	% so respo- nding	Paid by renter	% so respo- nding
Grainseed	All	100	All	89	All	72	All	95	All	100	All	100	All	90
Combining	All	100	All	89	All	74	All	95	All	100	All	100	All	92
Grain Hauling	All	100	All	94	All	83	All	95	All	100	All	100	All	93
Fertilizer	S/C	86	All S/C	63 37	All	65	All S/C	60 35	All S/C	55 45	All S/C	50 50	All S/C	57 38
Property Tax	None	100	None	94	None	100	None	94	None	100	None	100	None	97
Federal Crop Insurance	All H/S	75 25	All H/S	60 40	H/S	71	H/S	100	H/S	88	H/S	100	H/S	77
Hail Insurance	All	100	All H/S	25 75	H/S	69	H/S	100	H/S	96	H/S	100	H/S	82
Hay Harvesting	All	100	All	100	All	100	All	100	All	75	All	100	All	96
Hired Labor	All	100	All	100	All	100	All	100	All	94	All	100	All	99
Building Maintenance	All	100	None All	33 67	All	64	None All	33 67	None All	40 60	All Labor	50 50	All	67

Key: H/S = Renter's Share
S/C = Same as crop share

in Yellowstone and Richland Counties did a noticeable percentage of renters indicate having to insure the landlord's portion of the crop. He would then surrender the respective share of whatever hail or crop insurance was received to the landlord, should the crop be destroyed.

Most renters in the six counties indicated they pay "All" hay harvesting expenses. While not divided as such on the questionnaire, this would include cutting, raking (or swathing) and baling where used. In about a quarter of the leases in Yellowstone and Chouteau Counties the renter doesn't pay the landlord's share of baling costs.

Renters nearly always pay for all hired labor.

Building maintenance was characterized by varying cases of the operator doing all minor building repair, furnishing labor and material, to doing nothing, letting the landlord maintain the buildings.

Irrigated Crop Sharing. The irrigated summary at the bottom of Table 15 shows wheat, barley, and oats sharing typified by a one-third/two-thirds arrangement. Straw is most often given to the renter in private leasing.

Irrigated hay is most often split evenly between the landlord and renter.

For corn silage and the very few who reported producing corn for grain, a one-quarter/three-quarters arrangement of sharing is most commonly used.

In the case of sugar beets, related landlords and renters usually

Table 15

Share of Crop Normally Received by Renter in Irrigated Leasing
in Yellowstone and Richland Counties, Montana, 1977-78

	Wheat		Barley		Oats		Straw		Hay		Corn Silage		Corn for Grain		Sugar Beets		Beet Tops		Beans	
	Renter's Share	% so responding	Renter's Share	% so responding	Renter's Share	% so responding	Renter's Share	% so responding	Renter's Share	% so responding	Renter's Share	% so responding	Renter's Share	% so responding	Renter's Share	% so responding	Renter's Share	% so responding	Renter's Share	% so responding
<u>Yellowstone County:</u>																				
Landlord: A) private, nonrelative	2/3	100%	2/3	100%	2/3	100%	All 1/2	39%	1/2	82%	3/4	100%	3/4	80%	3/4 4/5	45%	All	74%	3/4	84%
B) private, relative	2/3	100	2/3	75	2/3	100	All 1/2	33 67	1/2	75	3/4	100	3/4	100	3/4 4/5	33 67	All	67	2/3 3/4	50 50
C) all, private	2/3	100	2/3	96	2/3	100	All 2/3	38 38	1/2	81	3/4	100	3/4	83	3/4 4/5	44 57	All	73	3/4	80
<u>Richland County:</u>																				
Landlord: A) private, nonrelative	2/3	80	2/3	80	2/3	89	All	75	1/2	88	2/3	74	2/3	100	3/4 4/5	50 50	All	75	2/3 3/4	25 50
B) private, relative	2/3	60	2/3 3/4	50 50	2/3	100	All 4/5	50 50	3/4	50	3/4	67	4/5	100	4/5	100	All	75	3/4 4/5	50 50
C) all, private	2/3	73	2/3	71	2/3	90	All	70	1/2	67	2/3	69	4/5	67	3/4 4/5	33 67	All	75	3/4	50
<u>Irrigated Summary:</u>																				
Landlord: A) private, nonrelative	2/3	93	2/3	93	2/3	96	All	50	1/2	84	3/4	68	3/4	67	3/4 4/5	47 53	All	74	3/4	71
B) private, relative	2/3	75	2/3	63	2/3	100	All 1/2	40 40	1/2	50	3/4	83	4/5	67	4/5	88	All	71	3/4	50
C) all, private	2/3	89	2/3	86	2/3	97	All	48	1/2	76	3/4	71	3/4	55	3/4 4/5	39 61	All	74	3/4	67

use a one-fifth/four-fifths sharing plan. A near toss-up characterizes nonrelatives who lease sugar beets as 47 percent reported a one-quarter/three-quarters arrangement and 53 percent utilize a one-fifth/four-fifths sharing scheme. This difference in crop-sharing plans, as noted in earlier sections, is not explained by the relation of landlord and renter, or by average crop yield. Some other unidentified factor or combination of such factors must cause this alteration. Overall, for both related and unrelated private landlords and renters, one-quarter/three-quarters and one-fifth/four-fifths sharing arrangements were used in 39 and 61 percent of the leases, respectively.

Beet tops are given to the renter in about 75 percent of all cases.

Beans are most often shared in a one-quarter/three-quarters arrangement.

Irrigated Expense Sharing. Looking at each irrigated summary (Tables 16, 17, and 18) one sees a fairly standard mode of expense sharing.

Table 16 discloses the following. Nearly all renters, 93 percent, reported paying all grainseed, combining and grain hauling expense.

Beet seed is most often paid for by the renter, and all respondents are responsible for beet harvesting costs.

Table 16

Share of Expenses Normally Paid by Renter in Irrigated Leasing Between Private Parties
(for both related and unrelated individuals) in Yellowstone and Richland Counties, Montana, 1977-78

	Yellowstone County		Richland County		Irrigated Summary	
	Paid by Renter	% so responding	Paid by Renter	% so responding	Paid by Renter	% so responding
Grainseed	All	100%	All	82%	All	93%
Combining	All	100	All	82	All	93
Grain Hauling	All	87	All	100	All	93
Beet Seed	All	100	All	75	All	92
Beet Harvesting	All	100	All	100	All	100
Fertilizer	S/C	65	All S/C	63 37	All S/C	32 54
Bean Seed	All	100	All	86	All	94
Corn Seed	All	100	All	78	All	91
Property Tax	None	100	None	100	None	100
Federal Crop Insurance	None All	44 44	All H/S	46 24	None All	36 44
Hail Insurance	None All S/C	23 54 23	All H/S	77 23	All H/S	66 24
Irrigation Water	None	94	None	87	None	91
Hay Harvesting	All	61	All	93	All H/S	75 22
Hired Labor	All	100	All	100	All	100
Building Maintenance	None Labor	71 23	None All	62 38	None All	67 20

Key: H/S = Renter's Share
S/C = Same as crop share

Table 17

Share of Expenses Normally Paid by Renter in Irrigated Leasing Between
Private Parties (for unrelated individuals) in Yellowstone and Richland Counties, Montana, 1977-78

	Yellowstone County		Richland County		Irrigated Summary	
	Paid by Renter	% so re- sponding	Paid by Renter	% so re- sponding	Paid by Renter	% so re- sponding
Grainseed	All	100 %	All	78 %	All	93 %
Combining	All	100	All	82	All	94
Grain Hauling	All	85	All	100	All	90
Beet Seed	All	100	All	70	All	93
Beet Harvesting	All	100	All	100	All	100
Fertilizer	1/2 C/S	20 60	All C/S	59 41	All C/S	26 55
Bean Seed	All	100	All	89	All	96
Corn Seed	All	100	All	78	All	92
Property Tax	None	100	None	100	None	100
Federal Crop Insurance	None All	44 44	None All	50 38	None All	47 41
Hail Insurance	None All	23 54	All	88	All	67
Irrigation Water	None	94	None	80	None	88
Hay Harvesting	All H/S	61 39	All	90	All H/S	71 29
Hired Labor	All	100	All	100	All	100
Building Maintenance	None Labor	73 20	None All	75 25	None	74

Key: H/S = Renter's share
S/C = Same as crop share

Table 18

Share of Expenses Normally Paid by Renter in Irrigated Leasing Between Private Parties
(for related individuals) in Yellowstone and Richland Counties, Montana, 1977-78

	Yellowstone County		Richland County		Irrigated Summary	
	Paid by Renter	% so responding	Paid by Renter	% so responding	Paid by Renter	% so responding
Grainseed	All	100%	All	83%	All	89%
Combining	All	100	All	83	All	89
Grain Hauling	All	100	All	100	All	100
Beet Seed	All	100	All	83	All	100
Fertilizer	S/C	100	All S/C	71 29	All S/C	50 50
Bean Seed	All	100	All	83	All	89
Corn Seed	All	100	All	80	All	88
Property Tax	None	100	All	80	None	100
Federal Crop Insurance	None All H/S	33 33 33	All H/S	60 40	None All	38 50
Hail Insurance	All H/S	67 33	All H/S	60 40	All H/S	50 37
Irrigation Water	None	100	None	100	None	100
Hay Harvesting	All 1/2	67 33	All	100	All	88
Hired Labor	All	100	All	100	All	100
Building Maintenance	None Labor	50 50	None All	40 60	None None	43 43

Key: H/S = Renter's share
S/C = Same as crop share

A situation nearly opposite that in dryland leasing finds the renter and landlord most often sharing fertilization costs in proportion to the shares received for that crop fertilized.

As with other seed, bean and corn seed are most often furnished by the renter.

Federal crop insurance coverage was reported as not being paid for by irrigated renters ("None") in about a third of all cases. In such cases the insurance is evidently not subscribed to. It is subscribed to and wholly paid for by the renter in 44 percent of all cases. Hail insurance is most often furnished in whole by the renter. Twenty-four percent of the renters indicate insuring only their portion of the crop for hail damage.

Irrigation water charges are most often paid by the landlord with the renter paying "None".

Seventy-five percent of the renters pay "All" hay harvesting expenses, including cutting and raking, or swathing, and baling where used, along with stacking. Twenty-four percent of landlords and renters share expenses such as baling.

Hired labor is paid, in all cases, by the renter. And 67 percent of the renters reported paying no share of building maintenance.

Cash Leasing

Very few of those parcels in both dryland and irrigated study

areas were cash leased. While those agreements where cash rent was not paid on a per acre basis were omitted from these analyses, such selection only excludes five leases from all those dryland and irrigated cash leases reported in the entire six-county study area.

Cropland Cash Leased. Some dryland cash rents are paid on each acre of both the cropped and fallowed acreage. Other agreements are based on a higher rental rate applied to only cropland acreage. To obtain a uniform response, the questionnaire asked all cash leasing responses be based on cash rent paid per acre of cropland. Cropland was defined as all plantable land. This would include any land fallowed in the past year but would exclude dryland and irrigated pasture. Pasture and the rents paid, if any, were considered separately. Cropland cash rents are reported in Tables 19 and 20. The low incidence of cash rental for both irrigated and dryland cropland provided an insufficient data base for chi-square, Kendall's tau, or other analyses to ascertain cash rental determinants.

Dryland Pasture Cash Leased. Those cash rental rates per Animal Unit Month of grazing capacity on dryland pasture are included in Table 21. Cash rent per A.U.M. was computed by multiplying the pasture acreage reported ". . . needed to support a 1,000 pound cow and calf for one month" times the cash rental fee per month.

Table 21 reports cash rental rates per A.U.M. from \$1.50 in both Yellowstone and Hill Counties to \$15 in Fergus County.

Table 19

Cash Rental Per Cropland Acre (both cropped and fallowed land)
And Crops Raised on Seventeen Privately Owned Dryland Farms
in Six-County Dryland Study Area, Montana, 1977-78

Cash Rent Per Acre	Crops Grown						County
	Winter Wheat	Spring Wheat	Durum Wheat	Barley	Oats	Hay	
\$ 6.47						X	Richland
8.00	X			X			Sheridan
8.00		X		X			Sheridan
9.00	X			X			Chouteau
10.00	X			X			Yellowstone
10.00	X			X			Yellowstone
10.00 (3)	X			X	X	X	Richland
10.00 (1)	X			X	X	X	Richland
10.00	X			X			Chouteau
12.00 (2)	X						Yellowstone
12.00	X			X			Chouteau
12.00				X		X	Fergus
12.50	X			X		X	Richland
16.00			X	X	X		Sheridan
18.00		X		X	X		Sheridan
18.00	X		X		X		Hill
20.00	X		X				Yellowstone

Table 20

Cash Rent per Cropland Acre and Crops Raised on
Ten Privately Owned Irrigated Farms in
Yellowstone and Richland Counties, Montana 1977-78

[illegible]

Similarly, Tables 19 and 20 show a wide range in cash rental rates per acre with dryland cash rents ranging from \$6.47 to \$20 and irrigated rents varying from \$24 to \$60 per acre. Reasons for these wide ranges in cash rental fees are analyzed in the following section.

Interpretation of Cash Rental Rate Data. The composite nature of parcels containing both cropland and pasture with alternate lease plans used undoubtedly explains much of the deviation in cash rents. Some farms in the study area are entirely composed of cropland. Others are wholly made up of pasture acreage. But many are composed of some cropland with the remainder as noncropland acreage, used as pasture.

Lease arrangements vary for each type of parcel. For any given parcel with both cropland and pasture acreages, the cash lease arrangement used often adheres to one of the following basic plans.

Plan A) Cash rent is paid per acre of cropland with the pasture "thrown in", being rent free.

Plan B) A cash rent per cropland acre is paid with a lower charge per acre of pasture.

Plan C) An equal rental rate is paid per acre on the entire farm, the same rent paid per acre of cropland as for pasture acreage.

The data in Table 19 exemplify such different arrangements. For example, the eighth case in the table (marked as "(1)") typifies

leases like those described in Plan A. This case of cash rental is from a Richland County farm with 470 acres of cropland rented for \$10 per acre, the renter receiving use of 970 acres of pasture without charge.

Arrangements like that described in Plan B can be pictured by considering the tenth case in Table 19, marked as "(2)". A \$12 rent was paid per acre on 450 acres of cropland and \$2 was paid per acre of pasture (\$5.76 per A.U.M.).

Lastly, Plan C leases are exemplified by "(3)". This refers to a farm of 418 cropland and 110 pasture acres. The renter indicated paying a \$10 rental fee on each of the 528 acres (\$10 per A.U.M.).

While cash rents per acre in the study area are reported in Tables 19, 20, and 21 the preceding indicates the difficulty of comparison and use of such data. This problem is evident whether such data are for pasture or cropland. For the cash rents reported, little meaningful information comes in comparing a \$2 per acre (\$5.76 per A.U.M.) pasture cash rent in "(2)" to the \$10 per acre (\$10 per A.U.M.) rental fee in "(3)". And problems arise in comparing the \$12 cash rent per cropland acre in "(2)" to the \$10 cropland rent in "(1)".

This difficulty of comparison arises as follows. A consideration of the cash rent per acre for one part of a farm, say cropland, is incomplete. Such an analysis must also consider the amount of pasture within the parcel and the arrangement for its rental as these

Table 21

Cash Rental Rate Per A.U.M. (Animal Unit Month) of Grazing
Capacity on Privately Owned Dryland Pasture in
Six-County Dryland Study Area, Montana, 1977-78

County	Rental Rate
<u>Yellowstone:</u>	\$ 1.50
	1.56
	2.00
	2.48
	4.00
	4.17
	5.00
	6.00
	5.76
	11.72
<u>Richland:</u>	2.00
	10.00
<u>Sheridan:</u>	3.56
	7.00
	7.00
	7.00
	8.75
<u>Hill:</u>	1.50
	3.33
<u>Chouteau:</u>	1.67
<u>Fergus:</u>	2.80
	3.33
	3.33
	3.50
	6.67
	15.00

Note: The 26 cases of dryland pasture cash rental reported herein differ from those 35 indicated in Table 5. Table 5 notes the total number of cases of dryland pasture cash leased while this table reports only those cases in which the cash rental per A.U.M. was actually identifiable.

factors weigh in the determination of cropland rent. If one wishes to consider pasture rents, he must thus also consider the cropland portion of the parcel.

This problem is only slightly alleviated if one considers two farms operated under the same basic lease plan. For example, assume two farms both utilize the lease form shown in Plan A. One farm might contain 100 acres of cropland rented at \$15 per acre with the renter given use of 300 acres of pasture without charge. A second farm might contain 400 acres of cropland rented at \$15 per acre with only 30 acres of pasture at the renter's disposal without charge. Simple tabular comparison of cropland cash rents per acre, even though both are \$15 in this case, as a basis to approximate an average cropland cash rent is inaccurate.

Most of the preceding difficulties are not so evident in the comparison of cash rents in irrigated cash leasing. As most irrigated parcels reporting are entirely made-up of cropland, use of tabulated data is more meaningful than in dryland leasing. Still problems arise. All ten cases in Table 20 of cash rent per irrigated cropland acre come from farms entirely composed of cropland. Statistical analysis shows an average cash rent per acre for irrigated cropland of \$42.81. But the sample standard deviation in rental fees with respect to that average rent per acre is large, \$10.97 (see Table 22). Obviously there is still a need to explain the deviation in irrigated

cropland rents by considering land productivity, fixed improvements, and other factors.

Table 22

Average Cash Rental Fee Per Cropland Acre
and Animal Unit Month of Pasture
in Six-County Study Area, Montana, 1977-78*

	Irrigated Cropland (10 cases)	Dryland Cropland (8 cases)	Dryland Pasture (11 cases)
Average Cash Rent Per Acre or A.U.M.	\$42.81/acre	\$11.19/acre	\$5.98/A.U.M.
Standard Deviation in Cash Rental Fee	$\pm \$10.97$	$\pm \$ 3.93$	$\pm \$2.98$

*These statistics relate to parcels wholly comprised of either irrigated cropland, dryland cropland, or dryland pasture.

Similar consideration of only those parcels in Table 19 which are wholly made up of cropland, eight in total, shows \$11.19 as the average cash rent per acre of dryland cropland (Table 22). The standard deviation for the sample of cropland cash rents is \$3.93.

For the data in Table 21, those eleven cases of cash rents per dryland Animal Unit Month where only pasture is rented average \$5.98 with a large sample standard deviation of \$2.98 (see Table 22).

It can be seen the standard deviation about average cash rent is

proportionally greater in the cases of dryland cropland and pasture leasing than in irrigated cropland leasing. Nonetheless, as noted, the deviation in irrigated cropland rents is large. In all three cases a larger data base would be beneficial in possibly reducing the deviation in cash rents with regard to the average rent. Such a larger data base would also allow study of those factors weighing in cash rent determination.

Lease Equity

Comparisons of expense and return sharing were made to test for lease equity for the customary share arrangements reported. The contributions approach was used for the analysis (see page 11). No such analyses of cash leasing were conducted due to insufficient data regarding cash rental rates.

Dryland Share Lease Equity. A 1200 acre farm considered representative of Chouteau County was used as the model farm in the dryland analysis.²⁷

For such leasing, revenue sharing is easily considered. All grain crops are shared in the same one-third/two-thirds manner (Table 11).

Computations were necessary to determine expense contributions

²⁷ The costs for the hypothetical dryland farm in this analysis are from: Schaefer, Griffith, and Luft, Costs of Dryland Crop Production in Chouteau County. Bulletin #1140 (Rev.), Cooperative Extension Service (Bozeman: Montana State University, June, 1978).

made by each party (Table I2). The only variable cost contribution attributable to the landlord, while optional, was one-third of the crop insurance coverage carried. The renter pays for two-thirds of the crop insurance plus all other variable costs. As for fixed costs, the landlord pays taxes and insurance on land and improvements, upkeep costs for storage facilities, and interest on land.

Most cost contributions are easily set at the market purchase price but land is not so easily considered. Land, the major landlord cost contribution, can be valued at market value. But some believe market value is unrealistically high compared to its value in use as a farm (this, of course, is a major argument in favor of "current use" estate valuation). Once a value has been placed upon land one must determine what return it merits. It is difficult to decide whether to credit the landlord with a contribution of, say five, or ten percent of the land's value.

For this analysis land was valued at \$300 per acre. With a return to land of five percent, the landlord contributes 41 percent of all costs, the renter 59 percent. This deviates somewhat from the one-third/two-thirds (33 percent/67 percent) sharing plan used for returns. The two would deviate still more if a higher return was attributed to the land contribution.

Irrigated Share Lease Equity. Costs and returns assumed typical for a 300 acre farm in Montana's Lower Yellowstone Valley were used to

test for equity in irrigated crop-share leasing.

Unlike dryland leasing in the study area, the same crop-sharing mode is not used for each crop in irrigated leasing (Table 15). Thus, a computation of the return expected from such a farm was necessary. The acreages assumed and the yields and prices expected are shown in Table 23.²⁸

Table 23

Acreage, Yields, and Prices Assumed for a Hypothetical
Irrigated Farm in Montana's Lower Yellowstone Valley, 1977-78

Crop	Acreage Grown	Yield per Acre	Assumed Price
Sugar Beets	100	18 tons	\$24.00
Alfalfa	50	4 tons	50.00
Barley	20	65 bu.	1.65
Spring Wheat	50	50 bu.	2.35*
Beans	40	16 cwt.	18.00
Corn Silage	40	20 tons	15.00

*The wheat was assumed not planted under the government program.

²⁸The costs and returns for the hypothetical irrigated farm in this analysis are from: Schaefer, Griffith, and Luft, Costs of Irrigated Crop Production on the Lower Yellowstone Valley, Circular 1162 (Rev.), Cooperative Extension Service (Bozeman: Montana State University, April, 1978).

Such production and prices would result in total revenue of \$84,738.05. With each crop shared as shown in Table 15's Irrigated Summary for all private leases, the landlord would receive \$22,191.55 or 26 percent of the total revenue generated. The renter would receive 74 percent, or \$62,546.50.

The next consideration is costs. Costs were assumed shared in the same manner as expressed in Table 16. The renter provides all variable inputs except the landlord's "share" of any fertilizer used. In terms of fixed costs, the owner pays for irrigation water, taxes and insurance on land and improvements, and return to land. The sole fixed cost considered paid by the renter was that of machinery ownership costs.

In this analysis, irrigated land was valued at \$1,200 per acre with two returns attributed to it, the first at seven percent and the second at five percent.

With land receiving a seven percent return, the landlord's total contributions amounted to 34 percent of all costs. The renter's contributions, in turn, represented 66 percent.

With land's return reduced to five percent, the landlord's total share of costs fell to 29 percent. The renter's share accordingly rose to 71 percent.

For irrigated leasing the analysis indicates revenue is shared (74 percent/26 percent) in approximately the same manner as costs

(71 percent/29 percent) when land is granted a five percent return. Thus it appears irrigated leases in the study area split revenues closely in relation to cost contributions.

This is not so apparent in dryland leasing. Cost sharing (59 percent/41 percent) deviates slightly more so from return sharing (67 percent/33 percent) than in irrigated leasing. It is difficult to state whether this crop and expense sharing mode is equitable. The contributions analyses are believed accurate regarding the farming practices, associated operating costs, and the yields assumed for each operation. But many factors such as crop price and others not so easily quantified affect cost contributions and shares earned. If altered or taken into consideration, any of these might change the contributions analysis results.

A lower return on dryland cropland would bring cost and revenue sharing closer. Such a return to a landlord's investment in land, while seeming low, might typify landlord expectations as the landlord might consider his return from land leasing as but part of his return from land ownership. Another, and possibly major return perceived could be based in hopes of price appreciation.

Chapter 4

SURVEY FINDINGS AND ESTATE VALUATION PROCEDURES

Large monetary benefits can be gained using "current use" procedures to value an agricultural estate for estate taxation. The literature review notes the value of an estate subject to the taxation can be reduced by up to \$500,000. Thus an estate tax obligation can be reduced substantially, depending upon the estate's magnitude in light of the progressive nature of estate taxes.

However, many factors complicate utilization of "current use" measures. Several rules restrict its use to those satisfying specific conditions, the decedent being required to satisfy specific pre-death restrictions and heirs having to continue fulfillment of certain post-death conditions. Such restrictions placed upon decedents and heirs are considered later in this chapter along with foreseen effects of Section 2032A valuations.

First, the procedure for the valuation process itself and the difficulties inherent in its use in the study area and the rest of Montana are considered. Methods to overcome several such procedural problems and thus ease achievement of "current use" valuations are proposed.

Alternative Methods for "Current Use" Valuations in the Study Area
and Montana

Little cash leasing is found in the six-county study area (Tables 5 and 6). Share rental predominates. This prevalence of share rental is assumed to characterize farm leasing in both dryland and irrigated farming areas throughout Montana as those counties surveyed were chosen under an assumption they represent much of the State's agriculture (page 18).

The low percentage of respondents reporting cash leasing, coupled with the low survey questionnaire response rate, provided very little data on cash rental. What data was acquired was largely uninterpretable for meaningful use (pages 52 -57) as a guideline for cash rental revenue generation. Such problems were largely attributed to the different types and individual characteristics of study area farms. But even in areas where such difficulties were not so evident, simple data summaries regarding average cash rents might not be wholly adequate for "current use" valuations.

The main valuation technique of Section 2032A does rely upon cash rental information. But the law is discriminating in requiring the gross cash rental return used for the valuation be from ". . . comparable land used for farming purposes."²⁹ Thus, general

²⁹ Internal Revenue Code. § 2032A(e)(7)(A),

comparability of the decedent's estate and the farm from which the cash rental return is taken must be established. This will probably not be accomplished easily. As noted in Chapter 3, any given farm's land is often a composite of varying soil types and varying productivity.

Fixed improvements also contribute to farm individuality. The presence and conditions of a dwelling, barn, grain bins, or other improvements such as fence lines can weigh heavily in a farm's value. Thus, they must often be considered in comparing two farms. This necessity is relieved somewhat in the study area as this research finds many parcels in the study area, especially in dryland farming areas, do not have a dwelling or other buildings (Table 24).

Table 24

Dwellings and Other Buildings on Cash and Share Leased
Parcels in Six-County Study Area, Montana, 1977-78

Study Area	Buildings	(%)
(A) Irrigated Study Area:	Dwelling Present	75
	No Dwelling Present	25
	Other Buildings Present	63
	No Other Buildings	37
(B) Dryland Study Area:	Dwelling Present	34
	No Dwelling Present	66
	Other Buildings Present	44
	No Other Buildings	56

But, when present, such improvements will require careful attention.

Such problems must be surmounted to ease use of "current use" valuations in the study area and Montana. Three alternative methods are proposed to partially overcome such difficulties.

Use of "Synthesized" Cash Rents. Harl and Boehlje suggest development and use of "synthesized" cash rental returns for "current use" valuations.³⁰ Such returns would come from an analysis of farms which are cash rented, seeking to identify those factors contributing to cash rental determination. Factors considered might include the relation of landlord and renter. Or they might range from the parcel's distance from town to its complement of fixed improvements to its soil type or many other factors. One might even simply find soil productivity to be the predominating cash rental determinant.

Whatever the case, such a study, in considering a great number of cash rented parcels, would allow the development of an equation to be used in synthesizing a cash rental rate. Such a synthesization equation would consider each individual farm's attributes which helped

³⁰ Michael D. Boehlje and Neil E. Harl, "Use Valuation Under the 1976 Tax Reform Act: Problems and Implications" (Ames, Iowa: Iowa State University), pp. 4-8. (Mimeographed).

determine cash rental terms.³¹

When applied to a decedent's estate, the equation would "synthesize" a cash rental believed appropriate.

Such a procedure does not attempt to establish comparability between the estate and another parcel actually cash rented. Rather, the synthesization equation, derived from information regarding many cash rented parcels, develops a rental return a farm like that being valued would be expected to generate. It is a hypothetical rental return.

Such a method could largely solve the problem of considering cash rent on a per acre basis. The equation could produce a total cash rental return expected by the estate in question and would consider factors such as distribution of cropland and pasture.

A synthesization process might eliminate many problems characterizing "current use" valuations in the study area and Montana but many problems are inherent in the procedure. First, it's complicated. It would be a complex task to identify and quantify those factors explaining rents for cash leasing in order to develop the equation. For an accurate predictive equation to be developed a large, precisely

³¹For an excellent discussion of a crop-share and cash rent synthesization project see: J. B. Wyckoff, et. al., Determining Agricultural Land Rents: A Case Study of Malheur County, Special Report #415, Oregon State University Extension Service (Corvallis: Oregon State University, August, 1974).

descriptive data base would be needed. This research indicates great difficulty is inherent in any such undertaking of data collection and analysis. Lastly, Section 2032A is unclear in specifying whether or not the synthesization procedure is allowable, even though it seems to fit within the context of the multiple factor approach (pages 16 and 17).

Use of a One-to-One Comparison Procedure. An alternative method for "current use" valuations is obviously a direct one-to-one comparison of the decedent's estate to another cash-rented farm. Such an analysis would require consideration of each basic characteristic of the estate, as in the synthesization process, but would require comparison to an actual farm. An actual rental return would be used, not a hypothetical return. Such an analysis would have to determine that the two farms are basically comparable: similar in cropland and pasture distribution, productivity, fixed improvements, and other factors. Once such near-comparability had been established, an in-depth analysis would often be necessary to adjust the particular rental return. Such adjustment would be for incomparabilities of the estate and the farm from which the rental return is adapted.

While this procedure could be based upon cash rental revenues per acre, the difficulties noted in Chapter 3 indicate the comparative ease of working with total cash rental revenue instead.

A notable advantage of such a one-to-one valuation procedure is

that, while requiring certain cash rental information, it might often rely upon case study analysis of but a few farms. As noted previously, development of the sophisticated equation to synthesize cash rents would require data from many farms. Thus, a one-to-one valuation technique might be advantageous in an area such as the study area and Montana where cash rental information is largely lacking and difficult to acquire.

The Problem of Locality. An important point must be viewed in considering both of the preceding procedures. Section 2032A states the rental rate used in the valuation must come from a farm ". . . located in the locality . . ." ³² of the farm being valued.

The data used to develop an equation to synthesize cash rents would probably come from geographically diverse areas. And if a one-to-one valuation procedure is followed, the specific farm from which the cash rent is taken may be distant from the decedent's estate. Such would frequently be the case whenever cash leasing is used much less often than share rental as in the study area. Thus, the meaning of locality must be determined.

Locality could be defined to include any area where farming practices are essentially nonvariant. In Montana little difference is

³²Internal Revenue Code § 2032A(e)(7)(A).

seen between farming methods in two entire counties like Hill and Chouteau. In this light, a large area could be considered a locality.

On the other hand, weather might shrink one's interpretation of locality as it can vary markedly as distance increases. Still, even two neighboring farms can often experience distinctly unique weather over a period of several years. Thus locality, even if defined to be a small area, might do little to equate an estate with another farm.

Weighing these considerations, the most plausible interpretation of locality would be that first mentioned: any area where farming practices are essentially nonvariant. This would not disregard the factor of weather but would instead include an implicit assumption adjustment for productivity would include much of whatever consideration of weather was necessary. Such an interpretation would probably go far to make Section 2032A more applicable in the study area and the rest of Montana. Cash rental data from one area, with proper adjustments, could then be used in valuations of distant estates.

Cash Equivalent of Share Rental Returns. If no cash rental return believed appropriate for the decedent's estate can be synthesized or actually secured for a one-to-one comparison valuation, a final plan is proposed.

An artificial cash rental revenue would be derived, using the cash equivalent of the landlord's return under a crop-share plan. This would be based upon the normal return the parcel could have been

expected to produce in the years preceding the decedent's death. Such a plan appears very sensible as it seems quite like that process suggested by the first, second, and last points of the multiple factor valuation approach.

The first step in this would be determination of an average yield for the parcel considered. And a normal cropping pattern would need to be established. While many respondents in this study failed to respond with average yield information, records kept by each landowner would probably provide such information when needed. Those agencies administering government price support programs would have such data for program participants.

With average expected yield established, one must consider how the produce is shared. This study indicates an easy solution to that problem for the study area and supposedly for those areas of Montana typified by the type of agriculture studied herein. A standard crop-sharing plan was found to be used, a plan unaffected by renter-landlord relationship (pages 28 - 31). Also, statistical testing found no relationship between average productivity of the land and the sharing arrangements utilized (31 - 34).

Furthermore, a relatively uniform mode of expense sharing seems to characterize Montana share leasing.

The price at which the crop is valued affects the cash rental equivalent and is therefore important. What price level would be used?

One could use price at harvest-time. But that presents the realization probably not all landlords sell their share of the crop at harvest. They often hold their produce for later sale, sometimes months or even years later, especially in the case of storable commodities like dry grains. While not totally eliminating many of the problems mentioned previously, using an average price for the year the crop was harvested poses a partial solution.

It should be noted a valuation using an actual or synthesized cash rental figure would usually be lower, and thus more desirable, than that from the capitalization of share rental returns. This is expected as a share landlord's rental returns are larger in the long run than those from cash leasing. The higher long-run returns compensate the share landlord for the added risk he incurs (see page 10).

While the process has some inherent difficulties, it looks workable. It is uncertain whether the law even allows such a process but the procedure seems quite like that suggested by the multiple factor approach of Section 2032A.

Section Summary. The preceding discussion of proposed mechanisms for "current use" valuations, while based upon study findings regarding Montana farm rental, has been very general. This is necessary. Each estate valuation, regardless of what basic plan is followed, will be a unique undertaking. Many potentially problematic considerations not mentioned herein will probably be encountered. Therefore, only general

guidelines of possible "current use" procedures can be recommended.

Foreseen Repercussions of "Current Use" Valuations

The following considers pre- and post-death restrictions limiting use of Section 2032A valuations and possible effects arising from such valuations. Such effects are foreseen should Section 2032A actually be widely used, not only in the study area, but throughout rural America.

Pre-Death Restrictions Upon Those Using Section 2032A. A wish probably common to each person having amassed an estate, whatever its magnitude, is passage of as much of his holdings as possible to his heirs when he dies. Naturally included in this desire is the hope a minimal proportion of his estate is absorbed by estate taxation. As shown previously, "current use" valuations fit into such motivations. Potentially huge savings in estate taxes can accrue to a decedent's heirs if a Section 2032A estate valuation can be secured. This results in a larger legacy. But while a landowner would desire that his heirs could use a "current use" estate valuation, he must have satisfied several pre-death conditions before they can do so.

Section 2032A restricts "current use" valuations to those cases where the decedent demonstrated "material participation."³³ Such a

³³Internal Revenue Code § 1402(a)(1).

demonstration denotes a certain level of managerial or laborial contribution to the farm's operation. The intent of this seems to direct estate tax relief to those "closer" to the land. These individuals would be those having a more intimate long-term commitment to farming. Such participation must have characterized the landowner's relation to the farm in at least five of the eight years preceding his death.³⁴

Clearly, those farmers who have operated their own farm for a sufficient period would qualify. But not so easily considered are those owners of farms who don't or haven't operated the business themselves. For these who are "farther" from the land, living far from the farm or even close by but with little direct bearing on the farm's operation, establishment of material participation is much more difficult.

In some such cases, interest in the farmland ownership arises from family ties, i.e. a farm background with a resultant inheritance. Or it can stem from outright purchase.

In both cases, the farm is sometimes rented to a relative involved in farming. Such rental to a relative automatically qualifies an owner for "current use" benefits. Or the farm may be leased to a nonrelative. In that case, the owner must have established material participation for the required period prior to death.

³⁴Internal Revenue Code § 2032A(b)(1)(C), i, ii.

Other cases see the landowner letting the family member oversee the lease to a third party. In still other cases, farm ownership can be vested in a partnership or small corporation with operation or leasing overseen by the landowner himself or a relative. In all these cases material participation appears achievable.³⁵

The last type of landowner would be one who acquired land either through inheritance or purchase, but where the farm's leasing or operation is administered through a professional manager or agent. At present, material participation is unachievable in such cases.³⁶

Another condition restricting use of Section 2032A is the requirement that at least fifty percent of the decedent's gross estate's market value must be in the form of real farm property.³⁷

Post-Death Restrictions and Effects on Agricultural Heirs. After considering pre-death regulations, one must next study the post-death restrictions upon those to whom the financial benefits of a Section 2032A valuation directly accrue, the heirs.

Section 2032A induces heirs to retain agricultural inheritances through "recapture"³⁸ clauses. Such clauses force forfeiture and

³⁵Internal Revenue Code § 2032A(b)(1)(c)(ii).

³⁶Internal Revenue Code § 1402(a)(1).

³⁷Internal Revenue Code § 2032A(B)(1)(A).

³⁸Internal Revenue Code § 2032A(c).

repayment of any benefits gained through "current use" valuations should certain post-death conditions not be satisfied.

Basically, Section 2032A penalizes heirs for sale of the inherited estate to nonfamily members. Full recapture of "current use" benefits occurs for such sales within ten years of the decedent's passage. Partial recapture occurs at a declining rate for similar sales during the eleventh through the fifteenth years. Any sale after the fifteenth year suffers no recapture retribution. For sales of but a portion of the inheritance, proportionate recapture occurs.

Additional cause for recapture of benefits arises whenever the heir fails to satisfy a post-death material participation requirement. Similar to the pre-death requisites, recapture is suffered if material participation cannot be demonstrated for more than three years in any eight year period ending after the decedent's death.

Foreseen Effects of "Current Use" Valuations. The preceding discussion of who can utilize Section 2032A along with the associated restrictions is the basis for the following. One can now envision effects "current use" legislation could possibly be expected to have on American agriculture.

The magnitude of benefits arising from Section 2032A estate valuation will vary for each individual but the net effect will be the same. An additional monetary return would be attributable to the ownership and participation in the operation of farms. Of the

several perceiving this return many might reshape their investment holdings to take advantage of Section 2032A's benefits. Possibly included in such a trend would be those farmers who would transfer a portion of their nonagricultural holdings into farm real assets in hopes of securing maximum benefits from "current use" valuations. And many others either holding minimal or no interest in farm property but who could achieve material participation would probably do likewise.

A major factor helping determine those so reacting would be the time value of money, its investment opportunity cost. An individual anticipating death within ten years would attribute a higher present value to a "current use" estate tax reduction than someone not expecting death for thirty years, providing both had similar investment opportunities. While in the aggregate, personal discount rates would vary, overall, older individuals would probably be more anxious to acquire farmland holdings than younger men. This would be a result of their higher perceived present value of "current use" estate reductions than those of their juniors. Older bidders could pay a premium to secure an agricultural estate, outbidding many younger counterparts, especially those seeking an initial foothold in farming.

Effects arising from Section 2032A would be long-run phenomena so one must also look ahead to the influences wrought by those generations subsequent to the initial decedent, the heirs. They appear

obvious. Post-death requirements for retention of reduced estate tax benefits discourage sale of the inheritance. So in many cases the farm could be expected to stay in a family's ownership, however diffused.

For those individuals wishing to become owner-operators, many of whom could be expected to be young men, another major obstacle would be erected. The supply of farmland would be restricted by owners legally inhibited from selling.

With the above occurring - more individuals competing for land ownership and fewer willing to sell - the total effect foreseen would be a general rise in the price level of farmland.

As noted, on the demand side, expectations of benefits arising from future reduced estate taxes would be capitalized into bids for farmland. The supply of farmland would be reduced by heirs retaining their inheritances to save "current use" benefits.

Eventually an equilibrium would be reached where there was no further incentive for entry. All anticipated benefits of estate tax savings would have been capitalized into higher land values. Economic theory suggests this heightened price level would end in "current use" valuations as high as those market prices which would have prevailed without Section 2032A valuations.

Returning to the question of who can utilize Section 2032A, clearly

the wider the "gates" allowing its use, the more profound the aforementioned effects will be.³⁹

And there may well be pressure to open those "gates" further. As previously noted, pre- and post-death material participation is presently disallowed those operating farms through professional agents or managers. But there may well be pressure to erode that barrier if Section 2032A valuations are made more easily workable in those cases already allowed. Land ownership would be even more appealing to a nonfarm class already having the incentive of income tax shelters through agricultural investment.⁴⁰

Present trends of farm emigration suggest farms would increasingly be operated by nonowners. Operation would be by part-owners, tenants, or professional managers. Ownership would probably be vested in individuals with little or no interest in the farm but maintaining ownership to retain "current use" benefits.

³⁹ Michael D. Boehlje and Neil E. Harl, "Use Valuation Under the 1976 Tax Reform Act: Problems and Implications" (Ames, Iowa: Iowa State University) pp. 38-39. (Mimeographed).

⁴⁰ Additional inspiration for this chapter arose from Harold F. Breimyer's address, "Sun, Soil and Seedstock: The Ecology and Economics of Modern Agriculture." Dr. Breimyer presented the paper at the M. L. Wilson Distinguished Lecture at Montana State University, Bozeman, on May 11, 1978.

Section Summary. Consideration of the total social and economic impacts of Section 2032A upon American agriculture and society is beyond the scope of this work. But they certainly merit sensitive consideration. One is led to ask what were the intentions of Section 2032A, and what the effects will actually be.

Chapter 5

SUMMARY AND CONCLUSIONS

This study was undertaken to accomplish objectives to

- 1) gather data so as to identify prevalent Montana farm leasing practices, analyze them from a standpoint of equity, and test whether factors such as average crop yield or landlord-renter relation affect lease determination, and
- 2) provide information necessary, if possible, for "current use" valuations of Montana farm estates. Included in this objective is a study of the structure of existing "current use" legislation and its possible effects upon American agriculture.

In the initial phase of the study a survey questionnaire was mailed to farm part-owners and tenants in six Montana counties. Survey inquiry focused on irrigated and dryland agricultural lease terms attempting to identify those factors contributing to their determination. Gross survey response was 22.70 percent of those questioned, with a net usable response of 16.97 percent. Only those leases of land owned by a private individual were included in the data summary.

Findings Regarding Leasing Practices

Crop-share leasing represents the predominant portion of those agreements reported. Cash leasing was less evident in all six counties for both dryland and irrigated leases.

Share leases were found to be characterized by rather standard cost- and crop-sharing patterns. Separate analyses of two factors, landlord-renter relation and average expected yield, tested for their relationships to alteration in crop-sharing terms. Both analyses found crop-sharing terms statistically independent of each of the two factors for most crops.

Survey data regarding cash rental rates per acre of irrigated and dryland cropland and per Animal Unit Month of dryland pasture found a wide range of rental rates in all three cases. In dryland cropland and pasture leasing, the wide ranges in rents were largely attributed to the composition of dryland parcels, containing varying proportions of cropland and pasture, and to the fact such parcels can be cash leased using any of several basic lease forms. The wide range in irrigated cash rents was not attributable to such factors as irrigated parcels are often wholly made-up of cropland. It was largely unexplained except by assumption factors such as productivity and fixed improvements explained rent deviation. This assumption could not be tested due to an insufficient data base.

Analysis of only those dryland parcels entirely composed of either pasture or cropland provided more meaningful estimates of average cash rents. Still the standard deviations of cash rents about their averages remained large. This indicated factors other than proportional composition of cropland and pasture affect dryland cash rents. An insufficient data base precluded analyses to determine such factors.

This research suggests an answer to inquiries regarding appropriate leasing practices for farms within the study area and Montana. Each of those farms included in this study's data summary is undoubtedly unique in many respects, and so are those individual landlords and renters involved. But many such landlords and renters apparently consider the relatively standard dryland and irrigated leases discovered to be adequate in considering such factors. Thus, the customary lease plans found serve as a basic method for those negotiating a rental agreement.

Such standardized leasing systems could merely be a result of tradition, deserving change in some cases. In those cases where both landlord and renter agree upon the need for such change, appropriate adjustment in lease terms can be made in consideration of those factors prompting such change. Otherwise, the customary share lease plan discussed herein would remain suitable.

For those desiring a cash rental plan, it is recommended the preceding process of calculating an appropriate share lease arrangement be accomplished first. Such a share lease, once formulated, would provide the basis for negotiating a cash rental return, adjustments being based upon risk transferral and other factors.

This process of arriving at a rental agreement, whether share or cash, might be difficult to conclude to the equal satisfaction of both landlord and renter alike. Still, this basic procedure, while seeming very rudimentary, is the appropriate method for share and cash lease determination as concluded by this research.

Application of Survey Findings to Estate Taxation

Next, in summary, the relation of farm leasing within the study area to "current use" valuations along with foreseen effects of such estate valuation procedures were considered.

As noted previously, problems were encountered in gathering cash rental data and comparing farms in the study area. This indicated a need for procedures to overcome such problems so as to ease accomplishment of "current use" procedures in the study area. Three such alternative valuation techniques were suggested.

The first method involves study of several cash leased farms with an equation to "synthesize" a cash rental rate. Such a process, in considering many farms, computes an estimate of a cash rental

return a farm like the decedent's could have been expected to generate.

The second method suggested relies upon comparing an actual cash leased farm with the decedent's estate. Such a one-to-one comparison adjusts the actual rental return for use in the "current use" valuation of the estate considered.

When both the aforementioned valuation techniques appear unworkable, a third procedure is recommended. This method largely foregoes the use of data from cash rented parcels, whether in a synthesization or one-to-one comparison. It instead utilizes the cash rent equivalent of the customary share rental plans used in dryland and irrigated areas as the basis for the valuation.

Next, possible effects of "current use" valuations were foreseen. It was concluded Section 2032A, regardless of its intentions, may discourage the existence of owner-operated farms. Possible effects of Section 2032A foreseen as leading to such effects were higher priced farmland with ownership vested in individuals with minimal or, in an extreme case, no direct tie with farm operation.

Suggestions for Future Research

Not all states or regions in the United States are characterized by farms like those encountered in the study area. But where such is the case, difficulties much like those encountered in this work will complicate research regarding farm rental. In such instances, the

usefulness of data summaries of information like "gross cash rent per acre", "cash rent per Animal Unit Month of grazing", or even "gross cash rent per cropland acre" is questionable.

Rental information from other studies is probably not intended as an exact guide in decisions regarding the specific rental revenue expected for a particular farm. Adjustments would be needed to match such data to individual farms, in recognition of their individual characteristics such as productivity or fixed improvements. But this research concludes, while such adjustments may be made, cash rental data for an area like that studied herein where farms may contain both cropland and pasture would provide an inadequate basis on which to base even careful adjustments.

Cash rental data for an area like the study area might be more meaningful when only considering those farms wholly composed of cropland or pasture, with such distinctions clearly specified. Then such data might be helpful as a guideline concerning cash rents for other parcels entirely made-up of cropland or pasture.

For parcels containing both cropland and pasture, the development of a predictive equation would probably be necessary. This would be quite similar to the synthesization process of Chapter 4. Such data, when presented, would necessarily include disclosure of the equation to approximate cash rents for other parcels.

At present, such precision and care is not apparent in the

literature relating cash rental information. Unless such care is exercised and indicated as such, research for regions like the study area appears misleading, and thus detrimental.

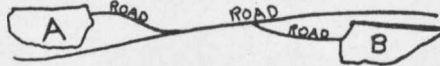
APPENDICES

APPENDIX A.

CONFIDENTIAL:

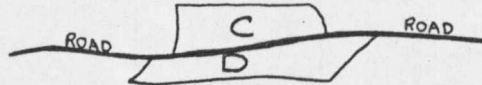
PLEASE READ THESE DEFINITIONS AND DIRECTIONS, that will guarantee we're "speaking the same language."

1. PARCEL: A parcel is to be defined as a contiguous, or continuous unit of land. For example, look at the following picture, even if units A and B



are rented from the same landlord they are still to be regarded as two distinct parcels.

And, of course, if two adjoining units like C and D below are rented from



two different landlords, they are to be regarded as two distinct parcels.

Lastly, if two portions of one unit are rented from the same landlord but different rental arrangements are used, they are then two distinct parcels.

2. CROPLAND: Cropland is that land which is plantable. This would include land which was fallowed this last year but would exclude dryland pasture and irrigated pasture.

Please check the category which applies to you:

- A. ☐ Tenant (renting all the land you farm, owning none.)
B. ☐ Owner-operator (operator of some land you own yourself and renting additional land.)

PREFERABLY ANSWERING FOR THOSE PARCELS WHICH ARE CASH-RENTED, please answer all the following questions with regard to each parcel you rent, answering for each parcel separately in its own column. If you rent more than 2 parcels, say 3, one for cash and two for share-rent, ALWAYS answer for the cash-rented parcel, plus one of the two share-rented parcels. If the share-rented parcels are rented from a Mr. Harris and a Mr. Miller, answer for the Harris parcel, i.e. answer for those share landlords whose names appear first alphabetically. Leave those items which do not apply blank.

	RENTED PARCEL #1	RENTED PARCEL #2
<u>GENERAL INFORMATION ABOUT THE PARCEL:</u>		
What is the total number of acres in this parcel?	() acres	() acres
How many acres of each land-type does the parcel contain	acres of dryland ()	()
<u>REMEMBER:</u> CROPLAND--Cropland is that land which is plantable. This would include land which was fallowed this last year but would exclude dryland pasture and irrigated pasture.	cropland (includes fallow)	
	acres of dryland ()	()
	acres of irrigated ()	()
	acres of irrigated ()	()
	pasture	
How is this parcel farmed?	crop-fallow ()	crop-fallow ()
	continuous-crop ()	continuous-crop ()
→ If crop-fallow, how much of this parcel was fallowed this past year?	() acres	() acres
What do you think the landowner would be willing to sell this entire parcel for?	\$ /acre	\$ /acre
What would you be willing to pay for this entire parcel?	\$ /acre	\$ /acre

1. Please turn to the back of this page.

TYPE OF RENTAL:

CROP-SHARE RENT: What share of these products do you receive: (if you don't crop-share rent, please move to the section on EXPENSES)	RENTED PARCEL #1 From Page 1	RENTED PARCEL #2 From Page 1
	YOUR SHARE:	YOUR SHARE:
Dryland Wheat	%	%
Irrigated Wheat	%	%
Dryland Barley	%	%
Irrigated Barley	%	%
Dryland Oats	%	%
Irrigated Oats	%	%
Dryland Hay	%	%
Irrigated Hay	%	%
Dryland Corn Silage	%	%
Irrigated Corn Silage	%	%
Dryland Corn for Grain	%	%
Irrigated Corn for Grain	%	%
Straw	%	%
Sugar Beets	%	%
Beet Tops	%	%
Dry Beans	%	%
Other (please specify):	%	%
	%	%

EXPENSES:

What share of these expenses do you pay? For those which do not apply, simply leave that space blank.	YOUR SHARE:	YOUR SHARE:
Small grain seed	%	%
Combining	%	%
Grain Hauling	%	%
Beet Seed	%	%
Beet Harvesting	%	%
Fertilizer	%	%
Bean Seed	%	%
Corn Seed	%	%
Property Tax	%	%
Federal Crop Insurance	%	%
Hail Insurance	%	%
Irrigation Water Tax	%	%
Hay harvesting (cutting, baling, etc.)	%	%
Hired Labor	%	%
Maintenance of Fences	%	%
Building Maintenance	%	%
Other (specify):	%	%

AVERAGE YIELD:

Please estimate to the best of your ability the average yields per acre of those crops you grow. (Include pasture.)		RENTED PARCEL #1 From Page 2	RENTED PARCEL #2 From Page 2
Dryland Wheat (Circle the type: winter, spring, durum)		bu/acre	bu/acre
Irrigated Wheat (Circle the type: semi-dwarf, durum, spring, winter)		bu/acre	bu/acre
Dryland Barley		bu/acre	bu/acre
Irrigated Barley		bu/acre	bu/acre
Dryland Oats		bu/acre	bu/acre
Irrigated Oats		bu/acre	bu/acre
Dryland Hay		ton/acre	ton/acre
Irrigated Hay		ton/acre	ton/acre
Dryland Corn Silage		ton/acre	ton/acre
Irrigated Corn Silage		ton/acre	ton/acre
Dryland Corn for Grain		bu/acre	bu/acre
Irrigated Corn for Grain		bu/acre	bu/acre
Straw		ton/acre	ton/acre
Sugar Beets		ton/acre	ton/acre
Beans		bags/acre	bags/acre
Dryland Pasture	Acres/AUM -- number of acres needed to support a 1000 lb. cow and calf for one month.	acres/AUM	acres/AUM
Irrigated Pasture		acres/AUM	acres/AUM
Other Crops: (Please specify the particular crop and the unit you measure its yield with.)			

CASH RENTAL:

Please respond for those parcels or portions of parcels that are cash-rented:

Indicate the number of acres cash-rented --			
	dryland cropland	() acres	() acres
CROPLAND is that land which is plantable. This would include land which was fallowed this last year but would exclude dryland pasture and irrigated pasture.	dryland pasture	() acres	() acres
	irrigated cropland	() acres	() acres
	irrigated pasture	() acres	() acres
Please indicate the cash-rental paid in each case:			
	dryland cropland	\$ /acre	\$ /acre
	dryland pasture (if rent is different than for dryland cropland)	\$ /acre	\$ /acre
	irrigated cropland	\$ /acre	\$ /acre
	irrigated pasture (if rent is different than for irrigated cropland)	\$ /acre	\$ /acre

CHARACTERISTICS OF THE RENTAL ARRANGEMENT:	RENTED PARCEL #1 From Page 3	RENTED PARCEL #2 From Page 3
For what number of years is your <u>present</u> rental agreement?	() years	() years
When was the <u>present</u> rental agreement begun?		
Is the agreement in writing?	()Yes ()No	()Yes ()No
Is this parcel rented from relatives?	()Yes ()No	()Yes ()No
Is there a dwelling on the parcel?	()Yes ()No	()Yes ()No
Do you live in the dwelling?	()Yes ()No	()Yes ()No
How much is paid for the use of the dwelling?	\$ /year	\$ /year
Are there other buildings or improvements on the parcel?	()Yes ()No	()Yes ()No
How much is paid for the use of these other buildings and improvements?	\$ /year	\$ /year
Check who this lease is with:	Private individual () State () U.S. Government () i.e. B.L.M. Bureau of Indian Affairs () Other, specify: _____	() () () ()

1. Please feel free to add any explanatory notes you deem necessary:

Answer the below for only Rented Parcel #1:

2. Are you as a renter authorized in your rental arrangement to make improvements, such as building or making major changes on a shed? ()Yes ()No

→ If yes, how are you compensated if you quit renting the farm? _____

3. What flexibilities in cash-rental rates are used to make adjustments to the party affected by changing prices, altered yields, cost changes, etc?

Thank you!

If the need should arise, may we contact you by telephone? ()Yes ()No

→ Would you please give your telephone number? _____

APPENDIX B

Kendall's Tau Statistic

Kendall's tau statistic tests for the presence of a statistical relationship between two variables. A null hypothesis that the two variables, analyzed in crosstabulation table form, are statistically independent is tested.

The statistic takes two forms, tau-b for square crosstabulation tables and tau-c for use with rectangular tables. Both are only applicable to at least ordinal-level variables. Values of both taus range from -1, for those cases where all observations lie upon the table's minor diagonal, to +1 where all observations lie on the major diagonal. A tau value of 0 indicates the lack of a statistical relationship.

For nonzero taus, the sign indicates the nature of the relationship present. While not exactly interpretable, the absolute value of the statistic (i.e. $|- .45|$ or $|.60|$) indicates the strength of the relationship.

Significance tests indicate the probabilistic presence or absence of the relationship at a prechosen level of assurance.

$$\text{Tau-b} = \frac{P-Q}{\left[\frac{1}{2}(N(N-1) - \sum T_1(T_1-1)) \frac{1}{2}(N(N-1) - \sum T_2(T_2-1)) \right]^{1/2}}$$

$$\text{Tau-c} = \frac{2m(P-Q)}{N^2(m-1)}$$

where

P = the number of concordant pairs

Q = the number of discordant pairs

T_1 = the number of ties on row variables

T_2 = the number of ties on column variables

m = the number of rows or columns, whichever is smaller

N - the total number of observations.

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