1⅟

LANDLORD INCOME FROM IOWA FARM REAL ESTATE

by

Willard Dale Den Herder

A Thesis Submitted to the

Graduate Faculty in Partial Fulfillment of

The Requirements for the Degree of

MASTER OF SCIENCE

Major Subject: Agricultural Economics

Iowa State University
of Science and Technology
Ames, Iowa

1965

TABLE OF CONTENTS

INTRODUCTION

Highly important to a present or potential investor in farm real estate is the return on his investment. Estimates of percentage return from farm real estate have been made on the basis of various types of income data. The usefulness of these estimates has been limited by inaccuracy and difficulty in obtaining the kind of data desired. The close relationship of land to other resources has made accuracy in the determination of return to land, apart from other farm resources, a difficult problem. The result has been use of the readily available but more inaccurate estimates.

Gross cash rent is frequently used for the estimate of return to land. Data on gross cash rent are readily available for use because it has been gathered for several years by the Statistical Reporting Service of the United States Department of Agriculture and the Federal Census Bureau. The main problem with gross cash rent is that it contains charges in addition to those actually received as a return on farm real estate property. Gross cash rent will not give a correct estimate of the return to land because also included within gross cash rent are such items as taxes, depreciation, and upkeep. A better estimate of return to land would of course be net cash rent. Net cash rent is not generally used though because regularly published sources do not provide information on this basis.

Another method of estimating return to land is to impute a return from the total net farm earnings of all owner operators. Scofield reports the return to land using this source for individual states (9). Deductions are made from total net farm earnings for the return to management, labor, and

non-real estate capital, leaving as a residual the return to land. If all
the deductions could be accurately calculated this method would give an
accurate indication of the return to land. But the problems of determining
a proper charge for production factors, especially management, are diffi-
cult.

A third method is to use the crop share landlord return from managed
farms as an estimate of the return to land. Records kept by farm managers
of landlord return on a crop share basis would give actual data on the
returns to land without many of the problems involved with the other
methods. All charges could be accurately separated out by the manager
from his records to give a net return attributable only to land. Manage-
ment costs are easily separated out as the farm managers charge for
management.

This method has not been widely used because data on the return to
landlords of managed farms have not been collected on a systematic basis
and certain problems in the collection and presentation of the data must be
solved before it is advisable to approach farm managers on any large scale
for these data.

It is the purpose of this study to present and discuss problems with
the collection of these data.

The Iowa Society of Farm Managers and Rural Appraisers[1] pledged
earlier this year to help in making a survey and study possible. At the
March 1965 meeting of the Iowa Society, a committee was authorized to work
with members of the Iowa State University Economics Department in

---

[1]The Iowa Society of Farm Managers and Rural Appraisers will here-
after be referred to as the "Iowa Society".

developing a system for obtaining the data from co-operating members. At the first meeting of the committee, a Pilot Survey of landlord return from managed farms was authorized. First the results of this Pilot Survey will be presented and then later, a basis for solving problems connected with making a larger yearly survey will be discussed.

METHOD USED IN THE PILOT SURVEY

Sample

This study is based on a sample of farms managed by six Iowa farm management firms. These firms were chosen by a survey committee[1] on the basis of their belief that they would co-operate. All six of the firms did co-operate returning 109 or 78% of the 140 questionnaires mailed. Five firms received 20 questionnaires each and another 40. The number sent was determined on the basis of the committee's knowledge of the probable response from each firm.

Questionnaire

The questionnaire was printed on five by eight index cards (see Appendix). One card was to be filled out for each farm used in the survey. The identification and data sections on the front side of the card were explained by instructions in the form of written directions and an example on the back of the card. The cards were designed to be reused in a continuing survey of these same farms, each card being coded by the manager with a farm number that would allow him to report data on this farm again when the questionnaire was returned as a part of future yearly surveys.

Summary of Data

The survey data is condensed into averages, percentages and indexes to make the data more useable for analysis. This process requires

---

[1]The survey committee, appointed by President of the Iowa Society, H. E. Stalcup, consists of Neill Thompson, Carl Hertz, George Putnam, and William G. Murray.

Table 1. Average and median values for high, medium and low grade Iowa
          farms, as reported by 1964 Iowa Land Value Survey

Grade	Average Market Value	Mid Point Between Grades
High	$387.00	
Medium	269.00	$328.00
Low	159.00	$214.00

computational work. As an experiment the computations on the Pilot Survey
data made both manually and by electronic computer. Use of the computer
required elaborate coding to eliminate side calculations. Yearly data for
each farm were transferred from the questionnaire onto separate punch cards
for the computing operation. As the amount of the data increased the need
for processing by electronic computer became more important.

The data are presented on the state level and by Seven Economic Areas
within the state. Other divisions were also made within the state by farm
improvements and grade of farm. Since there were no designations made on
the questionnaire to reflect grade, a separation was made by categorizing
the farms into high, medium, and low grades by comparison with the
designated grade for the same value level and location as in the Land
Value Survey (5) conducted annually by the Iowa Agricultural Experiment
Station.

For example, in the Western Livestock Area the average values reported
by the 1964 Land Value Survey were $387.00, $269.00, and $159.00 for the
high, medium, and low grades, respectively. A farm located in this area is
classified into the high, medium or low grade depending whether its value
is higher or lower than one-half the difference between the value of two
successive grades. The mid point values are $328.00 and $214.00. If the

value reported on a farm in this location is greater than $328.00 it would be classified as high grade. Farms with a lower value than $328.00 but higher than $214.00 are medium grade while those below $214.00 are low grade.

PRESENTATION OF PILOT SURVEY DATA

The Pilot Survey is used as the source of data for this section. The estimates obtained are of limited value as state estimates because the survey was not designed with the intention of making highly accurate state predictions, but to develop a successful method which later could be used to make accurate predictions. The results presented in this section can be of value if use is tempered by a knowledge of the limitations treated later in the discussion.

The survey covered the three years, 1962 through 1964. The number of farms reported for each year varied from a low of 100 in 1964 to a high of 108 in 1963.

In Figure 1 is a map showing the distribution of questionnaire returns from the Pilot Survey. Note how they were centered mainly in the central area of the state.

The survey included a little more than 20,000 acres of farmland throughout Iowa. The size of farms varied from a low of 40 acres to a high of 746, with an average size of 205 acres for the total sample.

Sample Data Classified by Years

The average Iowa[1] landlord net return for the three years was $16.52 per acre year or 5.0% of the estimated value (Table 2). This means that an average yearly return of five cents was received for every dollar invested in Iowa farm real estate.

_____

[1]The total sample is referred to as Iowa data because the boundary of the survey is the state boundary. The sample may not truly represent the state for it is not a random sample of all managed farms in the state.
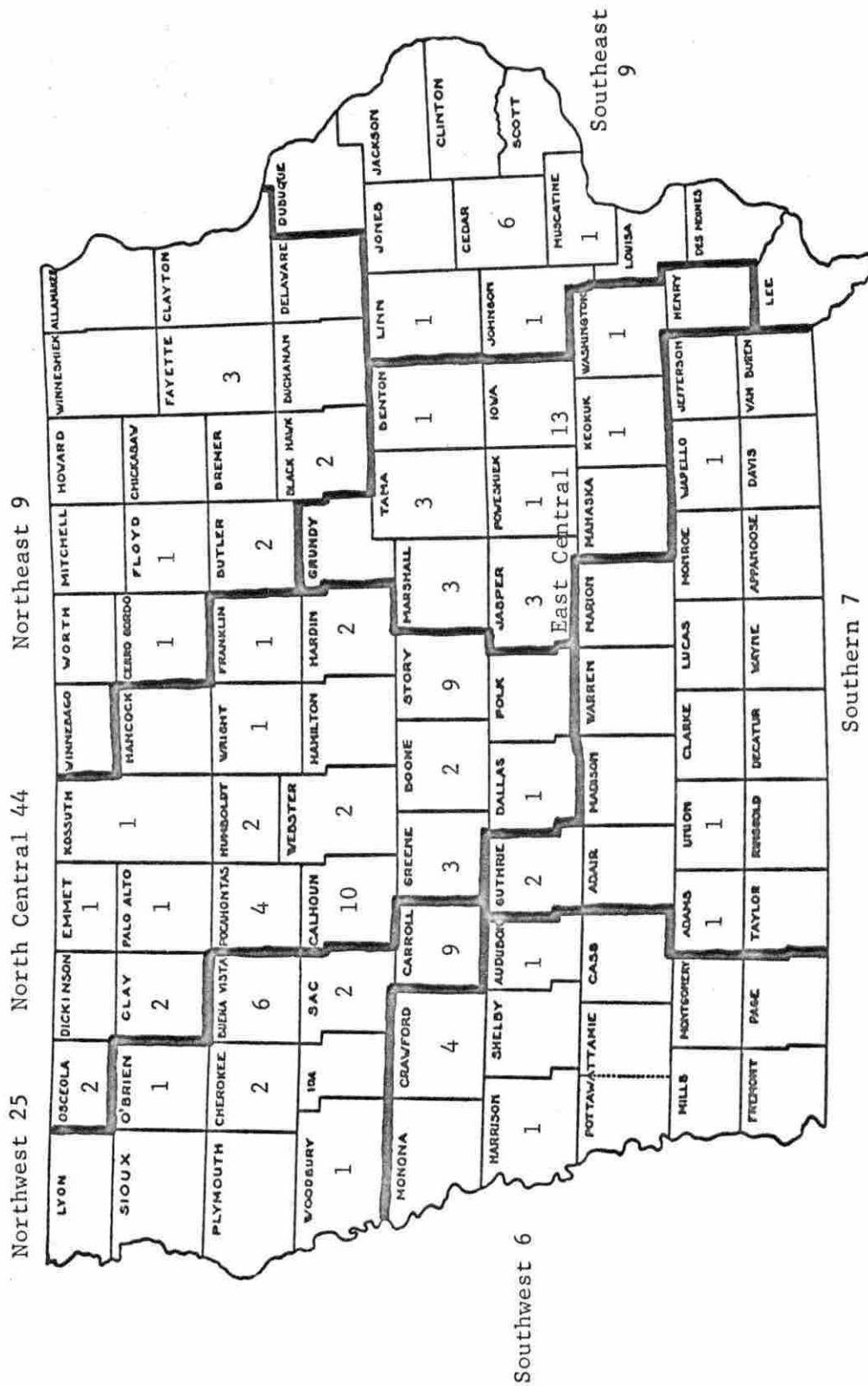
Figure 1. Distribution of questionnaire returns from Pilot Survey, by county and Seven Economic Areas

Table 2. Pilot Survey results for years 1962, 1963, and 1964

	1962	1963	1964	Average 1962-1964
Number of farms	107	108	100	
Number of acres	21,916	22,196	19,961	
Index	100	105	111	
Value per acre	315	329	349	331
Gross income per acre	$27.06	$31.55	$33.17	$30.59
Operating expenses per acre	$12.05	$13.34	$13.17	$12.85
Gross income minus operating expenses	$15.01	$18.21	$20.00	$17.74
Capital expenditures per acre	$ 1.17	$ 1.50	$ 1.00	$ 1.22
Landlord net return dollars per acre	$13.84	$16.71	$19.00	$16.52
Index	100	121	139	
Percent of market value	4.9	5.1	5.4	5.0

Both the landlord net return and estimated market value increased during the three year period. Net return increased more than market value giving a 1964 index of 139 and 111 for income and value respectively (1962 equals 100). The result was an increase in landlord net return as a percent of market value from 4.4% in 1962 to 5.4% in 1964.

Land value changes as reported by the managers corresponded very closely to that given by the Iowa Land Value Survey (5) for the same grade and location. The correlation coefficient of the land values based on

estimates of the two groups was .9888. This evidence does not cover absolute values but only value changes from year to year. It shows that the two estimates of change in value from year to year are closely correlated.

Sample Data Classified by Grades

There were 54 high, 41 medium, and 14 low grade farms in the sample when each farm was classified into grades on the basis of comparison with values for a location as given in the 1964 Iowa Land Value Survey (Table 3). The method of grade determination was explained at end of previous section on Method. The high grade farms were smallest, had a larger percentage of crop acres, and the greatest value per acre.

Land value and dollar landlord net return increased with movement from low to high grade, but the landlord net return in relation to value was greatest for the low grade farms. Over the three year period the percent return on value for the low grade land declined .3%, while that for high and medium grades increased about 1.5% for each grade. Since the return on low grade land is greatest this caused the percent return from the three grades to move closer toward equality.

There was a value increase over the three year period for all three grades. The effect on percent return of an increase in value depends upon the relative change in dollar net return. The net return from low grade land was stable, therefore, the increasing value resulted in a decrease in the percent of net return. For the two higher grades there was a greater increase in net return than value resulting in an increased percentage return on value.

Table 3. Pilot Survey estimates classified by grade of farm

	Low				Medium				High			
	1962	1963	1964	Average	1962	1963	1964	Average	1962	1963	1964	Average
Number of farms	14	14	14	14	40	41	37		53	53	49	
Number of acres	3095	3095	3095	221	8081	8361	7643	204	10740	10740	9223	203
Percent crop acres				71%				89%				93%
Value per acre	175	181	196	184	277	291	311	293	380	397	422	400
Gross return per acre	19.13	19.08	20.69	19.63	24.13	29.49	29.55	27.72	31.36	36.43	39.47	35.75
Operating expenses	8.69	8.94	9.58	9.07	11.78	12.73	11.76	12.69	15.03	14.97	15.26	15.08
Gross income minus operating expenses	10.44	10.14	11.11	10.56	12.35	16.76	17.79	15.63	16.33	21.46	24.21	20.67
Capital expenditures	.28	.35	.33	.32	1.40	1.89	.85	1.38	1.23	1.49	1.30	1.34
Landlord net return Dollars	10.16	9.79	10.78	10.24	10.95	14.87	16.94	14.25	15.10	19.97	22.91	19.33
Percent	5.8	5.4	5.5	5.6	3.9	5.1	5.4	4.8	4.0	4.0	5.4	4.8

Sample Data Classified by Improvements

Forty-seven percent of all farms in the sample were unimproved. An unimproved farm is designated as one having no buildings or grain storage facilities only. The unimproved farms are much smaller than the improved with 150 acres as the average size; 90 acres smaller than the average of 240 for improved. The percent of crop acres and value per acre were approximately the same for both improved and unimproved (Table 4).

High gross income and low capital expenses per acre helped to make the landlord net return on unimproved farms $1.74 higher per acre. An absence of expenditures on buildings helps to make the net return on unimproved farms larger. The larger gross return per acre from the unimproved farms may be partially due to the higher relative percentage of high grade farms in this category. Less than one-third of the low and medium grade farms were unimproved, while a little more than one-third of the high grade farms were unimproved.

Sample Data Classified by Seven Economic Areas

The sample was not evenly distributed throughout all areas of the state. The North Central Area was best represented with 44 farms (Table 5). Each of the three southern areas, along with the northeast, had less than ten farms represented.

The total sample showed a wide variation in landlord net returns from one area to another. The southern areas of Iowa had the highest percentage return on value while the eastern areas had the lowest. The high average return of 6.6% in the Southern Area may have been due to the unusually good

Table 4. Pilot Survey estimates classified by improvements

	Improved				Unimproved			
	1962	1963	1964	Average	1962	1963	1964	Average
Number of farms	67	68	63	63	40	40	37	37
Number of acres	15,928	16,208	14,447	240 Ac	5988	5988	5514	150 Ac
Percent crop acres				85%				90%
Value per acre	313	328	347	329	317	331	353	334
Gross return per acre	26.17	30.76	31.38	29.44	28.57	32.88	36.22	32.56
Operating expense per acre	11.75	11.67	12.89	12.11	12.54	16.17	13.65	14.13
Gross income minus operating expenses	14.42	19.09	18.49	17.33	16.00	16.71	22.57	18.43
Capital expenditure per acre	1.15	1.92	1.31	1.46	1.21	.78	.47	.82
Landlord net return Dollars per acre	13.27	17.17	17.18	15.87	14.79	15.93	22.10	17.61
Percent of market value	4.2	5.2	4.9	4.8	4.7	4.8	6.3	5.2

Table 5. Pilot Survey estimates classified by Seven Economic Areas

Economic Area	North-west	North Central	North-east	South-east	East Central	Southern	South-west
Number of farms							
1962	21	44	9	7	13	7	6
1963	21	44	9	8	13	7	6
1964	21	44	3	9	10	7	6
Number of acres							
1962	4169	9042	1617	1484	3381	1032	1191
1963	4169	9042	1617	1764	3381	1032	1191
1964	4169	9042	488	1884	2155	1032	1191
Percent crop acres	85%	92%	93%	91%	86%	67%	90%
Value per acre							
1962	293	361	308	328	311	134	247
1963	306	380	321	344	320	142	267
1964	327	401	310	375	325	156	283
1962-1964 average	309	381	313	349	318	144	266
Landlord net return							
1962 Dollars per acre	$10.37	18.18	9.22	12.32	14.77	6.92	10.65
Percent of value	3.5	5.0	3.0	3.8	4.7	5.2	4.3
1963 Dollars per acre	$17.16	19.29	15.28	14.50	17.23	10.08	6.87
Percent of value	5.6	5.0	4.8	4.2	5.4	7.1	2.6
1964 Dollars per acre	$17.91	22.97	8.07	12.63	18.75	11.48	15.75

Table 5 (Continued)

Economic Area	North-west	North Central	North-east	South-east	East Central	Southern	South-west
Percent of value	5.5	5.7	2.6	3.4	5.8	7.4	5.6
1962-1964 average Dollars per acre	$15.15	20.15	10.86	13.5	16.92	9.49	11.09
Percent	4.9	5.3	3.4	3.8	5.3	6.6	4.2

crop years during the past three years. The greater uncertainty in obtaining a good crop in this area helps to account for the higher return in good crop years. Values are lowest in dollars per acre and also in relation to income received in the southern areas. The North Central Area has the highest dollar return and value per acre. All but one area showed increases in net return during the three years. The Northwest Area had the greatest with an increase of $7.54 per acre.

COMPARISON OF LANDLORD NET RETURN WITH CASH RENT

The dollar return from gross cash rent is compared with net rent under crop share leases in Figure 2. The absolute values are not evenly comparable since the cash rent is gross to the landlord, while the crop share return is net of all expenditures. Use of the landlords' gross share return for the comparison would eliminate the difference in expenses paid entirely by the landlord, but cause another problem with production expenses paid by the landlord on a crop share basis but not with cash rents.

The difference is not entirely due to expense differences but also risk. On a crop share basis the landlord shares in the production risk and therefore should receive a larger net rent.

Even though the absolute values are not comparable the relative changes are since risk on a given farm is relatively constant and expenses have had only a small amount of variability over the past three years (Table 2).

Both gross cash rent and crop share net return increased during the three year period, but cash rent at a much slower rate. The cash rent increased at an increasing rate while landlord net return increase at a decreasing rate (Figure 2). This difference in rate change may be due to a differing effect of tradition on crop share and cash rental arrangements. Crop share rental agreements take advantage of increasing productivity immediately while for cash rent a change must be made in the rental agreement. These changes are usually delayed by tradition and therefore, it is possible that the trend shown in Figure 2 is part of this pattern.
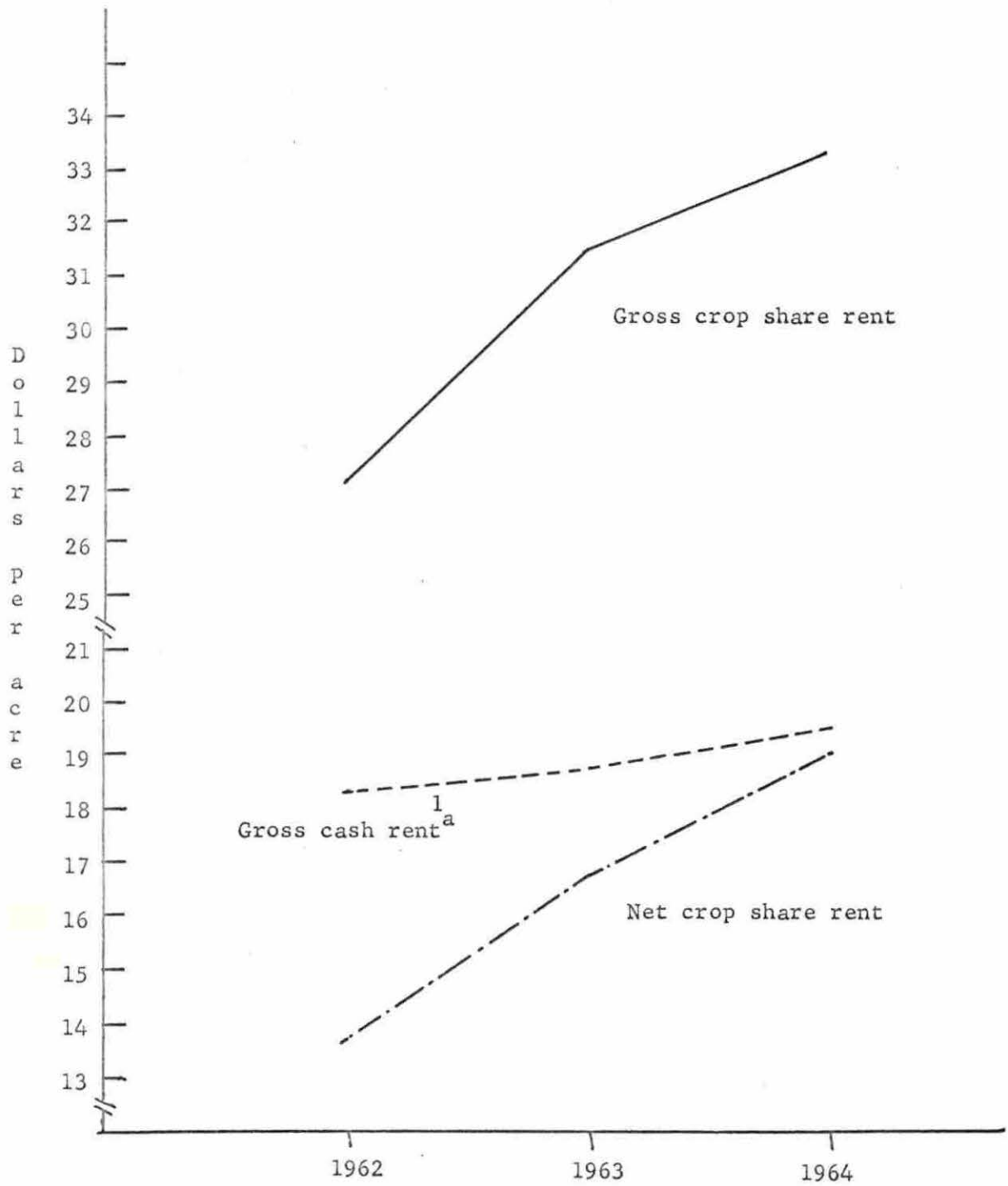
Figure 2. Comparison of gross cash rent with gross and net crop share rent

DISCUSSION OF PROBLEMS WITH LANDLORD INCOME AND EXPENSE DATA

There are two problems inherent in a crop share estimate of landlord net return from managed farms. They concern inter-year carry-over of crop inventories and determination of depreciation expense.

In the Pilot Survey landlord net return is reported as the gross cash sales minus the gross cash expense for a calendar year. This estimate gives a distorted picture of actual landlord net return for the calendar year when crops are not sold in the year expenses for the crops are incurred. For an accurate determination of the net income in any one calendar year period, only those expenses and receipts related to a single crop year should be included. In many cases crops are sold in the year following harvest. An accurate estimate could be obtained under these conditions only if there were an orderly marketing program that provided for the sale of a constant amount of crops in each year following harvest. The Pilot Survey assumes this in reporting on a net cash basis.

Another method of handling this problem would be to add together the cash sales for the year and the estimated market value of the ending inventory. From this, the beginning inventory would be subtracted. The result would give the dollar production for the year. This method would be more accurate than the one followed in the Pilot Survey, but it would require an accurate set of inventory records on both physical quantities and price on each farm, a record which some managers do not have. Consequently, it was necessary to follow the next best method, that of taking total cash sales each year.

Use of the depreciation charges as they are in a managers records

presents a problem because all are not universal in their method of write off. The rate of depreciation charged on a farm is usually related to taxes rather than the actual amount of depreciation. An increase in depreciation expense means a decrease in taxable income. The depreciation charge obtained on this basis is not usually a true indicator of actual depreciation and therefore not useful in providing an accurate indication of landlord net return.

Capital expenditures on depreciable items are usually made in lump sums. They are expenditures that should be spread over the life of the asset as depreciation charges and not designated as an expense against income in the year in which the expenditure is made; but since a survey covers several farms distributed geographically over the state, total capital expenditures made in any one year for the group of farms will be close to that of total depreciation expense if the farm is being maintained at a constant level. In the Pilot Survey this was assumed to be true and capital expenditures were used as an estimate of depreciation. This provides a reasonably acceptable estimate of depreciation expense for a group of farms as a whole that is easy for the manager to report. The topic will be further discussed in the next section as it relates to obtaining of data.

DISCUSSION OF PROBLEMS CONNECTED WITH OBTAINING
INCOME AND EXPENSE DATA

This section will involve a discussion of problems connected with making a state wide representative survey of managed farms. The discussion which will be based on the Pilot Survey will be directed toward the making of a larger survey, suitable for state wide examining of landlord returns.

Sample

Selection of sample

The Pilot Sample, as selected by the Survey Committee, was not a random sample of all Iowa farms. It may have been representative of those managed by the six participating firms if the farms were selected by the managers at random from among all farms managed by each firm. The selectivity used in choosing only those firms with a high probability of co-operating made this sample a biased sample of managed Iowa farms.

A random sample of all managed farms requires that each farm in the total population have an equal chance of being selected into the sample. Random selections from a list of all managed farms in Iowa gives such a sample. Since the number of farms managed by each manager is not known, a selection of this type is not directly possible. The only available listing related to managed farms in Iowa is the roster of membership in the Iowa Society of Farm Managers and Rural Appraisers.

Three methods of selecting a random sample from farms managed by members of the Iowa Society will be discussed. The first method requires that the members report on all farms managed. Under this method the sample

is the population. All members, whether they manage or not, would each be sent enough questionnaires to allow each manager to report on all farms managed.

Completing questionnaires on all farms managed requires more time than can be expected of all managers. Filling out a questionnaire requires from fifteen to twenty minutes. In order to comply, many would have to spend an entire day on the questionnaires. Failure to report all the farms would violate the random sample requirement; therefore, this method is rejected by implication. There is a direct conflict between the required and the realistic performance expected. Furthermore, this method would produce a sample much larger than needed for adequate precision in the estimate. It is not in accord with regular sampling technique and lacks the cost advantage of partial sampling.

The second method would also require two separate mailings. The first mailing would be sent to all members asking them to list the farm numbers of the farms they manage. From this list of farm numbers a random sample of farms would be selected. Questionnaires would then be sent only to those managers whose farms were selected. The probability of a manager being requested to take part in the survey would be a function of the number of farms managed.

If in the first mailing some indication of farm location were provided in addition to the farm number, sampling could be made on a regional basis, insuring that all areas of the state are equally represented. In the Pilot Survey the southern areas of the state were poorly represented. Separate random selection from each region of the state would allow a balanced report from the entire state.

A third method would be to select managers at random who in turn would select a certain number of farms at random from all the farms they manage. This is known as cluster sampling (4).

The sample selected in clusters must be larger than one selected at random from a list of managed farms, since each farm in the total population of managed farms does not have an equal chance of being selected once a manager had been chosen. The precision of the two methods can be compared in terms of mean squares (see Appendix). Using a sample of size sixty the relative precision of a cluster sample of six firms having ten farms each is 56% of the precision gained from a sample selected at random from all managed farms. In other words, the number of farms needed in the sample for the same precision would be about 1.8 times that required for a random sample of all farms. (More or less depending if the value of the sample size formula (see Appendix) is larger or smaller than the d.) In addition, a member asked to report may manage no farms or a smaller number than requested he report. This would compound the problem making the sample size needed exceedingly larger than one selected directly from all managed farms.

An increase in the number of questionnaires completed by each manager requires additional time for each manager. As the amount of time required per manager increases, the percentage responding will tend to decrease. If the percentage who respond should go down far enough, ultimately the number of members contacted will exceed that needed for a smaller number of questionnaires per manager. For example, if as we increase the number of questionnaires per manager from 10 to 15 and the percent return decreases 35%, then the number of farms reported would be less for 15 questionnaires

per manager than 10. Reducing the number of questionnaires per manager makes the time per manager required for completing questionnaires smaller; but since the number of managers is limited such a reduction could make it impossible to get the necessary sample size. Therefore, a happy medium must be found where the balance between number of questionnaires per manager and response is at an optimum.

Size of sample

The sample size needed is a function of the variance of the data and the percent error allowed in the estimates. Both factors must be established as a prerequisite to determining sample size.

The estimates of variance provided by the Pilot Survey will be used to determine the sample size necessary for a survey of landlord returns on managed farms. The Pilot Survey data on net returns to landlords for the years 1962, 1963, and 1964 had variances of 50.78, 71.67, and 78.41 respectively. The high variance year, 1964, will be used for the variance estimates to insure that the sample size is adequate.

The sample size is presented using three districting methods: Crop Reporting Districts, Five Economic Areas, and Seven Economic Areas (see Appendix). The sample size needed for the state, using any one of these districting methods, is the sum of the sample size needed for each district. The state total formed in this manner is larger than one based on a sample chosen at random from the entire state without districting (Table 6). The reason being that the larger sample gives the same precision for estimating at the district level that the smaller sample gave for the state.

Since the Pilot Survey did not adequately cover all areas of the state,

Table 6. Sample size and variance estimates for those areas of the state with ten or more farms represented

Districting Method [1]	No. of farms	$\bar{x}$	s^2	Sample Size District	State
Five Economic Areas					
Western Livestock	31	17.83	44.704	56	
North Central Grain	40	23.25	71.291	52	
Eastern Livestock	19	16.78	82.218	114	570
Seven Economic Areas					
Northwest	21	18.00	56.981	70	
North Central	44	22.97	66.644	51	
East Central	10	18.75	90.779	101	707
Crop Reporting Districts					
Northwest	19	20.13	28.812	30	
West Central	33	19.15	95.982	103	927
Central	24	22.87	58.363	45	
State	100	19.06	78.406		85

[1]Only three of each districting methods areas had ten or more farms.

the variances of only those districts with ten or more farms represented were used to estimate sample size. Each districting method had three districts represented.

The estimates of sample size can be based on the high, low, or average of the three variance estimates for any districting method. Basing the estimate on the lower variance gives a smaller sample size, but also

increases the chance of error in the estimates obtained from the sample. Using the high variance helps to insure that the sample size is adequate. Since the future is uncertain and many variables are involved to affect the percentage of questionnaire return, the high variance estimate can best be used to determine sample size. Adjustments made to obtain a smaller sample size should be made by increasing the percentage error allowed in the estimates, not by using a low variance. This method is more deliberate and hence will help to prevent unjustified confidence.

The high variance estimate of sample size multiplied by the number of districts gives the state sample size. For example, the Eastern Livestock Area, one of the Five Economic Areas, has the highest variance, and therefore, its variance is used as an estimate of sample size which, when multiplied by five give the state estimate of sample size.

The formula for sample size, as used, gives the sample size that will give an estimate within 10% of the true population mean landlord return per acre, 95% of the time. The error allowance can vary depending on the need for accuracy and cost in sample size to increase precision. An increase in the cost of precision or a decrease in the need for accuracy can justify an increase in the percentage error allowance.

A higher level of detail requires a larger sample. Making estimates on the basis of five districts requires a sample size 61% of that needed for nine districts. If the estimates from the sample increase to an even higher level the sample size must increase accordingly. Reporting data on three grades of land evenly distributed within each district would require a sample about three times as large for the same level of precision. If the characteristic is not evenly distributed, additional adjustments in

sample size are needed. The larger the percentage of the sample having the characteristic the smaller the sample must be to obtain a given level of precision and vice versa.

Characteristics of the sample

Analysis of the characteristics possessed by the sample of farms included in the Pilot Survey will help determine the usefulness of the data. The closer the characteristics of the managed farms correspond to all farms in the state the more likely the data will serve as a good estimate for all farms in the state.

The sample was not evenly distributed over the entire state, most of the farms were concentrated in the Central, West Central, and Northwest Areas of the state. Only a few were located in Southern Iowa. It is logical that the areas of the south and northeast have a lower response since there is a lower percentage of rented farms in these areas (Table 7).

Table 7. Questionnaire return and rented farms for the nine Crop Reporting Districts

Crop Reporting District	Returns (Percentage)	Rented Farms[1] (Percentage)[a]
1. West Central	30.3	13.9
2. Central	23.9	16.3
3. Northwest	17.4	14.9
4. East Central	9.2	10.2
5. North Central	8.3	12.9
6. Northeast	4.6	9.1
7. Southeast	2.8	7.9
8. South Central	2.8	6.5
9. Southwest	.9	8.1

[1]Source: [a] (7b)

Forty-nine percent of the farms reported in the preliminary survey

were high grade farms. The low and medium grades comprised the other 51% with 14% and 37% respectively (Table 8).

High grade farms have the largest landlord net return and value per acre. The heavy weighting of high grade farms makes the state average value and landlord net return higher than if each grade were equally weighted. Equal weighting of the three grades lowers the average landlord net return and value by $1.91 and $39.00, respectively. The effect of equal weighting on the ratio of landlord net return to value depends on their relative change. A smaller market value relative to the landlord net return caused the estimate of return as a percent of value to be .1% higher when the average was determined using the equal weighting of the grades.

The predominance of high grade land effects the state averages. Whether or not this is good or bad cannot be answered directly. It depends how closely the proportions of high, medium, and low grade farms in the sample correspond to that in the population for which it estimates. If the sample is truly a random sample of managed farms, the proportions will correspond to that in the population of managed farms. Data collected from managed farms and used in general as an estimator for all farms may be grade biased. Other factors such as the percent crop acres and market value indicate such a bias. A higher percentage of crop acres and value per acre are typical of high grade land in respect to lower grades. Comparing the results of the preliminary survey with the state averages for all farms shows that both value and percent of crop acres are substantially higher for the managed farms (Table 9). It follows that, since managed farms possess a higher percentage of high grade farms, the

Table 8. Grade of land and its effects on the state average

	Questionnaire distribution (percentage)	Landlord net return per acre (dollars)	Market value per acre (dollars)	Landlord return as a percent of market value
Grade				
High	49%	$19.33	$400	4.8%
Medium	37	14.25	293	4.8
Low	14	10.24	184	5.6
State				
Weighted equally by grades		14.61	292	5.1
Unweighted state averages		16.52	331	5.0
Difference		1.91	39	0.1

Table 9. Average land value and percent crop acres for all farms and managed farms of the Pilot Survey

Characteristic	All Farms	Survey Sample (managed farms)
Percent crop acres	60.3%[a]	89.0
Market value per acre	$265.00[b]	$349.00

Source: a (7a)
         b (5)

averages obtained from managed farms will be upward biased as predictors
for all farms.

The average size of farms in the preliminary survey was 205 acres,
three acres below the state average for all farms (7). Size of farm did
not significantly effect the landlord net return. A multiple regression
analysis, with size of farm and percent crop acres as dependent variables,
indicates that the regression coefficient of landlord net return on size
of farm is not significantly different from zero (Table 10). The negative
sign of the regression coefficient indicates that as size of farm in-
creases the landlord net return per acre decreases. This is in direct
conflict with the expected relationship of return from land and farm
size. Efficiencies gained from farm enlargement indicate that the return
from land should increase with size.

The size of managed farms is not a good indicator of the true
relationship of farm size and return from land. Many of the managed
farms are worked in connection with other land, making the relationship
of size of farm and return from land undeterminable.

Any effect that efficiency may have in increasing the return to the
landlord of large scale individual farms is offset by the effect of farmers
who wish to enlarge the size of their present farms by renting the small
unimproved farms. Those needing farms for enlargement often pay a rent
equal to that of improved farms even though the expenses are less for the
landlord. They already have sufficient buildings for the additional land
and therefore can afford to pay as much or more for the unimproved farms.
All sizes of rented farms are able to reap the benefits from large scale
farming, and therefore, it can be said that size of farm has no real

Table 10. Regression statistics for landlord net return per acre on size of farm and percent crop acres

Independent Variable	Regression Coefficient	Standard Error	T Value
Size of farm	.0057-	.0045	1.2531-
Percent crop acres	.2728	.0403	6.7632*

* Significant at .05 level

significance for landlord returns without conflicting with the ideas that the returns from land increase in size of farm.

Questionnaire

The questionnaire, used to acquire information on landlord returns, is sent to farm managers in expectation that a certain percentage will be returned with the requested information. It is designed to encourage a high percentage of return. The questionnaires possession of favorable qualities of appearance, convenience, length, and interpretability help meet this objective.

The questionnaire used in the Pilot Survey is basically adequate. It has a favorable appearance, is short, functional, and has proven to be generally favorable to a high percentage of return.

Convenience requires that the manager be able to transfer data from his records as directly as possible to the questionnaire with a minimum of calculation. Requesting data on a per farm basis without requiring adjustments for inventory or depreciation is in accordance with this convenience factor. Capital expenditures serve as an offset for depreciation and, assuming no general trend towards either depletion or investment,

CONFIDENTIAL STATISTICAL DATA ON CROP SHARE LEASES
As requested by the Iowa Society of Farm Managers and Rural Appraisers

Farm No. _____
County _____
Code _____

Is this farm improved? Yes ___ No ___
If improved, complete chart on other side of card.

Total Acres _____
Tillable Acres _____

Grade of Farm
___ Low Grade
___ Medium Grade
___ High Grade

Year	Gross Income	Operating Expenses	Net Income	Capital Expenditure	Est.-M.V. per acre	Remarks
1963						
1964						
1965						

Figure 3. Front side of revised questionnaire

INSTRUCTIONS:

Farm Number: Code so that the farm identification is known only to you, the reporter.

County: Give county where farm is located.

Code: Do not fill this space. Coded so this questionnaire can be returned for future yearly surveys.

Buildings: If improved, complete chart at right. Place one check on each line.

Grade of Farm: Check one grade with respect to other farms in the county.

Gross Income: Report calender year on cash basis. Do not adjust for inventory.

Operating Expenses: Including taxes, crop expenses, insurance, spervision, and repairs and maintenance which are not capital expenditures; Do not include depreciation.

Capital Expenditures: Capital improvement costs which are not annual operating expense items; Under remarks give the nature of the expenditure.

Estimated Market Value: Your estimate of the expected sale price as of December of the current reporting year.

Remarks: Indicate factors that create abnormal income or expense.

Processing: Please return within 30 days to Neill S. Thompson, 2817 Oakland, Ames, Iowa.

FOR IMPROVED FARMS

Type	Good	Poor	None
House	___	___	___
Livestock	___	___	___
Grain	___	___	___
Machine	___	___	___

Do these buildings serve as an operating headquarters? Yes No

Is this farm improved? Yes No If improved, complete chart on other side of card.

Total Acres _____

Tillable Acres _____

Grade of Farm
___ Low Grade
___ Medium Grade
___ High Grade

EXAMPLE:

Farm No. _____						
County _____						
Code _____						

Year	Gross Income	Operating Expenses	Net Income	Capital Expenditure	Est. M. V. per acre	Remarks
1965						

Figure 4. Back side of revised questionnaire

provide an accurate estimate of depreciation cost if a large number of farms are included. If there is no general tendency toward either buying or selling the inventory changes will average among farms. The data for a farm in any one year may not be accurate, but over time and several farms the average should be correct.

At the June, 1965, meeting of the Survey Committee, the questionnaire was discussed and the basic form approved as used in the preliminary survey, with only minor changes recommended for the identification and instruction sections.

The form of the revised questionnaire is shown in Figures 3 and 4. They are printed on the same type of index card. Less detail is required for the acres identification, and an additional section should be added inquiring of the grade of land in relation to other land in the county.

The appraisers on the Survey Committee were interested in acquiring more information on improvements. It was decided to change the improvement section on the front side of the card to a simpler choice between improved and unimproved and then on the other side of the card provide a table for additional information on improvements to be filled out for those farms with improvements. This allows the acquiring of information on improvements without unnecessarily cluttering up the front of the card.

A brief letter of explanation signed by an officer of the Iowa Society may help increase returns to the questionnaire. The heading on the questionnaire gives an indication that the individual data will be kept in the strictest of confidence, but an additional assurance of this plus an explanation of the importance of the data it was thought would tend to encourage a higher return.

The desirability of the revised questionnaire can best be determined by use. It does meet the general requirements of a good questionnaire mentioned earlier. A neater appearance, elimination of misunderstanding, and reduction in detail should make it a more efficient tool in acquiring the necessary data.

Summary of Data

The summary of data is another of the mechanical steps necessary in the making of a survey. This step converts the raw data into a usable form, easily susceptible to analysis. The data, as reported in the questionnaire, are on a per farm basis. The characteristics are those for the cluster of acres and other fixed improvement assets within the farm. The landlord's return and expense are reported in gross dollars per farm, and the market value is an average dollar per acre for the farm. The data are requested in this form because of convenience for the manager, it may not be the preferred form for the summary. The problems connected with this section therefore concern possible ways of devising a form that lends itself to efficient analysis and summarizations.

Weighting of data

The summary can be presented by weighting the data on an acre basis, where each farm's influence on the average depends upon the number of acres in the farm, or on the basis of an equal weighting of all farms regardless of the size. The farm weighted summary is an average among farms. The alternative acre weighting does not discriminate for farms. Gross total return and expense are determined first and then divided by total

Table 11. Comparison of total sample results by acre and farm weighting

	Acre Weighting	Farm Weighting
Value per acre	332	331
Landlord net return		
Dollars	16.04	16.52
Percent of market value	4.8%	5.0%

acres to give the acre weighted average.

The farm weighted average will be higher or lower than the acre weighted averages, depending on whether the larger farms have higher or lower returns than the average. If the large farms consistently have a higher return, the acre weighted average will be higher than the farm weighted and vice versa. With farm weighting, each farm's effect on the average is equal, whereas with acre weighting the larger farms with more acres will have a greater effect on the average.

The data can be reported in dollars per acre using both methods. The farm weighting method requires the transformation of each farm's data into a per acre basis before summarization, while the acre weighting method allows summarization directly from the questionnaire. Since converting to apply acre basis is also a necessary preliminary for regression analysis, this computation advantage of acre weighting is lost when regression analysis is also made.

Either way the results were very similar in the Pilot Survey (Table 11). Throughout this report the analysis and summaries are based upon a farm weighted basis. The data as reported by the questionnaire are from a sample of all farms and the characteristics of the data are separated

out on a farm basis; therefore, the data should be reported on a per farm weighted basis. Such things as size of farm, improvements and grade are characteristics that influence the return and expenses for specific farming units. Farm weighting is more in accord with standard reporting methods used in previous studies of this nature and will be on a more comparable basis for analysis.

Summary classification

The data on landlord returns are collected within dimensions of time and space. The bounds of the survey have been chosen arbitrarily as a year for the unit of time and the state as the unit of space. They represent the boundaries of the survey, but need not be the summary units. The data could be summarized on a per month, per week, or even per day basis, if the situation warranted. This flexability is true also of geographical units of space. How the data will be summarized depends on that form which will make it most suitable for analysis and practical use.

The year is the best summary unit available as a measure of time. It is widely used for reporting income and is a favorable form for analysis. Managers records are kept on a yearly basis and can most easily be reported in this time unit. Comparison of related data can most easily be made when the data are reported on a common basis, therefore, use of the year as the summary unit for data on landlord returns is preferred.

The desirability of the state as a geographical summary area is limited. Large variations in type of farming from one area of the state to another limit the practical use of data presented on this basis. A good geographical summary area should be homogeneous and popularly known.

The county possesses these attributes, but would require a sample size beyond that feasible for a survey of managed farms.

In this study the analysis of sample size has been based upon three intrastate districting methods. They are the three common methods used for reporting agriculture statistics in Iowa. Thorough analysis of all the various possible methods of districting would require more time than can be logically devoted in this study; therefore this section will be limited to a short discussion of each one of these three popular methods.

Division of the state into five economic areas had its start in 1929 (6). In these early years they were called type-of-farming areas, for they divided the state into areas with a homogeneous type of farming. The names Western Livestock, Central Cash Grain, Southern Pasture, Northeast Dairy, and Eastern Livestock as used today still indicate type of farming. In 1929, it was felt that the type-of-farming boundaries would change over time, but today essentially the same area boundaries are used. Districting methods tend to be perpetuated once introduced because a change would mean comparisons could not be made with earlier years data summarized on a different basis.

In 1950, the Bureau of the Census began grouping data on the basis of economic areas. It was termed as "a generalized system of area classification that reflects over-all broad socio-economic differences" (2). The state was divided into economic areas on four different levels. The second level, called economic regions, has basically the same boundaries as the early type-of-farming areas in Iowa. Additional divisions made within the Economic Regions, called Economic Subregions, are the origin of the Seven Economic Area Divisions used in this study. This revision

essentially separated the Western and Eastern Livestock Areas into four
economic areas. These areas merit separation because over time they have
become widely variant economically especially with regard to farm income
and land value (Table 5).

A districting method developed, and widely used by the Statistical
Reporting Service of the U.S. Department of Agriculture is based on nine
Crop Reporting Districts. This method divides the state into approximate-
ly equal sized districts with little regard for economic homogeneity.
This method would be used for summary because it permits comparability
with the numerous data published by the Statistical Reporting Service.
If the data acquired from the landlord survey will be widely used for
analysis and comparison with other data, summary on the basis of this
method becomes necessary.

COMPUTATION OF DATA

The computation of data in a study of this kind is time consuming. This is especially true if the calculations are done manually. Use of an electronic computer reduces the amount of time needed for the mechanical computational work, but increases the time needed for design and data preparation. In this section the preparation of data for use in an electronic computer will be discussed.

The survey data must be transferred from the questionnaire to a form suitable for use by the computer. The punchcard is a vehicle used to accomplish this. Each years datum are transferred to punchcards by electronic punching equipment. Since the landlord return survey is continuing yearly, the placement of data on the card should allow inter-year comparison of data without remodeling of the data or punching of additional cards. The cards will then serve as a permanent record of each yearly survey in a form not only useful for one year's summary, but also for analysis with other year's data.

Gross income and expense data on per farm basis are reported in the questionnaire. This must be transformed to per acre income and expense for each farm because, if not, the analysis will become biased by size of farm and many potentially important aspects of the analysis may become invalid. Determination of the effect of some factor related to farm size would become impossible for as size of farm changes so will gross income. Since the punchcards have only number designations, all the non-numbered items must be represented with a number. For example, the low, medium, and high grades of farm are represented by numbers 1, 2, and 3, respective-

Table 12. Organization of data on punchcards for analysis by electronic computer

Punchcard Space	Card Section I	Card Section II
1 - 4	Managers number	Managers number
5 - 6	Not for data use	Not for data use
7 - 10	Card identification County number Farm number	Card identification County number Farm number
11 - 13	Districting codes	Districting codes
14	Grade of farm	Year
15	Improvements	Year
16	Operating Headquarters	
17 - 24	Var. 1 - Year (independent variable)	Var. 9 - Grade of farm (independent variable)
25 - 32	Var. 2 - House (independent variable)	Var. 10 - Improvements (independent variable)
33 - 40	Var. 3 - Livestock buildings (independent variable)	Var. 11 - Operating headquarters (Independent variable)
41 - 48	Var. 4 - Grain buildings (independent variable	Var. 12 - Gross income (dependent variable)
49 - 56	Var. 5 - Machine storage buildings (independent variable)	Var. 13 - Operating expense (dependent variable)
57 - 64	Var. 6 - Total acres (independent variable)	Var. 14 - Return net of operating expense (dependent variable)
65 - 72	Var. 7 - Percent crop acres (independent variable)	Var. 15 - Capital expense (dependent variable)
73 - 80	Var. 8 - Value per acre (independent or dependent variable)	Var. 16 - Net return net of operating and capital expenses (dependent variable)

ly. In Table 12 is a format that can be used for arranging the data on punchcards.

Each farm's data are placed on two 80 space punchcards referred to as section I and II. The number of spaces needed for any one item depends on whether it is a code or a variable. The field size used in this example is eight. The code field size is equal to the number of digits in the code. All the items in section I within spaces one through 24 are codes. The "year" code has a field size of eight, because it is also an independent variable. Those codes in spaces 14 through 16 are located on different spaces with each section because they are also the independent variables 1, 9, 10, and 11.

There are 11 independent variables and six dependent variables. Variable eight can act as either an independent or a dependent variable. If only a summary is being made with no regression analysis then variables 2, 3, 4, and 5 can be ignored. This format is designed to be used for either summary or regression analysis.

SUMMARY AND CONCLUSIONS

The problems involved in making a survey of farm managers to obtain
information on landlord returns from managed farms have been discussed
and certain weaknesses pointed out. The analysis has shown that a survey
of managed farms is feasible. The problems of administration covered in
this study are real but not insurmountable. There are no fundamental
problems prohibiting the use of this data for an estimate of landlord net
return as a percent of land value. Most of the problems represent de-
cisions that must be made concerning methodological alternatives. Which
alternative is best depends upon the particular needs and goals of the
survey.

This study is based upon a Pilot Survey of 109 managed farms. The re-
sults of this survey were summarized by Seven Economic Areas, by grade of
farm, improvements, and over time. The landlord net return as a percent
of market value varied widely among economic areas from a low of 3.4% to
a high of 6.5%. The average landlord net return was $16.52 per acre or
5.0% of the estimated market value. Low grade farms had the lowest dollar
net return but the highest return as a percentage of market value. This
was caused by the relatively low market value in relation to net return.
Improved farms had the lowest average value and net return. An excess of
buildings and higher proportion of high grade farms in the unimproved cate-
gory helped to create this situation. Over the years 1962 through 1964 net
return increased more than market value.

Comparison of cash rent with crop share net return showed the both
increasing over time, but cash rent at a much slower rate. This difference

could be due to a delayed adjustment in cash rent relative to increasing productivity.

Inventory carry-over and depreciation expense are two problems inherent in crop share data from farm managers on landlord net return. If the amount of inventory carry-over varies from year to year the gross income will be affected. Depreciation expense records, as usually kept, are influenced by tax considerations and consequently are not useful in estimating actual depreciation. Each of these problems were discussed in relation to the Pilot Survey. Inventories were not considered and depreciation expense was assumed to be approximately equal to capital expenditures for the group of farms as a whole.

The Pilot Survey of farm managers was made to help solve problems in developing an annual survey of managed farms. The sample, questionnaire, and summary of data were individually discussed.

Basic decisions must be made before the survey begins. The amount and type of information needed, and the degree of reliability for the estimates are fundamental criteria that influence the design of the survey. Sample size and questionnaire design are directly affected by changes in this criteria. A high degree of precision in the estimates, and large number of category levels within the summary, such as grade within area, requires a relatively large sample size.

The questionnaire should be favorable to a high percentage response while acquiring the necessary information. The Pilot Survey questionnaire carried out these requirements adequately. Only minor suggestions for change were made in the revised questionnaire.

The form of the data as presented in the questionnaire may not be

best for analysis and summarization. The summary and the questionnaire conflict in that the form preferred for reporting in the questionnaire by the manager is not best for summary and analysis. Costs and benefits are weighed to determine the best form for each use.

An electronic computer saves time in computing the results. If a computer is used each farm's data can be arranged upon punchcards so that these punchcards can be re-used for inter-year analysis and not just for yearly summaries.

BIBLIOGRAPHY

1. Andapia, Alfonso Ortega. Adoption proneness and response to mail questionnaires. Unpublished M.S. thesis. Ames, Iowa, Library, Iowa State University of Science and Technology. 1964.

2. Bogue, Donald J. and Beale, Calvin L. Economic Areas of the United States. New York, N.Y., The Free Press of Glencoe, Inc. 1961.

3. Chambers, Clyde R. Relation of land income to land value. U.S. Dept. Agr. Dept. Bul. 1224. 1924.

4. Cochran, William G. Sampling techniques. 2nd ed. New York, N.Y., John Wiley and Sons, Inc. 1963.

5. Den Herder, W. Dale. Iowa farm land values reach all time high. Iowa Farm Science 19, No. 51: 3-4. Feb. 1965.

6. Holmes, C. L. Types of farming in Iowa. Iowa Agr. Expt. Sts. Bul. 256. 1929.

7a. Iowa Department of Agriculture. Crop and Livestock Reporting Service. Iowa Annual Farm Census, 1963. Des Moines, Iowa, State Statistician, Iowa Dept. Agr. 1964.

7b. Iowa Department of Agriculture. Crop and Livestock Reporting Service. Iowa Annual Farm Census, 1964: Preliminary report. Des Moines, Iowa, State Statistician, Iowa Dept. Agr. 1965.

8. Jessen, Raymond James. Statistical investigation of a sample survey for obtaining farm facts. Unpublished M.S. thesis. Ames, Iowa, Library, Iowa State University of Science and Technology. 1943.

9. Scofield, William H. Land prices and farm earnings. Farm Real Estate Market Developments. U.S. Dept. Agr. Publication CD-66. 1964.

10. Tabb, John R. Land value reports by real estate brokers in Iowa, 1941-50. Unpublished M.S. thesis. Ames, Iowa, Library, Iowa State University of Science and Technology. 1951.

11. U.S. Bureau of the Census and U.S. Bureau of Agriculture Economics. Cash rent. Washington, D.C., U.S. Govt. Print. Off. 1944.

12. U.S. Department of Agriculture. Agriculture Statistics, 1964. Washington, D.C., U.S. Govt. Print. Off. 1964.

ACKNOWLEDGMENTS

APPENDIX

Formula and Example for Determining Sample Size

A common formula for sample size, excluding the finite correction factor, is

$$n = \frac{t^2 s^2}{d^2}$$

where $t = t_{.05}$ shows significance at the 5% level, s^2 is the estimate of population variance, and d is the minimum error that will be detected. The finite correction factor is ignored because the sampling fraction does not exceed 10%.

Example: Calculation of sample size for East Central of Seven Economic Areas where t is assumed to be 2.00 for the first calculation, $s^2 = 90.779$, and $d = 1.875$.

$$\text{Then } n = \frac{(2^2)\ (90.779)}{(1.875)^2} = 103$$

A t value for 103 would be 1.982. With this new t value

$$n = \frac{(1.982^2)\ (90.779)^2}{(1.875)^2} = 101$$

A t value for 101 would again be 1.982 so then 101 is the closest estimate of the sample size.

Determination of the Relative Precision of Cluster Sampling

Ten farms selected at random from each of six firms will be used as the sample. An analysis of variance was made giving the following results:

Table 13. Sample analysis of variance

Source	Degrees of Freedom	Sum of Square	Mean Square
Farms within firms	54	4135.38	76.58
Between firms	5	755.00	151.00
Total	59	4890.38	99.84

Since the number of firms is less than 60, the total variance must be put on a common basis by using

$$\hat{S}^2 = \frac{s_b^2 + (M-1)s_w^2}{M}$$

where s_w^2 is 76.58, s_b^2 is 151.00, and M is 10. We have then

$$\hat{S}^2 = \frac{151.00 + 9(76.58)}{10} = 84.02$$

The relative precision for the fixed total size of sample is

$$\text{Relative Precision} = \frac{\hat{S}^2}{s_b^2} = \frac{84.02}{151.00} = 56\%$$

The cluster sampling method has 56% of the precision that a simple random sample of size 60 has.

List of Counties by Five Economic Areas

North Central Grain	North Eastern Dairy	Eastern Livestock	Southern Pasture	Western Livestock
Osceola	Winnebago	Grundy	Guthrie	Lyon
Dickinson	Worth	Marshall	Adair	Sioux
Emmet	Mitchell	Tama	Madison	O'Brien
Kossuth	Howard	Benton	Warren	Plymouth
Clay	Winnesheik	Linn	Marion	Cherokee
Palo Alto	Allamakee	Jackson	Adams	Buena Vista
Hancock	Cerro Gordo	Jasper	Union	Woodbury
Pocahontas	Floyd	Poweshoik	Clark	Ida
Humboldt	Chickasaw	Iowa	Lucas	Sac
Wright	Butler	Johnson	Monroe	Monroe
Franklin	Bremer	Cedar	Wapello	Crawford
Calhoun	Fayette	Clinton	Jefferson	Carroll
Webster	Clayton	Scott	Taylor	Harrison
Hamilton	Black Hawk	Muscatine	Ringgold	Shelby
Hardin	Buchanan	Mahaska	Decatur	Audubon
Greene	Delaware	Keokuk	Wayne	Pottawattamie
Boone	Dubuque	Washington	Appanoose	Cass
Story	Jones	Louisa	Davis	Mills
Dallas		Henry	Van Buren	Montgomery
Polk		Des Moines	Lee	Freemont
				Page

List of Counties by Crop Reporting Districts

Northwest	North Central	Northeast	West Central	Central
Lyon	Kossuth	Howard	Woodbury	Webster
Osceola	Winnebago	Winneshiek	Ida	Hamilton
Dickinson	Worth	Alamakee	Sac	Hardin
Emmet	Mitchell	Chickasaw	Calhoun	Grundy
Sioux	Hancock	Fayette	Monona	Boone
O'Brien	Cerro Gordo	Clayton	Crawford	Story
Clay	Floyd	Bremer	Carroll	Marshall
Palo Alto	Humboldt	Black Hawk	Greene	Tama
Plymouth	Wright	Buchanan	Harrison	Dallas
Cherokee	Franklin	Delaware	Shelby	Polk
Buena Vista	Butler	Dubuque	Audubon	Jasper
Pocahontas			Guthrie	Poweshiek

List of Counties by Crop Reporting Districts (continued)

East Central	Southwest	South Central	Southeast
Benton	Pottawattamie	Madison	Mahaska
Linn	Cass	Warren	Keokuk
Jones	Adair	Marion	Washington
Jackson	Mills	Union	Louisa
Iowa	Montgomery	Clarke	Wapello
Johnson	Adams	Lucas	Jefferson
Cedar	Fremont	Monroe	Henry
Clinton	Page	Ringgold	Des Moines
Muscatine	Taylor	Decatur	Davis
Scott		Wayne	Van Buren
		Appanoose	Lee

List of Counties by Seven Economic Areas

Northwest	North Central	Northeast	Southwest	Southern
Lyon	Osceola	Winnebago	Monona	Guthrie
Sioux	Dickinson	Worth	Crawford	Adair
O'Brien	Emmet	Mitchell	Harrison	Madison
Plymouth	Kossuth	Howard	Shelby	Warren
Cherokee	Clay	Winneshiek	Audubon	Marion
Buena Vista	Palo Alto	Allamakee	Pottawattamie	Adams
Woodbury	Hancock	Cerro Gordo	Cass	Union
Ida	Pocahontas	Floyd	Mills	Clarke
Sac	Humboldt	Chickasaw	Montgomery	Lucas
Carroll	Wright	Fayette	Fremont	Monroe
	Franklin	Clayton	Page	Wapello
	Calhoun	Butler		Jefferson
	Webster	Bremer		Taylor
	Hamilton	Black Hawk		Ringgold
	Hardin	Buchanan		Decatur
	Greene	Delaware		Wayne
	Boone			Appanoose
	Story			Davis
	Dallas			Van Buren
	Polk			

List of Counties by Seven Economic Areas (continued)

East Central	Southeast
Grundy	Linn
Marshall	Jones
Tama	Dubuque
Benton	Jackson
Jasper	Johnson
Poweshiek	Cedar
Iowa	Clinton
Mahaska	Scott
Keokuk	Muscatine
Washington	Louisa
Henry	Des Moines
	Lee

CONFIDENTIAL STATISTICAL DATA ON CROP SHARE LEASES
As requested by the Iowa Society of Farm Managers and Rural Appraisers

Co. _____

Farm No. _____

Improvements
Ex Av P Gr No

Acres
Total _____ Crop _____ Past. _____ Other _____

Year	Gross Income	Operate Exp	Net Income	Capital Exp.	Est.M.V. per acre	Remarks
1962						
1963						
1964						
196_						

Figure 6. Front side of preliminary survey questionnaire

Instructions for Completing Form:

County: Indicate county where farm is located.

Farm No.: Code so that the farm identification is known only to you, the reporter.

Buildings: Circle one - Extensive, Average, Poor, Grain only, None.

Gross Income: Report calander year on cash basis; do not attempt to adjust for inventory;
round all figures to nearest dollar.

Operating Expenses: A lump sum figure which includes real estate taxes, crop expenses,
ins., supervision, repairs & maint. which are not capital exp.; do
not include depr.

Capital Exp.: Capital improvement costs which are not annual operating expense items;
under remarks give the nature of the expenditure.

Est. Mkt. Value Per Acre: Your estimate of the expected sale price as of December of the
current reporting year. Indicate with a check mark any per acre
price which is an actual sale price during a reporting year.

Remarks: Include such items as; nature of cap. exp., hail, drought, etc., and other
factors which create abnormal income or expense figures.

Processing: Please return within 30 days, if possible, to Neill S. Thompson, 2817 Oakland,
Ames, Iowa 50012

Example:

Co. _Polk_   Farm No. _001_   Improvements   Acres
                                      Ex (Av) P Gr No   Total _160_ Crop _120_ Past. _30_ Other _10_

Year	Gross Income	Operate Exp.	Net Income	Capital Exp.	Est.M.V. per acre	Remarks
1962	4,000	1,895	2,105	2,000	410	New crib added.
1963	4,500	2,000	2,500	-	430 ✓	Seeding f loor.
1964	4,300	2,010	2,290	500	450	

Figure 7. Back side of preliminary survey questionnaire