

AN APPRAISAL OF CURRENT FARM MANAGEMENT DATA  
IN THEIR APPLICATION TO THE  
LOW INCOME FARM PROBLEM

by

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# AN APPRAISAL OF CURRENT FARM MANAGEMENT DATA IN THEIR APPLICATION TO THE LOW INCOME FARM PROBLEM

## CHAPTER I

### INTRODUCTION

#### The Problem

Farm income has declined in the past several years. Net farm income in the United States is almost 25 percent below the 1947-1949 level, yet our National income is almost 50 percent above the figure for that period. Per capita income of people on farms changed from \$655 for the period 1947-49 to \$606 in 1955 (15, p.1).

The decline in farm income can certainly be partially attributed to the fall in the real prices of farm products, or the ratio of prices received by farmers for goods sold to the price farmers pay for products used. It should be noted, however, that a large percentage of our farms had low incomes even during the periods of relatively high farm prices.

In the past, changes in farm product prices have been stressed as the major determinant of the differences in farm incomes. Determinants other than prices, however, must be found to explain the economic situation on these farms with inadequate incomes during periods of high agriculture prices. More information is needed to understand the influence of these determinants or combinations of them on Oregon farms.

Farm families with low incomes are found in all parts of the state. Certain areas have a more acute and immediate problem than do other sections. Large farms are generally increasing in number throughout the state, but in highly populated areas there has been a tendency for average farm size to decrease. In these areas there has been a gradual tendency for large farms to be divided and subdivided into smaller units. Under such conditions, smaller farms have trouble providing adequate levels of income for the operator and his family, using the same practices and methods used in the community prior to the divisions.

In studying the low income farm situations and the problems they create, goals and attitudes must be considered. Not all farms or rural residents are intended to produce food or fiber, nor are they intended to show profits. Some so called low income farms are simply homes of people engaged in other occupations. Some are places of retirement for older people, and others can be considered as only hobbies for urbanites. As such, these farms cannot be properly judged by commercial standards, nor should they be considered merely as agricultural production units. People living on such farms may not be at a disadvantage. In fact conditions existing on some of these farms may represent a good adjustment to the needs and situations of the individual families involved.

After excluding these large groups of rural residents, many of whom are included in agricultural census data, there are still

many full time and part time farmers who do not have a high enough income for an adequate family living, but who do not intend to leave the farm. It is this group which is of primary concern to this study.

This group of farms has many problems both within and outside of the field of agriculture. Some of these problems might be as follows: (1) Farm too small for an economic unit; (2) Lack of capital to expand acreage or develop enterprises; (3) All of the production and management problems associated with intensive farming such as the effective use of labor, use of machinery on small acreages, insect and disease control, and the full field of production problems; (4) Lack of opportunities for diversification; particularly in being able to make effective use of complementary and supplementary enterprise relationships; (5) Poor soil; (6) In the case of part time farms, the integration of management of the farm and available labor with the outside job; and (7) High taxes.

These can for the most part be classified as organizational or farm management problems. As many of these low income farmers are not trained in the field of agriculture, they turn to agricultural field men and agricultural institutions for assistance in solving their problems. Such aid is generally in the form of educational programs, farm plans, and production and economic information. As a result there is a great demand for agricultural economic information to assist small and part time farmers increase their incomes and standards of living.

Most of the current interest in the low income farm problem centers about that part of the low income farm population that can become more productive with appropriate guidance and assistance. Part of the problem of furnishing this assistance lies in the adaptability of available information to the problems of this particular group of farms. Much criticism has been made in the past of some agricultural agencies because of their policy of emphasizing production problems and disregarding the organizational and management phases of agriculture. This poses the question whether the farm managerial data now released by the Agricultural Experiment Station and Federal Cooperative Extension Service permit the development of reasonable understanding and reasonable solutions to problems of the small and part time farmers.

In order to answer this question, certain basic information must be procured. The characteristics and geographic location of these low income farms must be known to evaluate the magnitude of the problem. Information is needed about costs and other determinants and differences in their impact on small farms as compared with units with higher incomes. The extent of the usefulness of current farm management data to agriculture workers in the field in assisting low income groups in organization problems must be appraised. The services available to small operators in market outlets, custom machinery work, technical assistance, and factors of production should be determined. When the information on these points is



available there will be a much better understanding of the low income farm problem in Oregon.

### Objectives of the Study

It would be difficult if not impossible to solve all of the problems of the low income farmers in one study; however, since there has been very little work done in this field in the past, it is feasible to isolate some of the problems, analyze pertinent data, and to point out needs for future research.

With this in mind, the following five objectives were designed to set the scope of this study:

1. To define and locate geographically in the state the low income farms.
2. To determine the problems and characteristics of these farms that place them in the low income class.
3. To determine if the Oregon State Agricultural Experiment Station and the Cooperative Extension Service recognize the problems of this group of farms.
4. To determine whether these agencies have been providing satisfactory economic data to use as a basis for farm management decisions on these low income farms.
5. To determine the nature of additional economic data needed to develop effective reorganization plans and other management decisions on these low income farms.

## CHAPTER II

### METHODS OF STUDY

To accomplish the objectives this study was divided into three main parts: First, establishment of the intensity of the low income farm problem in the different regions of the state; second, a survey of the established critical counties and analysis of the data collected, and; third, analysis of selected current farm management publications.

#### Locating the Problem Areas

The first step in this study was the identification of the areas in the state with most acute farm income problems. This was accomplished by two methods. First, current census data were used to generally locate these farms by areas within the state. Second, a questionnaire type survey was sent to all County Agricultural Extension Agents, Soil Conservation Service Work Unit Conservationists, and Farmers Home Administration County Supervisors.

Location of farms by using census data was based on frequency distributions of farms in the counties according to amount of gross income. Percentages of low income farms in the entire state were used as a basis of comparison. All counties that had a higher percentage of low income farms than did the whole state were considered as critical. These counties were selected as the areas for further study.

To corroborate the census data a questionnaire was sent to agents working with farmers in all counties. This survey provided data concerning the extent of the problem, and helped to establish critical areas within the counties. These field men were selected because they work with farmers on problems of organization and planning which should familiarize them with the problems of low income farms and the suitability of current farm management data. In addition to these questionnaires, the Associate Director of Extension, an Agricultural Economist trained in Farm Management, the Extension Service Farm Management Specialist, and the State Agricultural Extension Agents were consulted on the location and extent of the problem.

#### Survey of Selected Critical Areas

The use of a mailed questionnaire to obtain data from persons working with farmers was chosen for two reasons: (1) limitations of time and finances, and (2) the need to interview at least one authority from each county in the state early in the study to determine the location and extent of the problem.

The questionnaire was compiled after a preliminary study of published data and informed opinions on the small farm and low income farm problem. Personal interviews were conducted with the Associate Director of Extension, an Assistant Professor of Agricultural Economics at Oregon State College, the three State Agricultural Extension Agents, and with County Extension Agents from three pilot

counties. Information received as a result of these interviews was used as a basis for the questions asked in the questionnaire. The questionnaire was checked by an Agricultural Economist and the Farm Management Extension Specialist for content and for value in meeting the objectives. As a further test, the final draft was sent to one vital county to determine the clarity and readability of the questions.

Information asked for in the survey included:

1. Location and extent of the small farm problem in the particular area.
2. Influence of certain physical factors on small farm income.
3. Extent of finance problems.
4. Farm labor and off farm labor problems.
5. Nature and extent of marketing problems.
6. Data on machinery problems.
7. Usefulness of available Experiment Station and Extension Service farm management publications in planning.

Data from the questionnaires served to verify location of critical areas. After these areas were established, only the questionnaires pertaining to critical areas were used to study the above points. Data from the selected surveys were tabulated, and the results of a detailed analysis of these records will be presented in this paper.

## Analysis of Selected Current Farm Management Publications

A survey of the users of agricultural information is not sufficient to determine the usefulness of current published farm management data in its application to planning on the small farm. For this reason several publications available to farmers, extension agents, and other agricultural field men were analyzed to determine their adaptability to the analysis of problems confronting managers of small farms.

### Selection of the studies used

The publications to be used in this analysis were selected from the current Agricultural and Home Economics Bulletin List of the Oregon Agricultural Experiment Station and the Federal Cooperative Extension Service (32) and the Federal Cooperative Extension Service Agriculture and Home Economics Circular List (16). The results of this review show that the cost of production type of study has been published in about a four to one ratio to other types of farm management data in the bulletins. All farm management studies reported in the current list of Extension Circulars are of the cost of production type.

Since the emphasis in the farm management field has been on cost of production studies by the Agricultural Experiment Station and the Federal Cooperative Extension Service, two studies of this type were selected for analysis. These studies are: "Cost of

Producing Red Raspberries for Processing in the Willamette Valley, Oregon" by Kuhlman and Mumford (26); and the "Cost of Producing Pole Beans in the Willamette Valley, Oregon" by Davis and Mumford (13). For comparison with the above two studies a third study, "The Yamhill County Poultry Management Study" by Becker and Neely (6), will be used. It is a cost study of a different nature.

These studies were chosen because they are representative of the types of cost of production work that have been done by the Experiment Station and the Extension Service. They represent different authors and thus varied styles in making a cost of production study. These studies deal with enterprises that are well adapted to many sections of the state, and all are still current. They represent different approaches in gathering and presenting data.

#### Methodology of Analysis

In order to evaluate the selected studies in an expeditious manner, all of the field and office notes were acquired and studied to determine methods of sampling, methods of survey, and to check calculations. Interviews were made with persons connected with the publications to verify the field notes. The recommendations of the publications were studied to evaluate their usefulness to the small farms. To further check the utility of these studies on the small farm, certain other data were calculated from the original raw data as a cross check to that in the publications.

The final step was to test statistically the size factors expressed in the publications to determine their effects on the cost of production. The various size factors are treated as individual cases and not as multiples. The statistical method used in this case was the simple linear correlation. This method was selected because of the nature of the data analyzed: there are only two variables; and the relationship can best be described by a straight line. The first condition results in simple correlation; the second in linear correlation (33, p.396).

## CHAPTER III

## DEFINITIONS OF FARM SIZE

Farm size has been a topic of discussion among agricultural writers since the days of the earliest farm management studies. The chapters on size of farms in G. F. Warren's "Farm Management" (39, pp.239-269) and in Henry C. Taylor's "Outlines of Agriculture Economics" (36, pp.170-183) both speak of the difficulties in measuring farm size, and both of these early writers attempt to determine an "optimum size of farm".

There is still a major problem in studying the low income farm problem in Oregon to find a usable definition or to standardize terminology dealing with farm size. Many measurements of farm size do not completely cover the difficulties involved, particularly when trying to compare farms from different sections of the state or those with different types of organizations.

Some confusion exists in the terms "size of farm" and "size of farm business". These terms are often used interchangeably and are measured in many different ways. Size of farm generally refers to physical inputs such as acres of land in a farm unit. Size of farm business refers to the combined inputs of land, labor, capital, and management. Size of farm business as defined above is the term with which this paper is mainly concerned.

Methods of determining the size of a farm business can be classified in three broad categories. These are: (1) in terms



of the fixed plant; (2) in terms of input, and; (3) in terms of output (11, p.538). Examples of each of these can be cited and the limitation of each category should be pointed out.

### The Fixed Plant

The fixed plant can be measured in terms of total acres, crop acres, or in number of livestock. Total acres is the most common measurement of farm size; and is in general use by the farmers and laymen alike. This measurement is adequate within a limited scope when comparing farms with the same organization in the same location or community; however, outside of this sphere total acreage does not offer a good means of comparing farm size as changing physical, economic, and technological conditions will change the acreages needed for similar operations.

A comparison of the following farm businesses will show the difficulty in using total acres as a measure of size of different types of farm business.

30,000 acre cattle ranch

3,000 acre wheat farm

300 acre general farm

30 acre berry farm

3 acre chicken farm

.3 acre greenhouse

Such an illustration may seem extreme, but it is not impossible to find all of these types in the same general geographic location in Oregon.

Measuring size in terms of crop acres has about the same limitations as does measuring size in total acres. The crop classification does bring the problem closer to what can be, and is being used by the farmer; but it eliminates potential capacity which is the factor to be considered. When measuring farm size in terms of numbers of livestock, location of the farm and type of product are necessary considerations. Location is important since in some regions it is the practice to keep enough animals to market forage and grain crops through livestock, while in others, usually near metropolitan market areas, all feed is purchased and much larger herds are kept. As a result of these differences, number of livestock is only a suitable measure of size when comparing like farm businesses within a given locality.

#### Farm Size by Inputs

Examples of farm size measured in terms of input are: labor inputs or productive man work units, the size or type of machinery it takes to operate, or the amount of capital it takes to operate. Measuring by inputs is probably one of the best single measures for comparing size. As an example, in using productive man work units it is possible to work out a size comparison in terms of labor that is standard. Such a measurement is of value when trying

to compare different types of farms, as it puts one important input used by all into a common term. The disadvantage of using labor as a comparison lies in standardizing the labor inputs for each enterprise. As in many other measurements of size, records have to be kept and averages computed to get a standard figure for comparison. This will differ in localities as topography, soil and weather will change the labor requirements; however, it is very satisfactory within a given economic area such as the Willamette Valley (see appendix B). In terms of machinery, farms are often classified as a one-tractor farm, two-tractor farm, and on up, or according to tractor horsepower. This classification also has real limitations.

Capital managed is a good measure for comparison of farms in different areas and of variations of enterprises within areas. The limitations are in the estimation of charges for capital and the variations in capital requirements between enterprises. Some enterprises require a large initial capital outlay and a comparatively small annual cash expenditure, while others have just the opposite capital requirements.

#### Size in Terms of Outputs

Size in terms of output can be measured in number of physical units produced, in value of gross income, or in value of net income. It is easy to understand that volume of physical output is inadequate as a measure of size when no mention is made of the volume of the required inputs. If production alone were the goal of agriculture,

this would be the case, but the highest physical production is not the most economic nor always the most feasible. Two similar farms operated by different managers may have a very different output because one farm may be operated at nearer maximum capacity or with greater efficiency.

Gross income is a valuable measurement of the size of farm business when comparing farms over a large area such as the state or the nation. Such data reflects management and efficiency, but does not show capacity nor does it reflect in any way actual income from the business. It does, however, put size in terms of dollars which can be compared in a heterogeneous area; it gives a basis of comparison, omitting the irregularities found in estimating costs.

Net income is a good measurement of size of farm business, but it is difficult to determine due to the lack of good cost data. Many farms do not keep accurate records for various reasons. Even when records are kept, estimates must be made on many critical items such as interest and depreciation charges. Such estimates are sometimes inaccurate; therefore, they limit the value of cost and net income data.

In determining the true size of farm businesses, several different measurements are needed. It is advisable to use at least one measure from each general classification, that is: (1) the physical plant; (2) input, and (3) output. To illustrate: the Willamette Valley farms shown in Table 1 were chosen from the study by Becker, Hyer, and Mumford (5) to show how various measurements of

Table 1

## ENTERPRISES ON SELECTED WILLAMETTE VALLEY FARMS/1

## FARM A

14 cows	95 acres wheat
20 heifers	41 acres oats
149 ewes and bucks	55 acres barley
24 hens	19 acres oats and vetch hay
4 sows	
61 hogs	

## FARM B

13 dairy cows	18 acres oats and vetch hay
6 heifers	30 acres alta fescue seed
1 steer	116 acres common ryegrass seed
	8 acres corn silage
	22 acres oats
	20 acres barley

## FARM C

22 dairy cows	103 acres small grain
14 heifers	32 acres oats and vetch hay
60 ewes and bucks	170 acres common ryegrass
135 hens	150 acres perennial ryegrass
4 sows	48 acres chewings fescue
29 hogs	9 acres walnuts

## FARM D

37 dairy cows	26 acres irrigated ladino pasture
13 heifers	

## FARM E

20 acres pole beans
30 acres corn
10 acres beets
10 acres strawberries
8 acres filberts

/1 From a study by Becker, Hyer, and Mumford (5).

size will classify the same farm differently, but how the same measurements combined will classify the farms into more reliable size categories. It should be noted that four of the five farms are general farms, and one is a dairy farm. Those with smaller acreage tend to specialize to some degree. See Table 2. In classifying these farms according to size, five criteria are used, they are: (1) total acres, (2) crop acres, (3) productive man work units or PMWU's (see appendix B), (4) total investment, and (5) gross income.

Table 2

DATA FOR SIZE CATEGORIES OF FIVE SELECTED WILLAMETTE VALLEY FARMS/<sup>1</sup>

Farm	Total Acres	Crop Acres	PMWU's	Total Investment	Gross Income
A	664	210	429	\$62,595	\$14,576
B	241	214	292	43,294	12,510
C	686	512	654	108,442	30,565
D	29	26	418	46,646	26,000
E	90	78	2342	65,000	43,412

<sup>1</sup> From a study by Becker, Hyer, and Mumford (5).

Each farm is ranked numerically from the largest (1) to the smallest (5) under each classification. See Table 3. Weighting these classifications equally and taking an average, it is interesting to note that the final or average classification does not match any of the single classifications, but they do indicate size of business

to the extent that those that are high numerically throughout are the small farm businesses; those that are low numerically are the larger businesses. It can also be noted that those farms that are largest in the physical plant category are not necessarily the largest from an over-all business standpoint. The comparison of these farms also shows that farms of similar acreage can be organized differently, and thus be considered as different sized farm businesses.

Table 3

RANKING OF FIVE SELECTED WILLAMETTE VALLEY FARMS ACCORDING  
TO NUMERICAL ORDER BY DIFFERENT SIZE MEASURES

Farm	Total Acres	Crop Acres	PMWU's	Total Investment	Gross Income	Overall Rating
A	2	3	3	3	4	3
B	3	2	5	5	5	4
C	1	1	2	1	2	1
D	5	5	4	4	3	5
E	4	4	1	2	1	2

In the discussion of size of farm business some mention should be made of scale as some economic writers refer to size in terms of scale. Scale as generally used in economics refers to different sizes of physical plant that result when all proportions of inputs are increased at a constant rate. It is possible for a farm business to be enlarged by increasing the inputs of all agents in fixed proportions; however, it is unlikely that this procedure will be

followed by operators. In actual farm production many practices are used in producing a single product. Increased volume of production is likely to arise from changes in several practices, each of which employs different proportions of land, labor, capital, and management. As a result, to talk in terms of constant proportions in agriculture is unrealistic.

Size of farm business as it has been defined in this study actually deals with the whole of land, labor, capital, and management that a given operator has at his disposal as used in the proportions dictated by the technology adopted. Changes in size can be made by altering one or more of these proportions or inputs.



## CHAPTER IV

## CLASSIFICATION AND LOCATION OF LOW INCOME FARMS IN OREGON

Throughout this study certain terms are to be used dealing with farm size. To accurately describe farm size, several measurements or criteria must be used. Data for these measurements can be obtained when working closely with individual farms or groups of farms; but it is very difficult to obtain empirical data to classify farms in such a manner when dealing with the entire agricultural industry of the state.

Some farms that are large by physical standards are very extensively operated and have a small income, while some small farms that are very intensively operated have large incomes. One of the most significant measures of size is the value of products (7, p.21). Data from the Census of Agriculture provide this value of products in the form of average gross farm income for Oregon farms, and will be used as a basis for placing farms into size categories.

## Current Census Classification of Farms

The Census divides farms<sup>1</sup> into two categories based primarily

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<sup>1</sup>For the 1954 Census of Agriculture, places of three or more acres, were counted as farms if the annual value of agricultural products, exclusive of home garden products, amounted to \$150 or more. The agricultural products could have been either for home use or for sale. Places of less than three acres were counted a farm only if the annual value of sale of agricultural products amounted to \$150 or more (37, p.XII).

on amount of income--commercial farms and other farms. See Table 4.

"Commercial" farms are further broken down into six economic classes according to gross income, they are: Class I, \$25,000 and over; Class II, \$10,000 to \$24,999; Class III, \$5,000 to \$9,999; Class IV, \$2,500 to \$4,999; Class V, \$1,200 to \$2,499; and Class VI, \$250 to \$1,199. Farms in the \$250 to \$1,199 range were classed as commercial only if the operator worked off the farm less than 100 days or the value of the farm produce sold was greater than other family income.

"Other" farms are classified as: "part time" farms when farm income is from \$250 to \$1,199 and the operator works off the farm 100 days or more or when other family income that exceeds farm sales; "residential" farms include all farms other than abnormal farms on which the total value of farm products sold was less than \$250; and "abnormal" farms include public and private institutional farms and community projects.

#### Definition of Low Income Farms

In the classification of farms in this study, two things are important: (1) the gross income of the farm, since this study is concerned primarily with the "low income group", which is a term arbitrarily used to define an income below that required for an average standard of living for the farm family, and (2) the intentions or goals of the farmer.

One important question at this point is, what level of income

Table 4  
FARMS BY ECONOMIC CLASS

Census Designation	Value of Sales	Designation Used in This Study
Commercial Farms		
Class I	\$25,000 and over )	Large Farms
Class II	10,000 to \$24,999 )	
Class III	5,000 to 9,999	Upper Medium Farms
Class IV	2,500 to 4,999	Lower Medium Farms
Class V	1,200 to 2,499 )	Small Farms
Class VI <sup>1</sup>	250 to 1,999 )	
Other Farms		
Part time <sup>2</sup>	250 to 1,999	Part time <sup>2</sup>
Residential	Under \$250	Residential
Abnormal <sup>3</sup>		Abnormal <sup>3</sup>

<sup>1</sup>The operator worked off the farm less than 100 days and the farm sales were greater than other family income.

<sup>2</sup>The operator worked off the farm 100 or more days during the year and non-farm income received by the operator and his family exceeded farm sales.

<sup>3</sup>Public and private institutional farms, community projects, etc.

is to be considered low? Many factions of agriculture in the state will argue to the effect that the differences between prices received for agriculture goods and the prices paid by farmers for capital and consumption goods is so great that even a large gross income does not necessarily mean a high net income. This may be true; however, it can be answered for purposes of this discussion that everyone below a certain level, regardless of the relationship between gross and net income does not have an adequate family living. The figure selected to be used in this study is \$2,500 annual gross income.

A phrase which will not be used in the definitions in this paper is "the family farm". This term by popular definition is a farm run by the operator and his family without extra labor except for brief periods in time of harvest. Although this is a popular definition of farm size, it boils down to a designation of size based on labor inputs and all labor inputs are to be termed in productive man work units in this study.

Considering the qualifications set up, the following classifications will be used in this paper: large commercial farms, medium commercial farms, small farms, and others. A breakdown of these according to gross income is as follows: large commercial farms are those with a gross income of \$10,000 and over; upper medium commercial farms are those with a gross income of \$5,000 to \$9,999; medium farms are those with a gross farm income from \$2,500 to \$4,999; the small farms from \$250 to \$2,499. Other farms are part time farms, residential farms, and abnormal farms as classified in the Census.

See Table 4. In this case, however, some of the part time farms are of special interest and will be included in the analysis with the small farms.

#### Classification of Farms by Goals and Circumstances

A further refinement of the classification of farms must be made. Small or low income farms can be broken down into three general classifications that are centered around goals or circumstances that have put them into this category. In classifying these farms the main interest is in those farmers who derive all or most of their incomes from farming, and whose objective is a full time business for the present or in the foreseeable future. This objective will immediately eliminate suburbanites, rural residences, and part time farmers who receive most or all of their family income from a primary occupation other than farming. It is felt that these rural residents, although classified as farmers by the Census definition, are not primarily an agricultural problem; therefore, they are eliminated from consideration in this study.

The farms to be considered are: (1) those that were purchased as "small" units primarily to supplement the income from an outside job, but with the intent of expanding into a full time farm business. This also includes farms that are large enough units to have real agriculture problems even though they are essentially part time; (2) farms that have become "small" or "low income" farms because of social or culture reasons, and (3) farms that are "small" or have

become "small" because of economic change.

### Farms Small by Intent

Farms in the first classification, presently too small but the intent of the operator is to develop them into full time operations, are generally purchased as a result of limited capital on the part of the operator. Such businesses have problems that are both complex and varied. These farms depend to a great extent on the local area and the industry where the people work, if they have a job. Their problems are economic, industrial, agricultural, and political. It is difficult to separate one type of problem from another because they are interdependent and related. Nor will these problems be solved by doing a piece meal job. All aspects of the over-all problem must be considered in their proper relationship.

### Social and Institutional Reasons

The second group to be considered contains those farms that are small because of social or institutional reasons. These farms have been full time units at one time or another; for reasons generally beyond their control, they are too small today. Such cultural forces as inheritance laws have split up farms among heirs and reduced the original unit into small uneconomic units which in turn have been sold and resold because they are not large enough to provide an adequate family living. Farms in the fringe areas of cities, where constant subdividing is going on, and those divided by highway right of ways

and other such developments fall in this category. Governmental programs, such as rehabilitation programs and irrigation reclamation projects have contributed to the number of farms in this class by making the original units so small that they have not been able to remain economic units.

### Changing Economic Factors

The last class includes those farms that were at one time an economic unit; but due to changes in economic factors, have since become too small for an adequate income for the operator and his family. Such farms have suffered because of price changes in their main products or because of technological changes that have eliminated them as competitors. This group of farms may have alternatives that will again make them economic units, but at the present they are in the low income category. An example of this type of situation is found in the Northern part of Marion County. At one time many farms in this area were high income hop farms. Because of the decline in demand for hops by brewers and the advent of expensive hop picking machines, these farms can no longer compete as hop production units. However, since they are on good soil and are well located geographically for markets and supplies, these farms can again become high income economic units with a reorganization program.

### Geographic Location

The second step in determining the extent of the low income farm

problem in Oregon is to locate these low income farms in the geographical and economic areas of the state.

There are no available income figures that are wholly satisfactory for setting out the low income areas and low income population groups in Oregon. Chronic low incomes in certain parts of the state's agriculture, however, are not just statistical imperfections. By any of a large variety of indicators of incomes and welfare, low levels of living are typical of some segments of agriculture in the state and have been for many years.

To establish the problem areas in the state the farm classifications set up earlier in this Chapter will be used. Since it is difficult to select the farms by goals and attitudes, two classes, the small farm and the part time farm, will be considered together. This is done because many of the problems of the small commercial farms are similar to the problems of the part time farm.

The basic income figures used in this section are those reported by the 1954 Census of Agriculture (37). They include the gross money incomes for the classes of farms studied. The survey of County Agricultural Extension Agents, Soil Conservation Service Work Unit Conservationists, and Farmers' Home Administration County Supervisors is used to locate these low income farms within the counties.

Farms with low incomes are found in all parts of the country, but such farms are most numerous in areas of dense rural settlement. The abundance of hand labor has tended to reduce the incentive for making adjustments that would give farms higher earning power per



worker. In many areas there are few outside jobs to supplement the farm income (38, p.6).

Oregon is not considered a serious low income problem<sup>2</sup> area by the U. S. Department of Agriculture in its report on problems of low income farmers to the Secretary of Agriculture (38, pp.6-7), however, certain parts of the state are classified as having moderate<sup>2</sup> low income farm problems.

With the above situation in mind it can be observed that of Oregon's 1,664,000 people, 163,906 or 9.9 percent are classified as farmers or farm workers by the 1954 Census of Agriculture (37). About 57 percent of the farm families have a gross income of less than \$2,500 per year. This figure includes part time, residential, and abnormal farms, which account for about 41 percent of the farms in the state.

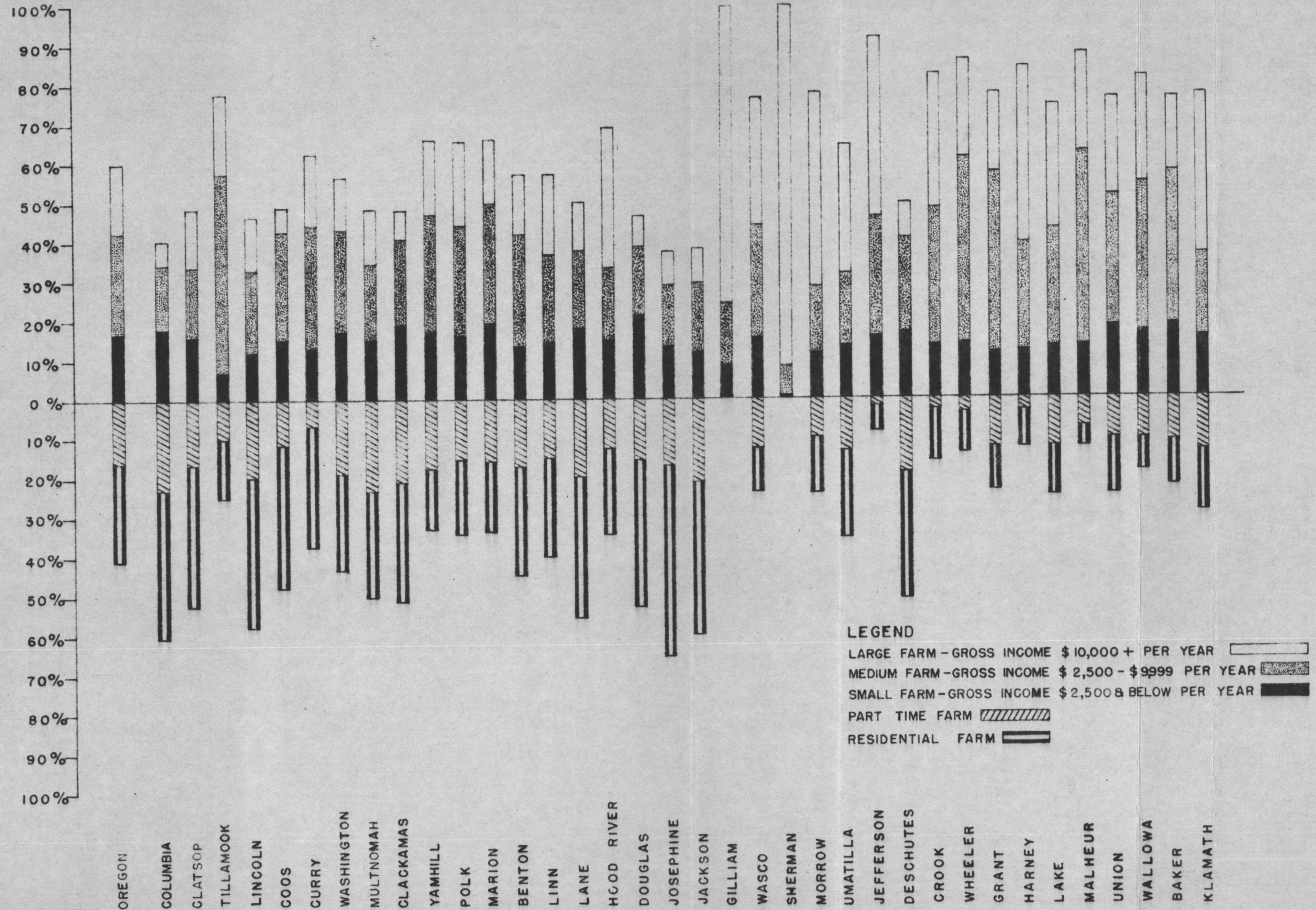
Only 32,138 or 59 percent of the state's farms are classified as commercial farms. Of these commercial farms, 27 percent had gross incomes of less than \$2,500 per year. See Figure 1.

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<sup>2</sup>Classes set up by U. S. Department of Agriculture (38, p.7) are "Serious", which include all three criteria; "Substantial", any two criteria; and "Moderate", any one criteria. Criteria (1) Less than \$1,000 residual farm income to operator and family with level-of-living index below the regional average and twenty-five percent or more of commercial farms classified as low production. (2) Level-of-living index in lowest fifth of the nation. (3) Fifty percent or more of commercial farms classified as "low production".

Figure 1

# DISTRIBUTION OF FARMS by ECONOMIC CLASS



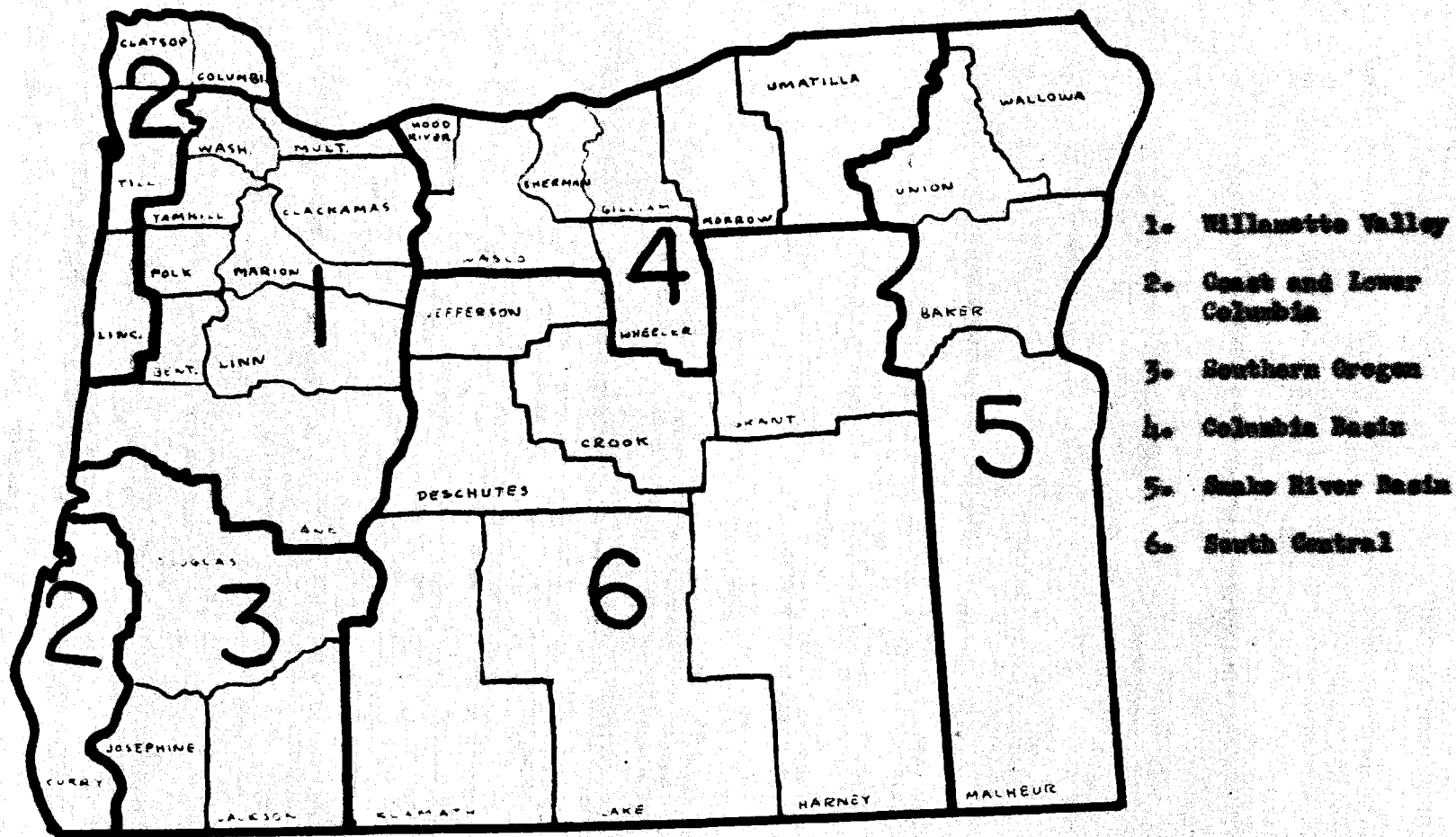


Figure 2. Map showing economic areas of Oregon.

### Counties with Low Income Farm Problems

Many small farms are found in most counties of the state, but 60 percent of these farms are located in eleven of the counties in Oregon. The counties with 30 percent or more of all of their commercial farms in the small farm class are: Columbia, Washington, Multnomah, Clackamas, Marion, Lane, Douglas, Josephine, Jackson, Deschutes, and Coos. See Figure 3.

Since the entire low income farm problem does not center around the commercial farm alone, another system of locating the problem areas was used. This consisted of adding to the small farm number, the number of part time farms in the counties.

Fifteen counties fell into the category with more than 30 percent of their total farms classed as small or part time. Seventy-two percent of the farms in the two classes are in these fifteen counties. The counties are Columbia, Clatsop, Lincoln, Washington, Multnomah, Clackamas, Yamhill, Marion, Benton, Lane, Josephine, Jackson, Deschutes, and Baker. See Figure 3.

To further locate the low income farm problem the percentage was lowered to 25 percent of the total farms that had an income of less than \$2,500 per year. This added ten more counties, which are: Polk, Hood River, Linn, Coos, Umatilla, Wasco, Klamath, Lake, Union and Wallowa. The addition of these counties raises the total counties to 25, which would include 93 percent of the total small farms and part time farms in the state. See Figure 3.

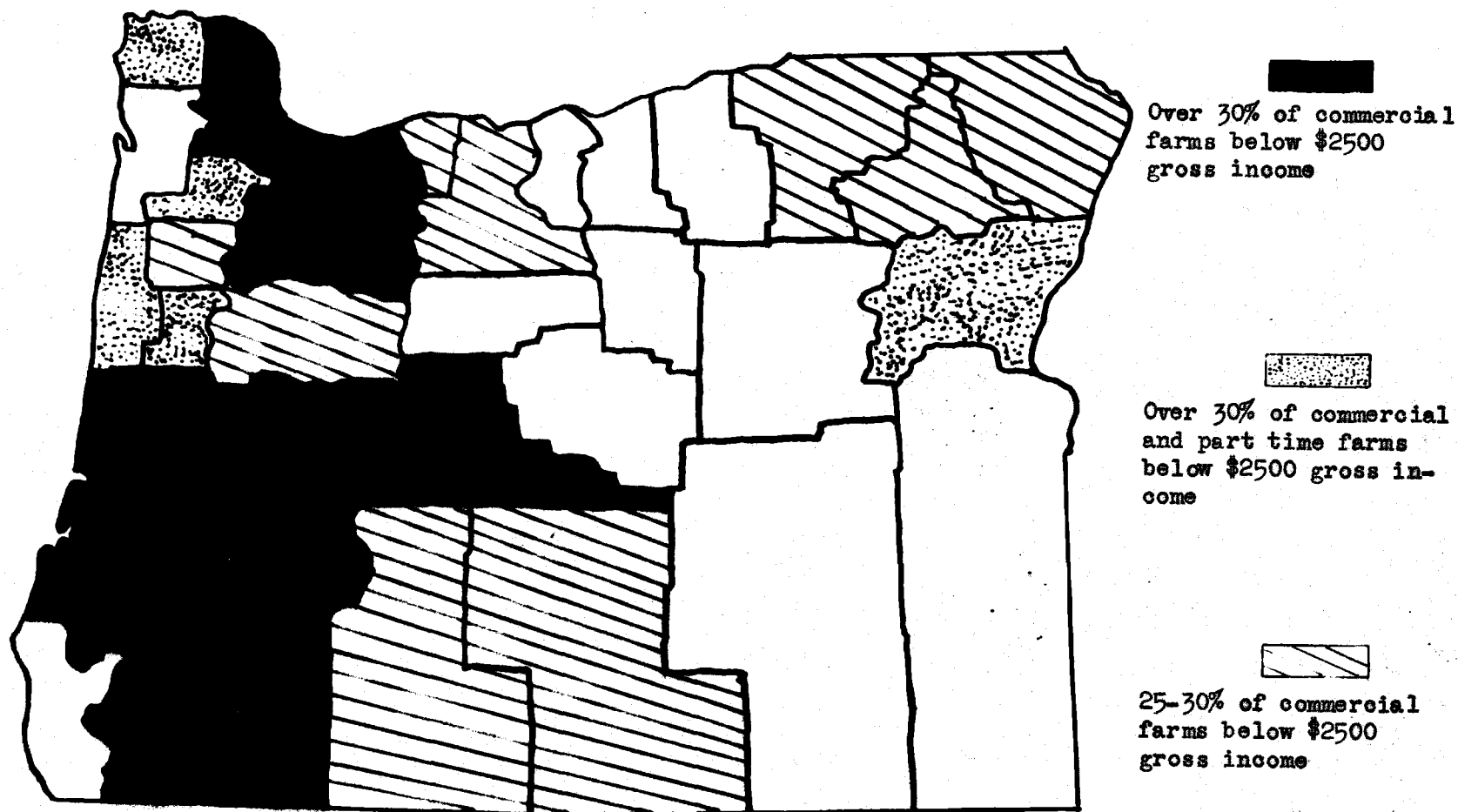


Figure 3. Map showing distribution of low income farms in Oregon by counties.

### Specific Problem Areas

Study of these data on location of the part time and small farm areas indicates that certain areas of the state have greater concentrations of these part time and small farms than do others. See Figure 4.

#### Willamette Valley

Results of the survey show that in the Willamette Valley counties of Multnomah, Clackamas, Washington, Marion, Yamhill, Polk, Benton, Linn, and part of Lane, these farms follow the Valley floor between the mountain ranges. It is difficult to locate these farms in this area because in all cases they are scattered throughout the county, and are dispersed among the more profitable commercial farms. This difficulty was well expressed by one of the County Extension Agents who said, "The Census figures indicate there are many small farms in my county, but I don't know where they are."

#### Coast and Lower Columbia

In the Coast and lower Columbia counties of Clatsop, Columbia, Tillamook, Lincoln, part of Lane, Coos and Curry, these part time and small farms are generally located along the Columbia River and Coastal harbor areas. The exception to this is in Lincoln, Western Lane, and Curry counties where these farms are scattered throughout the agricultural areas of the counties.

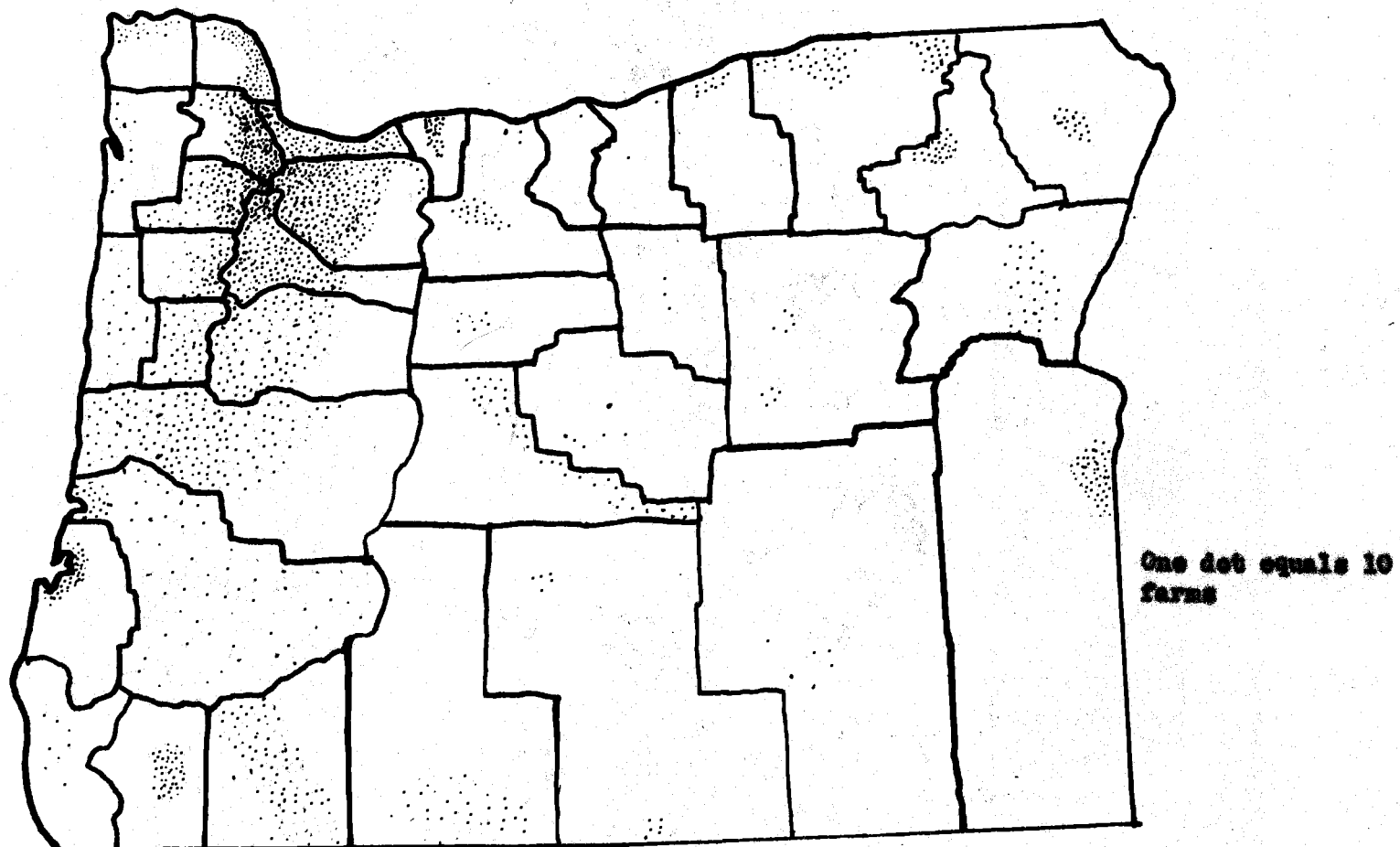


Figure 4. Location of part time and small farms in Oregon.

### Southern Oregon

The Southern Oregon economic area consisting of Douglas, Josephine, and Jackson counties has its small farm problem scattered throughout the agricultural districts. The survey of this area does show a concentration to the extent that the small farms are located around the more heavily populated centers.

### Other Economic Areas

In the three remaining economic areas of Oregon--the Columbia Basin, the Snake River Basin, and South Central Oregon--these farms are generally located in definite centers of each county. In the counties bordering the Columbia River, they are generally clustered in irrigated communities along the Columbia River or along creeks and rivers that have been developed for irrigation. The survey shows that not all the farms within these specific region are low income farms, but those low income farms are scattered among the more profitable farms. This same situation is true within the Snake River and South Central Regions where the problem farms are located within definite irrigation project regions.

Several points can be made in summarizing these data on location of low income farms in the state: (1) Small commercial farms and low income farms are most heavily concentrated in the more heavily populated parts of the state. (2) As a general rule they are scattered among the more prosperous farms. (3) In the eastern and southern Oregon areas they tend to be concentrated in irrigated areas.



## CHAPTER V

## ANALYSIS OF THE RESULTS OF A SURVEY TAKEN IN PROBLEM AREAS

Analysis of the results of the survey sent to agricultural field men provides information on the adequacy of current farm management data in the development and understanding of questions and problems of the low income farm groups.

Two questions to be answered in finding the extent of the agricultural problem of these farm groups are: (1) What characteristics common to these farms cause them to be in a low income group? (2) Do agricultural field men have the data they need to adequately assist small farms or enterprises?

A preliminary survey of agricultural leaders helped to point out some of the agricultural problems confronting the low income farm groups.

From this preliminary study, the following emerged as important determinants of the problems of the low income farms: acreage and productivity of land, level of soil management, organization of farm enterprises, availability and management of capital, availability and use of labor, machinery problems, quality of produce for sale, and availability of market outlets. Opinions obtained from professional agricultural field men on the seriousness of the above problems, the extent of present programs designed to assist the low income farm groups, and the adequacy of available farm management data will also be summarized in this chapter.

Data selected for analysis were taken from the answers received from County Agricultural Extension Agents who work in the twenty-five counties that have over 25 percent of their total farms falling in the low income farm groups. The data were verified by checking against the answers received from the Soil Conservation Service Work Unit Conservationists and the Farmers Home Administration County Supervisors who work with the farmers in the same counties.

Since various sections of the state have similar problems, counties in the same general geographic location with comparable types of farming were grouped into economic areas. Percentage figures used for economic areas are the averages of the estimated percentages given by the county agents representing selected counties comprising each economic area. The reference made to percentages for all areas is the average of the estimated percentages of all twenty-five of the county agents questioned. Pooling of opinions of those persons working close to the low income farm groups in this manner, gives a good indication of how much influence is attributed by these persons to each selected factor determining the income status of small and part time farms.

### Acreage

The phrase that "the farm is too small for an economic unit" is commonly heard when referring to farm income.

Respondents from the problem areas of the state named lack of sufficient crop acres as a contributing factor to the low income

problem on 78 percent of the farms in their counties. The county agents located in the Willamette Valley economic area estimated this to be a problem on 94 percent of the low income farms. See Table 5.

By breaking this down into two classes, the writer was able to determine the relationship between this acreage problem and managerial ability. An average of the estimates from county agents questioned shows that 58 percent small and part time farms in the counties studied do not have a sufficient number of acres to carry on the type of farming that is best adapted to their own communities. A smaller number, 20 percent of the small and part time farms, lacked sufficient acreage for enterprises that best fit the managerial ability of the present operators. Checking the items by state economic areas, the Columbia Basin Counties reported the highest percentage with insufficient acreage to fit in with local cropping programs. In contrast, this same economic area has the smallest percentage of the low income farms with acreages not best suited to the level of management. In other economic areas a lower percentage of the low income farms were too small for principal local crops, but the percentage of present managers needing more acreage to best use their managerial ability was higher.

Possibilities of expansion of acreage as a solution to the low income status were explored. The answers indicated that an average 34 percent of the total low income farms are unable to expand acreage because adjoining land or land that would be feasible to combine with their present unit is not available at a reasonable price.

Table 5

**PERCENT OF LOW INCOME FARMS WITH AN ACREAGE PROBLEM  
BY ECONOMIC AREAS IN OREGON**

<b>Economic Area</b>	<b>Percent of Farms Lacking Sufficient Crop Acres</b>	<b>Percent with an Insufficient Acreage for Local Crops</b>	<b>Percent with Acreages too Low for Present Management</b>
Willamette Valley	94	64	30
Coast	66	48	18
South Central	80	60	20
Southern	73	55	18
Columbia Basin	84	77	7
Snake River	52	35	17
All Areas	78	58	20

Other reasons were given by the county agents for not expanding acreage. Those cited most often were: the isolation of farming areas did not make expansion feasible; the adjoining lands not for sale for agricultural purposes; and failure of farmers to develop acreage they already own. These factors were estimated to be present on 47 percent of the low income farms in the selected counties.

Soils

Soils problems contributing to the low income status of the small and part time farm groups will be considered next.

Table 6

PERCENT OF LOW INCOME FARMS WITH A SOILS OR SOIL MANAGEMENT PROBLEM BY ECONOMIC AREAS IN OREGON

Economic Area	Percent with a Soil Management Problem	Percent with Soils Resource Problem
Willamette Valley	22	37
Coast and Lower Columbia	23	58
Southern Oregon	28	37
Columbia Basin	40	35
Snake River Basin	35	17
South Central	16	58
All Areas	27	42

Soils problems are divided into two groups, level of soil management, and soils resource problems. The level of soil management refers to practices carried on by the individual farmer in managing his soils as compared to those practices recommended and used by farmers in the local community. Soil resources refer to physical

properties of the soils of the individual farm that are common to neighboring farms or farms in the immediate vicinity. Soils resource problems are considered as being problems of low fertility, poor drainage, soil depth, water problems, site, and soil structure.

In the counties surveyed, the county agents reported an average of 27 percent of the low income farms had a level of soils management that was below the average of the community. The average percentage for low income farms with a soils resource problem was estimated by the county agents to be 42 percent. See Table 6.

### Organization

Organization can be construed to mean many things in farm management. In this study it is used to mean the combinations of enterprises. The various enterprises on the farm in different combinations make up the farm organization. In some organizations certain enterprises are needed to supplement<sup>3</sup> the main enterprises while others have complementary enterprises.<sup>4</sup> Some enterprises actually

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<sup>3</sup>Supplementary enterprises are those with such a relationship that when resources are constant, output of one product can be increased with neither gain nor sacrifice to another. Enterprises supplement each other when combined in such a manner they are best able to use a given resource (19, p.83)

<sup>4</sup>Two enterprises are complementary to each other when an increase in total output of one also results in an increase in total output of the other, from a fixed land area or a given resource. When enterprises are complementary, use of resources for enterprises makes possible a greater production of one or of both enterprises than if each were produced independently. This relationship exists only when one enterprise furnishes an element of production required by the other (19, p.84).

compete against one another for available resources. Changing the combinations of various types of enterprises would change the gross income of the farm business.

To determine the extent to which the combination of enterprises contributes to the low income status of the small farm and part time groups, three questions were posed. These questions are: (1) To what extent do low income farmers have the wrong combination of enterprises? (2) How often is there an improper selection of enterprises to fit in with those best adapted to the local area? (3) Is there an improper selection of enterprises to fit the individual manager's ability?

Table 7

PERCENT OF LOW INCOME FARMS WITH CERTAIN ORGANIZATIONAL  
PROBLEMS BY ECONOMIC AREAS IN OREGON

Economic Area	Percent of Farms with Wrong Combinations of Enterprises	Percent of Farms with Enterprises Not Adapted to Area	Percent of Farms with Enterprises Not Proper for Manager
Willamette Valley	13	15	15
Coast	10	11	6
South Central	17	14	17
Southern	12	9	11
Columbia Basin	20	11	23
Snake River Basin	8	13	23
All Areas	13	13	15

Those questioned answered that 13 percent of the low income farms had a wrong combination of enterprises. County agents expressed an improper selection of enterprises to fit those best adapted for the local community was evident on 13 percent of the farms. Wrong enterprises related to managerial ability was given as a reason for 15 percent of the low income farms. See Table 7.

### Labor

Proper allocation of labor inputs on different sizes of farms has been a point of dissention among agriculture economists for some time. To determine the extent of labor problems and their effect on small farms is the goal of this section of the study. In addition to the effective use of operator's and family labor, other labor problems to be analyzed are the availability of needed hired labor and the availability of off farm employment as an alternative to incomplete use of the operator's time on the farm.

A number of the elements of the farm business affect labor efficiency. Crop and livestock combinations; field and farmstead layouts; planning work and chores; replacing labor with machinery; and the amount of capital combined with a given amount of labor can all influence the degree of labor efficiency. The county agents questioned expressed labor efficiency was a factor influencing incomes on 23 percent of the small and part time farms in their counties.

Certain enterprises may be eliminated from plans or limited in



scope because of the lack of available hired labor. This was deemed a limiting factor in only 11 percent of the farms in the areas surveyed. Several references were made to the quality of the labor available. This was true in isolated areas where irrigated row crops are prevalent. See Table 8.

Table 8

PERCENTAGE OF LOW INCOME FARMS WITH A LABOR PROBLEM AS A  
CONTRIBUTING FACTOR TO INCOME PROBLEMS  
SHOWN BY ECONOMIC AREAS OF OREGON

Economic Area	Percent of Farms with Inefficient use of Labor	Percent of Farms with Outside Labor not Available
Willamette Valley	26	15
Coast	7	17
Southern	33	3
South Central	25	5
Columbia Basin	32	0
Snake River	23	8
All Areas	23	11

Off farm jobs for the operator or his family were considered to be available in 80 percent of the counties. The areas where there was a lack of such jobs as an alternative to labor intensive agricultural enterprises were in the Snake River counties, the South Central

counties, the Southern Oregon counties, and in the Columbia Basin. Certain counties had problems of this nature because the part time farmer's alternative occupation was in the lumber industry where much of the logging activities are seasonal. In these areas the part time farm problem is of a more serious nature because agriculture must provide a greater share of the operator's income than it does in areas where more constant off farm work is available.

### Capital or Credit Problems

Failure to obtain through borrowing all of the capital that appears to be profitable is often termed capital rationing. Capital rationing can be divided into two general types, External and Internal.

External Capital Rationing is described as the limitations put on the amounts of capital made available by outside sources or lending agencies. These limitations may be imposed either in the form of rates of interest that are excessive in relation to expected rate of return on the money borrowed, or in the form of lending a lesser amount of money than is needed to develop other resources fully enough to maximize returns.

Internal Capital Rationing is defined generally as the failure of the operator to return or put into the farm business the necessary capital to develop other resources even though the apparent rate of return might exceed the interest cost of borrowing. Causes of Internal Capital Rationing may result from a preference for liquidity,

uncertainty, unwillingness to assume debts, and the strong relationship between the farm business and the household which exists in agriculture.

Both types of Capital Rationing are influenced by uncertainty. The lender is uncertain of the intentions and capabilities of the operator as well as fluctuations in price and natural elements. The farm operator is uncertain as to price fluctuations, natural forces, and the amount of capital to be needed by the family and household in combination with the farm business. Capital Rationing may affect the efficiency of resource allocation in two ways: (1) by affecting the combination of factors used, and (2) by affecting the size of farm business (24, p.64).

The extent of this problem in the eyes of the Agricultural Extension Agents in Oregon was determined by asking two questions, which were: (1) What percentage of the small and part time farmers were unable to get credit at reasonable rates from regular lending agencies? (2) What percentage of these farms had capital which they would not return to the farm business?

External Capital Rationing affected about 30 percent of the low income farms in the problem areas. By regions the range was from 53 percent in the South Central counties to a low of 17 percent in the Southern economic area. Other economic areas are shown in Table 9.

Internal Capital Rationing was estimated to be practiced on 23 percent of the farms in the problem areas. The high in this case was the Snake River section with 36 percent, and the low was in the

Willamette Valley area with 15 percent of the low income farms practicing Internal Capital Rationing. See Table 9.

Table 9

PERCENTAGE OF LOW INCOME FARMS WITH A CAPITAL OR CREDIT  
PROBLEM BY ECONOMIC AREAS IN OREGON

Economic Area	Percent External Capital Rationing	Percent Internal Capital Rationing
Willamette Valley	21	15
Coast	38	29
South Central	53	17
Columbia Basin	32	32
Southern	17	16
Snake River	33	36
All Areas	30	23

Credit problems are the least serious in the areas where alternative occupations are more readily available, and in the areas nearest urban centers where the land may have alternative uses. This is true because part time farmers with steady outside jobs can repay loans or invest part of their salary into the farm business more readily. Where land may be subdivided it is worth more as collateral than it would be for agricultural uses.

### Marketing Problems

Marketing has been termed as part of the modern productive process. The goods that are grown on farms must be stored, transported, processed, and delivered in the form, at the time, and to the place that consumers desire. Farmers in the past have performed many of these functions themselves; however, in recent years with specialization taking over many of these fields there are more steps in marketing between the farmer and the consumer.

This brings up the question, "How does the farmer on a small unit with a small lot to offer in the market place, fare with today's complex marketing system?" In order to determine this, several questions were asked in the survey. These questions are: (1) Are the small or low income farms in your area too far from regular markets for economical marketing of the products they could best produce? (2) Are the products in small lots graded in a manner that the market demands? (3) Do the small producers have alternate outlets to provide competitive bidding on their products? (4) Are buyers interested in the small lots produced by these small farms?

Distance from market was not considered a major problem in very many sections of the state. It is considered a serious limitation on farm organizations throughout the Coastal Area. All counties, except one, reported that this was a major problem that affected 61 percent of their small and part time farms. Other areas reported this as a problem only in certain counties, but in these areas it reaches major proportions. The most seriously affected are: Deschutes County,

60 percent of the farms with the problem; Wasco with 50 percent affected; Union, 100 percent affected; and Jackson with 70 percent.

Proper grading of products is considered a limitation only in scattered areas. Many of these marketing difficulties depend upon the location and the products grown. Poor grading of products does appear in certain sections of the Willamette Valley and is in all counties in this section on 11 percent of the low income farms. The Coast section is again high with 44 percent of the small and part time farms having this marketing situation. In other sections of the state this was not considered to be too important by the persons questioned.

Lack of alternative markets and competitive bidding are not isolated in areas away from marketing and transportation centers. This is a problem in all economic areas of the state; but not particularly in all counties. The counties that reported a shortage of alternative markets are Clackamas, Multnomah, Clatsop, Lincoln, Deschutes, and Wallowa. The explanation for this is that in the counties near marketing centers lots are too small or specialty crops are grown that have only a limited demand. In other areas such as Lincoln County there are too few outlets and poor transportation facilities exist.

Absence of buyer interest in small lots is a problem on 16 percent of the small farms in Oregon. This problem is greatest in the Coast Region area where it affects 30 percent of the small and part time farms. In Willamette Valley it affects 23 percent of the

farms; Southern Oregon, 7 percent; Columbia Basin, 8 percent; South Central, 7 percent; and the Snake River area only 3 percent. Much of this is due to the type of products grown.

Other problems in marketing mentioned were: small producers don't take advantage of market information to market at the best price level; some producers produced "off brand" varieties that were difficult to sell; one area complained of too many markets for one particular product; and some complained the price in their area was too far below the general price level of the state.

### Taxes

Results of the preliminary survey indicated that taxes were a problem to the low income farm groups. The more extensive survey shows, however, that high farm property taxes are prevalent mainly in the more densely populated areas of the state. In sections of the state generally considered "agricultural areas" property taxes are not excessive compared to other property taxes except in isolated cases where wrong assessment values are made. Counties with taxes considered high are mostly in the Willamette Valley area. They are: Clackamas, Multnomah, Washington, and Marion counties. Other counties with a lesser problem are: Clatsop and Coos of the Coast area and Wasco of the Columbia Basin.

### Machinery problems

There is some public discussion of the extent to which families

on small farms can afford to own and operate modern labor saving machinery. It is not uncommon for a small or part time farmer to have new machinery and to be fully equipped beyond the apparent needs of the enterprises he has in his farm organization. To determine the nature and extent of these machinery problems, several questions were asked in the survey. They are: (1) Do these low income farms have too much machinery for the size of the unit? (2) Are these small farmers using new machinery when used machinery would suffice? (3) Is used machinery available? (4) Are there opportunities for machinery pools? (5) Are machinery pools used? (6) Is custom work available at the proper time and at a reasonable price?

Results of the survey did not reveal the extent of the machinery problem on individual farms or by areas, but it did stimulate thinking along these lines and opens areas for future research. Of the interviews made, 84 percent of the County Extension Agents in the problem areas indicated that there was a problem of too much machinery on small units for the enterprises in the farm organization. Those who indicated that there was not such a problem were generally from specialized farming areas where types of equipment are standardized and equipment pools or partnerships were used and good custom service available.

Sixty-eight percent of the persons interviewed in the survey stated that new equipment was purchased where used equipment would have been sufficient. Part of this situation developed as a result of pride in ownership. The problem lies in more heavily settled



areas where alternative opportunities for acquiring equipment exist. The areas that are primarily agricultural areas do not report this is a particular problem. Part of this difficulty lies in the availability of used equipment as only 56 percent of the persons questioned answered that good used equipment is available as an alternative to buying new machinery.

Possibilities of machinery pools were indicated in 80 percent of the areas; however, limitations were expressed. Partnerships were the most common method of pooling equipment, with specialized harvesting machinery mentioned as the type that was used in pools. Only 56 percent of the County Agents reported that any type of pooling was being practiced in their areas.

Custom work at reasonable prices is available in only 52 percent of the areas surveyed. A large number of the cooperators in the areas where it is not available reported that the difficulty in using custom work is getting work done when it is needed.

Ninety-two percent of those questioned answered that more studies are needed in this field of farm machinery. There is a need for more data on the problems pointed out by this study.

#### Programs Available to Low Income Farm Groups

This section is directed to determining what programs the Extension Service has for the small and part time farms and what additional data these Agricultural leaders feel is necessary to help relieve the pressure of the low income farm problem.

To determine the extent of present county programs, the following questions were posed: (1) Has your office kept records on farm management data? (2) Do you have a separate program for small or low income farms? (3) Do you believe that a separate program for small farms is desirable?

Answers to the above questions determined by the survey indicate less than half or 48 percent of the problem farm counties have kept any records on any type of farm management data. Only 36 percent of the County Extension Offices have a separate program for small farms. Forty-four percent believe that a separate program for small farms is necessary.

Reasons given for not having a separate program are generally threefold: The first is that the Agent's Office does not have enough manpower to have a separate program to make all the personal calls a separate program would require. The second reason given for not having a separate program is that many agents and small farmers consider that their problems are similar to larger farms. In many instances the small farmer does not wish to be classified separately. Programs were tried in two counties for small and part time farmers, but failed because these people did not recognize their own status. The third reason, not given too often, was that the agent considered this problem to be a "lost cause".

Generally speaking, in the counties where the problem is most severe the Extension Agent expressed a need for a separate or intensified program for the low income units. Agents in counties with

less pressing low income farm problems believed that these people needed special help, but that it could best be given through their regular type of program.

#### Additional Data Needed

Before any program can be developed to assist low income farm groups, data must be available to aid in the decision making process. Seventy-one percent of agricultural field men reported that farm management data presently available are not adequate for them to use in assisting the small or low income farmers: seventy-six percent of those questioned stated that additional data would be beneficial to them in working with these people. Several of the field men mentioned that although present data were adequate, they had trouble disseminating them and several mentioned they had problems of getting people to use what had been disseminated.

Agricultural field men who recognized the need for additional data in the field of farm management indicated several types of studies that would be beneficial to them in assisting low income farmers. The types of additional data needed that were most frequently mentioned were data for enterprises produced in local communities, special studies for small unit organization for local areas, and marketing studies for growers with small lots of produce to sell.

The following questions were asked in the survey regarding the need for additional data: (1) How could present experiment station studies be conducted to be of greater use to you in assisting small

and part time farms? (2) What additional data do you need in farm management studies? Typical answers to these two questions are as follows:

1. "More information on basic Farm Management is needed."
2. "Data evaluated in terms to fit economic area."
3. "Offer suggestions in enterprises that suit a small operator such as holly, poultry, or raspberries; also need cost of production studies for local products in comparison to costs for the same products in competing areas."
4. "Studies should cover a wider range of commodities and be brought up to date more frequently. Also need cost data on local enterprises taken under local conditions."
5. "Information is needed on the best use of cut over timber land, particularly for grazing in combination with tree farming."
6. "Enterprise studies are needed for local areas. Studies made on small or low income farm units and marketing studies for farmers with small lots are needed."
7. "Need a step by step method of analyzing a farm situation to enable agents to make individual management studies on individual farms. Selection of enterprises on small farms is very limited. Production and marketing problems entirely different from the volume producer."
8. "Present data are not sufficient to cover desirable enterprises for small units. Data are needed on vegetable, small

fruits, and similar products. Need marketing information and market development for these intensive crops."

9. "Need specific recommendations for feeding, seeding, and fertilization. A program for small units is also needed."
10. "Key the studies to local areas in the following factors; all phases of marketing, transportation facilities, and intensification plans for small units."
11. "Cost of production studies on vegetables for local area and studies on organization, particularly on alternative crops for small farms are desired."
12. "Make farm studies on costs and returns in specific areas each year."
13. "Cost analysis on small enterprises are needed; also some studies on the optimum size of enterprise for specific areas."
14. "Studies on marketing procedure are needed."
15. "Data on local enterprises are needed."
16. "Cost of production studies on various local crops and farming procedures, including irrigation and management studies for small units."
17. "Additional information on alternative crops and enterprises for local areas is needed."
18. "Studies made are not always applicable to this area. Local management studies are needed on enterprises practiced in this area. This is an isolated area with limited market

outlets. These farmers have marketing and transportation problems."

19. "Need to know optimum size for various local enterprises."
20. "Cost and return data for local enterprises are needed."
21. "Need mostly studies on cost of production on some local vegetable crops. Current studies should be brought up to date."
22. "Need studies to determine 'what is an economic unit in this area?'."
23. "More pilot studies for small farms are needed on the small farm basis. This information is needed within the county and should be taken on a county pilot farm basis."
24. "More data are needed on individual practices of good land use."
25. "More emphasis on studies for enterprises on small units for local area."

These answers from the questionnaires indicated that more data are needed. Some other persons questioned indicated the need for additional management data but did not specifically state the nature of these data. Some persons questioned did not think any additions were needed to present data.

It can be noted from the list of answers that many of the field men recognize the need for studies to include the whole farm organization. They also express needs for finding alternative crops, and for studies to be stratified so that data are applicable to small

units. A few of the answers also indicate that data are needed to determine "optimum" or economic units for their specific localities for specified enterprises.

Agents having Farm Home Development programs in their counties were the ones most aware of the limitations of present data and offered the best constructive criticism. County Agents who said that the problem had no solution or indicated apathy towards small and part time farms in other ways, were the ones to assert the sufficiency of present managerial data.

## CHAPTER VI

## ANALYSIS OF SELECTED FARM MANAGEMENT STUDIES

Comments from agricultural field men regarding the need for more farm management data of specific types lead to questions about the applicability of current data to problems of low income farms.

The small farm operator and the part time farmer may have similar management problems to those of the large more profitable farms; however, in many instances their problems vary widely because of goals and attitudes, resource combinations, changes in economic conditions, or advances in technology. As a result of these differences, all economic data available to farmers may not fit all sizes of farm businesses equally well. This section shows how well selected studies fit in their application to the small and part time farms.

The following parts of this paper are an analysis of pre-selected farm management studies to determine whether the conclusion of these studies would be applicable to small and part time farm operators in planning or reorganizing their operations.

Red Raspberry Study

In the study on the "Cost of Producing Red Raspberries" (26), the sampling method was a stratified sample based on total acres of producing berries at the time the study was taken.<sup>5</sup> The data were

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<sup>5</sup>The stratification in this study was by county on a total acreage basis. Fifteen percent of the total acreage of each county was taken. Number and size of farms was not considered. Acres of planting of individual farms observed ranged from 2 to  $\frac{3}{4}$  acres.



collected by the survey method. Each cooperating grower was visited at the end of the year for the purpose of obtaining a complete business record on the bearing red raspberry acreage. Analysis of the data was made chiefly by grouping and cross-tabulating. Many of the details entered on the schedule were the farmers' estimates. Time was spent with each grower to work out all the facts pertaining to the year's operation.

Joint costs were considered as those farm expenses that were incurred only in part for the red raspberry enterprise, and were charged to the berries only in the proportion to the benefit received. The investment in machinery and buildings used jointly was apportioned according to use.

Renters were treated as owners and were charged interest, taxes, and depreciation in lieu of rent, in order to make all farms comparable according to use.

Labor records were taken by enumerators by recording for each operation the farmer's estimate of the work done by himself, his family and by hired labor. Most of the estimates were on an hour basis, so the wage rates were also expressed on an hourly basis. Wage rates for family labor were based on rates paid to hired labor for comparable work.

In addition, each operator was asked to apportion his total year's time among his enterprises. From this estimate for the raspberry enterprise, the actual time spent on direct work was deducted, and the remainder was then entered as supervision and miscellaneous

work.

Contract labor expenditures were divided between wages for man labor and the rental value of the machinery involved.

Interest on investment was based on estimates of the present investment and inventory. Interest was charged at a rate of 5 percent. Interest on the value of land was set at 4 percent.

Depreciation on buildings and equipment was obtained by dividing the present depreciated value by the number of remaining years of usefulness. Depreciation of the stand of red raspberries was prorated over ten crop years.

Machinery operation costs were determined by computing interest and depreciation on these items separately from daily operation costs. Total machinery costs were obtained by adding the operating costs, interest, and depreciation.

In this study several conclusions were drawn about the differences in the cost of production. These factors were considered as yield per acre, size of planting, differences in soil, irrigation procedures, variety of plants, insect and disease pests, excessive wind, and life of the stand. The two to be considered here are yield as a factor influencing cost of production and the size of planting.

A table taken from the raspberry study shows that the farms were divided by yield per acre into three classes: less than 4,000 pounds per acre; 4,000 to 6,000 pounds per acre; and 6,000 pounds per acre. It further shows that costs per pound for producing ranged from 16.5 cents per pound to 11.3 cents per pound, with an average of 12.9 cents

per pound.

Table 10

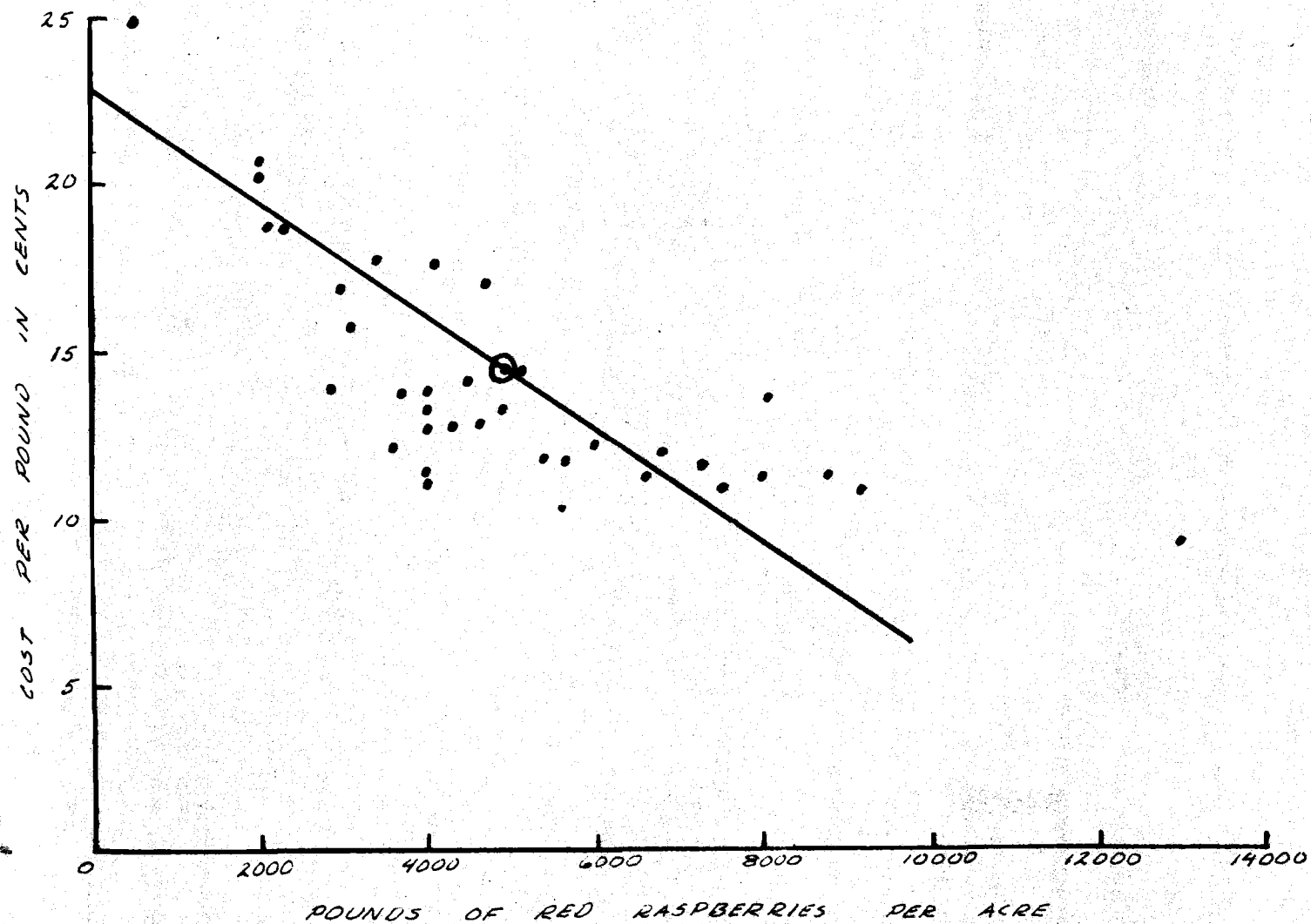
RED RASPBERRIES (FOR PROCESSING):  
RELATION OF YIELD TO COST<sup>1</sup>

Yield Group	Average Production	Number of Farms	Cost (except harvest labor)		Total Cost
			per acre	per pound	
Less than 4,000#	2,874	12	\$250	cents 8.7	cents 16.5
4,000 - 6,000	4,537	16	246	5.4	12.6
6,000 -	7,959	10	344	4.3	11.3
All Plantings	4,705	38	\$269	5.7	12.9

<sup>1</sup>From a study by Kuhlman and Mumford (26)

Correlation analysis of the field data from which these data were summarized indicates that yield accounts for about 41 percent of the variation in the cost of production among these farms, and that 59 percent of the difference is attributed to other factors. See Figure 5.

References made to size in the original analysis were in terms of area of planting and pre-harvest labor and equipment. As a comparison, data from the field schedules in the original study were used to determine the effect that different size measurements would



**Figure 5. Relationship of yields of red raspberries per acre and cost per pound.**

have on groupings of farms and on average costs of production.

Table 11 shows the cost of production and the data by farm groups according to size of planting. The study concludes that the smaller planting groups, less than 4 acres, had the highest cost of production per pound.

Table 11

RED RASPBERRIES (FOR PROCESSING): RELATION BETWEEN SIZE OF PLANTING YIELD, LABOR AND EQUIPMENT COSTS AND TOTAL COST PER POUND.<sup>1</sup>

Planting Groups	Average Area of Planting Acre	Number of Farms	Pre-Harvest Labor and Equipment per Acre	Yield per Acre Pound	Total Cost per Pound
Less than 4 acres	2.7	10	\$174.00	4,030	14.5
4 - 7.9 acres	5.0	11	183.00	5,918	12.2
8 - 11.9 acres	9.2	10	167.00	4,966	12.6
12 or more	17.0	7	152.00	4,090	13.4
All	7.0	38	165.00	4,705	12.9

<sup>1</sup>From a study by Kuhlman and Mumford (26, p.12).

Using the original field data the farms from this study were regrouped on a total farm labor input basis expressed in terms of production man work units (PMWU's). Using this measure, farms fall into different size classifications from what they were in on the acreage basis. As a standard, ~~part~~ time farms were those

with 250 PMWU's or less,<sup>6</sup> small farms ran from 251-500, medium farms from 501 to 800, and large farms 800 and over. See Table 12. Classifying farms into PMWU's shows the farms with the least number of PMWU's had the highest cost per pound per production, but the pre-harvest and equipment costs for these farms were not the highest. This can be attributed to the fact that total yield in the cost class is lower than in the rest.

Table 12

RED RASPBERRIES (FOR PROCESSING): RELATION BETWEEN PMWU'S YIELD, LABOR AND EQUIPMENT COSTS AND TOTAL COST PER POUND.

PMWU Farm Group	Average Area of Planting	No. of Plantings	Pre-Harvest Labor and Equipment	Yield per Acre	Total Cost per Pound
Less than 250	2.7	3	176	4,233	14.9
251 - 500	4.7	7	198	5,383	13.0
501 - 800	6.4	10	143	5,152	12.5
801 -	10.4	18	149	4,819	12.4
All	7.7	38	165	4,705	12.9

<sup>6</sup>The three farms with less than 250 PMWU's are part time farms. Classifying by PMWU's includes harvest labor for berries; this raises total PMWU's for all farms higher than normally would be expected on these farms.

When those same size measurements were tested by correlation analysis, the results show that none of the standard physical size measurements used has any significance with reference to changes in cost of production. As a rest this formula was applied to three size measurements, they are: acres of planting, total farm acres, and PMWU's per total farm. The correlations indicate that acres of planting account for only 0.09 percent of the change in the cost of producing a pound of red raspberries. Using total acres as the independent variable, the linear correlation equation indicates this size factor accounts for 0.15 percent of the change. The labor input expressed in PMWU's has a coefficient of determination of 1.7 percent. This can be seen graphically by studying the scatter diagram of the cost of production of each observation in relation to the individual measurements of size. As the computations show, there is no distinct pattern in the observation; therefore, it can be concluded that there is little relationship between size factors and the differences in production costs. See Table 13.

These data indicate that there is no significant relationship between physical measurements of size and cost per pound. Cost per pound differences are attributed mainly to production. The three part time farms with the highest cost of production (see Table 12) do not represent enough of the sample to be significant; however, if the part time farms and small farms are combined, they represent a combined production that is above average. This indicates differences in cost are in pre-harvest labor and equipment costs that should be

explored further in their relation to size.

The reasons for differences in yields are attributed by the writers of the publication to differences in soils, irrigation, practices and plant varieties. There is no indication that size of farm, acreage of planting, or any other physical size determinant had an effect on the yield of berries per acre.

Table 13

COEFFICIENT FOR RELATIONSHIP BETWEEN SIZE OF OPERATIONS AND COST  
PER POUND OF PRODUCING RED RASPBERRIES FOR PROCESSING

	Coefficient of Correlation (r)	Coefficient of Determination (r <sup>2</sup> )	Constants for Regression Y=a + bX	
			a	b
Pounds Per Acre	- .640	.41	22.7	- .0017
Aeres for Planting	- .095	.009	14.8	- .068
Total Farm Acres	.039	.0015	13.7	+ .0085
PMWU's	- .133	.0176	15.1	- .0009

Findings of this study are equally useful to farms of all sizes, except for the varieties in costs among the different size classes as represented in the publication. Most of the findings in the raspberry publication are applicable to small as well as to large farms. Differences in costs cannot be proved to be a function of size of business with the data used in this study.



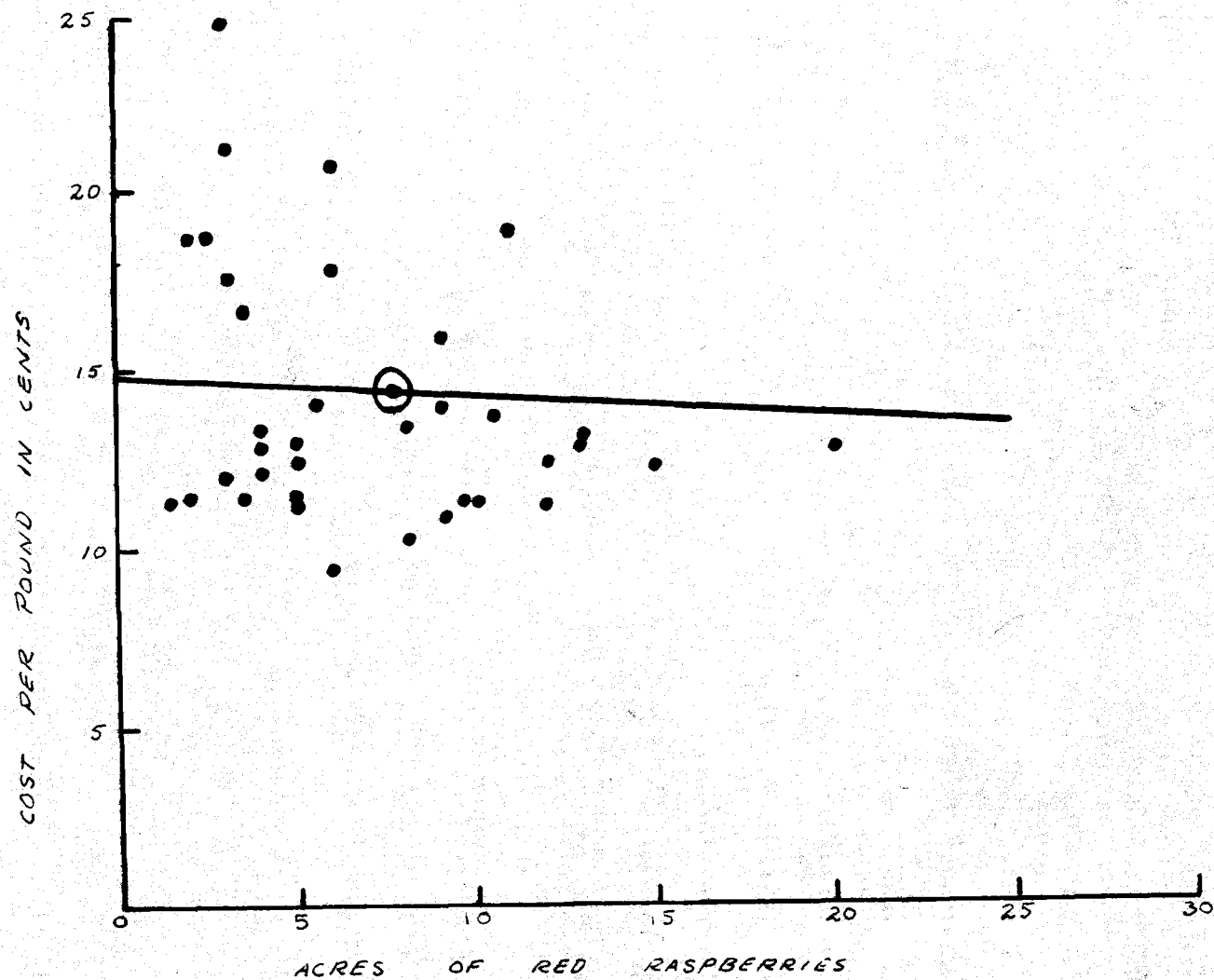
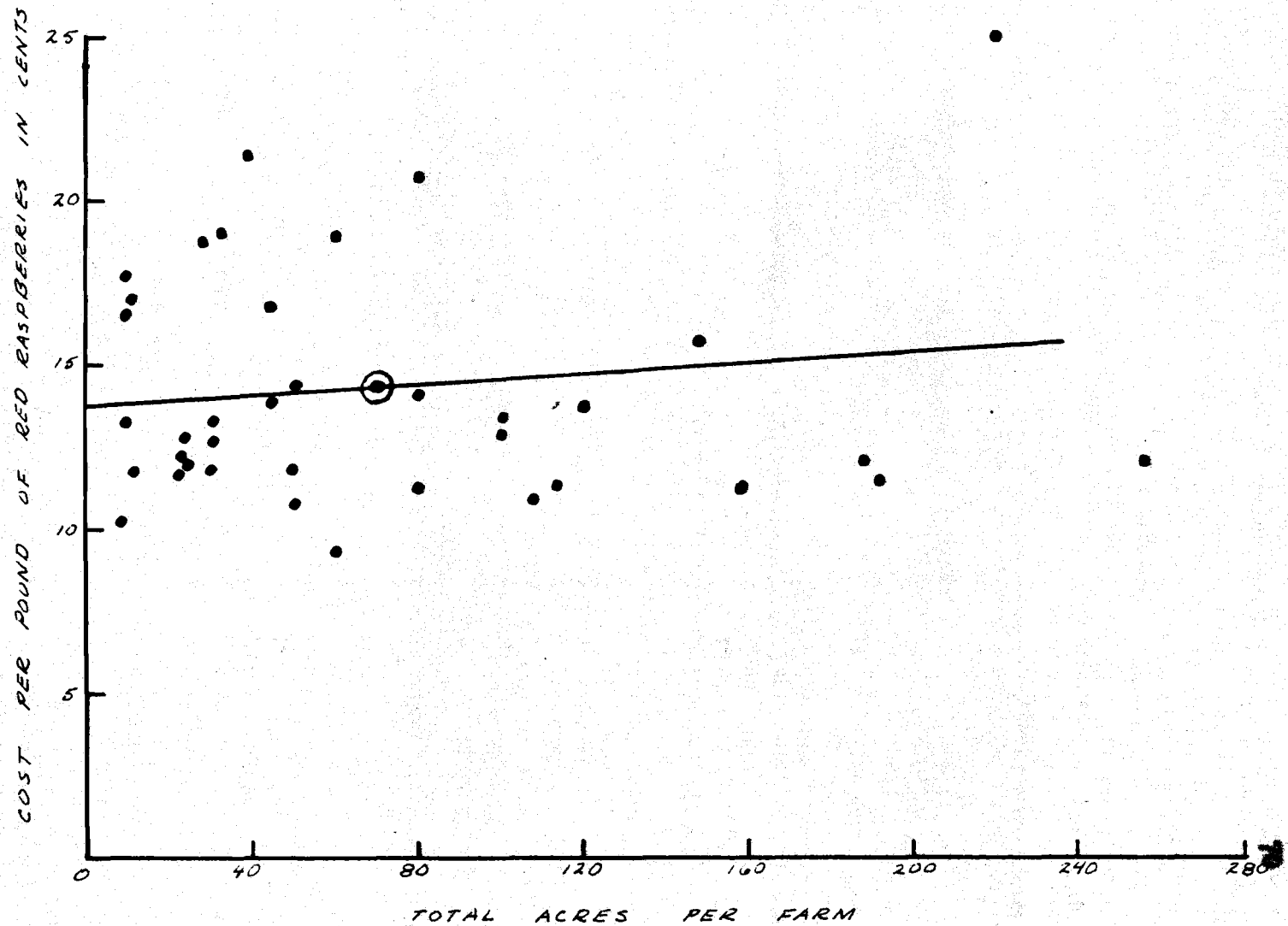
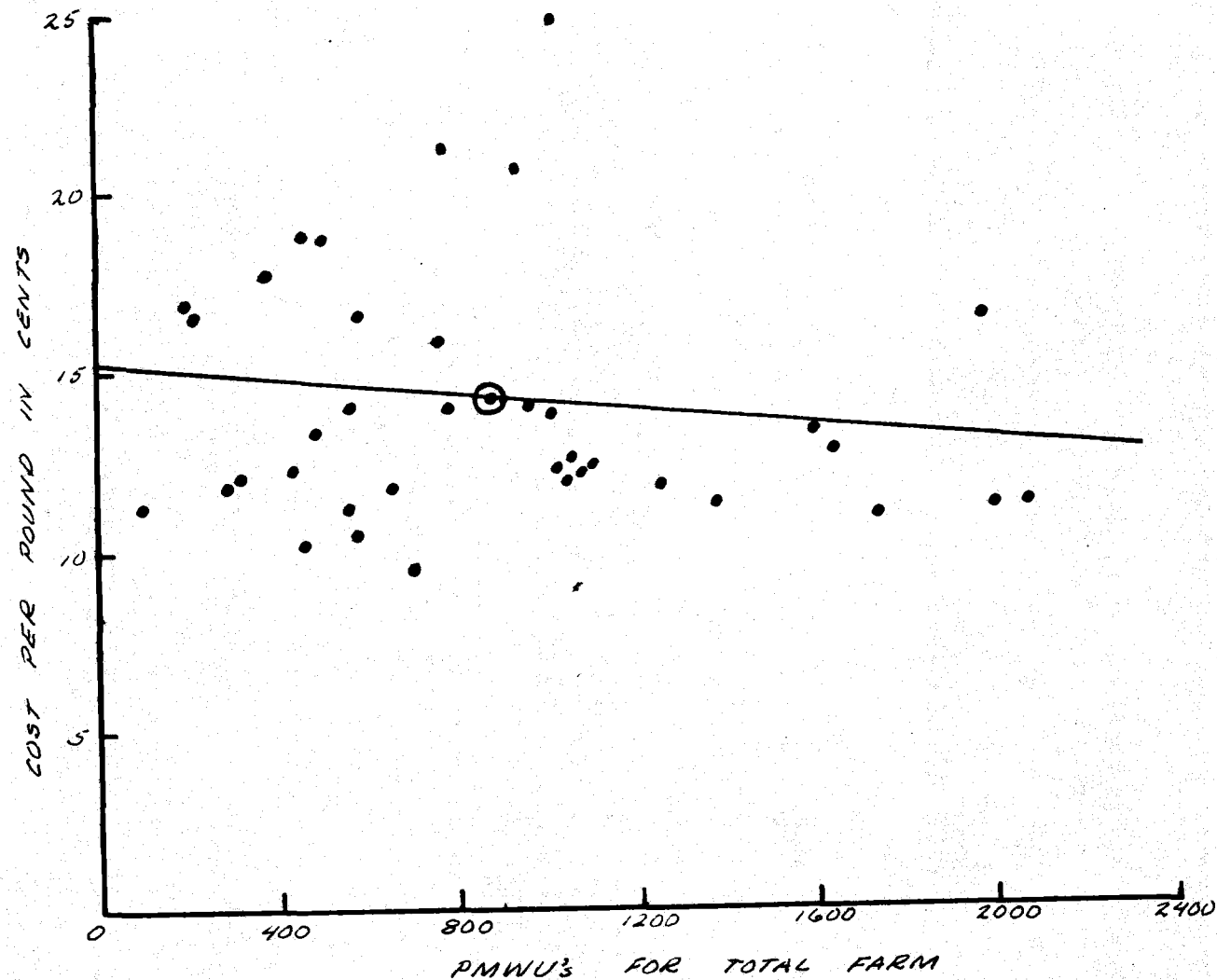


Figure 6. Relationship between acres of red raspberries and cost per pound.



**Figure 7. Relationship between total acres per raspberry farm and cost per pound.**



**Figure 8. Relationship between PMWU's for total red raspberry farm and cost of production per pound.**

### Pole Bean Study

The sampling method used in the study "Cost of Producing Pole Beans in the Willamette Valley, Oregon" by Davis and Mumford (13), involved stratifying<sup>7</sup> the bean plantings on an acreage basis. The various plantings were then placed in categories based on size and growing area. A ten percent sample was drawn from each acreage classification.

The study was then made by having a trained enumerator visit to obtain the needed information. The costs for this study included cash costs and non-cash expenses. Non-cash costs included the bean crops share of: depreciation on equipment; bean yard equipment and buildings; an interest charge of 5 percent on the value of the bean yard equipment; other equipment and workstock; an interest charge of 4 percent of the value of land and buildings; the grower's estimated charge for his own time and that of his family spent directly on the bean crop; and in overhead expense for the indirect time spent by the grower in the production of beans.

All rented land and buildings used in the production of beans were treated as if they were owned by the grower. By doing this, renters are subject to the same real estate charges as owners, but

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<sup>7</sup>Stratification by acres in this study was from data obtained from bean processors based on tons. When enumerators visited growers, acreage did not always confirm to that specified in the grower's contract. A ten percent sample was taken of growers based on contract acreage not on actual acres of pole beans.

the actual rent is included as a cash expense.

Three factors were shown in this study as being responsible for the difference in cost of production, they were: (1) acres per bean yard, (2) the hours of labor used per acre excluding picking, and (3) tons of beans produced per acre.

Each of these factors was concluded as having an influence on costs; but it was noted that the importance of one factor cannot be adequately measured without considering the others. These three factors will be analyzed as to the effect each has on the cost of production.

The size of bean plantings as a factor affecting the cost of production is shown in Table 14. This study indicates that growers with under 5 acres had the highest cost per ton, which was \$117.80; while the lowest cost was in the 10 to 15 acre group, with a cost of \$99.30. Per ton, the largest acreage group does not have the lowest cost. Part of this is attributed by the authors to the productiveness of the land. The section of this study which groups these farms into classifications based on tonnage produced per acre (Table 16) also will show that size of planting does not affect cost as the high and low cost producers have about the same acreages.

As a comparative measure, the bean farms were grouped by using PMWU's based on the total farm business. Table 15 shows that the smallest farms by this measurement did not have the highest cost, but the next smallest category of 251-500 PMWU's, had the highest total cost of production.

Table 14

COST OF PRODUCING POLE BEANS AS AFFECTED BY ACRES OF BEANS PER  
GROWER, WILLAMETTE VALLEY, OREGON, 1946<sup>1</sup>

Size of Bean Yard (Acres)	Average Size Acres	Number of Growers	Total Cost per Ton	Yield per Acre Tons	Labor Cost (Excluding Picking) Per Acre	Cost Per Ton	Percent of Farms
Under 5	3.0	19	117.80	7.4	284.80	38.60	28 %
5 to 10 Acres	6.5	20	107.50	8.1	251.70	30.90	30 %
10 to 15 Acres	11.1	19	99.30	8.8	214.00	24.20	28 %
15 Acres -	25.4	9	105.40	6.9	184.00	26.50	14 %
All Growers	9.3	67	104.60	7.9	217.30	27.60	100 %

<sup>1</sup>From a Study by Davis and Mumford (13, p.24)

Table 15

COSTS OF PRODUCING POLE BEANS AS AFFECTED BY FMWU'S ON TOTAL FARM, WILLAMETTE  
VALLEY, OREGON

Size of Bean Farm	Average Size Acres	Number of Growers	Total Cost per Ton	Yield per Acre Tons	Labor Costs (Excluding Picking)		Percentage of Farms
					Per Acre	Per Ton	
Less than 250	2.0	4	\$120.46	8.1	307.76	38.74	6 %
251-500	3.7	9	123.12	6.9	269.83	36.13	14 %
501-800	5.6	17	110.28	7.6	255.27	32.43	25 %
800 -	13.6	37	102.13	7.8	205.30	26.00	55%
All Growers	9.3	67	104.60	7.9	217.30	27.60	100 %

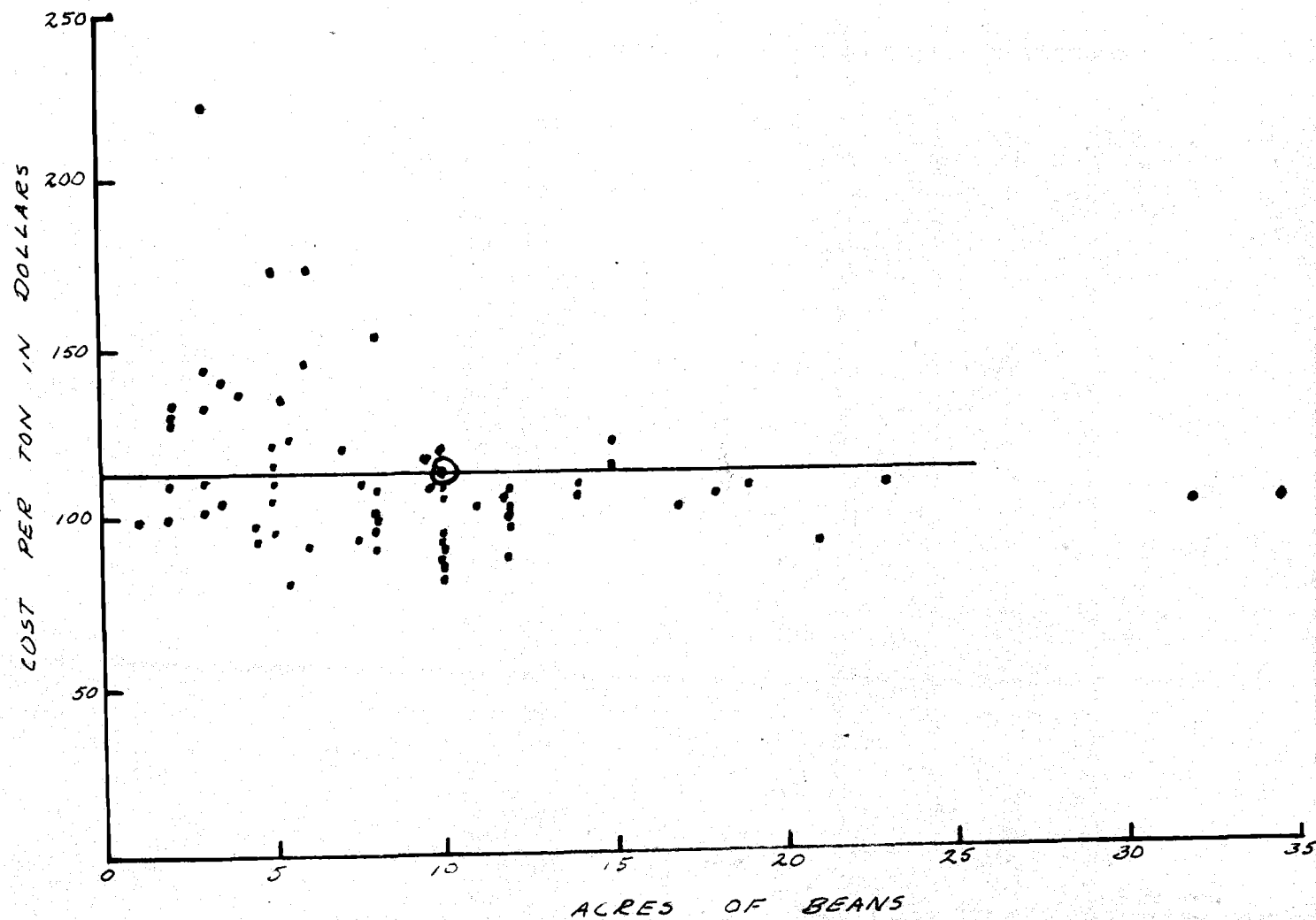
Part of the difference between crop acres of beans and PMWU's is attributed to the sample size. As in the case of acreages, 28 percent of the study falls into the smallest class of five acres or less; in the PMWU study, only 6 percent falls in the lowest category.

Using the simple linear correlation figures calculated for these two phases of this study, the results signify that only 5.6 percent (Figure 9) of the difference in the cost per ton can be attributed to size of bean plantings and 7.6 percent of this cost difference can be attributed to size measured by total farm PMWU's (Figure 10).

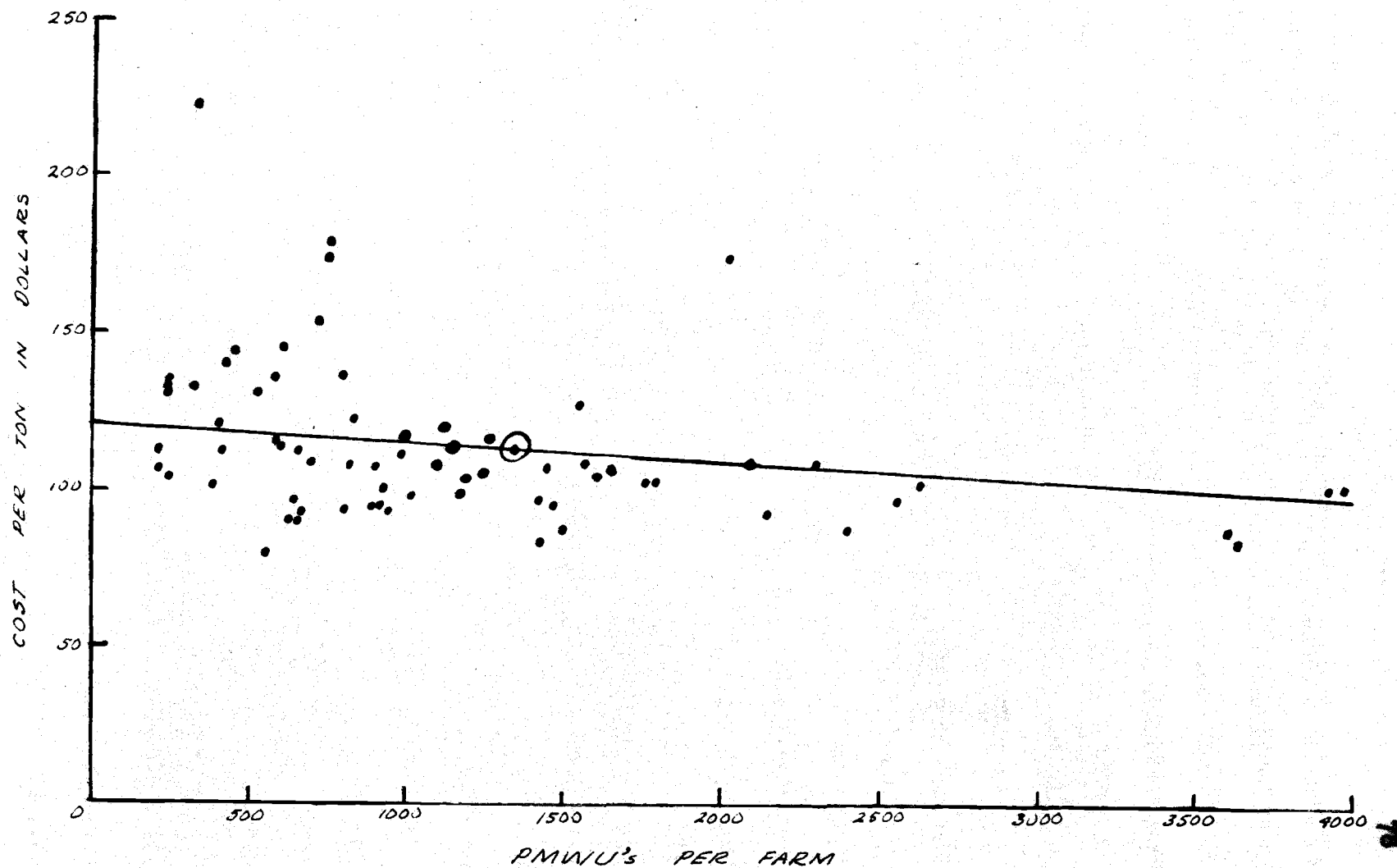
The next point which was considered as a contributing factor to the difference in cost of production of beans is that of the pre-harvest labor. Tables 14 and 15 show the comparison of these figures by acreage and by PMWU's. Where acreage of planting is the measure, the small farms run the highest in labor cost; but the largest farms are not the lowest in cost of labor. Where PMWU's are used as a measure of size, the costs run from low to high directly according to size of farm, with the smallest farm having the highest labor cost. In analyzing these facts, two considerations must be kept in mind, these are: (1) that indirect time spent by the grower and his family is charged as an overhead non-cash expense against the beans, and (2) that operator and family labor is arbitrarily charged at a fixed price throughout the study without regard to real value or value for alternative use.

The final consideration in this study is that of tons of beans produced per acre. The following Table (16) shows the cost of





**Figure 9: Relationship between acres of beans per farm and cost of producing a ton of beans.**



**Figure 10. Relationship between PMWU's per total bean farm and cost of producing a ton of beans.**

producing pole beans as affected by yield of beans per acre. The yield of beans per acre was shown as one of the most important facts affecting cost. High yields were associated with low costs per ton, and low yields with high costs.

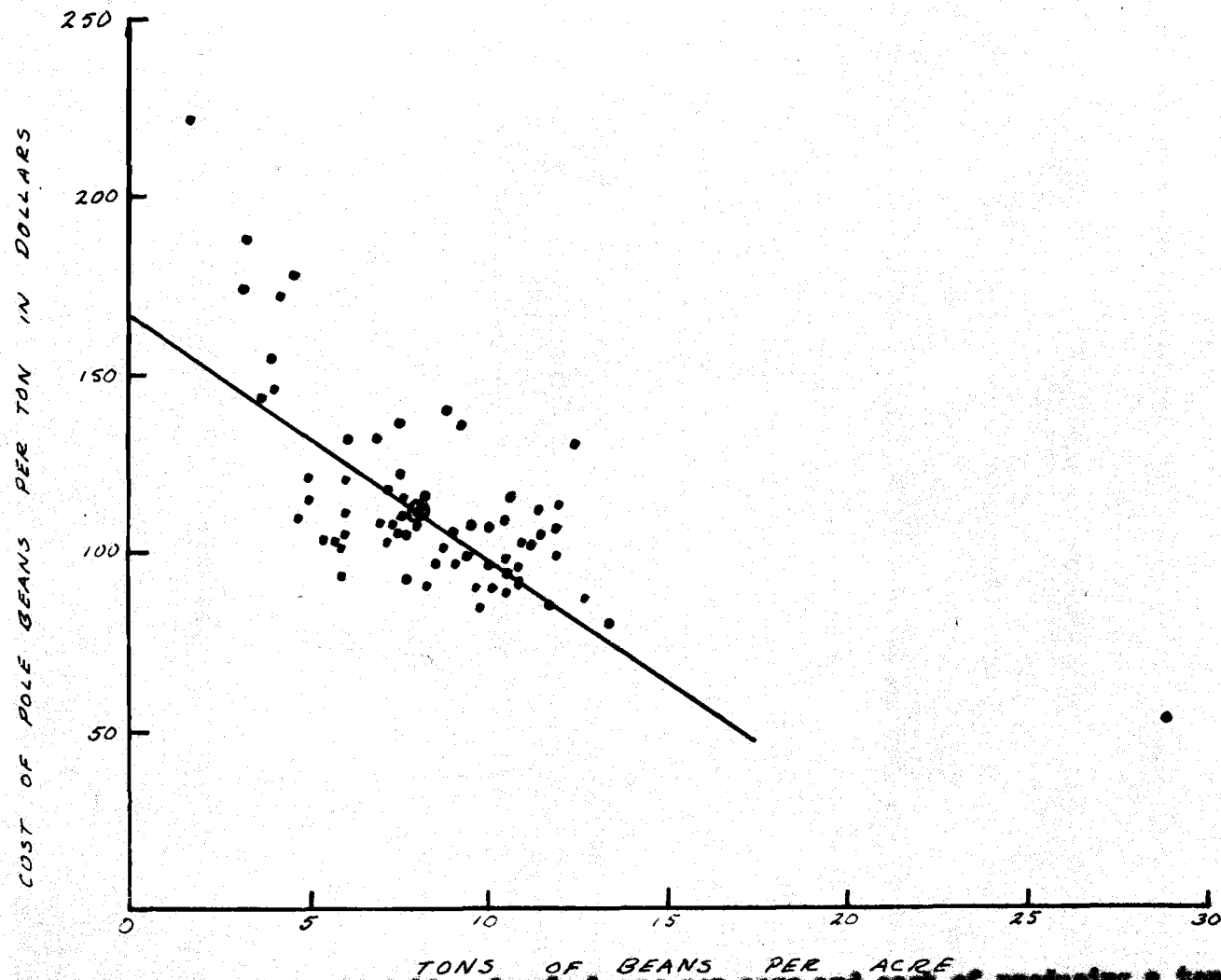
Table 16

COSTS OF PRODUCING POLE BEANS AS AFFECTED BY YIELD OF BEANS PER ACRE  
WILLAMETTE VALLEY, OREGON, 1946

Bean Yields per Acre	Average Yield Tons	Total Cost per Ton	Average Size of Bean Yard Acres	Number of Growers	Percent of Growers of Total
Under 4 Tons	3.4	162.10	4.8	4	6 %
4 to 6 Tons	5.3	113.90	11.8	10	15 %
6 to 8 Tons	7.2	107.10	11.2	21	31 %
8 to 10 Tons	8.8	101.20	8.2	13	20 %
10 to 12 Tons	10.6	99.70	8.5	15	22 %
12 Tons and over	12.8	88.70	4.9	4	6 %

Using the linear correlation method with the production per acre of beans as the independent factor, and the cost per ton as the dependent factor, yield per acre of beans will account for 46 percent of the differences in production costs. See Figure 11.

As an indication of the extent that size of operation or total farm size has on the cost of producing a ton of pole beans, a table was constructed to show the size determinant, the coefficient of



correlation, the coefficient of determination, and the constants for regression.

Table 17

COEFFICIENT FOR RELATIONSHIP BETWEEN PHYSICAL SIZE OF OPERATION  
AND COST PER TON OF PRODUCING POLE BEANS

Size Determinant	Coefficient of Correlation (r)	Coefficient of Determination (r <sup>2</sup> )	Constant for Regression Y = a + bX	
			a	b
Tons per Acre	-.680	.46	166.98	-6.742
Acres per Planting	.237	.056	113.48	.0558
Total Farm Acres	.181	.032	113.38	.0053
PMWU's	.277	.076	120.24	.0054

### The Poultry Study

The nature of the Yamhill County Poultry Management Study (6) is different from the other two studies that have been discussed. This study was conducted by using nine selected cooperators, who kept records for one year, under the supervision of the County Agent.

The cooperators participating in this study had flocks which produced above the state average, and all were from about the same locality. Designing the study in this manner simplified the analysis as choice of markets, prices of feed used, prices of cull products,

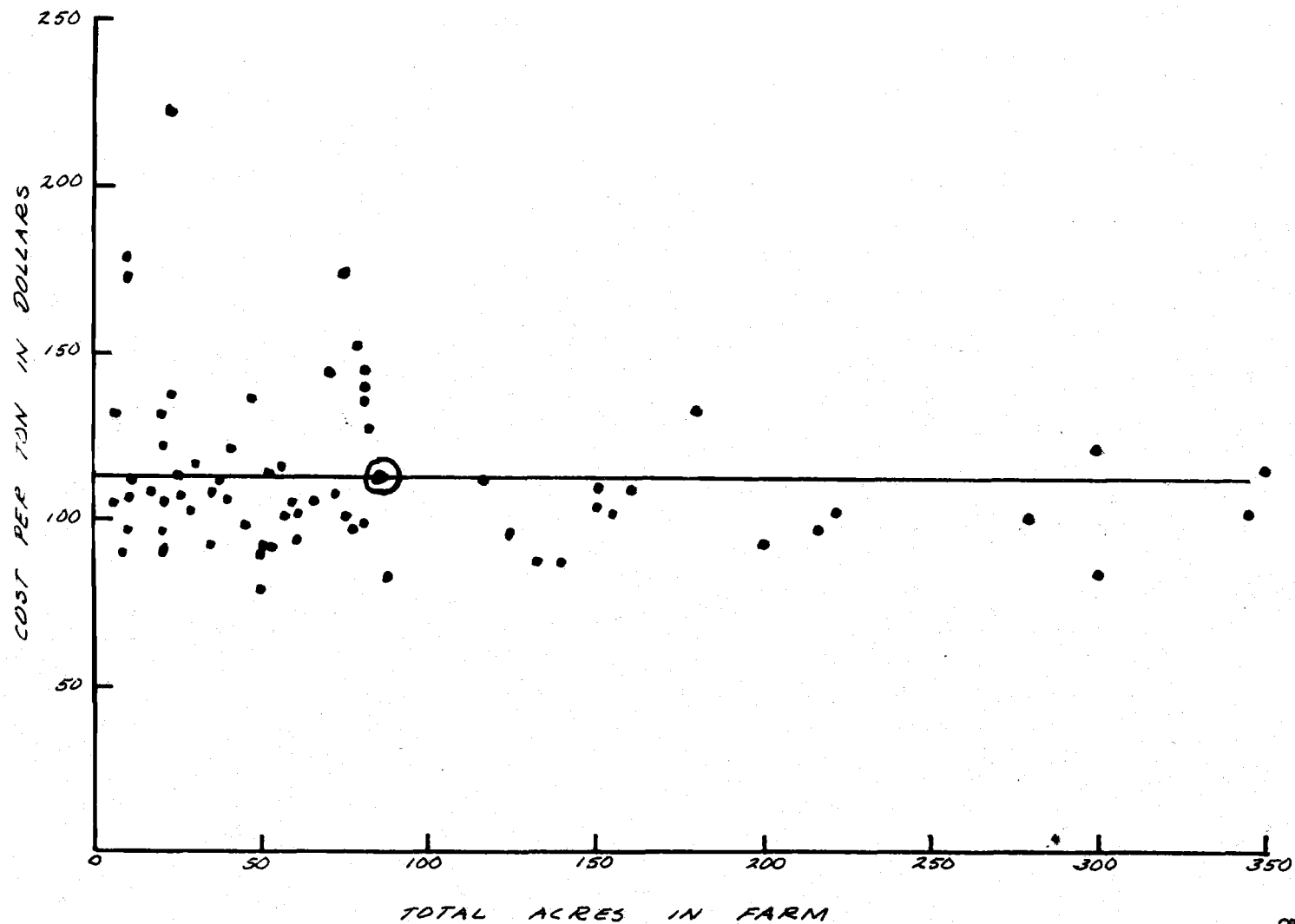


Figure 12. Relationship between total acres in bean farm and cost of producing a ton of pole beans.

hired labor costs, weather conditions, and other costs were relatively easy to compare. Such a comparison can be used by the individual operator under similar conditions to modify his own practices and increase his income.

Costs charged to the poultry were only those costs actually accrued by the poultry. Actual labor put into the enterprise was taken from the records so there was no calculated factor which had to be divided among enterprises. The cost of raising replacements was charged to the laying flock to attempt to get the entire cost picture.

Interest was calculated at a fixed rate of 5 percent of the average value of the laying flock at the beginning and end of the year. Depreciation on buildings and equipment was taken from the farmer's records.

The main differences in costs of producing eggs in the poultry study are attributed to: (1) the size of flock, (2) the amount of feed used, and (3) the amount of labor expended.

The size of flock averaged 792 layers per operator for the year studied. The range in flock sizes were from 1436 laying hens to 246 laying hens. See Table 18. The size of flock was not given as a factor by the authors as influencing the expenses per bird. Size of flock was indicated as a factor when coupled with labor.

When the simple regression correlation analysis was computed with size as an independent factor, and expenses per hen as the dependent factor, the results of the computation express that size

of flock accounts for only .13 percent of the differences in expenses between flocks. See Figure 13.

Table 18

TOTAL EXPENSE PER HEN AND FACTORS CONSIDERED AS AFFECTING COSTS  
IN YAMHILL COUNTY POULTRY STUDY<sup>1</sup>

Flock No.	Number of Hens	Eggs per Hen	Pounds of Feed used per Hen	Pounds of Feed Required per Hen	Labor per Hen Hours	Total Expenses per Hen Dollars
1	1436	261	186	133	2.00	11.06
2	539	242	114	117	2.33	8.39
3	672	236	140	138	1.46	9.02
4	840	237	161	142	1.20	9.68
5	1132	249	140	105	1.25	8.32
6	992	220	126	107	1.73	7.60
7	646	235	145	123	3.42	11.77
8	264	252	117	95	4.09	10.03
9	610	237	143	115	2.47	10.02
All	792	241	140	119	2.22	9.54

<sup>1</sup>Taken from a study by Becker and Neely (6, p.7)

The results of the linear correlation analysis between amount of feed used and its influence on the total expenses per hen shows that the pounds feed used affects the differences in expenses about 29.5 percent. See Figure 14.



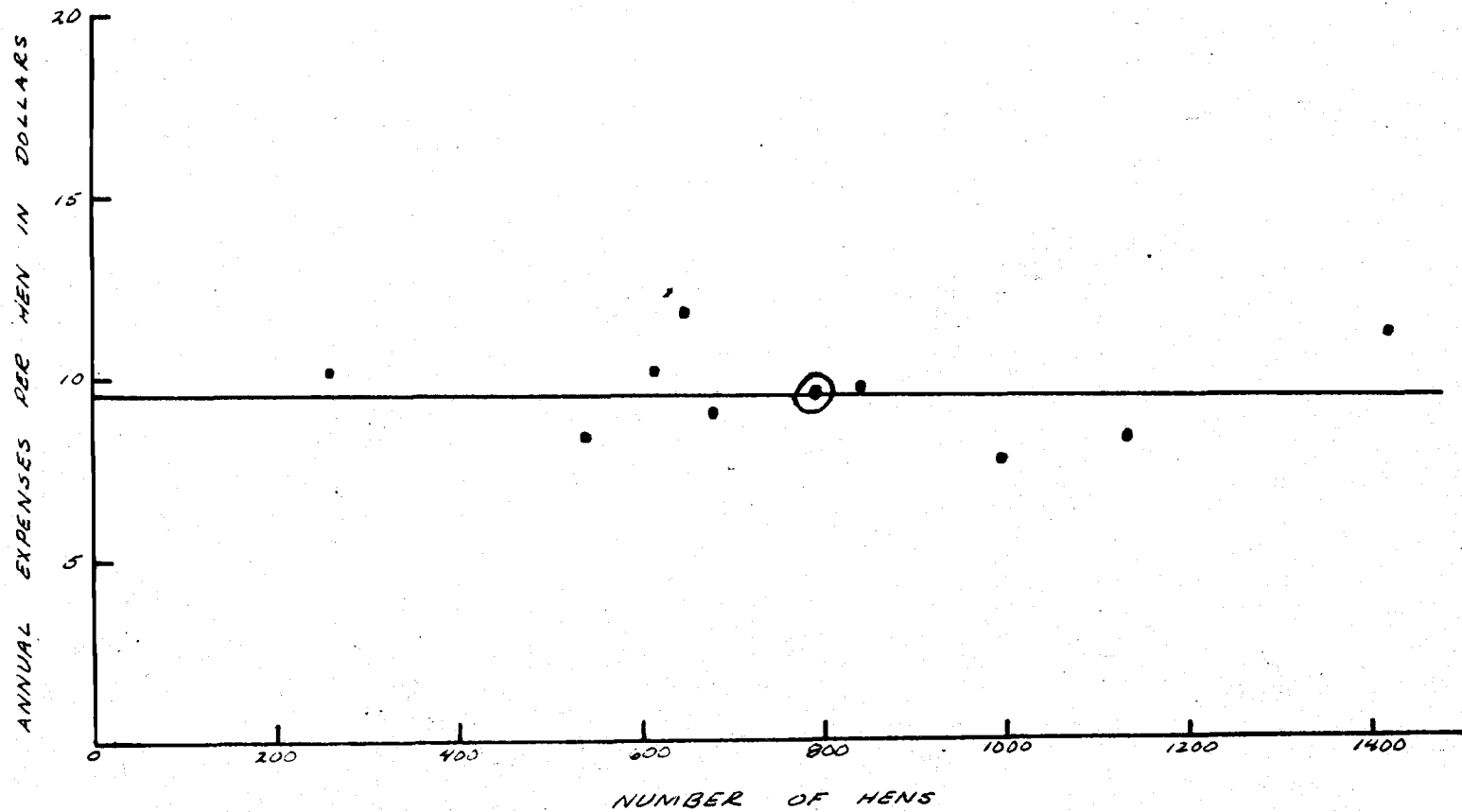


Figure 13. Relationship between number of hens in the laying flock and the total expenses per hen.

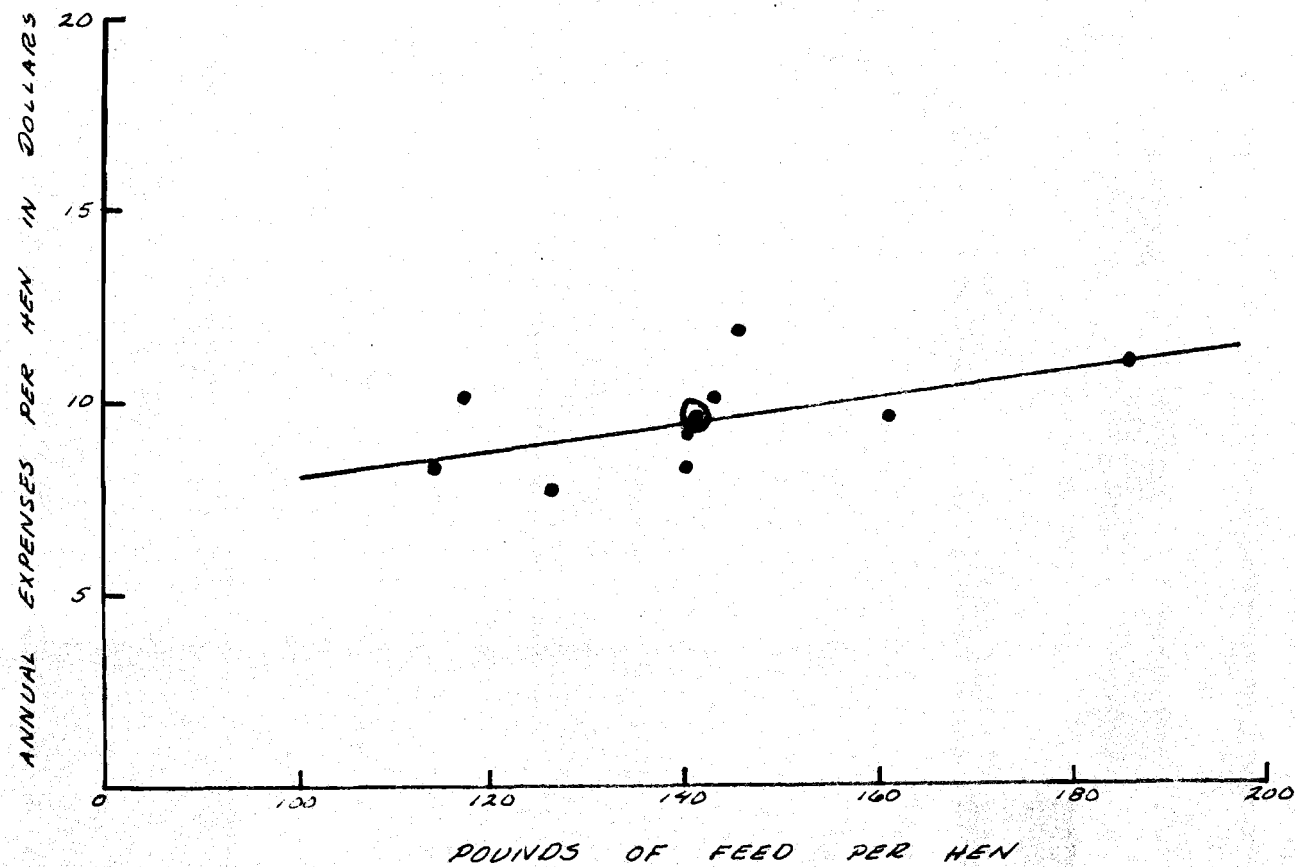


Figure 14. Relationship between pounds of feed per hen and annual expenses per hen.

An average of 2.2 hours of man labor per bird was required for all flocks in the poultry study. The range was from 1.2 hours per bird to 4.1 hours per bird. Labor used was classified by the authors as being the second high item in the cost of producing eggs. No breakdown of operations was made in an attempt to analyze where labor was expensive, but size of flock was listed as an indication as to the efficiency of labor. Size of flock alone was not a factor, as shown earlier in this Chapter, but it may have had an effect on the use of labor. In this study the operator with the smallest flock reduced the size of his flock during the record taking year without reducing the size of the rest of his fixed plant. As a result of this reduction in flock size, the same labor was required for the smaller flock at the end of the year as was needed for the larger flock at the beginning of the year.

Labor used when tested statistically by the linear coefficient method had a coefficient of determination of 27.7 percent. This indicates that there is some correlation between amount of labor used and the differences in costs per hen in the production of eggs in the particular area studied. See Figure 15.

The summation of this analysis would show that size of flock as an independent variable has little effect on differences in the cost of production; feed used is an important factor in costs, and labor also influences differences in costs. See Table 19.

Valid conclusions may be drawn regarding the analysis of these three studies. It has been demonstrated that if the influence of

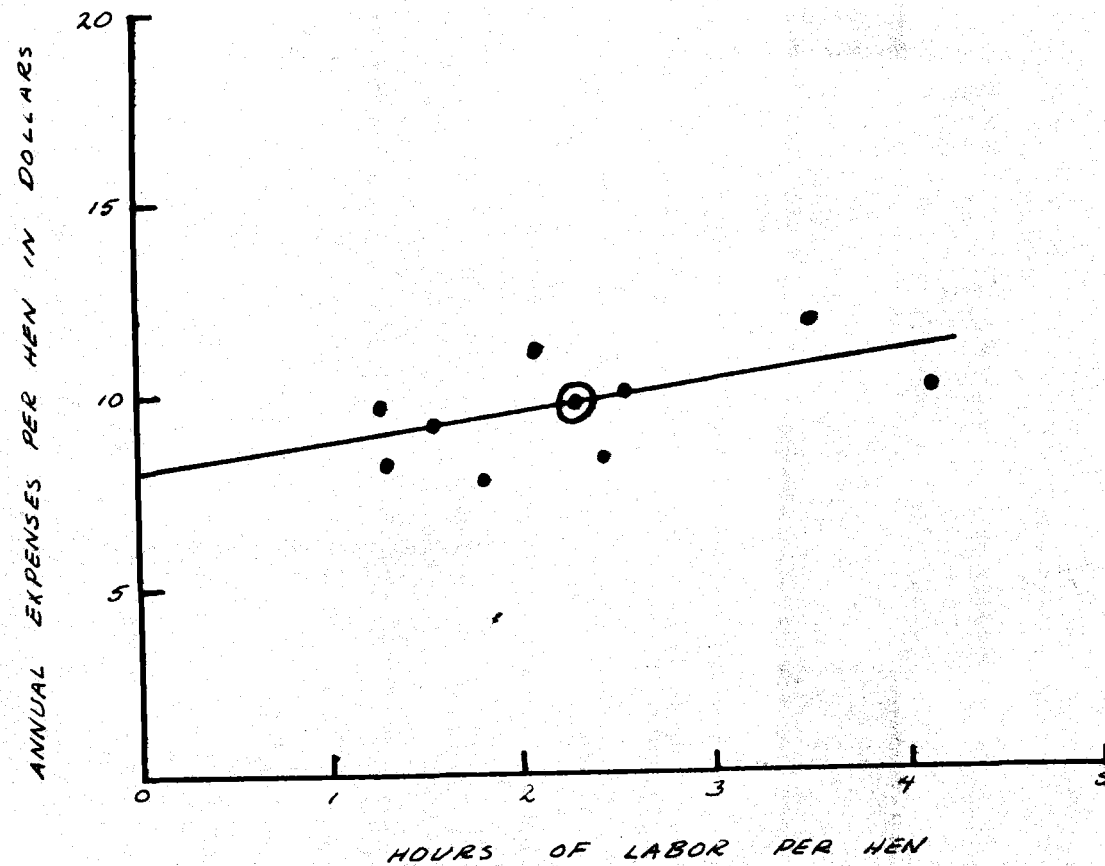


Figure 15. Relationship between hours of labor per hen per hour and annual expenses per hen.

physical size has an effect on the cost of production, other factors not specifically a function of size must be controlled.

Table 19

COEFFICIENT FOR RELATIONSHIP BETWEEN SIZE OF OPERATION AND COST PER HEN IN PRODUCING EGGS IN YAMHILL COUNTY, OREGON<sup>1</sup>

Size Determinant	Coefficient of Correlation (r)	Coefficient of Determination (r <sup>2</sup> )	Constant for Regression Y = a + bX	
			a	b
Number of Hens	-.0357	.0013 (.13%)	9.65	-.00014
Amount of Feed Used	.544	.295 (29.5%)	4.88	.033
Labor per Hen	.526	.277 (27.7%)	7.95	.72

<sup>1</sup>From a study by Becker and Neely (6)

Analysis of the red raspberry study shows the size as stated in the publication is not a factor influencing differences in cost of production among the farms in the sample. Further tests show that other physical determinants of size do not influence cost differences. References made to size are not correct because of these reasons. Sampling methods used did not include size factors when the sample farms were selected, but references were made to size after the data were collected. These points lead to the conclusion that wrong decisions would be made by farmers using this publication because

results of chance differences in yields were related to size factors.

Size of farm business in the pole bean study had a small effect on cost of production; however, these effects are slight. Yields are the influencing factor in this study, and like the raspberry study the influence of this factor overshadowed many factors of management that influence differences in costs.

The data in these two studies, because of relationship they attribute to size are not adequate for the small and part time farmer in making his farm organization plans.

In the poultry study the farms studied had similar egg yields and size ranges were not extreme. Size of flock was not considered a factor in this study, and tests proved it was not a factor by itself. With variations in production and size held constant in this manner, other measures of success were further studied and conclusions regarding management were drawn that are applicable to other egg producers.

## CHAPTER VII

## SUMMARY AND CONCLUSIONS

A large percent of Oregon's farms do not provide incomes adequate to support a family. Some of these are merely rural residences. Others are operated by individuals attempting to earn their entire income from farming.

The U.S. Census of Agriculture listed 54,442 farms in Oregon in 1954. Of these, 32,138 or 57 percent were classed as commercial farms. Of the commercial farms 8,677 or 27 percent had gross incomes from the sale of agricultural products of less than \$2,500 per year. Another 8,640 or 6 percent of the total farms in Oregon were classed as part time farms with \$1,199 to \$250 gross income from sales of agricultural products. Those farms with from \$150 to \$249 total value of farm products produced for sale or home use in 1954 were classed as residential. This group included 13,613 or 25 percent of the total farms.

This study is concerned with those commercial farms that may be called small farms because they do not provide an income adequate to support a family, and the part time farms. More specifically, the study deals with those farmers in these two groups who rely on agriculture as a major source of income rather than merely having a farm as a place to live.

The primary question to be examined in this study is whether farm management data presently available to field men working with

farmers are adequate to assist these low income and part time farmers to increase their income from agriculture.

This question required first a definition of the low income farms to be considered, and second their location within the state. Analysis of current thinking on farm size leads to the conclusion that no single measure by itself will give an adequate measurement of the size of the farm business. Several size determinants including one from each of the three classifications based on fixed plant, inputs and outputs must be combined to measure realistically the true size of the farm business.

A measure of output, gross farm income, is used to define the specific group of farms to be studied. Census data on distribution of farms by gross income are used to determine size classes and numbers of farms by economic class. Commercial farms with gross incomes of less than \$2,500 in 1954 are defined as small farms.

These small farms plus the part time farms are located by county according to the Census data and within counties by data obtained in a survey of County Agricultural Extension Agents, Farmers Home Administration County Supervisors, and Soil Conservation Service Work Unit Conservationists. Those counties having over 25 percent of their total farms falling into the small or part time class are selected for detailed consideration as critical areas. The counties selected for study on this basis are: Benton, Baker, Clackamas, Clatsop, Columbia, Coos, Deschutes, Douglas, Hood River, Jackson, Josephine, Klamath, Lake, Lane, Lincoln, Linn, Marion, Multnomah, Polk, Union,



Umatilla, Wallawa, Wasco, Washington, and Yamhill. Small commercial farms and part time farms are clustered in the more heavily populated areas of the counties, particularly in the Willamette Valley counties. In southern and eastern regions they were generally located in irrigated areas, in the coastal regions these farms were found scattered over the entire county. On a statewide basis these problem farms are not located by definite communities, but are in all instances dispersed among the more profitable farm businesses. This leads to the conclusion that location is not a primary factor in the status of the low income farms.

A mailed questionnaire from County Agricultural Agents in the critical counties was used to determine the problems and characteristics that cause farms to fall into the low income classes.

Lack of sufficient acreage to carry on types of farming generally practiced in the community, or to best suit the managerial ability of the operator, is considered by the County Agents to be one of the major problems. These acreage shortages are believed to be present on 78 percent of the low income farms. Opportunities for alleviating these acreage problems by expanding are lacking in many areas because of the present price of land, land not available for agriculture, or inability to develop land presently owned.

The lack of acreage coupled with limited opportunities to expand indicate that the basic problem of acreage lies in the inability of these low income farms to intensify. This may be attributed to a shortage of information on farm planning and on information available

concerning adaptable alternative enterprises.

Soils problems are present on a large percentage of the low income farms. Lack of management that is comparable to that carried on in the community is considered to be present on 27 percent of these farms. Soils resource problems such as fertility or drainage are present on 42 percent of the small and part time farms according to the agents questioned.

Labor problems are classified by the survey as being: improper use of available labor, inability of part time farmers to integrate farm labor with their outside job, and lack of outside labor to assist in peak seasons. At least one of these problems is estimated to be present on 33 percent of the low income farms.

Outside jobs of some nature are available to 80 percent of these farmers to be considered as an alternative to some of the farm enterprises. The other 20 percent must rely entirely on income from the farm business.

Capital and credit problems are evident on over half of the farms. Lack of credit or inability to borrow is a bigger factor than is the failure of the operator to put available funds into the farm business. The two main reasons for credit problems are: (1) operators are poor risks because of excessive debts already accrued, and (2) insufficient collateral to back up a loan of sufficient size. This problem is one of policy; however, a good reorganization plan, based on long range operations would help to lessen this situation on many of these farms.

Marketing of products is considered a problem in areas away from

population centers; however, grading problems were found in most counties. Buyers lack of interest in bidding on small lots is also a problem that needs much consideration.

High taxes are listed as a contributing factor to the low income status of small and part time farms only in areas that border on urban or high population centers. Agents from other sections classed inequitable assessment as a greater factor than high tax rates for agricultural land.

The persons questioned are not too aware of all the aspects of certain problems dealing with farm machinery as very little has been done in the way of data or record keeping on this subject. The fact that 84 percent of the small and part time farms do have a machinery problem of some type indicates the need for more data in this field.

Organizational problems, particularly in the proper selection of enterprises, is considered a problem on about 15 percent of the small and low income farms. It can be noted, however, that most of the factors contributing to the low income status of the small and part time farms fall in the field of organization and management. In order to overcome these problems, the farm organization in its entirety must be considered in the planning or reorganization to raise the income of these farms.

County Extension Agents are divided on their views concerning separate programs for the small or part time farmer. Those with the biggest problems generally felt that a special program should be adopted for the farms. It is noted that agents having programs for

small and part time farms recognized the need for separate programs in their counties and were more aware of the problems involved in reorganizing these farms. Several agents show indifference to the low income farm problem and indicated that there is no solution except for the operators to leave agriculture entirely. Other agents with fewer farms in their counties, or a lesser magnitude of the low income farm problem, state that a separate program is not needed.

Seventy-one percent of the persons interviewed stated that present farm management information is inadequate to meet these farmers needs. More management data are needed to help operators to reorganize their operations and generally raise their income status. In most cases it is not possible for these farmers to expand acreage, so additional data leading to greater intensification in enterprises adaptable to local communities should be provided. Studies indicating costs and returns on local enterprises as they are adapted to various sizes of farm businesses should be made. Such studies must be conducted in all regions so farmers operating under different climates, topographic and economic conditions have information relating to their local situations. Organizational information involving the entire farm would be of great value to these farmers.

Additional data are needed in the field of farm machinery. Recommendations as to size of equipment for various size of farm businesses are not available. Cost data on used equipment as an alternative to the purchase of new equipment are lacking. Information as to alternatives of custom work to owning equipment should be

studied. Recommendations, suggestions, plans, and agreements for partnerships and equipment pools would be helpful to these farmers in making decisions for their farm businesses.

Other fields needing additional research are in the alternative marketing opportunities of small lots for various sections of the state as well as studies on grading and handling of certain specialized produce adaptable to these farms.

The results of the analysis of the selected farm management studies show that the traditional cost study is most applicable to farms having conditions similar to the "average farm" computed by the study. The analysis brings out that selecting farms by acres of planting in the Red Raspberry study and the Pole Bean study did not account for all of the variables so that conclusions relating size of planting and cost were not entirely valid. The data in these bulletins may be usable to small and part time operators when budgeting individual enterprises, but the average of all farms in the study should be used and not the figures classified according to size of enterprises. This is shown by the simple linear correlation analysis which indicated that differences in yields per acre explained over 40 percent of the differences in cost. Yields apparently were not significantly lower on the smaller plantings. The same method pointed out that physical size measures were not factors influencing differences in production costs per unit.

In the Poultry Management study analyzed, the farms selected were from the same community and had a narrow range in production

per hen. This study indicated that within the range of average size of flocks of 264 to 1436, size of enterprise was not a limiting factor except in its influence on labor. This study was able to point out the influence of specific management practices on costs more readily than did the other two studies because it was designed to analyze management and determine cost of production on a group of farms with less variation than the entire industry. A study of this type is usable in planning on these problem farms particularly in communities with similar conditions to the one where the study was made.

Conclusions drawn from the analysis of these studies are: (1) Physical size of farm or enterprise is not a factor by itself that influences differences in costs of production per unit; (2) Yields influence cost of production, but tests used in this study did not establish whether size of business affected yield; (3) Studies covering too large a population have too many variables whose influence cannot be determined. This leads to wrong conclusions about size as an influencing factor on cost of production; (4) Studies to determine average cost of production for all producers of a commodity within the state provide useful information. However, they are not likely to be able to deal with management practices in sufficient detail to make them the most fruitful way of gathering the data needed for planning purposes on small and part time farms; (5) To provide the data requested by field men actively working with farmers, studies need to be oriented not toward a specific item, such as cost of production, but toward the entire farm business and the provision of information needed by management

for the decisions required in the organization and operation of a farm business.

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## APPENDIX A

## QUESTIONNAIRE

The following is a questionnaire to determine the scope, location, and some of the individual problems of low income farms in the state. The purpose of the questionnaire is to try and define the low income farm and to determine areas for research in the field of farm management which will offer better data than is now available in assisting the farms to increase their income. This study is principally concerned with the low income commercial farm, and those part time farms whose primary interest is in agriculture rather than in their off-farm work.

Tabulated data will be available on this study as soon as all counties have replied.

1. Name of County or area \_\_\_\_\_
2. What is the extent of the small farm problem in your County or area?
  - a. Are they located in definite areas of the county or area? (yes) (no) If they are, please indicate location by a sketch or map or a list of communities.
  - b. Are they scattered among larger more profitable farms? (yes) (no)
  - c. What type of farms are these low income farms? (general farms), (dairy), (livestock), (cash crops), (specialty crop), (other), specify \_\_\_\_\_
3. The following is a list of some of the factors contributing to low incomes on farms. Please check these items that apply to the farms in your area, and indicate the approximate percentage of low income farms in the area, for each factor. This is to determine the main or contributing factor to the low income status of farms.
  - a. Acreage
    - (1) Lack of sufficient crop acres
      - (a) To carry on type of farming adaptable in community (yes) (no) \_\_\_\_\_%

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- (b) For enterprise adaptable to managerial ability  
(yes) (no) \_\_\_\_\_ %

(2) Alternatives for expanding acreage

- (a) Lacking because price of surrounding land is too high for agriculture use \_\_\_\_\_ %
- (b) Unable to purchase or rent because of other reasons (specify) \_\_\_\_\_, \_\_\_\_\_ %

b. Soil

- (1) Good soil but poorly managed \_\_\_\_\_, \_\_\_\_\_ %
- (2) Poor land adaptability \_\_\_\_\_, \_\_\_\_\_ %
- (a) Low level of fertility \_\_\_\_\_, \_\_\_\_\_ %
- (b) Drainage problem \_\_\_\_\_, \_\_\_\_\_ %
- (c) Shallow soil \_\_\_\_\_, \_\_\_\_\_ %
- (d) Irrigation or water problem \_\_\_\_\_, \_\_\_\_\_ %
- (e) Site (slope, etc.) \_\_\_\_\_, \_\_\_\_\_ %
- (f) Structure of soil \_\_\_\_\_, \_\_\_\_\_ %
- (g) Other soil problems \_\_\_\_\_, \_\_\_\_\_ %

c. Organization

- (1) Wrong combination of enterprises \_\_\_\_\_, \_\_\_\_\_ %
- (2) Improper selection of enterprises to fit in with those best adapted for the area \_\_\_\_\_, \_\_\_\_\_ %
- (3) Improper selection of enterprises to best fit managerial ability \_\_\_\_\_, \_\_\_\_\_ %
- (4) Other problems of organization \_\_\_\_\_

d. Capital or credit

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- (1) Unable to get proper credit \_\_\_\_\_, \_\_\_\_\_%
- (2) Failure to put capital back into the farm business  
\_\_\_\_\_, \_\_\_\_\_%
- (3) Other \_\_\_\_\_

## e. Effective use of labor

- (1) Doesn't use own and family labor efficiently \_\_\_\_\_  
\_\_\_\_\_%
- (2) Hired labor not available when needed \_\_\_\_\_, \_\_\_\_\_%
- (3) Alternatives for off farm work (are), (are not) available.
- (4) Other labor problems \_\_\_\_\_, \_\_\_\_\_%

## f. Marketing problems

- (1) Too far from market areas \_\_\_\_\_, \_\_\_\_\_%
- (2) Poor grading of products \_\_\_\_\_, \_\_\_\_\_%
- (3) Lack of competitive bidding by buyers or lack of  
marketing alternative \_\_\_\_\_, \_\_\_\_\_%
- (4) Buyers not interested in small lots from small  
farms \_\_\_\_\_, \_\_\_\_\_%
- (5) Price variations \_\_\_\_\_, \_\_\_\_\_%
- (6) Other \_\_\_\_\_, \_\_\_\_\_%

- g. Taxes (is tax base out of proportion to urban taxes,  
industrial taxes, taxes on timber land?) \_\_\_\_\_, \_\_\_\_\_%

## 4. How effective is the use of farm machinery?

- a. Too much machinery for size of enterprise \_\_\_\_\_
- b. Using or purchasing new machinery when good used machinery would do the job \_\_\_\_\_.

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- c. No opportunity for machinery pools with other farmers \_\_\_\_\_.
  - d. No opportunity for purchasing good used machinery \_\_\_\_\_.
  - e. Are machinery pools used in some cases? \_\_\_\_\_ How? \_\_\_\_\_
  - f. Enterprise combined in such a manner that a considerable inventory of machinery is required and idle a large share of the time \_\_\_\_\_.
  - g. Is there an alternative to owning machinery by having work custom done \_\_\_\_\_?
  - h. If custom work is available is it
    - (1) Available when needed? (yes) (no)
    - (2) Priced at a rate favorable as an alternative to owning? (yes) (no)
  - i. Other comments on machinery
  - j. Do you feel research needed in this area concerning farm machinery? (yes) (no)
5. Is present farm management data from the experiment station adequate for you to use in assisting the small or low income farmer? (yes) (no)
- a. How could these studies be conducted to be of more practical use to you in helping farmers?
  - b. What additional data do you need in farm management studies?
6. Has your office kept any records or made any studies in regards to farm management problems? (yes) (no) Explain:
7. Do you have a separate program for small farms? (yes) (no)
8. Do you feel a separate program for small farms is desirable? (yes) (no) Explain:

## APPENDIX B

ESTIMATED AVERAGE NUMBER OF DAYS OF MAN LABOR REQUIRED ANNUALLY BY  
FARM ENTERPRISES IN THE WILLAMETTE VALLEY (5)

Item	PMWU's per head or acre
<b>Livestock</b>	
Dairy cows	10.0
Dairy heifers (or steers)	1.3
Sheep	.5
Lambs	.2
Beef, cow and calf	3.0
Sows & litters to weaning	3.0
Hogs, weaning to market age	.5
Chickens (layers)	.2
Chicks (pullets)	.1
Turkeys (layers)	.4
Turkeys (market)	.1
<b>Field Crops</b>	
Alfalfa hay	2.3
Clover hay	1.0
Vetch & Oats hay	1.4
Corn	2.2
Wheat	.6
Oats	.6
Barley	.6
Austrian winter field peas	.7
Clover seed	1.0
Common ryegrass seed	.5
Common vetch seed	.7
Hairy vetch seed	.9
Highland Bent grass	.3
Perennial ryegrass seed	.3
Alta fescue seed	.5
Chewings fescue seed	.5
Flax seed	2.0
Flax fiber	3.1
<b>Succulent crops</b>	
Corn silage	3.7
Vetch silage	2.4
Ladino clover, irrigated pasture	1.2



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Item	PMWU's per head or acre
<b>Cannery Vegetables*</b>	
Corn	4.0
Beets	10.0
Carrots	14.0
Tomatoes	19.0
Snap (pole) beans	82.0
<b>Other Crops*</b>	
Hops	42.0
Potatoes	6.0
<b>Nuts*</b>	
Filberts	9.0
Walnuts	8.0
<b>Tree Fruits*</b>	
Apples	30.0
Cherries (for processing)	32.0
Peaches	30.0
Pears	24.0
Prunes (for processing)	12.0
<b>Small Fruits*</b>	
Boysenberry	40.0
Loganberry	38.0
Raspberry (blackcaps)	30.0
Red raspberry	58.0
Strawberry	41.0
<b>Establishing New Planting</b>	
Hops (1 year period)	17.0
Filberts (5 year period)	19.0
Walnuts (11 year period)	20.0
Boysenberry	16.0
Loganberry	12.0
Raspberry (blackcaps)	6.0
Red raspberry	12.0
Strawberry	15.0
Alta fescue	.5
Chewings fescue	.4
Perennial ryegrass	.3

\* Certain crops not normally done by operator himself.