AN ABSTRACT OF THE THESIS OF

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in GEOGRAPHY (Major) presented on August 6, 1973 (Date)

Title: THE EVOLUTION OF AGRICULTURAL RESOURCE USE STRATEGIES IN THE WILLAMETTE VALLEY

Abstract approved: Richard M. Highsmith, Jr.

Agriculture in the Willamette Valley, Oregon, has undergone continual change since the annual migrations of American pioneer farmers began to arrive in the early 1840's. The comparisons of data from each of the agricultural censuses of Oregon counties taken since 1850 confirms that change has been continual. The data revealed that the strategies of agricultural resource use employed by the valley's farmers, and which guided their agricultural practices, have also been continually modified or upgraded.

The purpose of the study was to document the evolution of agricultural resource use strategies which were implemented in the Willamette Valley during the course of its growth and development. Two general assumptions were made that provided the organizational framework for the analysis. The agricultural resource use strategies were considered to have evolved from simpler to more complex forms,

and agriculture was considered as a resource use system comparable to general systems.

An analogy was made between the agricultural system of the Willamette Valley and a general system characterized by rapid growth and development. The development of the agricultural system was divided into a threefold chronology of growth stages. The analysis of changes in farm characteristics, total agricultural acreage, and crop and livestock production trends supported the threefold growth stage concept. Growth curves depicting data from each agricultural census on farm characteristics, agricultural acreage, crops, and livestock show several conspicuous similarities. On the basis of the similarities delimiting dates were selected for the theorized growth stages.

Strategies favoring self-sufficing farms were predominant between 1840 and 1900. Strategies of diversified agricultural production prevailed between 1900 and 1950. In the third and current growth stage, beginning in 1950, farmers increasingly adopted strategies of highly specialized single enterprise farming at larger scales of operation. Once the growth stages' delimiting dates were decided upon they permitted an easier analysis of all the agricultural census data that was examined. The treatment of agriculture in the Willamette Valley as an open resource use system tied its structure and functioning to influences of simultaneous systematic developments occurring outside of agriculture.

The Evolution of Agricultural Resource Use Strategies in the Willamette Valley

by

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A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Doctor of Philosophy

Completed August 1973

Commencement June 1974

APPROVED:

Professor of Geography
in charge of major

Chairman of Department of Geography

Dean of Graduate School

Date thesis is presented August 6, 1973

Typed by Mary Jo Stratton for Jack H. Blok

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

THE EVOLUTION OF AGRICULTURAL RESOURCE USE STRATEGIES IN THE WILLAMETTE VALLEY

CHAPTER I

INTRODUCTION

Introduction to the Problem

When substantial numbers of American pioneers first began arriving in the Willamette Valley of western Oregon, after 1840, there already existed a small but highly significant agriculturally based settlement. The prosperity of this community, which consisted mainly of retired French Canadian fur trappers, was proof enough for the American emigrants that their own efforts in agriculture could succeed. The local Indian populations had, only shortly before the arrival of the Americans, been nearly wiped out by repeated outbreaks of disease. The political control of the entire Pacific Northwest region was unsettled, leaving the land easy for the taking. The Americans who arrived after 1840, unlike the few who had come before them, had come intent upon laying out exclusive ownership claims to the land with all its resources, and they had come intent upon establishing permanent farms.

The claiming of the valley's land by pioneer contingents of Americans ensured the continued growth and development of the existing agricultural community. The progress of their settlement on the

remote Oregon frontier followed a course of events which roughly resembled those of previous frontier experiences in the history of the United States. The settlement of frontiers by farmers and their eventual incorporation into the social, political, and economic fabrics of the country had been a recurrent phenomenon. It is likely that this phenomenon was clearly understood and anticipated by the early emigrants to Oregon. Once there, the frontier farmers set about acquiring land and other resources to establish farms in the manners to which they had been accustomed. Their early efforts at community building bore the stamps of perception 'filters' and value systems which had been shaped by the goals and aspirations that were held in highest esteem by the societies the frontier farmers had left behind. The first American farmers in Oregon immediately set about trying to find the fastest and best ways to achieve their goals and aspirations.

Problem Statement

The purpose of the dissertation is the documentation of the strategies of agricultural resource use which were implemented in the agriculture of the Willamette Valley during the course of its growth and development.[1] A basic assumption made in the dissertation is that

[1] Agricultural resources are those factors entering into agricultural production. Land resources are the primary concerns of this dissertation, and they include all the land use determinants associated with site characteristics or vicinal location. Other categories of agricultural resources are those that are added to the land. They include all

marked change has occurred in such strategies through time.[2] Consequently, the main thrust of the dissertation will be focused upon the forms that the changes took, beginning with the strategies of the frontier farmers and following through to those employed in the valley today.

Research Themes

To facilitate the documentation of resource strategies, two themes will be pursued in the dissertation. The first comes to light through use of the term 'evolution', when relating to agricultural resource strategies. When used in such a context the term implies that the stragegies employed in agriculture have progressed from simpler to more complex forms as a consequence of the processes of growth and development. This view coincides with an underlying assumption that change has occurred in the strategies of agricultural

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physical improvements, management or organizational skills, and technological inputs.

[2] The term 'strategy', used in this sense, implies that these farmers endeavored to employ the resources at their disposal in the most skillful manner they could, to achieve the highest levels of agricultural production. In any resource converting system care has to be exercised to achieve the highest possible levels of productivity in the face of the constraints imposed by environmental circumstances. Through periods of trial and error, strategies were consciously developed which displayed the best 'fits' with local environmental circumstances. The writer considers that the farmers' own value systems and goals are parts of the social subsystem of the environment and that they too must be considered in order for a strategy to succeed.

resource use that have been employed in the Willamette Valley. The second theme to be followed derives from the conceptualization of agriculture as a resource use system. In such a conceptualization, an analogy may be made of the progress in the development of agriculture with a general system characterized by growth. Both themes will be fully discussed below.

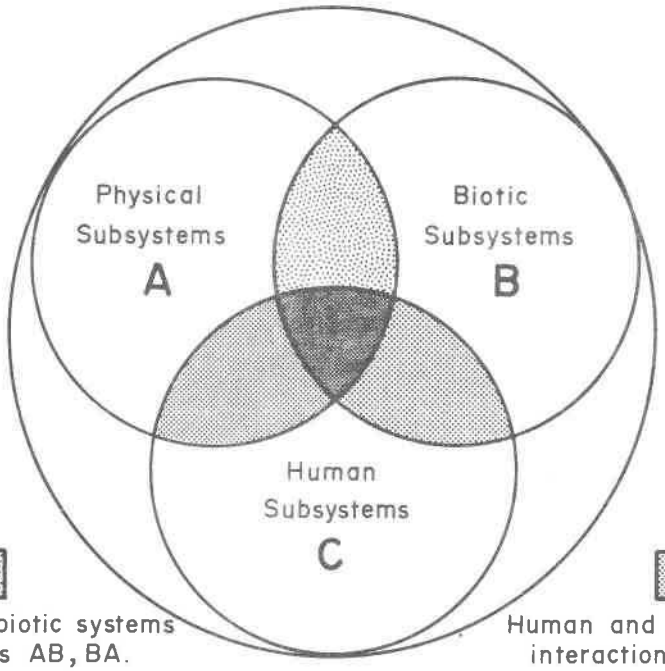
Change in Agricultural Resource Strategies

Another assumption is that the stimuli for the changes that did occur in the strategies of resource use were the result of the evolving interactions among the component subsystems of the Willamette Valley's environment[3] (see Figure 1). More specifically, it was the growing complexity of the social, economic, and political institutions which repeatedly undermined the suitability of existing resource use

[3] As used in this dissertation, the term 'environment' is one which encompasses the totality of systematic interactions between the physical, the biotic, and the human subsystems taking place within it. Physical environmental subsystems consist of such abiotic processes as exist, for example, in the valley's climate or in the degradation of its landforms. Biotic environmental subsystems encompass all the processes sustaining living organisms, or those having ecological significance. The human subsystems have been singled out, setting them apart from other biotic systems, by virtue of the degree of complexity in their social organizations which institutionalizes both space and resource converting techniques. Effective social organizations of these kinds make it possible for the actions of human institutions to have disparately greater impacts upon the way interactions occur between the component subsystems of any geographical environment.

FIGURE 1

ENVIRONMENTAL SUBSYSTEMS

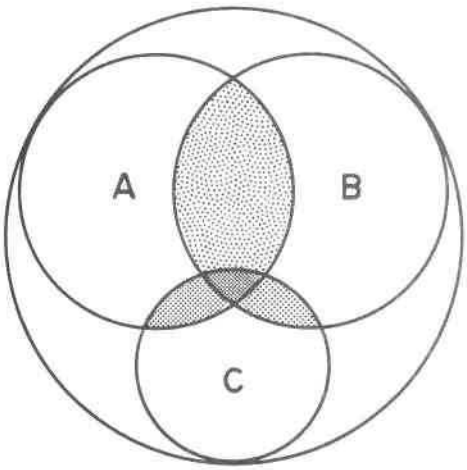


Physical and biotic systems interactions AB, BA.

Human and biotic systems interactions BC, CB.

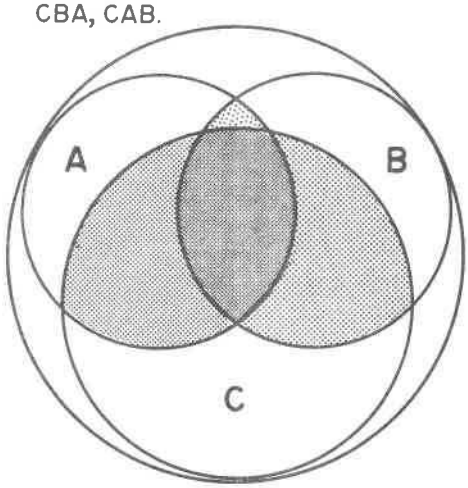
Human and physical systems interactions AC, CA.

Human, biotic, and physical systems interactions ABC, BCA, BAC, ACB, CBA, CAB.



Willamette Valley - 1840

Human institutions relatively simply organized. Limited resource converting capabilities.



Willamette Valley - 1970

Human institutions highly organized in all aspects of resource conversion.

J.B

strategies and fostered the search for better ones. The growing complexity of the human subsystems component in this geographical environment determined the changing nature of inter-relationships within the man-land system.[4]

The frontier settlement of the Willamette Valley during the 1840's differed substantially from that of other frontiers where lands of the Public Domain were transferred to private ownership. As successive wagon trains of Americans arrived, they entered into an expanding agricultural community which already participated in international commerce with locally produced agricultural commodities. Manufactured items, including nails, glass, sawed timber, clothing, condiments, and a variety of processed foods could be had for a price. For those who could afford them, these items greatly ameliorated the living conditions on this frontier. The seed of commercial agriculture was already present, and the expanding local market spurred an increase in local commercialism. Pioneer farmers attempted to establish a self-sufficiency in as many food and material requirements as possible, as soon as possible. Surpluses in more than just a few items having commercial potential required extra labor and extra storage facilities, and they just could not be disposed

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[4] The man-land system is defined in this dissertation as one which encompasses the totality of systematic interactions between man, or all the human subsystems as depicted by circle "C" in Figure 1, and the land in a geographical environment.

of easily, because most of the early farms produced about the same things. Local commerce was directed primarily at supplying newly establishing farmers with their immediate food requirements or their need for seed and livestock.

When one examines data depicting agricultural practices in the Willamette Valley during the 1840's, and compares them with current trends in agriculture, it is obvious that profound changes have occurred in the strategies of agricultural resource use. In view of the increasing complexity of agriculture, as emphasized by the current trends toward increasing specialization, commercialization, and larger scales of operation, it is likely that these changes are of a fundamental nature. A likely prospect is that the decision making criteria contributing to a well conceived strategy have changed in points of emphasis and number. In other words, new variables have been added to, and others dropped from, the decision criteria considered in formulating resource use strategies.

Despite the presence of successful farms in the valley, beginning farmers were operating in an environment that was unfamiliar to them. Consequently, the physical and biotic environmental parameters were of great concern to them when they implemented their first agricultural resource strategies. The pioneer farmers were cautious out of necessity, for many had arrived bereft of food and supplies, and the first harvests were consumed almost entirely on the farms. Frontier

farmers considered self-sufficiency in most food items an immediate goal. Surpluses in more than just a few crops that could be sold or traded were not always practical because they conflicted with the labor needed to achieve self-sufficiency on new farms. The commercialism that existed for the newly establishing farms was primarily local in scope, and farmers retained a near complete vertical control over the production and the final destination of most all of their products. Once farms were established, usually in a few years time, they participated more fully in local commerce and shipped wheat to the Hudson's Bay Company warehouses at Champoeg or at Vancouver, which the Company traded in international commerce.

Gradually, private commercial enterprises, cooperative farm organizations, and publicly sponsored institutions appeared. They began to function as collectors and disseminators of information useful to farmers on a diversity of topics ranging from the most modern production techniques to the latest price and market information. They also carried out activities which formerly had to be done by the farmers themselves, thereby leaving them free to spend more time farming. The presence and emergence of such institutions in an agricultural landscape must be noted, for they contribute mightily to the complexity of interactions in any man-land system. They also figure importantly in strategy decisions. Some institutional factors have assumed such an importance in agriculture, that the success or

failure of currently employed strategies may rely as much upon a familiarity with them as upon a knowledge of the physical and biotic environmental variables. A far different situation exists now in this regard than at the outset of settlement, and it is visible in the resource use strategies employed.

Any description and assessment of the processes of growth and development as they occurred during the progress of agriculture in the Willamette Valley must make provisions for the inclusion of such institutions, because they have affected the disposition and use of the valley's resources. The growing complexity of the human subsystems was evidenced by the appearance of these specialized institutions and they greatly enhanced the welfare of the valley's farmers. As the social, economic, and political institutions evolved, the geographical environment in which the agricultural resource managers operated was also made different.

Agriculture as a Resource Use System

The second key organizational concept chosen to facilitate this investigation comes from making an analogy of the valley's agricultural system with a general system characterized by growth. Viewing agriculture as a resource use system, after a general systems model, makes possible a more convenient classification of the growth phenomena influencing strategy decisions. A threefold classification

of growth phenomena common to a wide variety of systems was proposed by Kenneth Boulding in 1956.[5] Three theoretical growth stages will be designated for delimiting the agricultural growth and development of the Willamette Valley into cohesive time periods.

Agricultural Growth Stages

The key to the similarities between the growth stages of an agricultural resource use system and those of a general system lies in the processes of growth themselves. In order to make a plausible analogy of agriculture, as an evolving resource use system, with a general system, the development of agriculture in the Willamette Valley should exhibit distinctive and recognizable growth stages.

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[5] The first stage of the threefold classification system proposed by Boulding was termed 'simple growth'. In this stage the growth of the system depends upon the accretion or depletion of single homogeneous variables to or from the aggregate population. The second stage, termed 'population growth', is no longer characterized by a growing homogeneous system, but its variables have taken on an age distribution. Growth in the second stage can be both positive or negative depending on whether there is an excess of additions to the system over the subtractions from it. In the third and most complex stage, termed 'structural growth', growth merges imperceptibly with structural change. 'What grows' is not the size of the system, necessarily, but the complexity of its inter-related parts. In reality all growth is structural in nature. The addition of just a few variables to a system will likely change the relationships between all of them. An age distribution among the variables is also present from the beginning, making real homogeneity a technical impossibility. However, for the purposes of analysis, a generality can be imposed on the system studied to better understand the processes of growth that take place in it (Boulding, 1956).

Three such stages have been recognized in the development of the valley's agriculture.

Stage I--General Agricultural Growth, c. 1840 to 1900

The agricultural growth of the Willamette Valley was of a homogeneous nature for much of the time period between 1840 and 1900. Some agricultural specialization was present from the outset, specifically in the wheat farming on French Prairie. Even on these farms, however, the agricultural strategies encompassed a broad range of activities. These strategies were also designed to supply the farms with a self-sufficiency in most items that were consumed on the farm. For the first few decades of this period the most characteristic of farms remained unspecialized, with labor and non-land resource inputs being devoted to a typically broad range of activities. Capital improvements on the new farms required time and energy that beginning farmers could ill afford to spend on the harvesting or disposal of too large of crop surpluses. Agricultural resources had to be committed along a broad front when the establishment of self-sufficiency in food and other necessities were the immediate goals of most new farmers.

The widespread similarity in strategies and the steady growth of the agricultural system during this time period correponds well with

the definition of the 'simple growth' stage in the general systems analogy. The farms that were added to the agricultural system resembled each other very much as they were being established, and they subsequently retained their general farming characteristics for a number of decades.

Stage II--Diversified Agricultural Growth, 1900 to 1950

Diversification and specialization were held up in the agriculture of the Willamette Valley by a lack of markets and by the lack of adequate transportation systems to potential markets. With the internal improvements in railroad transportation made in the valley beginning in the 1870's, and with the tie-in with the national rail networks during the 1880's, the trends toward diversification and specialization in agriculture had begun. By 1900, these trends had become firmly established and the valley's farms were not nearly as homogeneous in their operations as before. Positive growth continued in both the numbers of farms and in the total agricultural acreage after 1900. The greatest extent in agricultural acreage was reached around 1910 in the Willamette Valley, after which it gradually declined. The numbers of farms continued to increase until around 1935, when the average size of farms reached its lowest levels. After this date the numbers of farms began to decline gradually. The diversification

which was strongly established at the turn of the century trended gradually toward increasing specialization, especially in the latter part of this second growth stage. With the increased specialization the commercialization in agriculture intensified. The intrusion of publicly sponsored institutions into the affairs of agriculture became commonplace during the times of the World Wars and the Depression.

The period between 1900 and 1950, in the agricultural experience of the Willamette Valley, compares favorably with the definition of 'populational growth' in the systems analogy. In the early part of this period, the agricultural system experienced growth when additions of both farms and acreage were made to it. In the latter part of this period, the agricultural system experienced a decline in extent when the numbers of farms and acreage withdrawn from the system exceeded the additions made to it. Diversification may be considered to be a sign of the development of a 'farm class' structure, just as the 'age class' structure develops during the 'populational growth' stage among the individuals of the aggregate population in the systems analogy. In the context of the agricultural system, older farms possessed greater capital investments and their managers greater skills. The result in the Willamette Valley was that the second growth stage in agriculture was characterized, first by diversification, and later by increasing farm specialization.

Stage III--Structural Agricultural Growth, 1950 to 1973

Change in agriculture after 1950 was fundamental. The pace of change in agricultural resource use strategies quickened. Farmers were forced to discontinue farming because of circumstances beyond their control, or even their comprehension. A willingness to work hard was less of a guarantee that agricultural strategies would succeed after 1950, than it had been before. The increasingly complex inter-relationships between differently evolving social, economic, and political institutions gave rise to uncertain conditions which led to the demise of many farms. Impacts from new technologies, advanced management skills, and higher levels of organization were felt disproportionately throughout the various size classes of farms and kinds of farms. Increasing productivity from decreasing agricultural acreages are the result of these fundamental changes. The characteristics of this third agricultural growth stage match the definition of the 'structural growth' stage in the general systems analogy. In the Willamette Valley the agricultural land base has been diminishing while productivity has continued to increase. This situation, or form of growth, has resulted not from continued growth in the size of the system, but from the increasing complexity of its inter-related parts.

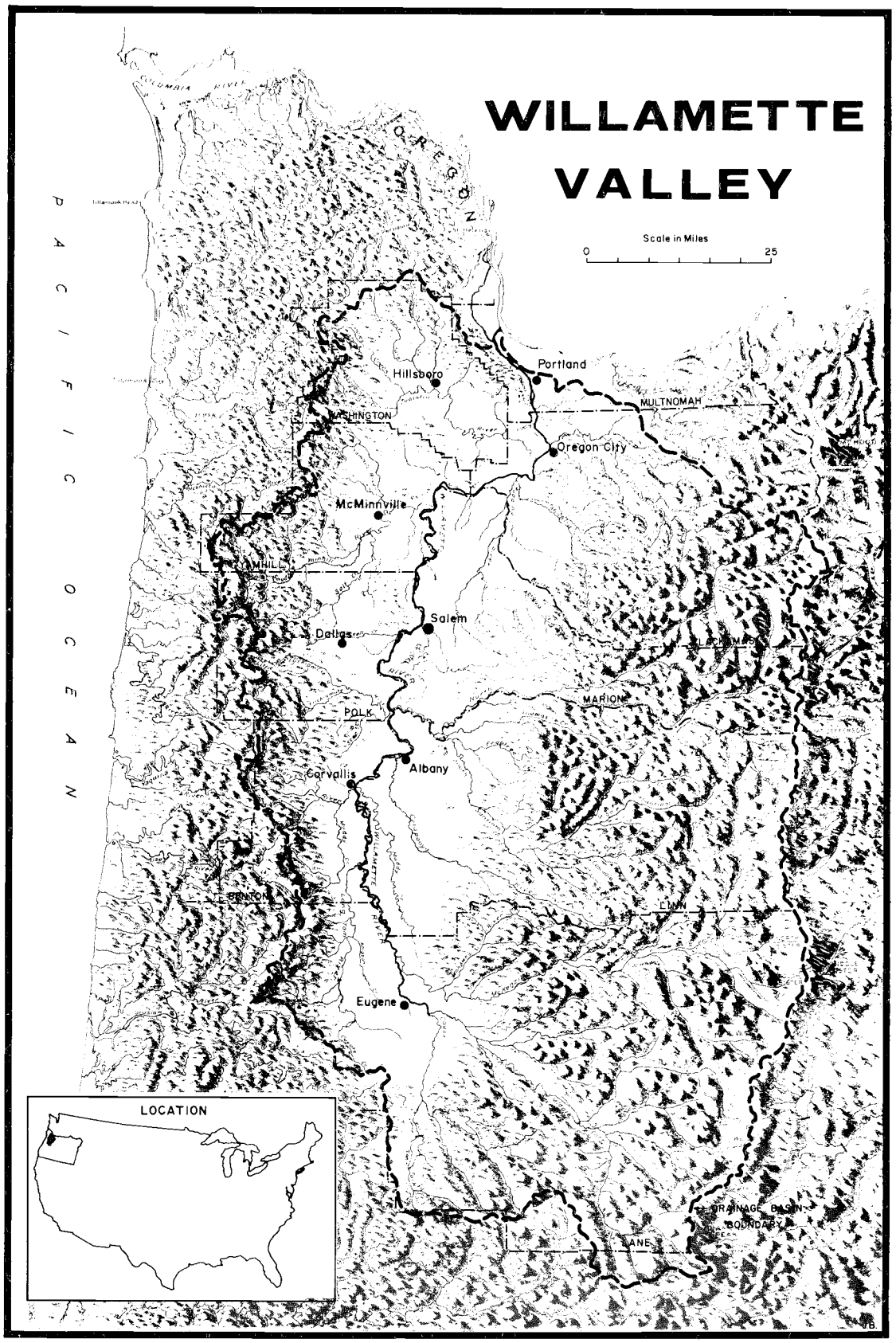
Selection of the Willamette Valley

Of the far western settlement frontiers, the Willamette Valley is well suited for a study of the resource strategies which guided agricultural progress. It is attractive for study because it is among the oldest of the frontiers in the West. Also, it was the lure of its land which brought the initial surges of Americans (see Figure 2). The valley's economy was long dominated by agriculture. Consequently, the progress in growth and development of the non-farm sectors of the population and the economy were inextricably associated with the success or failure of agricultural resource use strategies. Still other factors favor the selection of the Willamette Valley for such a study. It had a limited agricultural land base, and it was a remote frontier when first settled. Both these factors allow for a quicker analysis of the effects of improvements made in agriculture and in the supporting systems such as transportation. Despite its small size and remoteness, farmers in the valley have operated under many of the same constraints as did farmers elsewhere throughout the United States. Because of this, the trends in the agriculture of the Willamette Valley, although possibly occurring out of phase, are nevertheless representative of events in the rest of the country.

Research of the Agricultural Growth Stages

American farmers started in the Willamette Valley with

Figure 2.


WILLAMETTE
VALLEY
Scale in Miles
0
25
PACIFIC OCEAN
OREGON
Portland
Hillsboro
Oregon City
McMinnville
Salem
Dallas
Albany
Corvallis
Eugene
MULTNOMAH
MARION
POLK
LINN
LANE
LOCATION
DRAINAGE BASIN
BOUNDARY

strategies which had proved successful elsewhere before. The agriculture of the states of origin of Oregon's pioneers provides clues to the first commonly employed strategies of agricultural resource use. The subsequent change in strategies will be approached within the framework of the increasing complexity of the geographical environment. Considering either social, economic, or political growth separately would only yield parts of the environmental realities to which resource managers responded. In a 'social ecological' sense, these factors should be considered in concert because they interacted continuously, creating changed relationships within the man-land system. These changes necessitated resource strategy adjustments if farms were to remain viable. The agricultural system of the valley remained open as it developed. Farmers had to respond both to changing conditions within the valley and to influxes of population, information, and non-land resources from outside the region. The increasing complexity of the Willamette Valley will be treated in general, with measurements of agricultural change being restricted to two representative counties. Marion County and Polk County have been selected as the two counties for which most measurements of agricultural change have been made. They are located in the middle of the valley in an east-west alignment that includes as wide a variety of agricultural land use types as can be found in the valley. Both counties display a range of land use conflicts that are common

throughout the area. The analysis of the valley's agricultural resource strategies will be dealt with in separate chapters, each covering one of the designated growth stages.

Analysis of the General Agricultural Growth Stage, c. 1840 to 1900

The analysis of the first designated growth stage will be accomplished by focusing successively upon the following: the land; the characteristics of the frontier economy; the growth of local markets and the addition of distant ones; the general improvements in transportation; and the changes in farm characteristics and production.

Beginning with the land, a number of points will be investigated. Among them are the motivations of those filing claims under the Donation Land Act, as well as the sizes, locations, and quality of their claims.

The frontier economy will be studied to ascertain the role played in it by agricultural commodities.

The growth of the population, in both the farm and non-farm sectors, will be charted to show the growth of the local market. The addition of distant markets and the growth of the local markets will be viewed in terms of their importance in stimulating adjustments in strategies of resource use by the valley's farmers.

The major improvements in the transportation systems of the valley will be dated and mapped to show the increasing penetration of the agricultural landscapes by these systems, and to show the areas most directly affected.

Finally, the livestock, crop, and crop acreage statistics will be checked between each major agricultural census to detect change in the elements of resource strategies. The census data will be checked for each of the crop and livestock activities which occupied at least five percent of the agricultural acreage or contributed at least the same percentage to the value of agricultural production.

Analysis of the Diversified Agricultural Growth Stage, 1900 to 1950

The kinds of observations of statistical data made from the major censuses of agriculture during the first stage, General Agricultural Growth, will be repeated for the second growth stage to show longer term trends. Innovations in agriculture and in those supportive institutions which facilitated the handling, storage, shipping, and marketing of farm products will be examined briefly for their contributions to changing agricultural strategies. Specific attention will be paid to the publicly sponsored institutions which promoted the welfare of agriculture.

Analysis of the Structural Growth Stage, 1950 to 1973

The statistics on crops, acreages, livestock operations, and farm characteristics will be followed through to the present time to show the most recent changes in agricultural strategies. Of major concern during this stage will be the rate of the decline in the number of farms. Of further interest will be the rise in levels of leasing arrangements made by commercial farmers in attempts to maintain the economic viability of their operations.

The continued involvement of the public sector, through its imposition of constraints on specific agricultural practices, and through its sponsorship of research directly beneficial to the farm sector, will also be investigated to determine its role in influencing agricultural strategy decisions.

Justifications for the Study

The justifications for a study of the resource strategies which governed the progress of agriculture in the Willamette Valley are manifold. The presence of patterns attributable to human perception and use of resources in any landscape constitutes a subject for investigation which falls distinctly into the bailiwick of geographers.

There has been a persistent move in geographical research toward the understanding of man's role in modifying his environments

while engaged in his many methods of resource conversion. A number of attempts in this direction have made use of resource strategy concepts in evaluating resource converting systems.[6] Such approaches to the study of resource use systems can prove very useful in determining why and how man's activities alter the interactions between various environmental subsystems. It seems logical that resource strategy concepts should be used in providing an organizational framework for studying agricultural systems, for it is doubtful if man in any other way disturbs his environments as much over as extensive of regions, as he does through his practice of agriculture.

Resource strategy concepts have been used in studying agricultural systems, but usually those of traditional agricultural societies. Such societies possess relatively simple levels of organizational complexity in their agricultural systems, and therefore fit resource system modeling more conveniently. A search of the geographical literature on agricultural topics revealed that studies of this type have seldom been attempted for agricultural systems characterized by rapid rates of growth and development.

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[6] For an example of the previous use of the 'resource strategy' concept in the evaluation of a resource use system, see White (1970) and for an example of a Games Theory application to agricultural strategies, see Gould (1963).

Objectives of the Study

A primary objective of the documentation of changes in agricultural resource strategies is to determine the feasibility of structuring an investigative approach to the subject along the lines of a general systems analogy.

A secondary goal will be the identification of the more successful strategies that were employed during each of the designated growth stages.

A third objective will be to determine the primacy of the components entering into the decision making criteria consulted when agricultural resource stragegies are formulated.

A final objective will be to determine which factors posed the greatest positive or negative incentives to the selection of currently employed agricultural resource use strategies.

CHAPTER II

AGRICULTURAL RESOURCE STRATEGIES DURING THE 'GENERAL AGRICULTURAL GROWTH STAGE', 1840 to 1900

Agriculture in the Pacific Northwest Before 1840

Agriculture was first practiced in Oregon at Astoria when John Jacob Astor's Pacific Fur Company started a small colony near the mouth of the Columbia River. The farming effort of this colony consisted of the planting of a small garden in 1811. Unfortunately it was flooded out the first year. The next year's harvest, however, yielded a variety of garden vegetables including radishes, turnips, and potatoes. Hogs had also been brought to the farm by 1812 (Scott, 1917, p. 56). The British took over the colony and absorbed the operations of the Northwest Fur Company. Approximately a dozen of the employees of the Astorian fur enterprise stayed on in the region. Their continued presence helped to maintain American interests in the Pacific Northwest. American concerns about the region were expressed repeatedly during the following years.

In the 1820's, legislation was repeatedly introduced in Congress by Representative John Floyd of Virginia, urging that the United States forcefully occupy the Columbia River region.[7] With respect to

[7] Representative Floyd was himself born on a frontier and he had a first cousin who accompanied the Lewis and Clark Expedition, hence

the agricultural future of the region, the bill introduced by Floyd in January, 1822, would ". . . authorize the president of the United States to occupy the Columbia, to extinguish Indian title, and make land grants to settlers" (Bourne, 1905, p. 264). This bill was significant in that it raised for the first time the prospect of offering free land as an inducement to any American who would settle in the Northwest. Floyd even suggested that Chinese emigrants be used to settle the region for the United States. Senator Benton of Missouri regularly backed Floyd's legislative proposals in the Senate, and he once argued that the agricultural potentials of the region were very great by suggesting ". . . the valley of the Columbia might become the granary of China and Japan" (Bourne, 1905, p. 265).

The next agricultural venture was begun by the Hudson's Bay Company at their Vancouver farm in 1825. The Company entered into farming at the recommendation of George Simpson Esqr., Governor of the Northern Department of Rupert Land, who had toured the district in an effort to rationalize the fur trade. He recommended that the Company trading posts could cut their costs tremendously if they would only undertake to raise their own food. The Vancouver site was selected because it possessed better conditions for farming

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his interest in the Oregon country. In the capital, he boarded in the same hotel with Senator Thomas Benton, who shared his views on acquiring the region (Bourne, 1905, p. 263).

than did Fort George, formerly Astoria (Meinig, 1968, p. 70-71). Agricultural experts, a wide variety of seed, and livestock were all imported for that purpose. Agricultural stores were carefully built up under the directorship of Chief Factor John McLaughlin. McLaughlin soon began to seriously contemplate setting up a trading monopoly in agricultural commodities to supply the Russians, the Californians, Australia, and the Sandwich Islands (Clarke, 1927, p. 216). By 1828, wheat yields became sufficient enough to warrant the building of a grist mill. The Vancouver farming operation grew steadily. By 1835, there were 450 cattle, 100 horses, 200 sheep, 40 goats, and 300 hogs in the farming operation. In that same year, some 5,000 bushels of wheat were harvested (Scott, 1917, p. 57).

The Start of Agriculture in the Willamette Valley

Agricultural settlement of the Willamette Valley started when fur trappers retiring from the Hudson's Bay Company elected to stay in the region to take up farming. Most employees had come to the Northwest with the Company, and they returned home upon completion of their terms of service. The former Astorians, who were predominantly French Canadians, had signed on with the Company in Oregon and the Company did not have the same jurisdiction over them upon completion of their terms of service. Many of these men had

married Indian women and had families. They were not eager to leave their families behind or to subject them to hostilities and prejudicial treatment which they would surely have encountered with a return to eastern Canada.

By 1825, the ex-Astorian freemen had shown an interest in taking up permanent residence in the Willamette Valley. Some of them may have planted gardens over the course of several seasons, but such activities were not reported by any of the visitors to the valley in 1826 and 1838 (Clarke, 1927, p. 226). John McLaughlin reported that the first soil was turned in the Willamette Valley in 1829 (Clarke, 1927, p. 227). McLaughlin felt it was to the advantage of the Company to try to make these settlers contribute to the monopoly, rather than establish an independent community. He extended liberal credit for supplies and loaned livestock and seed. No currency was in circulation and wheat became the primary medium of exchange, thus tying the emerging agricultural community even more closely to the Company (Clarke, 1927, p. 220). Within several years the settlement at French Prairie was producing enough wheat to require the Hudson's Bay Company to build a receiving warehouse at Champoeg, on the Willamette River. Following this success of the French Canadian agricultural community, American interests were renewed and the gradual influx of pioneers began to quicken.

Nathaniel Wyeth visited the valley in 1832, and reported that

> . . . 22 miles from the falls are three or four Canadians settled as farmers they have now been there one year have hogs, horses, cows, have built barns, houses, and raised wheat, barley, potatoes, turnips, cabbages, corn, pumpkins, and melons (Clarke, 1927, p. 228).

Wyeth later returned to establish a farm as part of a commercial venture in 1834, some two miles south of Champoeg. The trading venture failed, and of the 70 men in the trading company, perhaps 19 stayed to settle in the valley (Clarke, 1927, p. 229).

More important than contributing to the settlement of the valley was the accompaniment the Wyeth party provided for the missionaries Jason and Daniel Lee. The Lees came to establish missions on behalf of the Methodist Board of Missions. The Lees selected a site for their mission two miles up river from the farm of a French Canadian by the name of Gervais, in present-day Marion County near Salem (Bancroft, 1888, p. 79-80). The missionaries purchased barley and peas from the French Canadian farmers, in what may have been the first important local commercial transaction not directly involving the Hudson's Bay Company. The two missionaries had enlisted the aid of Cyrus Shepard, Phillip Edwards, and Courtney M. Walker, so there were five men in all who established the mission and its farm (Bancroft, 1888, p. 80). Together they cleared, plowed, and enclosed 30 acres of land the first winter. In the spring they planted wheat, oats, corn, and garden vegetables, and built a barn with the assistance of some of the French Canadians. The first

harvest, in 1835, included 150 bushels of wheat, 35 bushels of oats, 56 bushels of barley, 87 bushels of peas, and potatoes and other garden vegetables. During the season, another 15 acres of land were enclosed. The harvest of 1836 was even more plentiful, with 500 bushels of wheat alone being produced (Bancroft, 1888, p. 80).

The Methodist missionaries became a fertile source of propaganda concerning the necessity for American settlement in the Willamette Valley. In his History of the Willamette Valley, R. C. Clarke referred to the Lees as advance men for Americanism and he stated that they were ". . . less important as missionaries than they were indispensible to settlement" (Clarke, 1927, p. 245).

Official American interest was also directed toward finding out more about the settlement in the Willamette Valley. For that purpose, a United States Navy purser, William A. Slacum, was sent to the valley to make a survey of the population and the agricultural productions in 1836. In addition to taking his census, Slacum contributed $500.00 toward the purchase of cattle in California, thus helping to support the newly formed Willamette Cattle Company. This company, which was headed by an American settler, one Ewing Young, enjoyed the support of the Methodist mission, the French Canadians, and even the Hudson's Bay Company. The American settlers and the French Canadians had been unhappy over the Hudson's Bay Company's control over the valley's livestock, and they hoped to

find another source of supply for cattle, sheep and horses. Slacum also urged the valley's farmers to seek another outlet for their wheat than through the Hudson's Bay Company. He informed the farmers that while they were getting 50 cents per bushel for their wheat in Vancouver, the Russians were paying $1.50 per bushel in California (Bancroft, 1888, p. 141-142).

By 1839, the Catholic community on French Prairie had succeeded in establishing a mission at St. Paul. Once this mission was established, it operated a 2,500 acre farm, which was large enough to give a measure of independence from the Hudson's Bay Company in economic affairs (Clarke, 1927, p. 245). On the eve of the beginning of the American migrations, the valley had a population of around 150 Americans, and perhaps 50 French Canadian families living in present-day Marion County.

The significance of this beginning of agriculture in the region was that it convinced Americans that their agricultural resource strategies could do well in the Willamette Valley. In fact, one of the valley's main attractions was the belief that farmers could do better in the Willamette Valley of Oregon than almost anywhere in the United States.

Agricultural Resource Strategies Prior to 1840

Agriculture was not started in the Willamette Valley by interested

parties acting alone. The strategies of resource use of those groups first practicing agriculture were both distinctive and complementary. The French Canadians were desirous of providing a comfortable home for themselves and their half-caste families. The Hudson's Bay Company was responsible for outfitting them, and the Company was primarily interested in expanding their agricultural monopoly by doing so.

The French Canadians took up claims between the Willamette and Pudding Rivers in a pattern with which they apparently had been familiar before. The majority of their claims were elongated, having river frontage. There is evidence to suggest that such an arrangement was thought preferable because it afforded individual claims with a variety of available land resources and access to river transportation. Such arrangements provided riparian forest, open prairie, and open or forested terrace land.[8]

Many of the French Canadians living in the open prairies of Marion County had married Indian women, some of them being the daughters of local Indian chiefs. Indian men occasionally labored

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[8] For a more complete discussion of the patterns of Donation Land Claims, see Head (1971), "The Oregon Donation Claims and Their Patterns," Eugene: University of Oregon, unpublished dissertation. Head compared the patterns that the Donation Claims took in different parts of the valley and has studied the persistence of them to the present time.

alongside their brothers-in-law, and with the Indian women, they contributed to the success of the agricultural settlement.[9]

For the first few years of their settlement, the French Canadians were content enough in their relationship with the Hudson's Bay Company. Their agricultural resource strategies were primarily geared toward achieving a self-sufficiency. Their emphasis on wheat stemmed largely from its role as a medium of exchange for manufactured goods at Vancouver. In this instance the two divergent agricultural strategies of the Company and the French Canadians served each other well. The American settlers who took up claims across the river from the French settlement, and on the Tualatin Plains, were openly resentful of the Company's monopoly over the supply of livestock, seed, and agricultural implements. These Americans were more interested in building up an agricultural community in which they hoped they would prosper.

The Methodist missionaries were not notably successful in their mission with the Indians. They became more interested in advancing the pace of American settlement in the Willamette Valley. Like the American farmers, the missionaries were also discontent with the

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[9] John Ball, who shared a room in Desportes McKay's house on French Prairie, attempted to start a farm of his own. He was assisted in his efforts by several Indians, who helped him catch poines and helped him make harnesses out of deerskin and oak limbs. He broke the ponies to the task of plowing and hauling (Clarke, 1927, p. 229).

Hudson's Bay Company and worked to circumvent the monopoly. The expansion of local commerce was enough to bring these groups together in a livestock buying expedition to California for the expressed purpose of increasing local commerce.

In spite of the resentment against the Hudson's Bay Company, it remained the only viable marketing agent for goods produced on most of the valley's farms. While it was the strategy of individual farmers to achieve the greatest measure of self-sufficiency they could, they still had to rely upon the Company for the supply of certain manufactured items and for provision of an outlet for the few surpluses they produced.

It is doubtful if these farmers, acting individually, could have successfully established a viable agricultural community had it not been for the help of the larger commercial and religious institutions. The Hudson's Bay Company, in particular, had been most helpful to the American pioneers coming with the first several wagon trains to enter the valley. Many of these Americans had come ill-prepared to take up farming on this frontier, and others had lost all their belongings, arriving in a destitute condition. The goals of the frontier farmers differed from those of the Company, but the success of each was occasioned largely through the cooperation between them. The Methodist missionaries, not being primarily interested in material prosperity, were very selective toward those to whom they extended

a helping hand. For this they earned the contempt of those they had refused to help.

The agricultural efforts of the Hudson's Bay Company and of the Methodist mission both enjoyed the support of much larger outside institutions. The success of their farming efforts were all but guaranteed by this support. The annual migrations of American farmers that entered the Willamette Valley after 1840 did not enjoy such institutional support. Nevertheless, despite the years it took for the strategies of self-sufficiency in agriculture to succeed, it was their farming systems that came to dominate a landscape that became increasingly agrarian.

The Growth of American Systems of Agricultural Resource Use in the Willamette Valley after 1840

Prior to the 1840's, some American fur trappers did retire to the Willamette Valley to take up farming when the fur trade was beginning to decline. They followed the examples of the retired French Canadian trappers who started the agricultural settlement at French Prairie. By settling down in the Willamette Valley, and making a success at farming, the American trappers became a prime source of information regarding the suitability of the valley for agriculture. This particular source proved especially persuasive among the

kinfolk and friends of these early American settlers.[10]

In 1840, an event occurred which was to figure importantly in the establishment of American strategies of agricultural resource use in the Willamette Valley. That year saw the first American family set out for Oregon from Missouri with the expressed intent of starting a farm (Bowen, 1972, p. 27). The family was that of Joel P. Walker, who was a brother of the noted frontier explorer and trapper Joseph R. Walker. Perhaps of greatest significance was the precedent set by the Walker family in using wagons to reach Fort Hall on the junction of the Snake River and what was later to become known as the Oregon Trail.

The Origins of Oregon's Early Population

Histories and reminiscences about Oregon pioneers frequently stress the view that their numbers were made up of rugged individualists who prized both their independence and self-reliance. It is suggested that these are the qualities which were most characteristic of the pioneers who ventured so far into the wilderness not knowing what they would find. Such glowing appraisals obscure a more

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[10] Contemporary media reporting on the conditions in Oregon were generally not believed. The only way information could be considered as being reliable was if it could be substantiated through private affiliations, as with family members or trusted friends who had themselves settled in Oregon or had visited the region (Bowen, 1972, p. 75).

realistic assessment of the pioneers, and underestimate the lure of the Willamette Valley's abundant resources. It is unreasonable to assume that rational men would have undertaken journeys perilous to their families without compelling incentives. There is also the possibility that something in the backgrounds of these first pioneers set them apart from the majority of their contemporaries who elected to settle in less remote regions when they migrated.

Detailed studies of the nativities of Oregon's early population reveal that kinship ties were strong among the first emigrants, and that certain family clans were well represented in Oregon.[11] Whole families frequently emigrated to join relatives, just as individuals did. The American pioneers of Oregon belonged to a long tradition of westward moving people. Records of their lives show the places of their birth, marriage, and the birthplaces of their children occurring sequentially from east to west. Many, if not most of Oregon's early population had pioneered some part of the Middle West before (Johansen and Gates, 1967, p. 203). Whether families came from the North or from the South, they were mostly headed by frontier farmers, moving west in search of the idyllic "Garden of the World"

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[11] For a more complete discussion of these clans see the chapter 'Information Diffusion and the Origins of Oregon's Population', appearing in the dissertation by Bowen (1972), "Migration and Settlement on a Far-Western Frontier: Oregon to 1850," p. 78-80.

(Johansen and Gates, 1967, p. 204).

These people were very capable in the opening up of frontiers, their families benefited from the accumulated experience of several generations of frontier farmers. These pioneers had firsthand information from friends and relatives who had pioneered before them. When the flows of information regarding the bountiful nature of the Willamette Valley painted a clear enough picture for the potential emigrants, and when the prospect emerged for getting at least a Section of free land, many came down with the 'Oregon Fever'. There were undoubtedly many who were dissuaded from going because of the length of the journey, but those who did go knew generally what to expect in the Willamette Valley. The greatest hardships were endured by those who had been ill-prepared for the journey, not for the taking up of residence in the valley. Agriculture had been practiced there for over a decade and it was generally regarded that the valley would be the easiest place in the whole Oregon territory for farmers from the Middle West to make the transition (Head, 1971, p. 7).

Pioneering west along the Oregon Trail stands out in epic proportions in the history of American westward movement. In fact, other simultaneous movements have been obscured by it, placing the American settlement of Oregon out of perspective.[12]

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[12] For example, the North Central States grew from a population of 51,000 to 5,400,000 people between 1800 and 1850. Approximately 80 percent of this growth occurred during the 1830's and 1840's

The pioneers who went to Oregon faced a longer journey than any previously undertaken by settlers on former frontiers. Their motivations, accordingly, had to have been stronger than at previous times, as must have been the incentives. Preparing for the journey required careful planning. Farms had to be sold, or abandoned, and wagons, seed, implements, livestock, and provisions for the journey all had to be acquired. A Lieutenant W. Peel, of the British Navy, visited the Willamette Valley in 1845, and remarked about the motivations and origins of the pioneers:

> Every year an increasing number of emigrants come into the country from the United States; they are almost all from the western provinces, chiefly from Missouri. Some are induced to come over from not finding a market for their produce in that country, others come merely from speculation and a restless disposition and some to recover or get rid of their debts, or to escape justice (Clarke, 1927, p. 258).

It appears that the lieutenant was an accurate observer of the times, for detailed studies of the nativities of Oregonians recorded in the 1850 census reveals 38 percent of emigrating families (551) and 43 percent of all migrating individuals (2, 865) passed through Missouri alone. Illinois and Iowa came in second and third, contributing 1, 115 and 814 persons respectively (Bowen, 1972, p. 90).

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when the agitation about Oregon was at its peak. Furthermore, while the American population in Oregon grew from around 150 in 1840 to about 13, 000 in 1850, Wisconsin added another 275, 000 people and Iowa another 175, 000 people (Johansen and Gates, 1967, p. 247).

The sources for information about Oregon were diverse, including letters from Oregon written to friends and relatives; missionary lectures and meetings held to inform the public about Oregon; books written from firsthand and secondhand information; the publication of reports on Oregon made by government agents; agitation in the Congress of the United States by interested legislators; and, finally, the newspaper reports covering all the above. When considering the widespread national debate about Oregon, and the disproportionate contributions to Oregon's population made by several western states, it seems more than likely that the firsthand information passed between relatives and friends played the dominant role in building up the motivations to emigrate.

Motivations of the American Emigrants

The reasons for going to Oregon were varied, but a number stand out most prominently. John Fraser Hart commented on the motivations of the earlier immigrants who had settled the Middle West as follows, "The men who took up land in the Middle West were materialists, not escapists, they went into the wilderness to secure the blessings of the good life for themselves and their posterity" (Hart, 1972, p. 265). The men who traveled to Oregon were similarly motivated.

The prospect of awarding free land to settlers of the Northwest

was first raised by Representative John Floyd in 1822. The concept was kept alive by Senators Thomas Benton and Lewis Linn of Missouri. Senator Linn introduced a bill that would have awarded grants of 640 acres for every man, 160 acres for wives, and 160 acres for every child in a family. His bill passed the Senate on January 4, 1843, but it did not clear the House (Dick, 1970, p. 128). The prospective emigrants to Oregon felt it would only be a matter of time until such a bill was passed. Even President Polk assured "Oregonians" that they would receive land for having emigrated, when he stated, "To doubt whether they (the Oregonians) will obtain such grants as soon as the convention between the United States and Great Britain shall have ceased to exist, would be to doubt the justice of Congress" (Head, 1971, p. 129).

The intent of the Linn bill was to induce families to go to Oregon and thereby ensure a stable population. Peter H. Burnett, one such pioneer, confessed that the lure of free acreage, for himself, wife, and six children (1,760 acres) drove him to go (Dick, 1970, p. 128). A prolific couple could always add more children once in Oregon!

Early emigrants spread out to occupy as much land as they thought they might be entitled to. Throughout the 1840's they went, and when the boundary question was settled with Great Britain in 1847, that season's total of wagons bringing families numbered about 1,000. Even during the California gold rush in 1848, 200 wagons still

journeyed to Oregon (Head, 1971, p. 17). When the Donation Land Claims law finally passed in September, 1850, Oregon's population surged upward. This law awarded 640 acres to a man and wife and 320 acres to unmarried individuals already in Oregon. Families arriving after December 1, 1850, but before December 1, 1853, were still to be entitled to a 320 acre claim. Individuals were to be entitled to 160 acres during this time period. Oregon's population grew from about 13,000 in 1850 to 35,000 by 1853 (Dick, 1970, p. 128-129). This suggests the effectiveness of the lure of these generously large grants of free land.

Free land alone would not have enticed people to Oregon, had other factors not prevailed, for land was easily available in the Middle West at that time. A most prominent factor was the highly touted quality of the Oregon environment. Gustavus Hines commented in 1850, "Individuals have arrived here in September, and have through hard work harvested from 50 to 150 acres of wheat the following season, when they settled on fine prairies" (Hines, 1850, p. 346). He added that, "Beef and pork can be raised in the country with greater ease than wheat. Already there are many settlers in the valley who have from 200 to 500 head of cattle, and it is nothing strange for a man to be owner of a 100 hogs" (Hines, 1850, p. 346). In summing up the finer agricultural attributes of the valley, Hines concluded,

> . . . and, indeed, there are few countries, perhaps none, in which a poor man, when once he has surmounted the difficulties of getting here, in which he can get a better living, and get it easier, than in this. Such is the testimony of every person who has tried it for one or two years (Hines, 1850, p. 346).

Another attraction was the hope of a more stable economy.

A strong commercial orientation had already permeated the agricultural systems of the Middle West by the 1830's. The Business Panic of 1837 severely undermined crop prices in the Mississippi Valley states, and farm mortgages contracted for during periods of growth and expansion could not be paid. The interior location forced a reliance upon a very lengthy river transportation system in order to reach markets, and the freight rates were too high. The Willamette Valley must have been very appealing because of its much shorter river connection with the sea. The Willamette Valley farmers also had access to markets that were relatively inaccessible to the rest of the United States, leaving it freer of the business crises that plagued the farmers of the Middle West (Halbakken, 1948, p. 13). The valley was a remotely located frontier, but its population grew rapidly nevertheless, partly because its farmers got higher prices for their crops. They also had access to different markets than farmers in the Middle West did at the time. Commenting on the wheat and livestock situation in 1850, Hines noted, "At present the great influx of population creates high prices for these productions" (Hines, 1850, p. 346). The agitation about Oregon attracted widespread attention, but it was

greatest in the western states. Carl Sauer, writing on the Middle Border states, noted that they were vibrant with activity when they were being developed. He observed that many more people were required to build houses and barns in the states, and to improve the land, than were required to manage finished farms. Some of the surplus population went farther west to take up new land (Sauer, 1963, p. 77). Whereas some of the populations of these states might be considered surplus, not everyone who went west can be considered as having been part of a surplus. Frequently, established individuals went, and many of them had owned farms. Daniel Waldo, who came to Oregon in 1843, cited a number of reasons why people left Missouri. Low prices for crops was one, and to find more healthful environments was another. On remembering conditions in Missouri, he related:

> In 1843 our lands all got into market there and just cleaned the country out of money. Applegate sold a steamboat load of bacon and lard for one hundred dollars. That is all he ever got. The salt alone cost $150. I left everything. I had a big tract of land there and left that. There was no market anywhere on the Mississippi River. They used bacon for steamboat firing that year. The cause was the scarcity of money (Bowen, 1972, p. 48).

Waldo gave a different reason for leaving--"That was not what brought us to Oregon. I could make plenty of money there. . . . I just came for my health" (Bowen, 1972, p. 48). When Waldo reached Oregon, he went to Salem to look for good grazing land, but avoided the area because it reminded him too much of the Missouri River bottomlands, and he had had enough of the "fevers" (Bowen, 1972, p. 48).

Individuals who gave accounts of their motivations for coming to Oregon listed a variety of reasons. They searched for better economic circumstances, more favorable health conditions, milder winter climates, and an abundance of forested land to supply wood for building purposes and for fuel. When the contemporaneous population growths of Oregon and Middle Western states are compared, in view of the highly touted superior quality of the Oregon environment, one wonders why so few actually chose to go to Oregon.

It seems plausible that the frontier farmers who were more easily induced to emigrate perceived their opportunities differently. The evidence points out that they were the products of families who had, through several generations, moved from frontier to frontier. Perhaps because of their experience, they functioned better in frontier settlements where the strategies of resource conversion were in their beginning stages. Clarke, in his historical observations, noted that there were two distinct types of pioneers, "Those of the 1840's, were bold, energetic frontiersmen bent on reclaiming the country and those who came after the 1850's were of a merchantile class who were more given to developing the resources of the country" (Clarke, 1927, p. 380-381). There is no evidence to suggest that only the surplus populations moved west. Rather, families and individuals emigrated because they perceived better opportunities on frontiers. Furthermore, the Middle West was rapidly increasing in

the complexity of its agriculture's commercial relationships with a rapidly emerging urban-industrial sector. Consequently, when opportunities on a new frontier emerged, certain receptive families and individuals emigrated. In the Willamette Valley, they converted a frontier wilderness into a viable agricultural society, paving the way for the so-called 'merchantile class' that followed.

The Selection of Farm Sites

When the annual migrations of Americans started arriving in the early 1840's, there were three clusters of settlement. The French Canadians had settled between the Willamette and the Pudding rivers, the Methodists had selected a site just two miles south of Champoeg, and retired American mountain men had settled on the grasslands of the Tualatin Plains. A scramble for the land began immediately. William Goulder, who arrived in the valley in 1845, lamented that all the choice spots had been taken up already (Dick, 1970, p. 129). A complicated pattern of land claims developed. Unlike the regularity of land parcels in the Middle West, where the Public Land Survey System had been followed, the earliest pioneers in Oregon took the best lands along the rivers, and delimited them by metes and bounds methods. Properties were irregularly spaced and oddly shaped, to include desirable portions of open prairie and stands of timber wherever possible. The provisional government of Oregon retained

the 640 acre per family portion of the Linn Bill as a basic unit. The government recognized the trading of claims long before Congress passed the Donation Law. Claim regulations under the new Donation Law required later comers to adhere to compact shaped units, and it forbade the crossing of section lines to include choice parcels of timber or other valuable resources (Dick, 1970, p. 130). By 1865, most all of the available prairie land in the valley was in private hands, although much of it would lay uncultivated for years. Vast acreages were disposed of for railroad construction grants, and the amounts of land taken under the Homestead Act increased steadily after 1868. Lands acquired by the latter methods were generally poorly located with respect to existing transportation systems.

Once the settlers arrived in the valley they showed marked preferences for the locations of their claims. The most desired of locations was along the margins of the prairies and the forests. The vast open prairies of Linn County were avoided until all such interface areas were occupied. The grasslands were taken next, and by 1850 approximately 90 percent of all farms in the valley had been established in the prairies and around the prairie margins (Bowen, 1972, p. 129). As long as grasslands were available, completely forested areas were avoided also, and with good reason. Besides being heavily wooded, the forest floors were covered with a dense undergrowth of ferns and shrubs which made clearing them extremely

arduous. When open land became scarce, forests were cleared with great difficulty. One who tried, and quit, recalled in jest,

> I took up a claim in the forest
> And set myself down to hard toil.
> For three years I chopped and I slaved
> But never got down to the soil (Fite, 1966, p. 145).

Low lying areas were scouted carefully for driftwood and high water marks by many a wary settler from Missouri who had experienced devastating floods there. Some of these settlers preferred foothill locations above all others (Longwood, 1940, p. 36).

The strategy of the early arrivals, as evidenced by the sizes, shapes, and locations of their claims, was to get as much of the best land as they were entitled to (Figure 3). Locational preferences varied somewhat according to the past experiences of the claimants. The easily tilled grasslands were highest in demand, but access to timber was also of prime importance. Timber for all purposes, but especially for fences, had become very scarce in the Middle West in the 1830's and 1840's. Many a farmer had lost part of his crops to roaming livestock because of the scarcity in fencing materials, and this condition apparently was fresh in the minds of the land claimants in the Willamette Valley.

The Response of Agricultural Strategies to Economic and Social Development

The American settlers of the Willamette Valley brought with them

DONATION LAND CLAIMS AND GENERALIZED LAND USE CAPABILITY CLASSES IN MARION AND POLK COUNTIES

Scale in miles

0 5 10 15

Class LAND SUITABLE FOR CULTIVATION

I – Very good land: deep soil, nearly level, little or no erosion.

II – Good cultivable land: gentle slopes, moderately deep soil, slight erosion.

III – Moderately good cultivable land: moderate slopes, often shallow soils, moderate to severe erosion.

IV – Fairly good land: suitable for occasional cultivation. Best suited for hay, pasture, or orchards.

e – Erosion

W – Wet or overflow

Salem

North Santiam Riv

LAND NOT SUITABLE FOR CULTIVATION

V – Well suited for forestry or grazing.

VI – Moderately well suited for forestry or grazing.

(*Sources:* Head, 1971, and Soil Conservation Service Land Use Capabilities Map of the Willamette Valley.)

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agricultural resource use strategies that had been developed and perfected in the Middle West. A standard small grain-corn-hay crop rotation system was already being widely followed there by 1820. Corn was the key crop in these rotation systems. Most of the crop production was fed to livestock, with the choice of animals being dependent upon the crop rotation possibilities of individual farms. Hogs were better at converting grains, but cattle did better on hay and pasture. Cattle were generally preferred because they required less daily care, while hogs had to be tended each day. When farmers coming from the Middle West entered the Willamette Valley they had to alter their crop rotation systems to suit local environmental differences, because corn did not grow as well in the valley. Their livestock preferences remained virtually the same, but because of an early scarcity in cattle, the more prolific hogs outnumbered cattle until after 1850.

The Early Frontier Economy

Wheat was already a crop of commercial significance in the Willamette Valley before larger numbers of Americans began emigrating after 1840. The levels of production, however, were also adequate to meet the demands of existing markets. As the emigrants arrived, year after year, they frequently did so having lost most of their possessions due to the hardships encountered on the Oregon

Trail. When they arrived they were very short of supplies. The population influx stimulated demands for food, livestock, fruit trees, farm implements, and crop seed of all kinds. The established farms met these demands and the newcomers often paid with their labor, for the economy was generally a moneyless one in which wheat, beef, pork, potatoes, and a man's labor were exchanged in a barter system. Even those who could not start their own farms immediately staked their claims to 640 acres of land. It was common for these people to work first as carpenters, mechanics, or laborers until they could develop their own farms.

The influx of people from the United States increased the demand for wheat. Wheat which sold for 50 cents per bushel in 1837, commanded a price of $1.50 per bushel in 1845, due to the increase of local demand created by the large migrations of pioneers. The pioneer farmers also turned to wheat crops when they found that corn would not grow well. The rapid growth of the agricultural system created its own demands and kept prices high throughout the early 1840's. By 1846, however, there was an over supply of wheat on the market and the price for it dropped to 60 cents per bushel (Halbakken, 1948, p. 35). Wheat still remained the most important commercial crop and it dominated the frontier economy. In fact, in 1845 the provisional government declared wheat legal tender and both taxes and wages were paid in it. Potatoes, salted pork, and beef also retained their

importance as trade items. The established farms did the supplying, and the newcomers paid with their labor. When wheat was becoming a glut on the market in 1846, farmers began to organize in an effort to form their own trading company to circumvent the Hudson's Bay Company. These farmers, through their representatives, tried to persuade the United States Navy in the Pacific to buy their wheat. Late rains ruined much of the crop that year, however, causing the price to increase again and the cooperative marketing venture never got off the ground. In an attempt to create higher prices for wheat, the Oregon City Spectator, in an editorial, urged valley farmers to withhold wheat from the market until the price rose in California (Halbakken, 1948, p. 37).

During the 1840's, most newly established farm operations resembled one another. Self-sufficiency was a primary goal, and agricultural resource use strategies gave it priority. Local commercialism grew slowly because relatively few farms could provide anything that the other could not. Strictly market oriented farming was absent, although some French Prairie farms approached it in the raising of wheat for export. Local commercialism increased with the population during the early 1840's but the external markets did not grow as fast. When the farms established at this time had achieved their goals of self-sufficiency, and turned more attention to producing wheat as a cash crop, the markets became saturated and the prospects

for continued rapid growth of the agricultural community looked less bright.

The Growth of Commercial Orientations in Agriculture

By 1848, trade with California in processed agricultural products, such as flour and salted pork, and in wood products, such as lumber, laths, and shingles, was growing stronger. After the gold strikes in California, trade in all these items, and more, increased enormously. With the appearance of an expanding market in California, the pent up commercial aspirations of Oregon's farmers was given an outlet. Most of the commerce of the Willamette Valley had been internal until this time. Between 1840 and 1846, seven ships brought cargoes to the valley. Only four of them supplied much demanded goods. Between March, 1847 and 1848, nine ships visited Portland. Only one brought a cargo and the rest had stopped to take on goods destined for California (Bancroft, 1888, p. 16-18). The impact of the Gold Rush in California affected every aspect of society in Oregon. Some 50 ships put into Portland during 1849 to handle the increased trade (Bancroft, 1888, p. 48).

Farmers did not immediately benefit from this turnabout of affairs. The situation warranted vastly increased production from the farms, but that proved impossible. Laborers, who had been paid three bushels of wheat per day, could not be found at all when the

stories spread that laborers were getting $100.00 per day in California. Peter H. Burnet estimated that two-thirds of the male population left for California (Clarke, 1927, p. 448). Crops were left to be harvested by women and children. For three years following the gold strikes the prices received for food staples in Oregon doubled or tripled each year. The farmers who stayed behind reaped enormous profits. However, almost everyone who returned from the goldfields had met with some success. Even those who had been only moderately successful were able to return and pay for their old farms, buy more property, or buy new farms. Paul Darst, who had settled near Sublimity in 1847, was having a very difficult time of it before he went to California, where he was moderately successful. He returned the following year with $1,500, sold his claim and bought an established farm (Schmid, 1951, p. 13-14). Another settler, Hadley Hobson, had taken up a claim near Stayton in 1847. He was impoverished when he arrived in the valley and worked as a brick mason until he could develop his property. He also went to California, was moderately successful, and returned to pay off his claim and bought more land, extending his holdings to 1,500 acres (Schmid, 1951, p. 14).

Strategies of agricultural resource use which had been primarily selected to maintain family farmsteads were suddenly modified to take advantage of the situation when it became apparent how much money was to be made. There were 15 farms in Marion County which

together produced 27, 334 bushels of wheat in 1850 (Bowen, 1972, p. 197). The wheat sold for prices that peaked at $3. 00 per bushel that year (Halbakken, 1948, p. 43).

Specialty items commanded incredibly high prices in San Francisco and Sacramento. In 1849, Willamette Valley farmers shipped several tons of eggs aboard the General Lane, bound for San Francisco. The ship's captain sold the entire lot to a passenger for 30 cents per dozen. He in turn sold them in Sacramento for as much as $1. 00 per egg (Bancroft, 1888, p. 50).

William Meek and Henderson Luelling had the presence of mind to bring many varieties of grafted fruit trees to the Willamette Valley in 1847. They propagated their nursery stock and set out the first extensive orchards in the Waldo Hills area and around Salem. The trees began to bear in 1851. Luelling and Meek shipped four bushels of apples to San Francisco and got $200. 000 for them. In 1854, 500 bushels were shipped and sold for net profits of $1. 50 to $2. 00 per pound. From 1856 to 1869, bimonthly winter shipments of fruit were made to San Francisco, with steamers carrying from 3, 000 to 6, 000 boxes per trip. In the 1870's, however, this trade was reversed to some extent, because California orchards had come into production, and their fruit matured earlier in the season (Cardwell, 1906, p. 37-38).

The money made in agriculture during this period was invested

by individuals for capital improvements on their farms, and increasingly larger amounts were being invested in public works. Transportation systems were in desperate need of improvements, but they were delayed because the public was undecided as to whether roads or railroads would best serve their purposes. Earlier, such improvements had proved impossible because of much lower population densities and an inability of the population to afford public works projects.

By 1854, the gold boom and the business it generated began to die down. Agricultural societies began forming in the Willamette Valley in an attempt to advance agriculture and to sustain the prosperity. Fairs were organized, and in October, 1854, both Marion and Polk County farmers exhibited horses, cattle, sheep, fruits, and grains. By 1861, sufficient interest had been generated to support the founding of a state agricultural society (Bancroft, 1888, p. 338).

Certain areas in the valley were becoming noted for the production of wheat, or fruit, but most farms retained their diversified agricultural production strategies. An overview, in 1870, of 17 farms in Fall Creek Township, in Lane County, illustrates this. They ranged in size from 40 to 660 acres. The improved acreage on them ranged from a low of six acres to a high of 480 acres. The farms were valued between $400.00 and $3,000.00. Each of the farms had cows and horses, and 12 farms had sheep. Of the total, 14 raised

potatoes, 14 raised oats, 12 raised wheat, 12 cut hay, 5 had small orchards, and 7 sold forest products. Incomes from the sale of farm products ranged from $145.00 to $1,024.00 (Fite, 1966, p. 148).

Farmers increasingly participated in county fairs and subscribed to various farm journals, but with all of this, more progressive strategies were frequently instigated by a disproportionate few. By the 1870's, a so-called "gentleman farming" was already an important factor in the initiation of progress in agriculture. An example can be seen in the case of S. G. Reed and W. S. Ladd. These men were general merchants who had expanded into banking and transportation. They formed a partnership, and, as of 1871, operated 17 farms in the valley, the largest of which had 7,000 acres. They imported purebred beef and dairy cattle, and sheep. They also brought in managers experienced in the latest scientific methods of farming who experimented with grain, grass seed, soil drainage, fertilizers, and the latest farming machinery (Johansen and Gates, 1967, p. 348-349).

Growth of the Agricultural System and Social Progress

Surges in population growth in the Willamette Valley were closely tied to periods of agricultural prosperity. The California Gold Rush ushered in a very prosperous decade after 1850. By 1860, the combined populations of Marion and Polk Counties had increased 180 percent and the number of farms 156 percent. Large towns were

lacking, but 24 percent of the population of both counties was living in small towns. This percentage distribution remained consistent until about the 1880's, when the connection with the national railroad system was made. During the 1860's the population of the two counties increased by about 35 percent. Growth had slowed significantly during the decade of the Civil War. Marion County lost rural population during this decade, some of which was sympathetic with one side or other in the War, and went to fight in it. The Homestead Act was passed during this period, but it proved to be ineffective in drawing population to the Willamette Valley. Most who might have come, took up lands in the Middle West that were already served by railroads.[13] Also, the lands that were still available in the Willamette Valley under the Homestead Act were generally remotely located from the existing transportation systems. After 1870, however, railroads were built in the valley, and during the 1880's they were connected with transcontinental railroads. Population and agricultural production both increased in direct response to these events.

The slow growth of the agricultural system during the 1860's became a growing concern, and a State Commission of Immigration was established in 1872 to publish pamphlets to acquaint prospective

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[13] During the 1860's, while the number of farms in Oregon increased by 30 percent, they increased by 450 percent and 350 percent in Nebraska and in Kansas, respectively (Fite, 1966, p. 144).

immigrants with Oregon's bountiful resources. A more official body, the State Board of Immigration, was formed in 1874 to continue publicizing agricultural conditions in Oregon. Because they were viewed as impediments to growth, constant demands were made during the 1860's and 1870's for the break up of the large land holdings in the Willamette Valley. The Willamette Farmer, editorialized in 1874,

> . . . land ought to be subdivided and thickly settled with small productive farms, rather than remain in the hands of large land holders. It would be better for the economy, sustain the schools, churches, and other social institutions (Fite, 1966, p. 144).

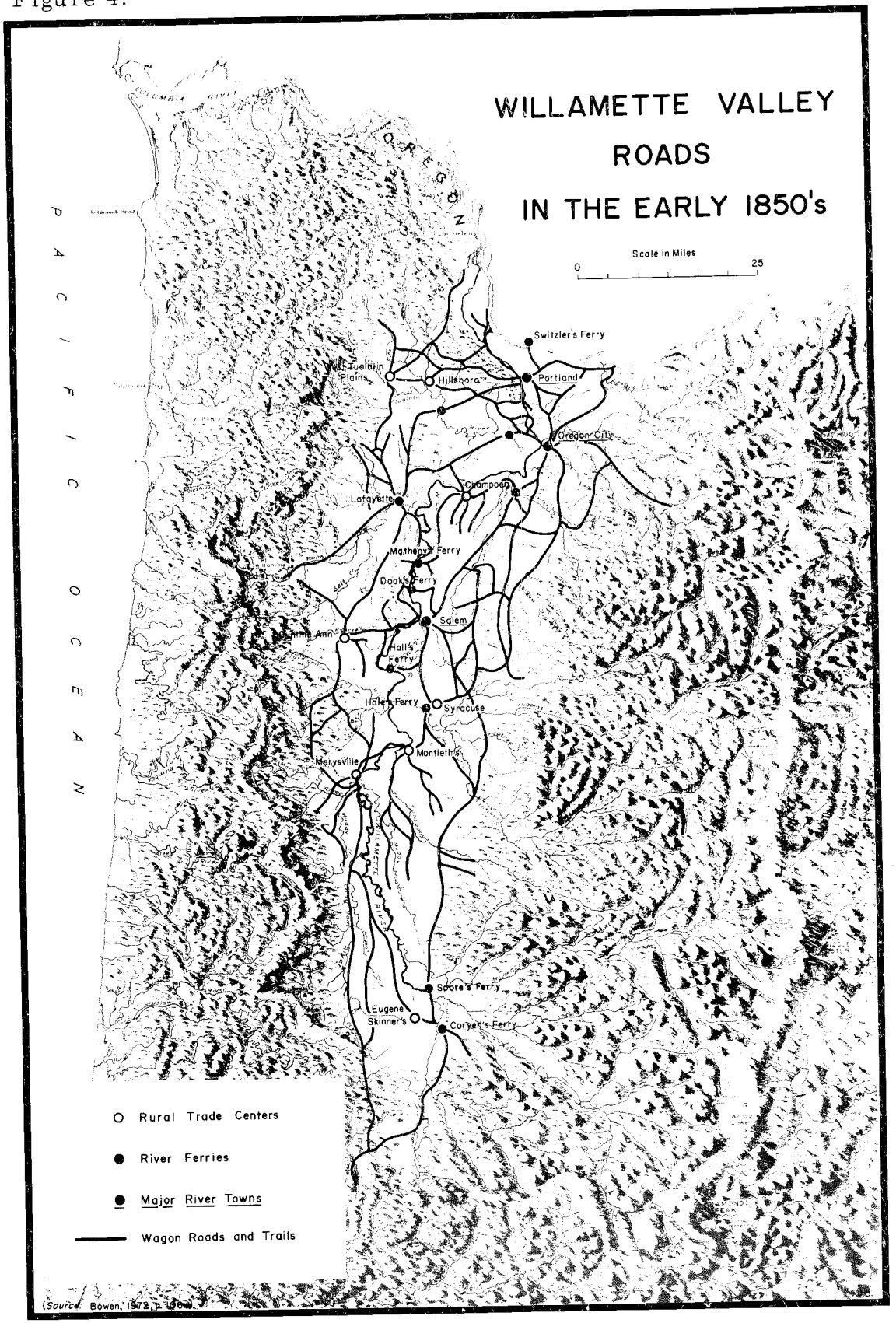
The State Board of Immigration continued to function into better times for agriculture. In the 1880's they published instructions to prospective farmers on the requirements of starting farms in Oregon. The Board advised that immigrating farmers should have enough money to remain independent for at least a year. By 1887, official advice was that from $500.000 to $800.000 would be necessary to meet the costs of putting up a house and for acquiring seed, implements, and livestock (Fite, 1966, p. 147). The most notable surges in the growth of the agricultural system usually accompanied major improvements in the transportation systems. This is also reflective of the increased commercial orientation of agricultural strategies. General farming remained the rule, but more farms were beginning to specialized in cash crop production.

Improvements in the Transportation Systems

The Willamette Valley adopted a system of Indian trails for a network of market and stage-line roads (Figure 4). The system as it was adopted was adequate for travel by foot or by horseback. When heavily laden wagons used these routes, they soon became impassible. Virtually all the roads used by wagons were turned into quagmires during the winter months, and many were axle deep with dust and deeply rutted during the summer. The Willamette River was the only reliable alternative in view of the deplorable conditions of the roads during the 1840's.

Settlements that showed promise of becoming larger towns during this decade were all located on or near the river because of its important transportation function. Numerous towns had been platted during this period, but uncertainties over land titles kept many people from building on town lots, causing the rural population to be swelled by substantial numbers of incipient town dwellers. A building boom took place when land titles were finally guaranteed by the passage of the Donation Land Claims Act. During the general prosperity induced by the discovery of gold in California, men who had been successful in the goldfields returned to build houses, enter businesses, or to buy additional property. Farmers who had benefited from the surge in demands for agricultural products improved their properties

Figure 4.


WILLAMETTE VALLEY
ROADS
IN THE EARLY 1850's
Scale in Miles
0
25
OREGON
PACIFIC OCEAN
Switzler's Ferry
Tualatin Plains
Hillsboro
Portland
Oregon City
Champoeg
Lafayette
Mathena's Ferry
Doak's Ferry
Salem
Hall's Ferry
Syracuse
Monteith's
Marysville
Score's Ferry
Eugene
Skinner's
Corbett's Ferry
Rural Trade Centers
River Ferries
Major River Towns
Wagon Roads and Trails
(Source: Bowen, 1978, p. 60)

or bought new farms. Transportation improvements were demanded by an enriched public, and they were taken up under public auspices.

A public road was surveyed between Champoeg and Salem in 1850, and a stage-line connected Champoeg and Marysville (Corvallis) by 1853 (Hussey, 1967, p. 206-207). A rage for the laying out of towns coincided with this period of prosperity. Town platting reached a peak level between 1850 and 1853, with the net result being that the growth of each of them was retarded by the competition from the others (Bancroft, 1888, p. 251). Towns which had located along the river competed vigorously for the farmers' trade. Local newspapers continuously extolled the advantages of the locations of their towns.[14] The river towns sponsored the building of roads into the countrysides from their river-front landings. A Champoeg merchant advertised in the Oregon City Spectator that he would "exchange goods and groceries for the farming community for wheat, oats, hides, pork, butter, chickens, eggs, or cash" (Hussey, 1967, p. 205). As the volume of road traffic increased, the condition of the roads grew worse. River towns planked their roads to enhance their trading position with the farmers. In the countrysides away from the river, farmers had to

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[14] William Corning, in his book Willamette River Landings, listed the towns of Butteville, Champoeg, Fairfield Landing, Wheatland, Lincoln, Salem, Eola, Independence, and Buena Vista as having been important shippers of agricultural products from the farms of Marion and Polk Counties during the heyday of river transportation Corning, 1947, p. 43).

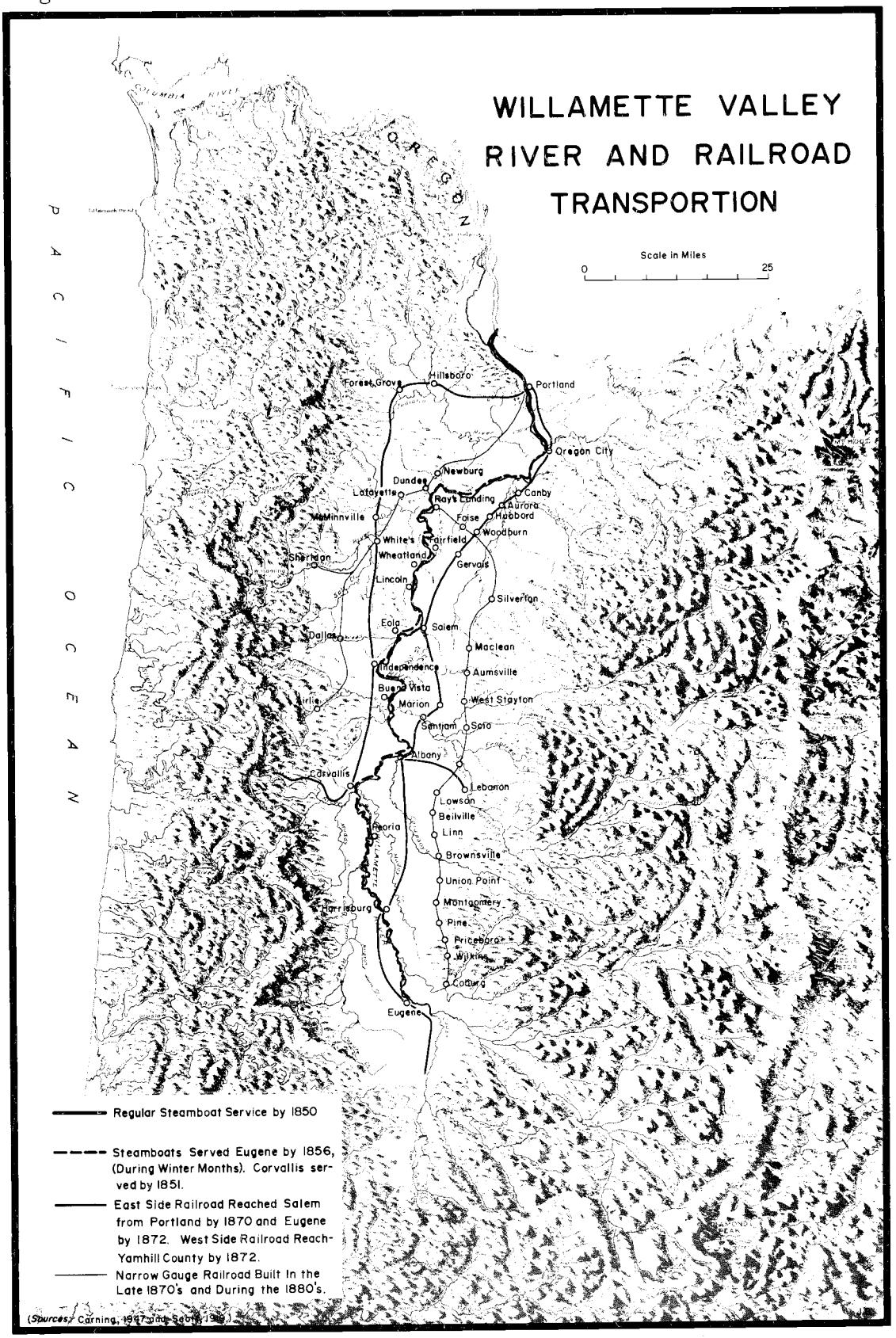
rely on their own efforts to keep roads open. It was reported in the Oregon Statesman on May 5, 1858, that the farmers of the Silverton area had called for a public meeting to discuss the building of a plank road all the way to Oregon City. They complained that wheat farming had become unprofitable in their district because wheat proved too bulky and combersome a product to be easily transported over the poor roads. Many had tried fruit farming as an alternative, but found that fruit could stand neither the cost nor the time of the journey (Clarke, 1927, p. 473). Action was repeatedly forstalled because of conflicting interests in both roads and railroads.

River Transportation

In the early 1850's, steam powered boats replaced the keel boats and flat boats in importance on the river as carriers of agricultural products. The cities on the lower river vied with each other to become the head of ocean navigation. By 1850, steamers were regularly traveling between Astoria and Oregon City. In the following year they reached up to Corvallis. The growing importance of river transportation was such that between 1850 and 1853, $30,000.00 in federal funds were spent to clear the Clackamas rapids from the Willamette (Clarke, 1927, p. 467). By 1856, steamboats were tying up in Eugene during the winter months (see Figure 5).

To combat high freight rates imposed by a succession of river

Figure 5.


WILLAMETTE VALLEY
RIVER AND RAILROAD
TRANSPORTION
Scale in Miles
0
25
PACIFIC OCEAN
OREGON
Forest Grove
Hillsboro
Portland
Oregon City
Newburg
Dundee
Lafayette
Ray's Landing
Canby
Aurora
Hubbard
Faise
Woodburn
McMinnville
White's
Fairfield
Wheatland
Gervais
Sheridan
Lincoln
Silverton
Eola
Salem
Dallas
Maclean
Independence
Aumsville
Buena Vista
Marion
West Stayton
Santiam
Sodo
Albany
Corvallis
Lebanon
Lowsan
Bellville
Peoria
Linn
Brownsville
Union Point
Harrisburg
Montgomery
Pine
Pricebora
Wilkins
Coburg
Eugene
Regular Steamboat Service by 1850
Steamboats Served Eugene by 1856, (During Winter Months). Corvallis served by 1851.
East Side Railroad Reached Salem from Portland by 1870 and Eugene by 1872. West Side Railroad Reach- Yamhill County by 1872.
Narrow Gauge Railroad Built In the Late 1870's and During the 1880's.
(Sources: Corning, 1937 and Scott, 1890.)

transportation monopolies, farmers banded together on a number of occasions to form their own shipping companies. In 1859, they formed the Yamhill Steamboat Company, which operated six boats on the river and its tributaries (Clarke, 1927, p. 468). In 1871, another farmers' group formed the Willamette Navigation Company which operated boats up to Lebanon on the Santiam River. Two years later, in 1873, a canal and lock system was completed at Oregon City. It fell into private hands and became part of the Willamette Transportation and Locks Company, which constituted yet another monopoly with which farmers had to contend. At this time, wheat sold for $1.45 to $1.50 per bushel in Portland, but after farmers from the Corvallis area had paid out transportation costs they got 75 cents per bushel (Halbakken, 1948, p. 55). To counter official collusion with shippers the Grange Movement incorporated the Farmers Transportation Company in 1876. This company operated two river steamers, but like the previous cooperative ventures, this one also lost money and was forced to sell (Clarke, 1927, p. 473). Finally, by 1905, the state legislature urged Congress to acquire the locks at Oregon City and make them public. At this late date, however, the shipping of agricultural products had long been supplemented by other means.

Railroad Transportation

During the 1850's, investments in road building were greatly

curtailed because it was thought that railroads would offer better results. Elsewhere in the United States, railroads were in general use, and their introduction into Oregon was eagerly awaited. In the 1860's, the agitation for them became very strong. Horse drawn railcars were in use around the falls at Oregon City in 1862. Portland's Morning Oregonian, editorialized in 1865, that a railroad through the Willamette Valley was what was needed to make Oregon a great state. It further stated that without railroads farmers would remain handicapped, and cited the fact that thousands of bushels of the finest fruit were left to rot because it did not pay farmers to ship fruit (Fite, 1966, p. 138). In his 1866 message to the State Legislature, Oregon's Governor George L. Woods said "a general system of railroads in Oregon is an absolute necessity," and he urged that the legislature do all it could rightfully do to aid in the construction (Fite, 1966, p. 138). The building of railroads in the Willamette Valley, even before the tie-in with the national network, was a more important attraction to immigrating farmers than the Homestead Act had been.[15]

Railroads caused extensive changes in agricultural production when they pushed up the valley from Portland. The Oregon Central

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[15] Johansen and Gates made the observation that the number of farms in Oregon went from 5,806 to 7,587 between 1860 and 1870, but that by 1880, it rose to 16,217. From this they concluded that railroads had been a more important consideration for farmers immigrating to Oregon than had the offer of land under the Homestead Act (Johansen and Gates, 1967, p. 342-343).

Railroad completed 48 miles of track between Portland and Yamhill County in 1872. The Oregon and California Railroad pushed up the valley on the east side of the river, laying about 200 miles of track to Roseburg by 1872 also (Scott, 1919, p. 141). The commercial aspects of agricultural strategies intensified wherever railroads were built. Trade patterns, land values, and the crops grown were all changed by the coming of the railroads. New towns appeared, and prospered, along the tracks, just as they had previously done along the river. When the railroad neared Salem in 1870, agricultural land values jumped in some cases from $7.00 to $30.00 per acre. The land continued to increase in value rapidly, reaching to $50.00 or $60.00 an acre by 1878 (Johansen and Gates, 1967, p. 374). The railroad towns also competed for the farmers' trade, as the river towns had done before. They built roads into the countryside, but with the increased wagon traffic on them, these too became impassable, and yet another railroad system was built.

The valley's railroads and river steamers both fell under the control of the same monopolies, and farmers again organized to support still other railroad ventures. A narrow gauge railway system, more removed from the river and the railroads, was backed by farmers, who supported construction of parts of it through a 50 cent per acre assessment in the districts that were to be served. In all, 183 miles of narrow gauge track were laid, but a 1,000 mile system had first been envisioned (Scott, 1919, p. 141-142)(Figure 5).

Agricultural growth was for a time impeded by the lack of transportation systems, but when they were built, progress in agriculture was impeded by high freight rates. The Grange movement in the valley was largely an outgrowth of the high rates charged by the transportation monopolies, which controlled both the river steamers and the railroads. Angry farmers backed each of the successive transportation systems to be built in hopes of providing competition that would cause freight rates to be lowered. The railroad from Corvallis to Yaquina was built in an effort to avoid the high freight rates charged by the valley's transportation monopolists. It became known as the "Frustration Road," because it was built out of frustration over high freight rates. Gravity and an easier access to all of the Willamette Valley hinterland favored Portland over Yaquina, and the road proved a failure.

In retrospect, it may be that the monopolists were somewhat unfairly maligned. Two essentially parallel railroad systems were built through a sparsely populated agricultural countryside that was also served by a river system that was navigable much of the year. High freight rates may have been made necessary due to lowered freight volumes on single systems, resulting from the duplicity in transport systems through a relatively sparsely populated countryside. Furthermore, when the first railroads were built, the lines were located out of political expediency because some towns more effectively

touted their locations than others did. They were also located too close to the river in most instances to effectively tap the farming districts that were located farther away from the river.

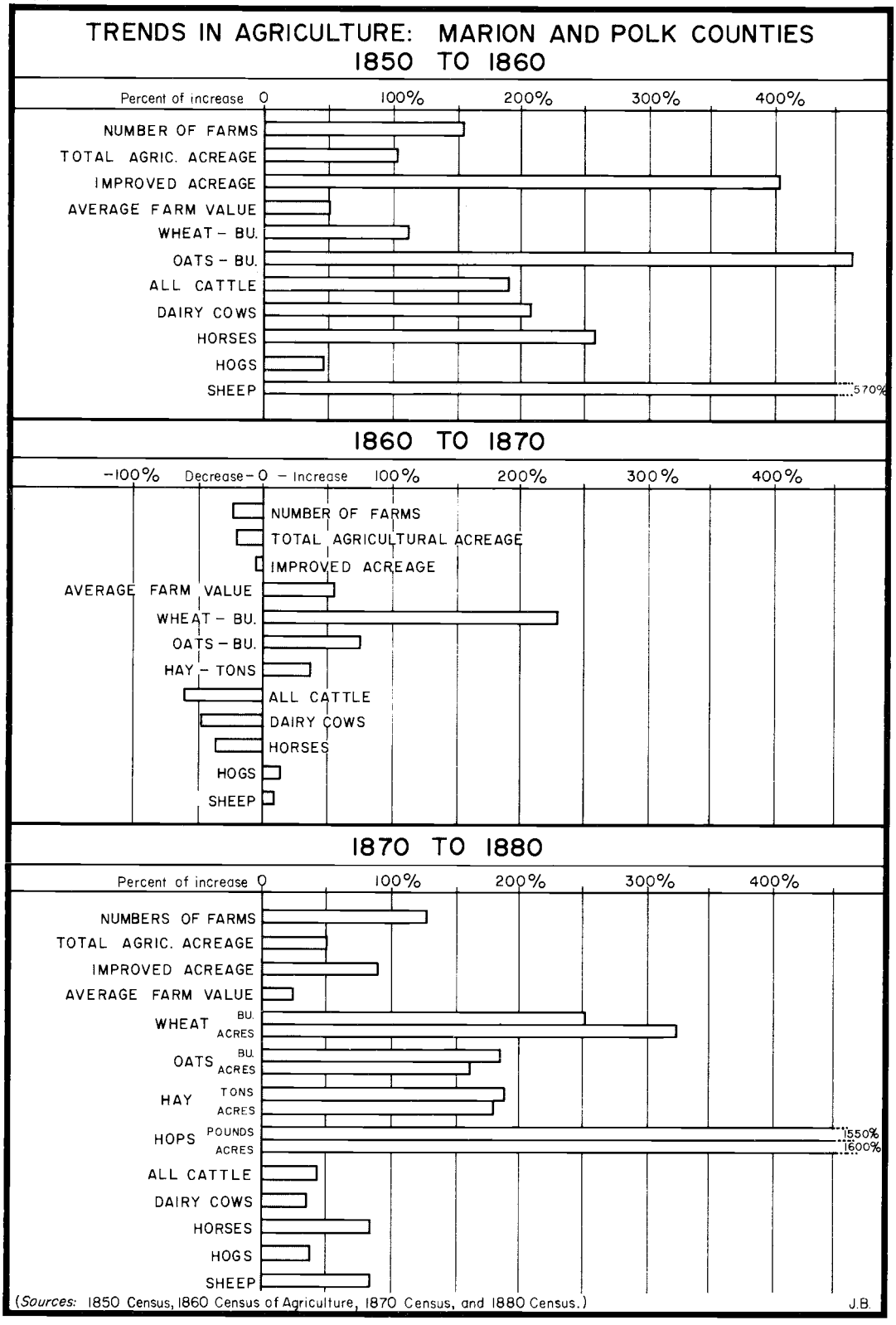
The Evolution of Agricultural Strategies in Marion and Polk Counties by Decades from 1850 to 1900

The Decade of the 1850's

The decade of the 1850's was a prosperous one for the agricultural system of the Willamette Valley. The farm strategies of the 1840's, whose primary aims had been to achieve states of self-sufficiency, quickly adopted increased commercial orientations when markets suddenly opened up in California. Few farms specialized completely in the production of commodities destined for export to California. Most farms, however, did attempt to participate in the increased trade with one or more of the surpluses they produced. Those farms that did so most effectively were most favorably located near the Willamette River in areas served by good wagon roads.

The rates of increase in the production of many crops and of most livestock, over the course of this decade, were greater than the rates posted by either the number of farms or the total population (see Figure 6). The large size of the Donation Claims greatly facilitated the trends of the growth that did occur. The improved

FIGURE 6


TRENDS IN AGRICULTURE: MARION AND POLK COUNTIES
1850 TO 1860
Percent of increase 0 100% 200% 300% 400%
NUMBER OF FARMS
TOTAL AGRIC. ACREAGE
IMPROVED ACREAGE
AVERAGE FARM VALUE
WHEAT – BU.
OATS – BU.
ALL CATTLE
DAIRY COWS
HORSES
HOGS
SHEEP
570%
1860 TO 1870
–100% Decrease – 0 – Increase 100% 200% 300% 400%
NUMBER OF FARMS
TOTAL AGRICULTURAL ACREAGE
IMPROVED ACREAGE
AVERAGE FARM VALUE
WHEAT – BU.
OATS – BU.
HAY – TONS
ALL CATTLE
DAIRY COWS
HORSES
HOGS
SHEEP
1870 TO 1880
Percent of increase 0 100% 200% 300% 400%
NUMBERS OF FARMS
TOTAL AGRIC. ACREAGE
IMPROVED ACREAGE
AVERAGE FARM VALUE
WHEAT BU.
ACRES
OATS BU.
ACRES
HAY TONS
ACRES
HOPS POUNDS
ACRES
1550%
1600%
ALL CATTLE
DAIRY COWS
HORSES
HOGS
SHEEP
(Sources: 1850 Census, 1860 Census of Agriculture, 1870 Census, and 1880 Census.)
J.B.

agricultural acreage in Marion and Polk Counties increased by 400 percent, while the numbers of farms increased by 158 percent and the total agricultural acreage grew by only 107 percent during this decade. Farms were capable of greatly expanding their productivity because of the reserve acreages many of them had available as a result of the large sizes of the Donation Claims. The accumulated capital improvements of farms is reflected by the 52 percent increase in value of average farms during this decade. Because of a more rapid increase in the number of farms than in the total agricultural acreage, the average size of farms dropped from 496.4 acres in 1850, to 398.6 acres in 1860.

Wheat was already the most important commercial crop raised in both counties in 1850, and its production was increased 115 percent by 1860. Oats occupied the next greatest amount of acreage in 1850, but its production was increased by 470 percent by 1860. The production of potatoes, which were also a most important food staple for the local population, was increased by 280 percent over the decade, while the population increased 180 percent.

The percentage increase in the numbers of all livestock, with the exception of hogs, was also greater than the percentage increase in the number of farms. Cattle remained most numerous throughout the decade, but the number of sheep increased over 15 times to reach a close second. Dairy cattle in the two counties increased in number

by 209 percent, while butter production increased 158 percent and cheese 700 percent. The increase in butter production matched the growth in the number of farms but the greatly increased cheese production reflects the growing importance of local and interstate commerce.

In spite of the increased commercial activity of the 1850's, the majority of farms implemented broad range strategies of resource use. They retained their self-sufficient character. Dairy cows were found on almost all farms, as were horses and hogs. Sheep raising was noticeably more concentrated, particularly in the vicinity of the woolen mills established in Albany in 1854, on Rickreal Creek in 1855, and in Salem in 1856 (Bancroft, 1888, p. 338). Orchard fruits also were concentrated early. The largest orchards had been planted in the Waldo Hills and around Salem. These concentrations existed primarily because the first fruit tree nurseries were close by. While fruit raising became of the greatest commercial significance in these two areas first, farmers all over the valley raised some kinds of fruit. When the fruit trade with California became so profitable, farmers from all over the valley came to buy scions and young trees of the improved varieties available at the nurseries for 50 cents and one dollar each (Cardwell, 1906, p. 35). The value of the orchard products sold in 1860 reached $166,556. This peak value fell off sharply and was not equaled until after the turn of the century. Broadly based

strategies offered the best insurance against the consequences of sudden price and market changes, and that is one reason why such strategies were so widely implemented.

The Decade of the 1860's

The size of the agricultural system during this decade in Marion and Polk Counties declined (see Figure 6). By 1870, the total population of the two counties had increased by 36 percent over the decade. The rural population loss, which was not again made up during the decade, was accompanied by a 26 percent decline in the number of farms. The town populations apparently did not suffer such declines. It should be remembered that substantial numbers of people who settled on farms, or who hired out as laborers and carpenters to work on the farms of others, moved to take up residence in towns at the first opportunity. To some extent, the decline in farms may be attributable to the growth of towns and the emergence of alternative employment opportunities in them.

It is interesting to note that while the total agricultural acreage declined by 22 percent during the decade, the improved acreage declined by only five percent. Farms in the larger size classes increased in size and number as the number of smaller farms declined. There were 337 farms in both counties having 50 acres or less in 1860. By 1870, farms in this smaller size class numbered 134. The

number of farms in the classes between 50 acres and 500 acres were reduced from 839 in 1860 to 810 by 1870. In the size class of farms over 500 acres, however, the number increased from 69 farms in 1860 to 81 farms by 1870. Because of this trend, the average size of farms increased from 398.6 acres to 428.9 acres.

Overall agricultural growth in the Willamette Valley during this decade was interrupted by the Civil War. There were cases where farmers abandoned their farms to return to fight in the war. Growth after the War was also slow, because other frontiers served by railroads were opened up under the Homestead Act.

On the farms, wheat production increased by 232 percent over the decade. Oat production also increased, but by a more conservative 78 percent. Sheep and hogs increased by small percentages, but the numbers of horses, cattle, and dairy cows all showed sizable declines. Even with the declines in livestock, however, 39 percent more hay was cut in 1870 than in 1860, indicating that changes were taking place in livestock operations.

Trade in agricultural products besides fruits also declined when California's farms rose to supply their local markets. The value of orchard products produced declined steadily through the 1860's, and by 1870 the value of all orchard products had fallen to $37,827.000, a 78 percent decline in value from 1860. The production of other crops tended to stabilize. The production of potatoes increased barely at all.

Agricultural strategies had to make an adjustment to the decline in commerce. Many farms did so by again emphasizing wheat when fruits and other crops lost their California markets. Along with the diminished commerce came a slowdown in growth. In some rural areas, as in eastern Marion County, the population declined. The beginnings of trends toward the specialization of certain commercially oriented crops that were grown for export during the boom years of the 1850's were abruptly interrupted by events of the 1860's. The change in circumstances favored agricultural strategies that were broadly based. Those which were leading to an increasing specialization, as in fruit, suffered directly with the loss of California markets. This decade had a stabilizing effect on agriculture, and it prolonged the dominance of self-sufficiency farming strategies. Experimentation continued, however, in an effort to revive profits with other crops. One crop just beginning to receive attention was hops. About four acres of them were planted in 1870, and they yielded over 1,000 pounds per acre.

The Decade of the 1870's

By most standards of measurement, the agricultural system of the Willamette Valley experienced a positive growth surge during the 1870's. The size of the system grew larger as more farms and more agricultural acreage were added to it (see Figure 6). Parts of eastern

Marion County were rapidly resettled in the early 1870's by farmers recently arrived from the Middle West. They came first by rail to San Francisco, then by boat to Portland, and finally by train south up the valley (Schmid, 1951, p. 49-50).

The largest farms increased more rapidly in number than smaller size classes. Farms larger than 500 acres increased in number from 81 in 1870, to 241 by 1880, for an increase of 200 percent. The smallest size class of farms increased in number by only 15 percent. The greatest expansion occurred in the classes between 50 acres and 500 acres. In this range the number of farms increased from 881 in 1870, to 1,888 in 1880. The large increase in the total number of farms further reduced the size of average farms to 267.9 acres in 1880.

Farm tenancy was slowly increasing and by 1880, 14.1 percent of the state's farms were rented (Swift, 1909, p. 32). The tenancy rates were generally higher in the older agricultural counties. The leasing arrangement most common on farms in Marion and Polk Counties depended upon the types of farms. On farms that emphasized wheat or other small grains, it was usually a crop share lease arrangement. On farms that emphasized either orcharding or dairying, cash tenancy was most common.

The percentage increases in the production of wheat, oats, hay, potatoes, and hops were all greater than the percentage increase in

the number of farms. Average farm productivity increased, and the system grew larger in extent. The agricultural acreage expanded by 51 percent, while the total improved agricultural acreage expanded 92 percent. This period of growth accompanied a rise of 40 percent in the total population, and it occurred during a time of increased prosperity which was touched off by the building of railroads in the valley. The railroads (by providing better access to markets) directly stimulated increases in sheep and wool production and revived a dormant fruit industry. They also provided better transportation for all other crops shipped in bulk, such as wheat. The value of all orchard products increased 134 percent during the decade, as measured by the 1880 census. Wheat acreage was expanded 320 percent in Marion and Polk Counties, but yields were at a low of 16 bushels per acre, so production only increased by 252 percent. The acreage in oats increased 162 percent, but its yields were better so production increased 186 percent. Of all livestock, sheep increased most rapidly in number, and their growth in number by 1880 was 87 percent. Wool production increased even more to 152 percent. Increases in other livestock operations were more in line with the growth in size of the local market. The numbers of cattle, dairy cows, and hogs increased 39 percent, 46 percent, and 35 percent respectively. Beef cattle were becoming less important on Willamette Valley farms as the centers of their production shifted east

of the Cascade Range. Dairying increased in importance in their place. This is verified by the 180 percent increase by 1880 in the acreage from which hay was cut. Perhaps coincidentally, butter production increased by 180 percent, and cheese production by 200 percent.

During the 1870's, the agricultural system of the Willamette Valley began to take on new characteristics. The heavy reliance upon wheat as the main cash crop was coming into question. Trends toward strategies which favored diversification in commercially important farm enterprises were becoming more noticeable. Hops had been tried successfully for ten years and in 1880, 72 acres were in production. Dairying was increasing in importance, and interest was revived in the growing of fruit.

The Decade of the 1880's

The productivity of the agricultural system increased during the 1880's, as did the number of farms. Both increases occurred in spite of a minor decrease in the total agricultural acreage (see Figure 7). These trends took place in a time of greatly increasing complexity in the inter-relationships between the farm and non-farm sectors of the local economy. Whereas the growth of the agricultural system had been of paramount importance in the economy until 1880, this situation had changed drastically by 1890. The connection of the valley's

railroads with the national networks occasioned the transition. Three times as many immigrants entered Oregon in the 1880's as in the previous decade. However, a much higher proportion of them were settling in towns and cities, taking advantage of rapidly expanding employment opportunities outside of agriculture. In 1880, Oregon's farms represented 50 percent of the state's total assessed wealth, but by 1890, they accounted for only 27 percent of the wealth (Johansen and Gates, 1957, p. 338). The decline was only a relative one because of an accelerated growth of cities and towns. Urban growth increased tremendously. Of all the immigrants entering the state, 41 percent settled in either Multnomah or Marion County during this decade. The state's population classed as urban dwelling increased from 14.8 percent in 1880, to 26.8 percent in 1890 (Johansen and Gates, 1967, p. 395).

The total number of farms in Marion and Polk Counties increased by 19 percent during the decade. The number of smaller farms, those having less than 50 acres, increased most rapidly, from 155 farms in 1880 to 399 farms in 1890, for a total increase of 157 percent for the decade. Farms in the intermediate range, between 50 acres and 500 acres, increased by only seven percent, with most of that occurring in the smaller farms within this range. Some of the farms over 500 acres in size were broken up into smaller units as their number decreased from 241 in 1880 to 220 farms in 1890. Because of the

increase in the number of farms and the stability of the total agricultural acreage during this decade in the two counties, the average size of farms decreased further from 267.9 acres in 1880, to 220.5 acres in 1890.

The percentage increases in commercial crops generally rose higher than the percentage increase in the number of farms. Wheat acreage declined by a full 20 percent over the decade, but the yields per acre in 1890 were higher than those of 1880, and production rose 16 percent over the 1880 level. Part of the acreage taken out of wheat was planted to oats in 1890. The acreage in oats increased 42 percent, and the production rose 43 percent. The acreage from which hay was cut rose 23 percent by 1890. Hop production continued to expand rapidly from 72 acres in 1880 to 1,314 by 1890.

The percentage increase in the numbers of livestock was also greater than the percentage increase in the number of farms. The number of sheep posted the highest increase, 87 percent. The increase for all cattle was 64 percent, but most of this gain was made up by an increase in numbers of dairy cows of 46 percent. Horses and swine both increased in number by 20 percent, about the same as the percentage increase in the number of farms. With the rapid rise in the growth of cities and towns, poultry production was also greatly expanded.

The agricultural system of the Willamette Valley in 1890 was

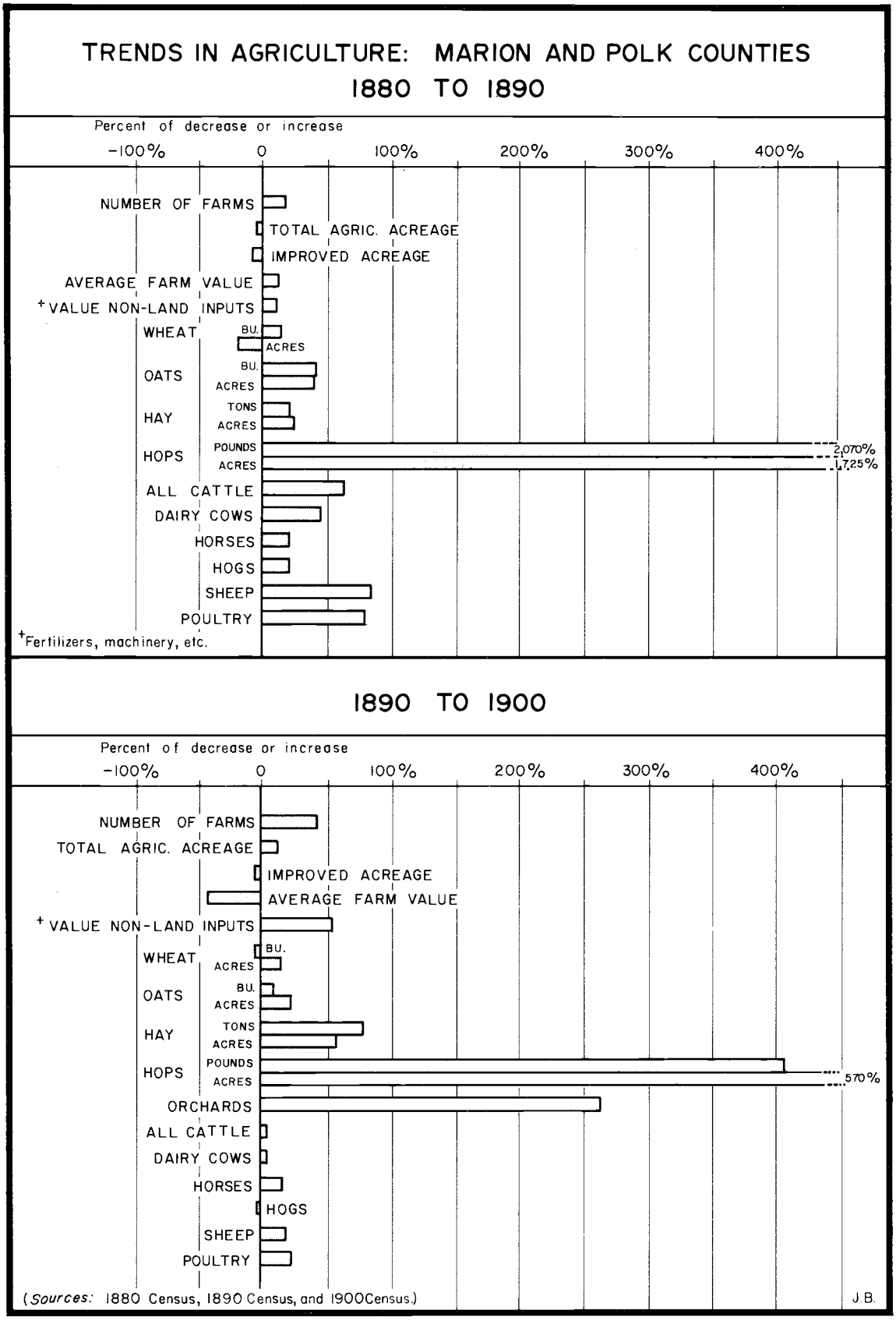
fully exposed to the full effect of business fluctuations in the rest of the country. With the integration of the valley's railroad system with the national network, Oregon's farm products reached eastern markets by rail. Fruit, especially, came to rely upon railroad transportation. With the appearance of refrigerated storage plants and railroad cars, fruit acreage became more valuable than all others in the valley.

Prior to 1880, the valley retained some of its frontier agricultural complacency, but after that date agricultural strategies were increasingly geared to market oriented farming activities. The reliance upon wheat and beef cattle was changed considerably by 1890. Dairying, orcharding, and the raising of specialty crops such as hops were all indicative of a trend toward greater diversification.

The Decade of the 1890's

The agricultural system of Marion and Polk Counties, in the 1890's, grew through both the addition of more farms, an increase in number of 47 percent, and through an increase in the total agricultural acreage of 12 percent (see Figure 7). The greatest increase came in the smaller sized farms. Farms having 50 acres or less increased in number from 399 in 1890, to 1,138 in 1900. There were also 1,976 farms in the 50 to 259 acre size class of farms. An additional 599 farms were in the 260 to 499 acre range, and 231 farms were larger than 500 acres. The average size of farms in the two counties

FIGURE 7


TRENDS IN AGRICULTURE: MARION AND POLK COUNTIES
1880 TO 1890
Percent of decrease or increase
-100%
0
100%
200%
300%
400%
NUMBER OF FARMS
TOTAL AGRIC. ACREAGE
IMPROVED ACREAGE
AVERAGE FARM VALUE
+VALUE NON-LAND INPUTS
WHEAT
BU.
ACRES
OATS
BU.
ACRES
HAY
TONS
ACRES
HOPS
POUNDS
ACRES
2,070%
725%
ALL CATTLE
DAIRY COWS
HORSES
HOGS
SHEEP
POULTRY
+Fertilizers, machinery, etc.
1890 TO 1900
Percent of decrease or increase
-100%
0
100%
200%
300%
400%
NUMBER OF FARMS
TOTAL AGRIC. ACREAGE
IMPROVED ACREAGE
AVERAGE FARM VALUE
+VALUE NON-LAND INPUTS
WHEAT
BU.
ACRES
OATS
BU.
ACRES
HAY
TONS
ACRES
HOPS
POUNDS
ACRES
570%
ORCHARDS
ALL CATTLE
DAIRY COWS
HORSES
HOGS
SHEEP
POULTRY
(Sources: 1880 Census, 1890 Census, and 1900Census.)
J.B.

fell to 167.3 acres in 1900. The rapid growth in the number of farms was overshadowed by an increase in the urban population. Cities continued to grow rapidly, and the state's urban population constituted 32.2 percent of the total by 1900.

In 1893, a national business crisis severely affected wheat farming in Marion and Polk Counties. Whereas wheat production continued to increase after 1890, by 1893 the price valley farmers received for their wheat had fallen to 45 to 50 cents per bushel. Acreages in wheat were drastically cut back, and in Marion County production dropped off 50 percent from what it had been in 1888 (Halbakken, 1948, p. 67). By 1900, wheat acreage had again increased by about 14 percent over the 1890 level. The acreage in oats was also expanded by 23 percent.

Agricultural strategies became increasingly oriented toward diversification in commercial enterprises by 1900. This was noticeable most through the increase in dairying, orcharding, and in the raising of specialty crops. The acreage in fruit orchards increased 266 percent over the decade. The acreage from which hay was cut was increased by 59 percent, and the acreage in hops increased from 1,314 acres in 1890, to 8,824 acres in 1900.

The trend toward increased commercialism in certain farm activities coincided with an increase in farm tenancy. In 1900, tenancy on Marion and Polk County farms was at 25.8 percent of the

total. Most lease arrangements were made on a crop share basis, with a much smaller proportion of the farms being rented for cash (Swift, 1909, p. 53-54).

In 1900, general farms were still in the majority, but the former strategies of self-sufficiency had been replaced by those geared to market oriented production of a greater variety of cash crops. Along with this trend came an increased usage of non-land resource inputs in farming operations. The total cash value of non-land resource inputs increased by 130 percent during the 1890's. Even with the large increase of farms, this still represented an increase in the use of non-land resources of 56 percent per farm in the two counties. From such trends it is clear that the character of the agricultural system had changed.

CHAPTER III

THE DIVERSIFIED AGRICULTURAL GROWTH STAGE, 1900 TO 1950

The agricultural system of the Willamette Valley experienced positive growth throughout the first agricultural growth stage between 1840 and 1900. The numbers of farms, the total agricultural acreage, the numbers of livestock, and the acreages devoted to staple crops almost all showed steady increases until after the turn of the century. In the decade between 1900 and 1910, however, the pace of agricultural activities quickened, following the relatively sluggish decade of the 1890's. After 1900, in Oregon, new lands were settled east of the Cascade Range, and in the Willamette Valley both the numbers of farms and the total agricultural acreage continued to increase. The valley's farms came to represent a greater proportion of the assessed wealth in 1910 than they did in 1890 because of the positive growth trends. In the first decade of this century Oregon's farms increased 300 percent in value, an increase which was three times the national average (Johansen and Gates, 1967, p. 445-446).

Based upon preliminary observations of the positive growth trends, it would appear that this particular decade could have been included for the purposes of analysis within the first agricultural

growth stage. The nature of the growth trends during the first decade of the second stage, however, was distinctly different from that which characterized those of the previous stage. Correspondingly, there was a recognizeable shift in the agricultural resource use strategies employed in the Willamette Valley.

Agriculture, in general, acquired an increased commercial orientation after 1900. The growth of commercialism in farming manifested itself in an increasingly diversified agricultural production. A greater variety of farm products were beginning to be marketed on a commercial basis both locally and out of the state. This change in the orientation of agriculture was brought about when strategies of resource use were modified to accomodate an increasingly complex commercial intercourse between a farm population, whose growth had begun to level off, and a non-farm population which was expanding in numbers dramatically (Figure 8).

During the transition from the first to the second growth stage, the progress of the agricultural system in the Willamette Valley became increasingly tied to the course of events in the non-farm sectors of the local society. The newly emerged commercial relationships between the farm and non-farm sectors represented a conspicuous departure from past circumstances. In the early decades of the first agricultural growth stage it was the success of the agricultural system which stimulated the growth of cities and towns.

FIGURE 8

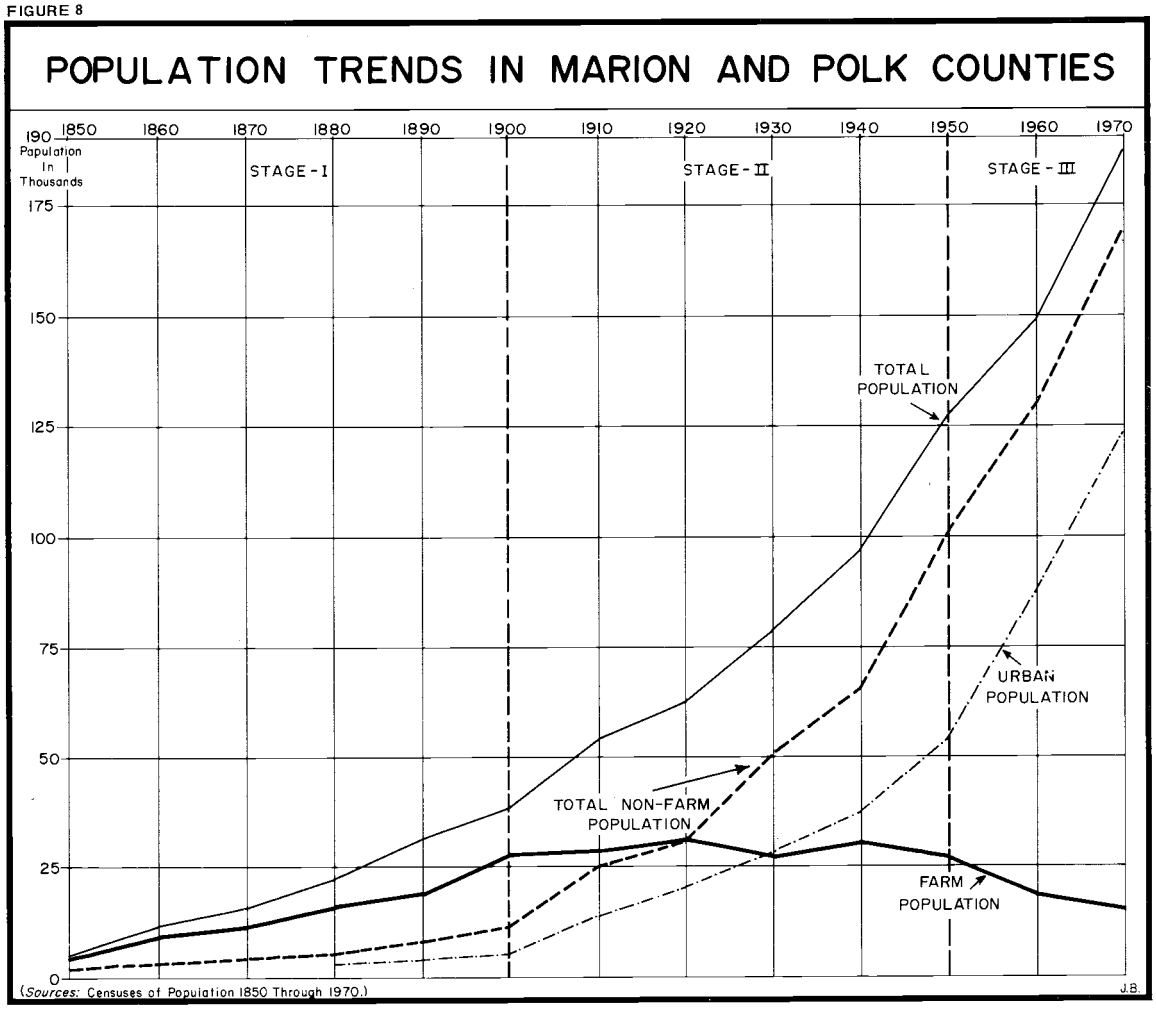
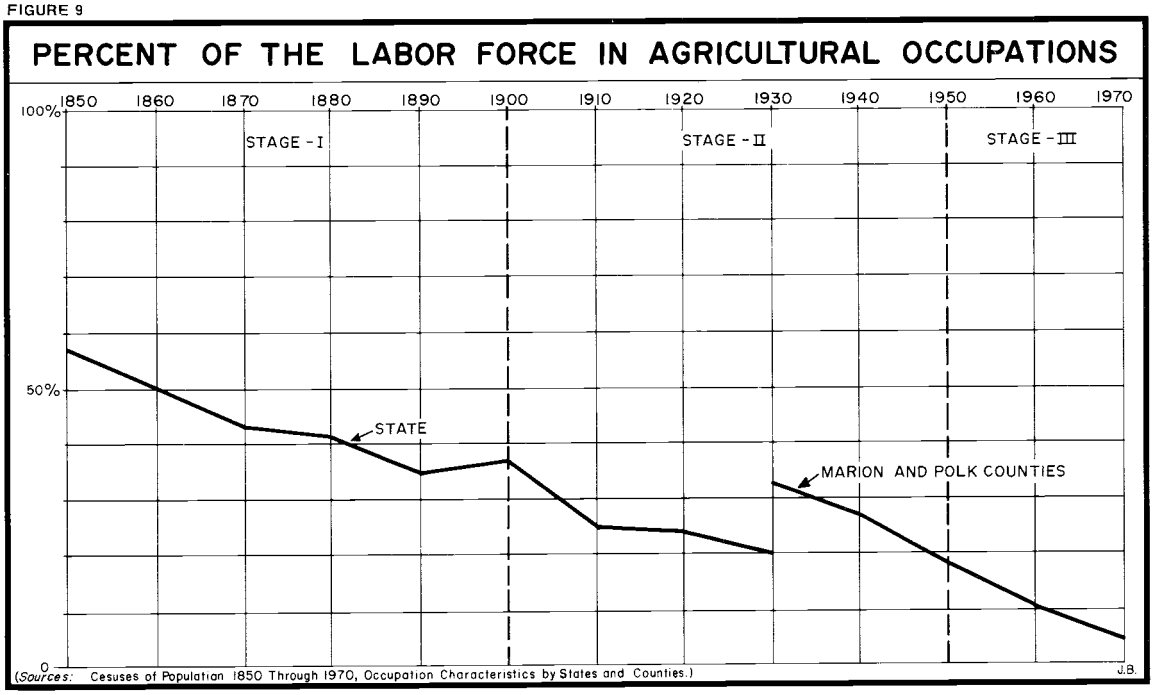


FIGURE 9



As the commercial ties with the non-farm sectors came to exert more influence over the selection of agricultural strategies around the turn of the century, it was apparent that farming had become less of a way of life and more of a way of making a living. Changed agricultural resource strategies had by no means been implemented on all the valley's farms by 1900, but numerous farm units established after that date were very likely begun as business investments by persons having had little or no previous experience in agriculture.

The goals of farmers for self-sufficient farms, so important during the early development of the agricultural system were based, in essence, upon the desires of farmers to establish the greatest measures of independence. The farmers of the first growth stage, who had prized their self-reliance in the raising of most all the food-stuffs and in the fabrication of many of the implements used on their farms, were gradually replaced by younger farmers who sought primarily to maintain a financial independence through the year-round marketing of a greater variety of farm products. The raising of certain crops and of some livestock had already become highly specialized activities at the turn of the century. Increases occurred in the numbers of farms when the opportunities for engaging in specialized agricultural activities presented themselves. This was especially the case in commercial fruit farming and poultry raising

on smaller farms. Many such small farms were sold to individuals by the large land development companies of the day. Many of the persons taking up the small specialty farms did so not so much to provide a home and hearth for their families as they did to gain an income, as others outside of agriculture did from a private business.

With the trend toward a more diversified farming system in the Willamette Valley came the addition of numerous smaller intensively worked farms to the agricultural system. The diversification of agriculture was occasioned and facilitated by a number of developments. First among them was the more rapid increase of the non-farm population, and, accompanying it, the proliferation of employment opportunities outside of agriculture (Figures 8 and 9). Also of great significance were the improvements in transportation systems, in agricultural processing and storage facilities, and in the appearance of private and cooperative marketing organizations. Of prime importance throughout the Diversified Agricultural Growth Stage was the increasingly important role played by both public and private institutions engaging in agricultural education and research.

The Diversification of Agriculture in the Willamette Valley

A trend toward the diversification of agriculture in the Willamette Valley became noticeable during the 1880's, as dairying,

orcharding, and other specialized agricultural activities gained in importance. It was during this decade that the valley's railroad system became fully integrated with the national networks, and that the non-farm population had begun to grow much more rapidly than the farm population. The above factors contributed strongly to the creation of circumstances which favored farms that were employing strategies of diversified agricultural production.

The relative importance of the growing of cereal crops, especially wheat, declined sharply after 1900 in the Willamette Valley. The raising of hops, of hay and forage crops, and of orchard fruits all increased in importance. Dairying and poultry raising were expanded directly in response to the growth of the local non-farm population. The raising of hops was the most highly specialized farming activity of major importance practiced in the Willamette Valley, and both Marion and Polk counties were leading producers.

The Growth in Importance of Dairying

With the increase in the number of farms and the intensification of agriculture, the average sizes of farms declined and the cutting of tame hay from improved pastures became much more common. In western Oregon, by 1910, hay and forage crops were worth twice as much as wheat had been valued in 1900 (Johansen and Gates, 1967, p. 448). This trend was directly related to an increase in

dairying activities on the farms. The Oregon State Agricultural College Extension Service regularly advised farm families to keep at least one good cow to supply their needs for milk and to provide another potential marketable farm product. Prior to 1910, the Oregon Railroad and Navigation Company and the faculty of the state's agricultural college cooperated to provide instruction in the use of milk testing machines on farming demonstration trains that toured the Willamette Valley during the summers (Morse, 1909, p. 10-11). Such machines were commercially available and they permitted farmers to easily assess the quality of milk from their cows, allowing them to improve their dairy herds through selective breeding programs. Dairying became an important enterprise on many of the newly emerging smaller intensively managed farms. On such farms, it was impractical to graze cows on large native pastures. Instead, dairy cows were fed hay made from vetch and winter oats, corn was fed as a fodder crop in the fall of the year, and during the winters various root crops, hay, and silage were relied upon. On many of the larger farms native pastures remained in use, but on the smaller farms, in the first decade of this century, vetch pastures became very important in the feeding of livestock (Springer, 1909, p. 10). By 1929, hay crops came to occupy one third of the total crop acreage in the Willamette Valley. The principal hay crops at this

time, in the order of their importance, were clover, oats and vetch, alfalfa, and cheat hay (Selby, 1929, p. 37-38).

Improved pastures were developed on a wide array of farm types permitting dairying as an additional livestock enterprise on many farms. Poultry raising and dairying were both considered to be well suited as secondary enterprises on fruit and berry farms. The Oregon State Agricultural College Extension Service advised in 1927, that ten cows could easily be managed by farmers who had from eight to ten acres of small fruits as their main enterprise. This was possible only if their farms had pasturage and cropland enough for both hay and succulent forage crops (Schuster and Burrier, 1928, p. 43). In 1924, a conference held on the agriculture of Polk County sponsored by the Oregon State Agricultural College Extension Service advised that to be commercially viable a dairy herd ought to consist of at least ten cows (Oregon Agricultural Extension Service, 1924, p. 11).

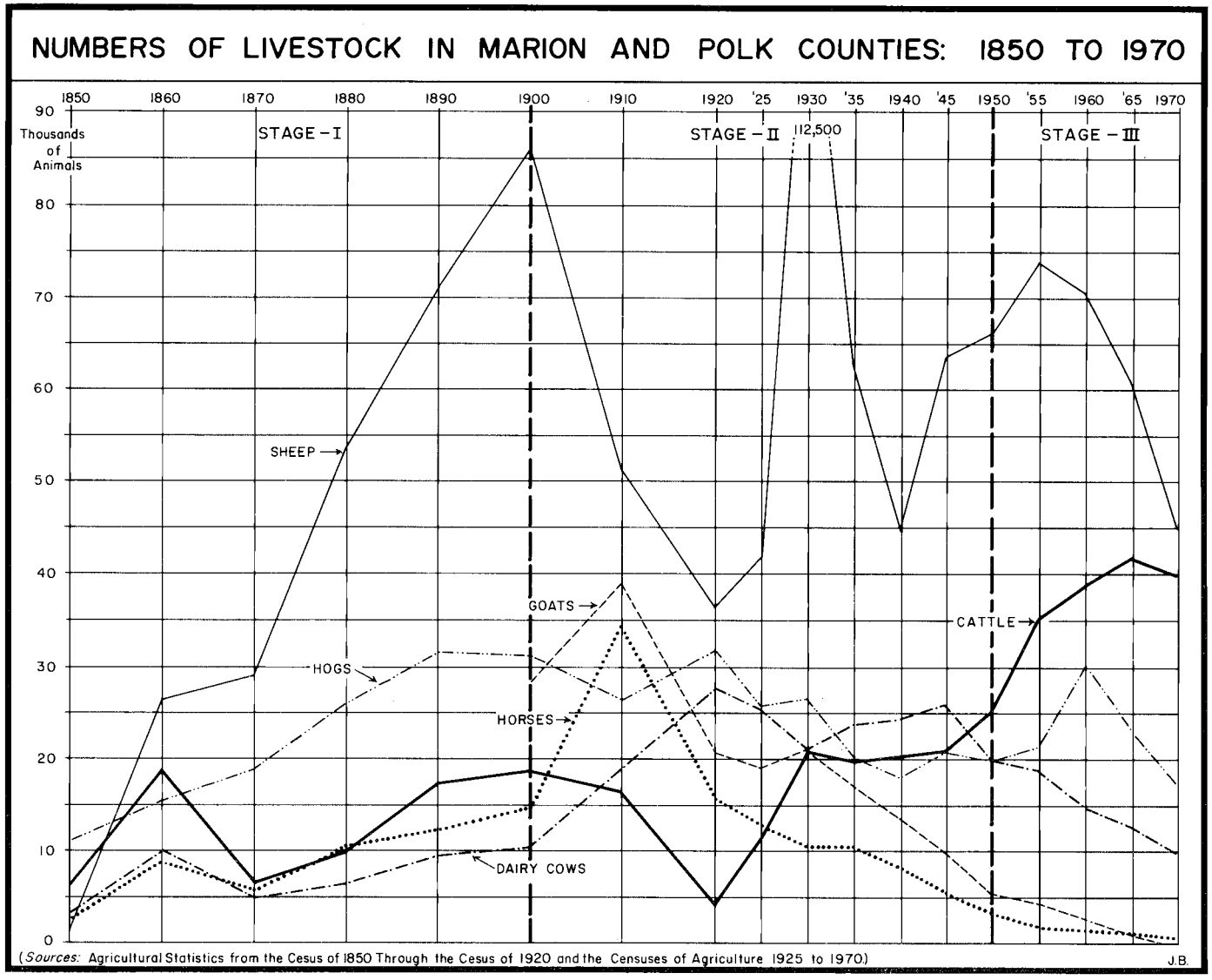
Dairy cows were reported on high percentages of all the farms in Marion and Polk counties in each of several censuses of agriculture. The 1930 Census of Agriculture reported that 73 percent of the farms in Marion and Polk counties had dairy cows. On 67 percent of the farms they were milked daily on a commercial basis. Commercial dairy farms were substantially larger than the average reported for all farms in 1930. The Department of Farm Management

of the Oregon Agricultural Experiment Station studied 289 farms classified as dairy farms between 1925 and 1927. They found that the cropland on typical commercial dairy farms alone averaged 82 acres. Although dairying was the main enterprise on the farms studied, they commonly engaged in a wide variety of activities. An average of 35 acres was planted in cereals on the typical dairy farms. An additional 33 acres of cropland were devoted to hay crops and 24 acres were devoted to a wide variety of other crops (Oregon State Planning Board, 1935, p. 33). On the commercial dairy farms the average size of the dairy herd was 17.4 cows. The farms, typically, also had horses, sheep, goats, chickens, and turkeys (Oregon Planning Board, 1936, p. 36). (For livestock trends see Figure 10.)

Dairying increased in importance throughout the 1930's, but hay production did not exhibit similar increases after 1935. The reason for this was that the supply of hay for cattle increased as the number of horses on the farms declined rapidly (Oregon Agricultural Extension Service, 1936, p. 7).

The 1940 Census of Agriculture reported that 78 percent of all the farms in Marion and Polk counties had dairy cows, but that only 50 percent of all the farms kept them for commercial dairying purposes. The Oregon State Agricultural Experiment Station made a random study of commercial farms in the Willamette Valley for the

FIGURE 10


NUMBERS OF LIVESTOCK IN MARION AND POLK COUNTIES: 1850 TO 1970
1850
1860
1870
1880
1890
1900
1910
1920
'25
1930
'35
1940
'45
1950
'55
1960
'65
1970
90
Thousands of Animals
80
70
60
50
40
30
20
10
0
STAGE - I
STAGE - II
12,500
STAGE - III
SHEEP
GOATS
CATTLE
HOGS
HORSES
DAIRY COWS
(Sources: Agricultural Statistics from the Cesus of 1850 Through the Cesus of 1920 and the Censuses of Agriculture 1925 to 1970.)
J.B.

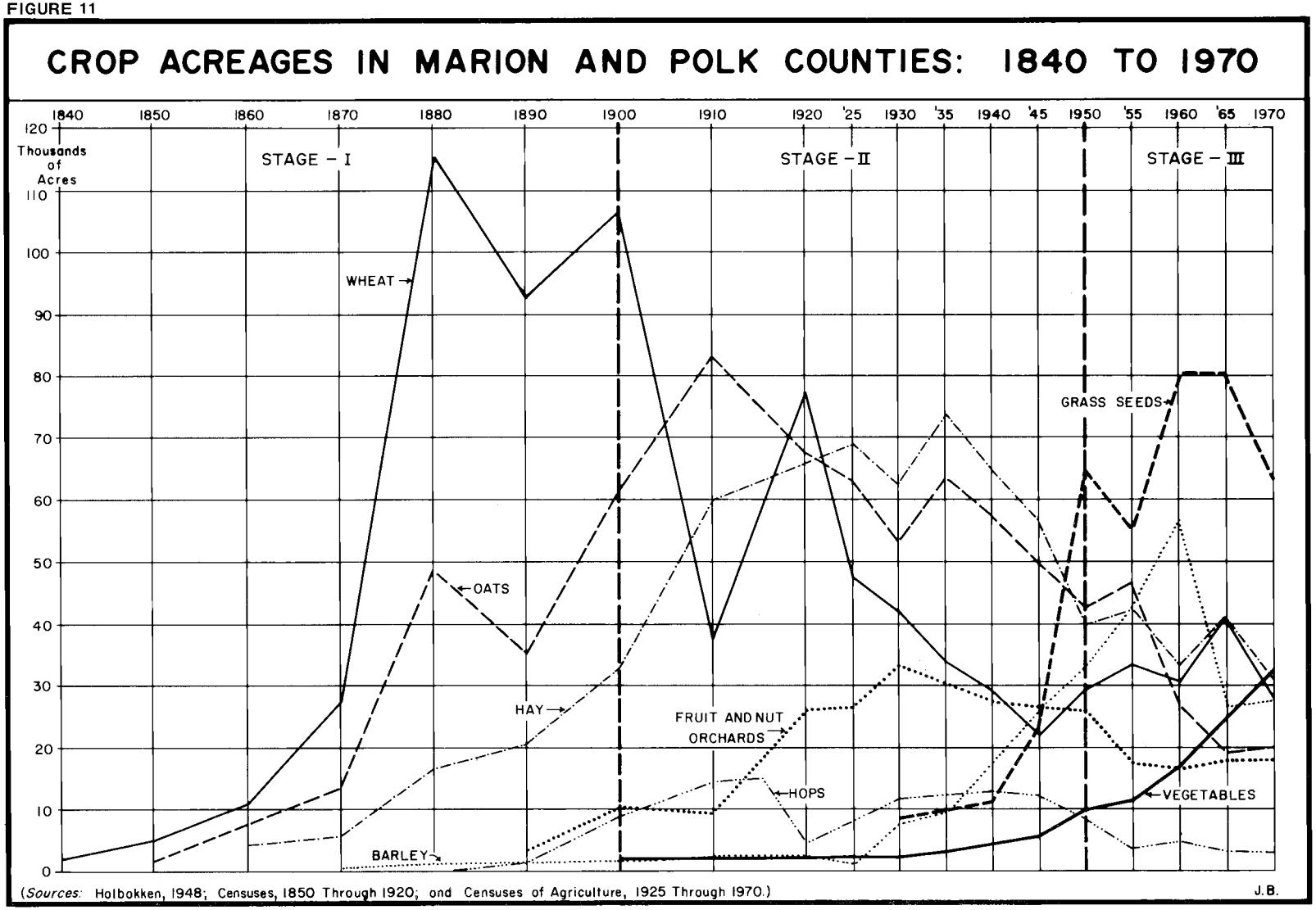
year 1938, and found dairy farms to have been the most numerous type of farm in their selections. Dairy farms were found to be located on all classes of soils, along with livestock farms and general purpose farms. The three types of farms accounted for 54 percent of all the commercial farms selected at random (Davis and Mumford, 1947, p. 18). The average size of the dairy farms was 118.4 acres in 1938. Of this amount 58.2 acres were devoted to a variety of crops and 15.2 acres was in pasture. Cereals and hay crops occupied the greatest proportion of the crop acreage, but vegetables, small fruits, and orchards were also commonly found as commercial sidelines (Davis and Mumford, 1947, p. 22-23).

Commercial dairying gradually became concentrated on fewer farms toward the last decades of the second agricultural growth stage. In the 1950 Census of Agriculture 4,175 farms in Marion and Polk counties reported dairy cows or 62 percent of all the farms. Of the farms reporting dairy cattle, however, only 32 percent had sold dairy products in 1949, while 52 percent of them had sold dairy products in 1944, and 57 percent in 1939.

The Growth in Importance in Orcharding

Fruit orcharding experienced several surges of commercial activity during the first agricultural growth stage (Figure 11). The most important one began with the connection of the valley's

FIGURE 11


CROP ACREAGES IN MARION AND POLK COUNTIES: 1840 TO 1970
1840
1850
1860
1870
1880
1890
1900
1910
1920
'25
1930
'35
1940
'45
1950
'55
1960
'65
1970
Thousands of Acres
120
110
100
90
80
70
60
50
40
30
20
10
0
STAGE – I
STAGE – II
STAGE – III
WHEAT
OATS
HAY
FRUIT AND NUT ORCHARDS
HOPS
BARLEY
GRASS SEEDS
VEGETABLES
(Sources: Holbokken, 1948; Censuses, 1850 Through 1920; and Censuses of Agriculture, 1925 Through 1970.)
J.B.

railroads with those of the rest of the nation. Beginning in the late 1880's, fruit from Oregon farms was marketed nation-wide almost entirely by rail. With this dramatic expansion of potential markets, fruit orchards were planted in all Willamette Valley counties. Apple orchards, especially, underwent a rapid increase in acreage in most counties. According to the 1880 census, 82 percent of the orchards in Marion and Polk counties were apple orchards. Prunes, pears, cherries, and peaches occupied 8.8 percent, 4.7 percent, 2.6 percent, and 1.9 percent of the remaining fruit acreage, respectively.

Prune acreage was greatly expanded after 1889 when the prices received for prunes reached from 10 to 12 cents per pound. In 1899, at the time of the next census, prune orchards accounted for 52.3 percent of the entire fruit acreage in Marion and Polk counties, even though the acreage in apple orchards had also been expanded. Apple orchards accounted for 37.7 percent of the orchard fruit acreage in 1899. A serious overproduction in both apples and prunes followed. Subsequently, the price received for prunes fell to lows of two and three cents per pound (Oregon Agricultural Extension Service, 1924, p. 5). As a result of poor prices received for both prunes and apples the acreage in prune orchards was expanded very little between 1900 and 1910, and during the same time approximately 32 percent of the apple orchard acreage in Marion and Polk counties was taken out of production.

After 1909, the price outlook for prunes improved substantially, and by 1919 the price had risen to 20 cents per pound. Coupled with the improved prices, the prune acreage was expanded by 200 percent between 1909 and 1919. The acreage in other fruits were also expanded significantly during this decade. A comparison of the 1910 and 1920 censuses of agricultural production for Marion and Polk counties showed that the acreage in cherry orchards was increased by 265 percent, peach orchards by 264 percent, apple orchards by 41 percent, and pear orchards by 25 percent. This decade coincided with a period of farm real estate subdivision which resulted in a rapid increase in the number of smaller farms, many of which had commercial fruit enterprises. The development and sale of small fruit farms will be more fully discussed below.

Fruit farms were among the first in the Willamette Valley to have adopted agricultural resource strategies which were geared exclusively for commercial production. Despite the shift of agricultural strategies in this direction around the turn of the century, fruit orcharding was primarily carried out on smaller diversified farms because it was generally believed that there was greater security in diversified agricultural production. The Oregon Agricultural College Division of Horticulture advised in 1915 that not many kinds of farming would return as high dividends on investments as would apple farming. As a hedge against price fluctuations they

also advised that the best way to diversify was to grow other varieties of fruit in addition to apples. Regardless of the mix of fruits raised, farmers were cautioned to maintain their self-sufficiency according to the following advice:

> . . . all farmers should have a good garden; should raise enough pork for his own use; should keep a family flock of chickens; and a good cow. He should endeavor to grow enough feed to maintain all the stock on his farm (Lewis and Vickers, 1915, p. 4).

Once fruit orcharding had become firmly established in the Willamette Valley it continued to be of importance, although shifts in emphasis between varieties of fruits did follow. Commercial apple production in the Willamette Valley suffered increasingly from competition with other areas in the state and region, and from competition with other varieties of fruit. Oregon prunes enjoyed an acceptance in world-wide markets. Between 1922 and 1926, approximately 50 percent of the United States prune crop was exported to foreign countries (Wiegand and Fenner, 1938, p. 5). Oregon's production of prunes continued to expand, and in 1929, 50,000 tons of dried prunes were produced, which amounted to ten percent of the world's production (Scudder and Besse, 1931, p. 14).

With the economic collapse during the Depression, the prune industry fell on hard times. Consuming countries instituted tariff barriers against the importation of prunes and some mounted drives to achieve self-sufficiency in prune production with the result being

that between 1935 and 1937, only 25 percent of the United States prune crop found export markets (Wiegand and Fenner, 1938, p. 5). The loss of foreign markets was a severe blow, but at the crux of the problem was the overproduction of prunes, decreased demand, and the low prices received for them. Of great detriment to the potential recovery of the industry were shifts in consumer preferences to competitive products, mainly to canned and fresh fruits.

In 1930, the prune acreage constituted 61.3 percent of all the bearing fruit acreage in the Willamette Valley, followed by apples with 19 percent, pears with 11.6 percent, cherries with 5.2 percent, and peaches with 2.9 percent. Diversification in orchard crops was beginning to be strongly felt during the 1930's. In the newly planted fruit orchards, which were not yet of bearing age, pears led with 30.7 percent of the new acreage, followed by cherries with 23.9 percent, prunes with 21 percent, apples with 14 percent, and peaches and apricots with 10.1 percent (Nelson and Sulerud, 1933, p. 5).

Whereas fruit farms at the turn of the century were characterized by acreages in a variety of fruits, by 1930, a considerable specialization in fruit growing was coming into evidence. For example, although 75 percent of all the cherry orchards were planted on slightly more than 20 percent of all the farms in the valley, 31 percent of the cherry trees were found on only two percent of the farms reporting cherry trees (Nelson and Sulerud, 1933, p. 36).

During the late 1920's and the 1930's, as more emphasis was placed upon raising a greater variety of tree fruits, filbert and walnut orcharding gained acceptance in the Willamette Valley. Filberts and walnuts were commonly found together on farms, but filberts became the more important crop because they required less care than other horticultural crops. By 1930, according to the Census of Agriculture, Oregon had 83 percent of the filbert production in the United States. Most of the filbert production was from young orchards, because 97 percent of the filbert orchards in Oregon had been planted in the 15 years prior to 1936 (Burrier and Schuster, 1937, p. 7-8).

The prices received for fruits and nuts generally fluctuated from year to year, but their proportion of the value of all crops produced in Marion and Polk counties increased for the first three decades of this century. In 1899, the value of fruits and nuts was 1.5 percent of the total value of all crops produced. In 1909, the figure had risen to 8 percent of the total value of all crops produced. By the next census, in 1919, it was 21 percent of the value of all crops, and by 1929, the value of fruits and nuts constituted 28 percent of the total value of all crops produced in that year. The censuses of agricultural production for Marion and Polk counties taken from 1930 to 1950 revealed that the value of fruits and nuts sold have accounted for a decreasing proportion of the total value of all

crops sold. In 1939, the value of the fruits and nuts sold by Marion and Polk county farms amounted to 22.2 percent of the value of all crops sold in that year. In 1944, the proportion had fallen slightly to 21.8 percent, and by 1949, the sale of fruits and nuts contributed 19.5 percent to the total value of all crops sold.

Trends in Other Specialty Crops

Hop farming deserves special mention, because, of all the activities signifying a shift in strategies of agricultural resource uses, it was the most highly specialized (Figure 11). Marion and Polk counties were leaders in Oregon's production of hops. The acreage planted in hops in the two counties was expanded rapidly between 1880 and 1911, when the highest price, (42.2 cents per pound) was received. After 1911, the hop acreage in the two counties increased slowly until 1915. In the following year, the price received for hops plunged to seven cents per pound (Sulerud, 1931, p. 48), and the 18,000 producing acres in the two counties in 1915, were cut back to 4,228 acres by 1919 (Figure 11). The recovery of the hop industry was delayed when European markets were shut off during the production seasons from 1914-15 to 1917-18 by World War I, and until Prohibition in the United States was repealed in 1935.

The raising of hops was a highly concentrated activity. By

1930, only two percent of the farms in Marion and Polk counties grew hops (Sulerud, 1931, p. 27-28). There were 535 commercial hop farms in all in the Willamette Valley in 1930, and of that number, 57.9 percent, or 106 farms, had more than 50 acres planted in hops. The remaining 429 farms collectively accounted for only 42.1 percent of the total hop acreage in the valley at that time. Despite the general acceptance of diversified farming as being the safest practice, on many of the hop farms the growing of hops was the sole commercial enterprise in 1930 (Sulerud, 1931, p. 28).

Dairying and fruit orcharding were the two most important diversification trends of agriculture during the second agricultural growth stage in the Willamette Valley. Several other crops also figured importantly in the diversification, however. After 1930, the acreages devoted to the growing of vegetables, grass seed, and barley were expanded steadily up to 1950 (Figure 11).

Vegetable gardening, aimed at supplying local non-farm markets in the Wilamette Valley was not developed on an organized commercial basis before 1910. At that time valley markets were still partially supplied by imported vegetables, and most of the remaining local market was supplied by area farmers who sold their produce on an individual basis. In 1910, there were few if any cooperative trucking and market gardeners' associations that had anything to do with the distribution and marketing of vegetable crops.

Both functions had to be performed by farmers themselves (Bouquet, 1910, p. 201). It was not until growers' associations were formed and the road systems improved that local markets were better supplied with locally produced vegetables.

The rapid expansion of acreages in grass seed and barley was influenced both directly and indirectly through the interference of public agencies into the affairs of agriculture. The grass seed industry was stimulated by national soil conservation programs established under federal legislation. The demand for Oregon grass seed became strongest in the American South where soil conservation was most needed. The prices received by southern farmers for their cotton directly affected the emerging grass seed industry. In 1935, the southern states used 15 million pounds of hairy vetch and Austrian winter pea seed mainly for soil conservation programs, and of this amount 12 million pounds of seed was supplied by Oregon growers (Oregon Agricultural Extension Service, 1936, p. 9). The growing of barley was boosted in the Willamette Valley by the Agricultural Extension Service at county conferences held during the 1930's. Farmers were advised to grow more barley at the expense of wheat and oats, because it had proved a superior livestock feed in experimental feeding trials, and it outproduced oats by 350 pounds per acre (Oregon Agricultural Extension Service, 1936, p. 4).

The distinguishing characteristics of the second agricultural

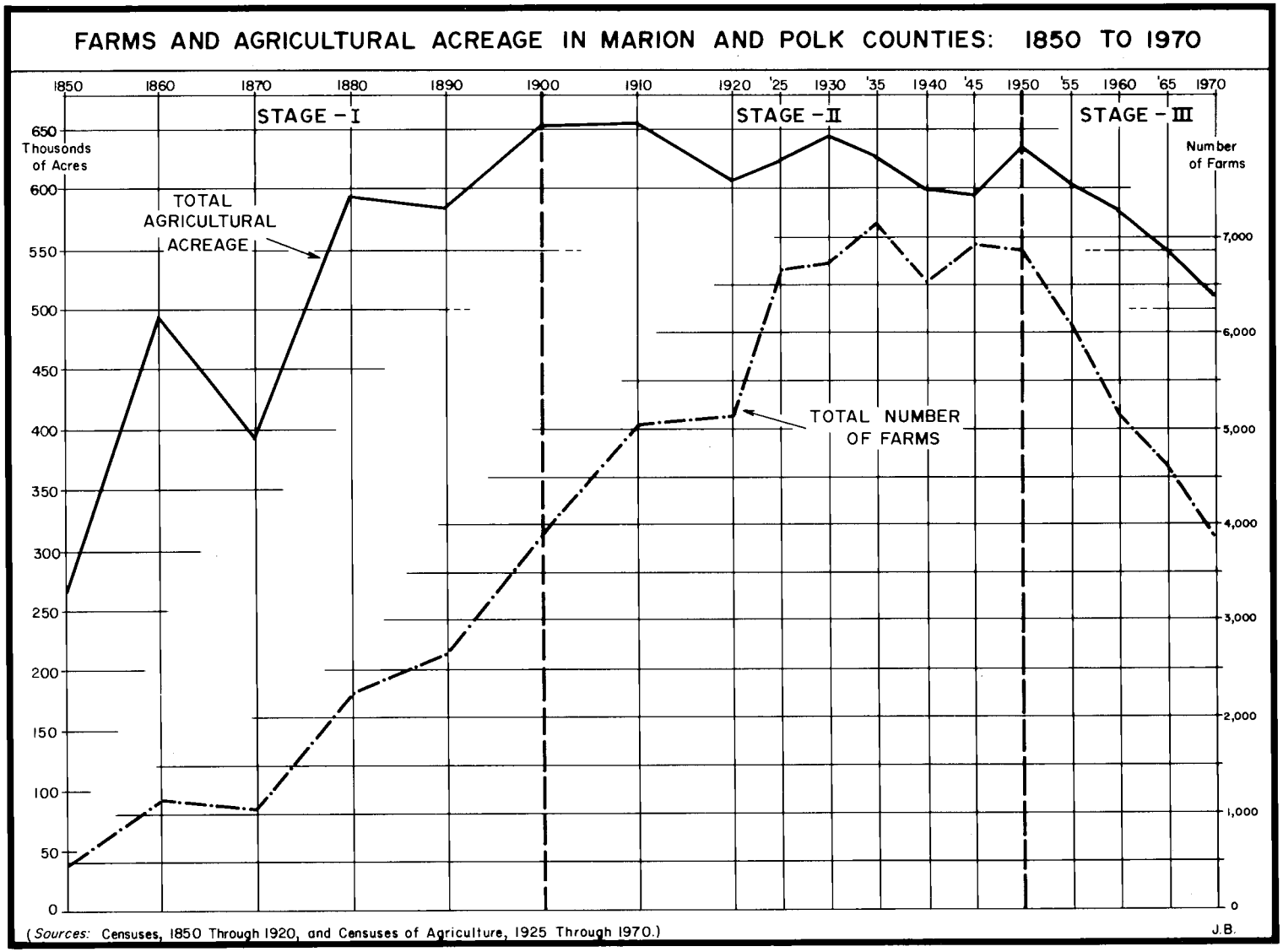
growth stage were the gradual increase in the number of commercially important crops and the increasing specialization of farms as they moved to produce a smaller variety of commercially oriented crops.

Positive and Negative Changes in the Sizes of Farms and and in the Size of the Agricultural System

Prior to 1910, both the total acreage and the farms in the agricultural system increased. The growth in these two categories remained positive throughout the first decade of this century (Figure 12). During the 1890's, as the numbers of farms increased, the average size of the farms in Marion and Polk counties decreased by about 20 acres. Between 1900 and 1910, however, the average size of farms decreased by about 70 acres, from 198.6 acres in 1900 to 129.7 acres by 1910.

Although the average size of farms was still relatively large, 268.1 acres in 1880, pressure and agitation for the breaking up of the large land holdings that remained intact from the Donation Land Claims period were beginning to be strongly felt. Newspapers editorialized in favor of subdividing the larger holdings because it was generally believed that the social progress of the Willamette Valley was being inhibited by the overlarge size of too many farms. From within the farm sector itself there was considerable support for the breaking up of the larger units. J. R. Springer, a farmer

FIGURE 12


FARMS AND AGRICULTURAL ACREAGE IN MARION AND POLK COUNTIES: 1850 TO 1970
1850
1860
1870
1880
1890
1900
1910
1920
'25
1930
'35
1940
'45
1950
'55
1960
'65
1970
STAGE - I
STAGE - II
STAGE - III
650
Thousonds of Acres
600
550
500
450
400
350
300
250
200
150
100
50
0
TOTAL AGRICULTURAL ACREAGE
TOTAL NUMBER OF FARMS
Number of Farms
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
(Sources: Censuses, 1850 Through 1920, and Censuses of Agriculture, 1925 Through 1970.)
J.B.

who owned a small farm near the Calapooia River, in Linn County, addressed the Portland Chamber of Commerce on the subject of small diversified farms as follows:

> A diversified farmer should plan to have something to market the year around and plat his land with that end in view, not all in one thing, and if that fails be in a bad way. Then he has less fences to care for, for of necessity he cannot spread over a very large acreage with so many things to look after. And that gives a place for neighbors in close proximity on all sides, which raises the country to its highest state of development and brings intensified farming, which is the best of conditions (Springer, 1904, p. 11).

In the early 1900's, the local business community became interested in subdividing large land holdings into smaller farms. Large eastern-based land development corporations also became involved in farm real estate schemes in the Willamette Valley. A.E. Hofer, secretary of the Salem Board of Trade in the early 1900's, reported that the subdivision of a large number of good sized ranches in the vicinity of Salem allowed the population to be increased ten times, making progress a reality. He reported in Portland's Chamber of Commerce Bulletin:

> One section owned by one family for more than 40 years was recently subdivided, in four years time this parcel was cut up and provided homes for 60 families. Added a ten room school instead of a two room one, a church, and a high school course for the community. This is only the beginning (Hofer, 1911, p. 14).

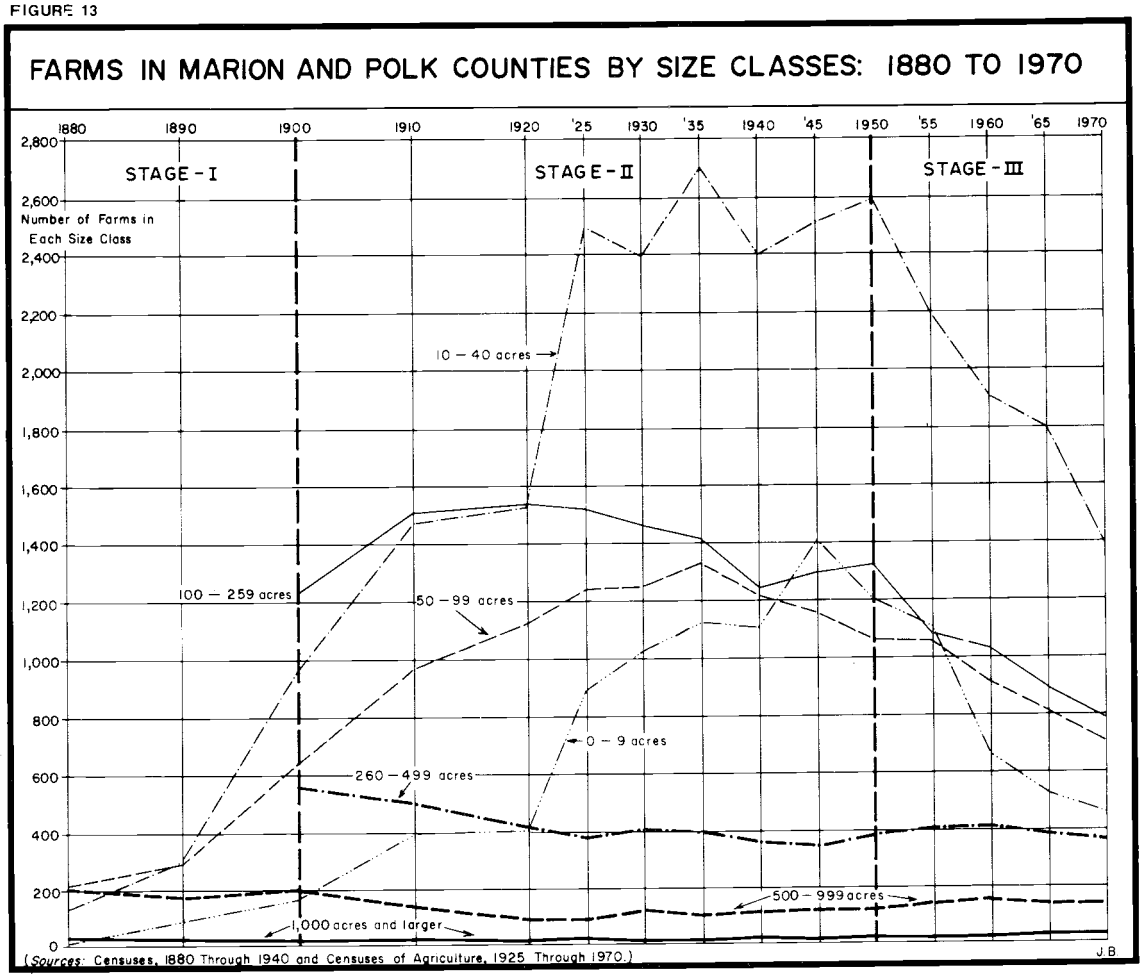
The numbers of small farms increased rapidly during the first three decades of the century. Farms having less than 50 acres

increased steadily after 1900. In that year, the percentage of all farms with less than 50 acres was 29.4 percent; by 1910 it was 37 percent; by 1920 it was 37.4 percent; by 1930 it was 51 percent; and by 1935, when there were the greatest number of farms in Marion and Polk counties, the percentage of farms with less than 50 acres reached 57 percent (Figure 13).

Small farm tracts with five to ten acres in bearing fruit orchards during the high price years were generally capable of providing an adequate income for a family prior to about 1915. Tracts of this size had frequently been sold sight unseen to easterners and others by the land developers. Tracts of 20 acres were sold both as fruit lands and as combined fruit and dairy farms during the same period. In fact, 'the twenty-acre homestead' was being pushed by segments of the local business community as being the ideal sized farm unit for the valley's best lands. In an editorial comment made in 1914, the editor of the Chamber of Commerce Bulletin of Portland backed the proposition that at least half of the Willamette Valley was well suited for subdivision into 128,000 'twenty-acre homesteads'. In support of the proposition, he wrote, "A time honored aphorism is to the effect that 'a little farm well tilled' is far more advantageous than a larger tract that is merely scratched over in places. There is ample proof of this statement" (Mosessohn, 1914, p. 257).

The Oregon state Board of Immigration, whose function it was

FIGURE 13


FARMS IN MARION AND POLK COUNTIES BY SIZE CLASSES: 1880 TO 1970
1880
1890
1900
1910
1920
'25
1930
'35
1940
'45
1950
'55
1960
'65
1970
STAGE - I
STAGE - II
STAGE - III
Number of Farms in Each Size Class
2,800
2,600
2,400
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
10 — 40 acres
100 — 259 acres
50 — 99 acres
0 — 9 acres
260 — 499 acres
500 — 999 acres
1,000 acres and larger
(Sources: Censuses, 1880 Through 1940 and Censuses of Agriculture, 1925 Through 1970.)
J.B

to publicize the opportunities for settling in Oregon, had strong backing from the business community. In 1912, the Board gave the following recommendations for farm sizes: 5, 10, or 20 acre tracts for intensive farming purposes such as for the raising of fruit or poultry; 20 to 40 acres for combined fruit, hops, and dairy farms; and 50 acres and upwards for general farming (Oregon State Immigration Commission, 1912, p. 99). The same sizes for farms were recommended again by the Board in the 1915 issue of the Oregon Almanac, which was also published for the information of home-seekers, settlers, and investors. The above acreages were deemed by the membership of the Board of Immigration to be of adequate size to support an average family of four or five persons. Faculty members from the Oregon State Agricultural College recommended somewhat larger sized farms for certain types of farming. Their recommendations will be discussed below.

In 1930, general farming, in which no single farm enterprise was especially dominant, dairy farming, and fruit farming were the most prevalent of full-time farming types. By this time, however, many units were either too small or otherwise inadequate to support viable full-time commercial farms. The 1930 Census of Agriculture reported that approximately 14 percent of all the farms in Marion and Polk counties were part-time farms, and that most of them were in the smaller size classes of farms. The average size of all the

farms in the valley in 1930 was 97 acres but, of the total number, fully 70 percent were smaller than 99 acres in size and 28 percent were less than 20 acres (Oregon State Planning Board, 1935, p. 28- and 31).

Many of the smaller part-time farms came into being when land development companies subdivided large properties into separate farm units that were too small to adequately support families through either intensive fruit farming or dairy farming. While fruit prices were high the small farms that were sold often lived up to advertising claims, but when prices or consumer preferences for specific fruits changed, many of the smaller farms gravitated toward becoming part-time operations. A number of land development companies involved in subdividing farm real estate sold small tracts specifically for part-time farming purposes to buyers who wanted to supplement their incomes. The number of part-time farms increased most rapidly when a new wave of immigrants entered Oregon from states that had experienced devastating droughts and the creation of 'dust-bowl' conditions. This latest group of immigrant farmers came during the Depression. They established part-time farms around urban fringes, and in rural locations as close as possible to industrial sites which offered the best prospects for markets and alternative employment (Oregon State Planning Board, 1936, p. 73-74.

Viable commercial farms in the 1920's were generally

substantially larger than the average sizes listed for all farms. This held true for both intensive crop farms and those growing extensive crops. A study carried out for 85 commercial strawberry farms for the years 1926 and 1927, found them to be significantly larger than the 5, 10, and 20 acre tracts that were sold as intensive crop farms by land development companies. The most common sizes of the berry farms studied fell into two size ranges, 20 to 40 acres and 40 to 80 acres. On the farms having more than 20 acres, but less than 40 acres, there was an average of 24 acres of cropland. On the farms having more than 40 acres, but less than 80 acres, there was an average of 40 acres of cropland. Nearly all the strawberry farms covered by this study were diversified, having one or several other commercial crop or livestock enterprises besides the average four acres of strawberries per farm (Schuster and Burrier, 1928, p. 11-12). Cane-berries, vegetables, and tree fruit or nut crops were commonly found to be compatible alternative crop enterprises on the intensively manages strawberry farms. The most suitable livestock enterprises on the strawberry farms were poultry raising and dairying (Schuster and Burrier, 1928, p. 42-43).

Commercial farms emphasizing extensively grown crops during the 1920's tended to be considerably larger than those growing primarily fruits or vegetables. This was substantiated by a series of studies of commercial farm types carried out for the period

between 1925 and 1927 by the Department of Farm Management of the Oregon State Agricultural College. Included in their studies were 207 general purpose farms, 289 dairy farms, 116 egg farms, and 155 prune farms. The general purpose farms had an average of 129.7 acres of cropland, dairy farms an average of 82 acres of cropland, egg farms an average of 25.6 acres of cropland and 735 laying hens, and prune farms had an average of 64 acres of cropland (Oregon State Planning Board, 1935, p. 33-34). Many of the commercial farms were much larger than the amounts of cropland per farm above indicates. They had considerable extra land not in crops or in pasture. For example, the studies of prune production in western Oregon between 1923 and 1926, revealed that the average size of prune farms was 160 acres, of which 64 acres were in crops (Scudder and Besse, 1931, p. 22).

The overall size of farms often played a determining role in their continued commercial success during the 1920's and 1930's, because the extra land owned permitted farmers to expand either a crop or a livestock enterprise without having to increase the size of the farm. In 1929, 46 percent of the valley's farmers were living on farms from which less than $1,000 of income was received for the produce that they sold. One of the main reasons for the low incomes was that too many farms were simply too small (Oregon State Planning Board, 1935, p. 28).

The physical environment in the Willamette Valley was not so restrictive as to force specific locations upon certain kinds of farming, but a clustering of certain types of farms did occur. Part-time farms were clustered around cities and towns for reasons already mentioned. Truck farms, poultry farms, and fruit farms also showed a propensity for locating nearer to markets and to transportation facilities. These types were generally in the smaller size classes and they were also more frequently leased to tenants. With the Depression, the leasing of farms increased in Marion and Polk counties. Tenancy was somewhat higher in Willamette Valley counties, and several coastal counties, than it was in the rest of the state. In 1930, 17.5 percent of all the farms in Marion and Polk counties were leased to tenants. By 1935, the level of tenancy in the two counties increased to 21.6 percent of all the recorded farms (Oregon State Planning Board, 1936, p. 67).

A land use problem of major proportions resulted in western Oregon because of the existence of farms that were too small to meet the changing circumstances brought about by events during the Depression. Financial difficulties were particularly acute for the owners of 'shoestring' farms located in smaller valleys remote from adequate markets and transportation facilities. Other inadequately sized farms were the 'stump ranches', which had been taken up in the recently logged over hill lands on the margins of the

Willamette Valley. They were also particularly hard hit. While such lands might eventually have reverted to more appropriate uses, the problem was aggravated and prolonged by the arrival of the immigrant farmers from the drought striken areas of the United States.

After 1930, the land reverting back to public ownership because of delinquent taxes increased rapidly. Prior to 1915, there was very little tax reverted land in Oregon, but by 1930, 1,150,000 rural acres had reverted to public ownership. In the following six years, the reverted rural acreage reached a total of 1,778,273 acres (Oregon State Planning Board, 1938, p. 5-6). Productive agricultural lands so acquired were auctioned off as quickly as possible to get them back into productive private uses. Marginal lands, not suited for agriculture, were set aside for public parks or other non-public uses. Tax reverted lands never constituted a large management problem in Marion and Polk counties, because there the reverted agricultural land was absorbed by existing farms. In 1936, when tax reverted lands posed management problems in some Oregon counties, the total tax reverted rural land in Marion and Polk counties constituted one half of one percent of the privately owned rural land (Oregon State Planning Board, 1938, p. 21). According to the Censuses of Agriculture, the number of farms in Marion and Polk counties increased until 1935. Between 1935 and 1940, however,

the number of farms in the two counties decreased by nine percent, and half those that were discontinued contained less than 50 acres of land. Simultaneously, the total agricultural acreage also declined somewhat, but the average size of the remaining farms was still increased by about four acres to a size of 91.8 acres per farm.

At the time of the 1940 census, 42.5 percent of all the farms in the Willamette Valley had less than 30 acres (Davis and Mumford, 1947, p. 15). Large proportions of the smaller farms were either part-time farms or other types of farms which were mostly non-commercial. Studies of full-time commercial farms in the valley in 1938 showed that they were substantially larger than the average size of all farms in Marion and Polk counties. The operations of 333 various types of commercial farms were analyzed. Among them were orchard farms, berry and truck farms, dairy farms, poultry farms, general crop farms, general livestock farms, and general purpose farms. The average size of all the commercial farms covered by the studies was 141.9 acres. Of the various types, the three general farm categories had the largest sizes, with the average size for the three types having been 197 acres in 1938. The smallest of the commercial farms were the berry and truck crop farms, which had an average size of 87.5 acres. All the other types of commercial farms had average sizes that were over 100 acres (Davis and Mumford, 1947, p. 22). According to the studies of

commercial farms in 1938, the larger farms were most commonly located in areas of less productive soils, while the smaller intensive crop farms were usually found in areas of more productive soils.

Of the variety of the commercial farm types studies for 1938, each was well diversified. Grain, hay, and seed crops were the most important remunerative crops grown. Grain and hay crops together accounted for more than 50 percent of the crop acreages on all the commercial farm types except orchard farms and berry and truck farms. On the latter two between 55 and 60 percent of the crop acreages were in intensive crops (Davis and Mumford, 1947, p. 21). A considerable variety in combinations of intensively and extensively grown crops was found on all the commercial farms. It is significant to note that, in the late 1930's, despite the increasing size of commercial farms, the farms were still being managed according to strategies of diversified agricultural production.

Perhaps the most conspicuous trend of the 1930's was the increasingly significant role played by the sizes of farms in the incomes of farmers. Of the variety of factors influencing farm income, including farm size, crop yields, and the efficient use of labor, the size of farms accounted for a greater variability of farm income than did the other factors. Just prior to World War II, intensive crop farms had to contend with increasing labor costs, and their smaller sizes inhibited the efficient use of machinery. On the

larger farms, even on those with less productive soils, both labor and machinery were able to be used more efficiently. Consequently, in the late 1930's, it was the larger farms that in most cases were receiving the greatest returns on their investments (Davis and Mumford, 1947, p. 68).

The rise in war-time prices after 1941 resulted in an increase in the number of farms in Marion and Polk counties. The increase was more significant considering that 45,000 acres of land were withdrawn from agricultural production in Polk County for inclusion into the Camp Adair Naval Air Station. Almost all the farms added during World War II were less than 50 acres in size. Many of the smallest farms were not carried as farms in the census of 1950. Some, doubtlessly, were dropped because they no longer fitted into any category of farm types, and others were absorbed by larger units.

At the end of the war, most of the land that had been withdrawn for military purposes was returned to agricultural use. A local farm advisory committee, in cooperation with the Agricultural Extension Service of Oregon State College, made the following recommendations for farm sizes considered to be the minimum required to assure economic viability of any farms to be re-established in Polk County:

1) Diversified farm units on good soils should have at least 80 acres.

2) Grain, hay, and field seed farms should be at least 160 acres.

3) Dairy farms should have at least 80 acres for every 20 to 25 cows.

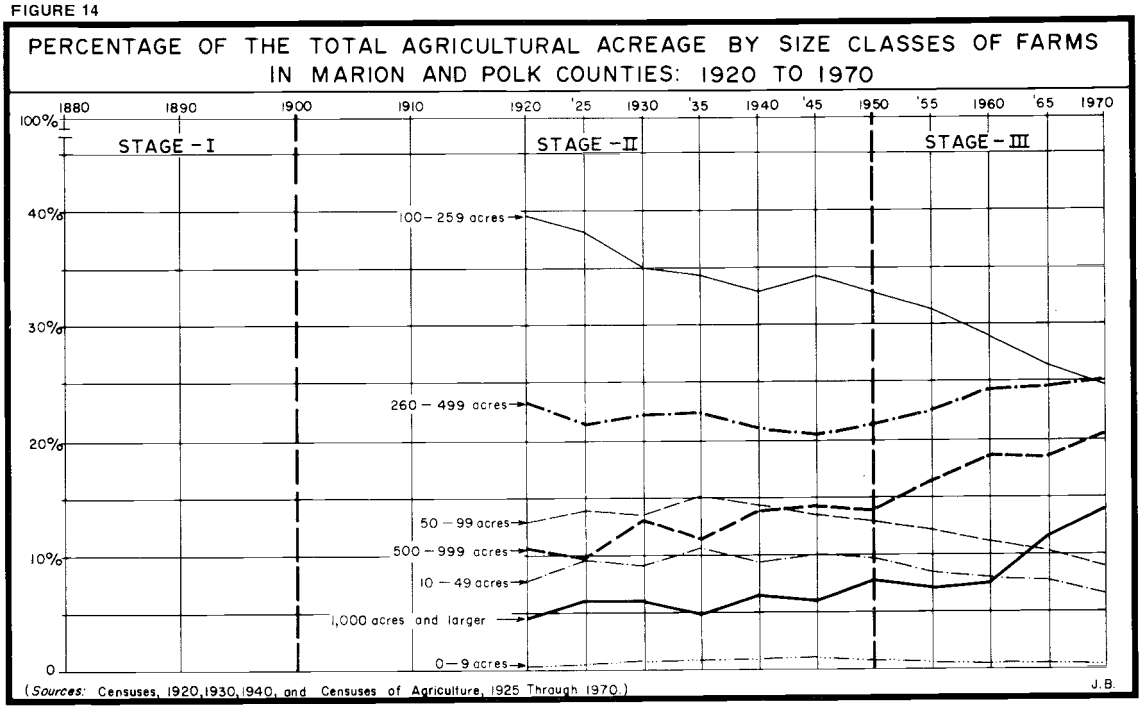
4) Orchard fruit farms should be at least 20 acres in size.

5) Truck farms, with good soils, should have at least 15 acres (Oregon Agricultural Extension Service, 1946, p. 8).

The recommendations of the committee for the minimum sizes of commercially viable farms were made under abnormal circumstances. High war-time prices rejuvenated the economic lives of many small farms and caused more small farms to be added during the War. The situation prior to 1940, which more adequately reflected long term trends, saw the number of small farms declining (Figure 13). Fortunately, the recommendations were not everywhere closely adhered to. A study of a nine square mile in southeast Polk County, lying in the midst of the former Camp Adair, indicated that farms re-established in the area were much larger than the recommended sizes (Blok, 1971, p. 8).

Small farms represented large percentages of all the farms in Marion and Polk counties throughout the second agricultural growth stage. Collectively, however, farms having less than 50 acres never occupied more than 12 percent of the total agricultural acreage in the two counties. The agricultural acreage in the smaller classes of farms gradually came to occupy a diminishing proportion of the total agricultural acreage (Figure 14). Conversely, the proportion

FIGURE 14


PERCENTAGE OF THE TOTAL AGRICULTURAL ACREAGE BY SIZE CLASSES OF FARMS IN MARION AND POLK COUNTIES: 1920 TO 1970
1880
1890
1900
1910
1920
'25
1930
'35
1940
'45
1950
'55
1960
'65
1970
100%
40%
30%
20%
10%
0
STAGE - I
STAGE - II
STAGE - III
100 - 259 acres
260 - 499 acres
50 - 99 acres
500 - 999 acres
10 - 49 acres
1,000 acres and larger
0 - 9 acres
(Sources: Censuses, 1920, 1930, 1940, and Censuses of Agriculture, 1925 Through 1970.)
J.B.

of the total agricultural acreage occupied by the three largest size classes of farms began to show a substantial increase toward the close of the second agricultural growth stage.

Toward the end of the second agricultural growth stage, but especially during the 1940's, the relationship between farm size and farm prosperity became an even more important factor. To maintain the commercial viability of their farms, it became incumbent upon farmers to try to expand the sizes of their holdings. Some did this through outright purchase of additional land and others by leasing. Farm consolidations occurred regularly as the numbers of farms declined after 1935.

In 1948, a study was undertaken of farms devoted to pasture and the raising of grass seed and hay crops. In all, 88 farms were studied, all of which were full-time operations. Of the total, 30 were primarily grass seed and grain farms, 24 were general farms not dominated by a single enterprise, and 21 were dominated by dairying activities. Of all the farm operators, 37 owned all of their land, 40 owned land and rented more, and four operators leased all of the land that they farmed. The owner-renters owned an average of 280 acres and leased an additional 222 acres, giving their farms an average size of 502 acres. The owners who leased no additional land had farms that averaged 379 acres in size. The remaining four operators who leased all their land, worked farms that averaged 441 acres

in size. On each of the above farms grass seed crops occupied the largest acreages in 1948 (Becker, Hyer, and Mumford, 1949, p. 6-7).

The Emergence of Systems Supporting Agriculture

Agricultural resource use strategies changed repeatedly during the second agricultural growth stage. The agricultural system became more complexly inter-related with the social and economic institutions of the non-farm sectors of the population. Political institutions particularly came to affect agricultural production strategies. The disparities between older and more current agricultural strategies came about in response to the disproportionately rapid increase of the non-farm population. As this population grew it created local markets which stimulated the reorientations of agricultural strategies and it created a demand for improved infrastructure systems, which proved especially important to the course of agricultural development.

Improvements in Transportation

During the first agricultural growth stage in the Willamette Valley, each major improvement in river transportation, and, subsequently, in railroad transportation, was followed by changes of agricultural resource strategies on those farms in closest

proximity to the transportation systems. Agriculture in the areas best served by the transportation systems took on increased commercial orientations. A greater specialization in commercial crops followed the tie-in of local railroads with the national networks. After the 1880's, fruit from Oregon reached New York and other eastern markets almost entirely by rail (Johansen and Gates, 1967, p. 454). Improvement of existing wagon roads and the building of new paved roads had the greatest impact on agriculture after the turn of the century.

After 1900, agitation for improving the state of the valley's roads was continually being fomented by either chambers of commerce, development committees, or by Farmers' Associations, including the Grange.. The propaganda for better built roads, originating within the business community was most effective. Their propaganda was specifically aimed at any and all owners of automobiles who stood to benefit in any way from improved roads. The Transportation Committee consistently backed the building of better roads and advocated the building of new bridges also. The editorial policy of Portland's Chamber of Commerce Bulletin was to enlist the broadest based support for the building of better roads in the Willamette Valley. In the issue of August, 1913, the Bulletin carried the following verse listing the benefits of improved roads:

Better Roads Mean

> Better schools and better attendence.
> Better health and quicker transportation.
> Better farms and more cultivated land.
> Better economic conditions and more producers.
> Better social conditions and less isolation.
> Better church attendence and better citizens.
> Better postal service and closer friends.
> Better business and more customers.
> Better industries and more employment.
> A better state and a better nation (Anonymous, 1913, p. 52).

The building of better roads in the rural areas of the valley had a tremendous impact through aiding the spread of commercially oriented agricultural resource use strategies. The growth in the numbers of farms engaged in intensive agriculture was greatly accelerated by the improvements in roads. Market gardening, or truck farming, particularly, grew in importance when improved roads allowed easier and faster access to the valley's expanding local markets. As of 1910, the local urban markets were still partly supplied with imported vegetables (Bouquet, 1910, p. 201). One of the main reasons for this was the lack of adequate roads.

A. E. Hofer, secretary of the Salem Board of Trade, reported in the January, 1911, issue of Portland's Chamber of Commerce Bulletin:

> Good roads around Salem, which is a pioneer section in this line of development, have probably done more than any other one thing to transform farms into gardens and coin wealth for adjoining properties (Hofer, 1911, p. 14).

In 1914, David N. Mossesohn, editor of the Chamber of Commerce Bulletin, reported that all the Willamette Valley counties were finally appropriating large sums of money for the building and maintenance of roads. He wrote, "Oregon is awakening to the necessity of good roads," and added, "The value of good roads to the farmer, which will enable him to haul to market greater loads of produce at minimum expenditures of energy, cannot be calculated" (Mossesohn, 1914, p. 63). After 1910, the valley's wagon roads, were gradually paved or otherwise improved to make them suitable for automobile and truck traffic.

Trends in Marketing and Processing of Farm Products

Repeatedly, during the first agricultural growth stage in the Willamette Valley, farmers' associations and political groups formed cooperative shipping and marketing companies to facilitate the selling of their grain crops. Farmers' political groups, most notably the Grange, also became actively interested in agricultural education and they collectively opposed high freight rates on both the rivers and the railroads. Prior to the building of the transcontinental railroads, the farmers' main organizing efforts were undertaken to expedite the marketing of wheat, their number one cash crop. After the valley's railroads were merged with the national systems, markets were found for a greater variety of farm products. The

fruit industries especially benefitted from each improvement in railroad transportation, in cold storage facilities, and in packaging.[16]

The business community in the Willamette Valley was anxious to become involved in increasing agricultural trade. In an article appearing in Portland's Chamber of Commerce Bulletin, in October, 1904, J.D. Lee wrote:

> Commercial organizations must assist in seeking markets for the produce of Oregon's farms, they must find and secure the best means of transportation for the sake of facilitating the most rapid and inexpensive movement of agricultural products to market (Lee, 1904, p. 12).

Obviously, local business would be greatly stimulated if it were to assume the roles called for above. Lee further proclaimed that the farmers would be the greatest beneficiaries from such cooperation, and that because of it they would be able to diversify their operations:

> Harmonious action between town and country is what is needed, farmers will benefit most directly, their lands will increase in value, and he will realize a good price for his products and will not have to confine himself to the growing of cereals (Lee, 1904, p. 12).

For a number of specialty crops, which came to characterize the diversification of Willamette Valley agriculture, marketing arrangements with business organizations became increasingly

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[16] In 1881, the first cold storage plant was opened in Boston, and by 1900, there were 6,000 such plants throughout the United States, mainly in the East. Prior to World War I, only a portion of the Pacific Northwest's fruit crop could find such storage, but after the War the situation improved rapidly (Johansen and Gates, 1967, p. 456-457.

important. It was reported in 1910, that the rapidly expanding local markets were not being adequately supplied with vegetables. Among the reasons given were the poor conditions of the roads and the fact that farmers acting individually had to serve as their own distribution and marketing agents. Arthur G. Bouquet, a faculty member of the Oregon State Agricultural College, in 1910, felt that the organization of cooperative truckers' associations and market gardeners' associations would result in an increase of the supply of locally grown vegetables (Bouquet, 1910, p. 201). The fruit farmers in the Willamette Valley were already well organized at the turn of the century. Fruit growers' associations did much to improve the quality of the fruit packed by setting standards for produce shipped out of the state. In many instances the fruit was packed by cooperative fruit growers' associations and then marketed through the highly organized selling capabilities of national marketing agencies (Besse, 1928, p. 13).

The raising of hops was the most specialized of all the commercially important crops during the first few decades of this century. The production of hops became risky at times because of the widely fluctuating prices that were received from year to year. As a consequence of this, farming under contracts became popular among the valley's hop farmers during the 1920's. Through the use of from one to five year contracts, buyers were assured of quality

supplies, and growers of stable prices. In 1931, between one-third and two fifths of the valley's hops were haravested under contracts (Sulerud, 1931, p. 55).

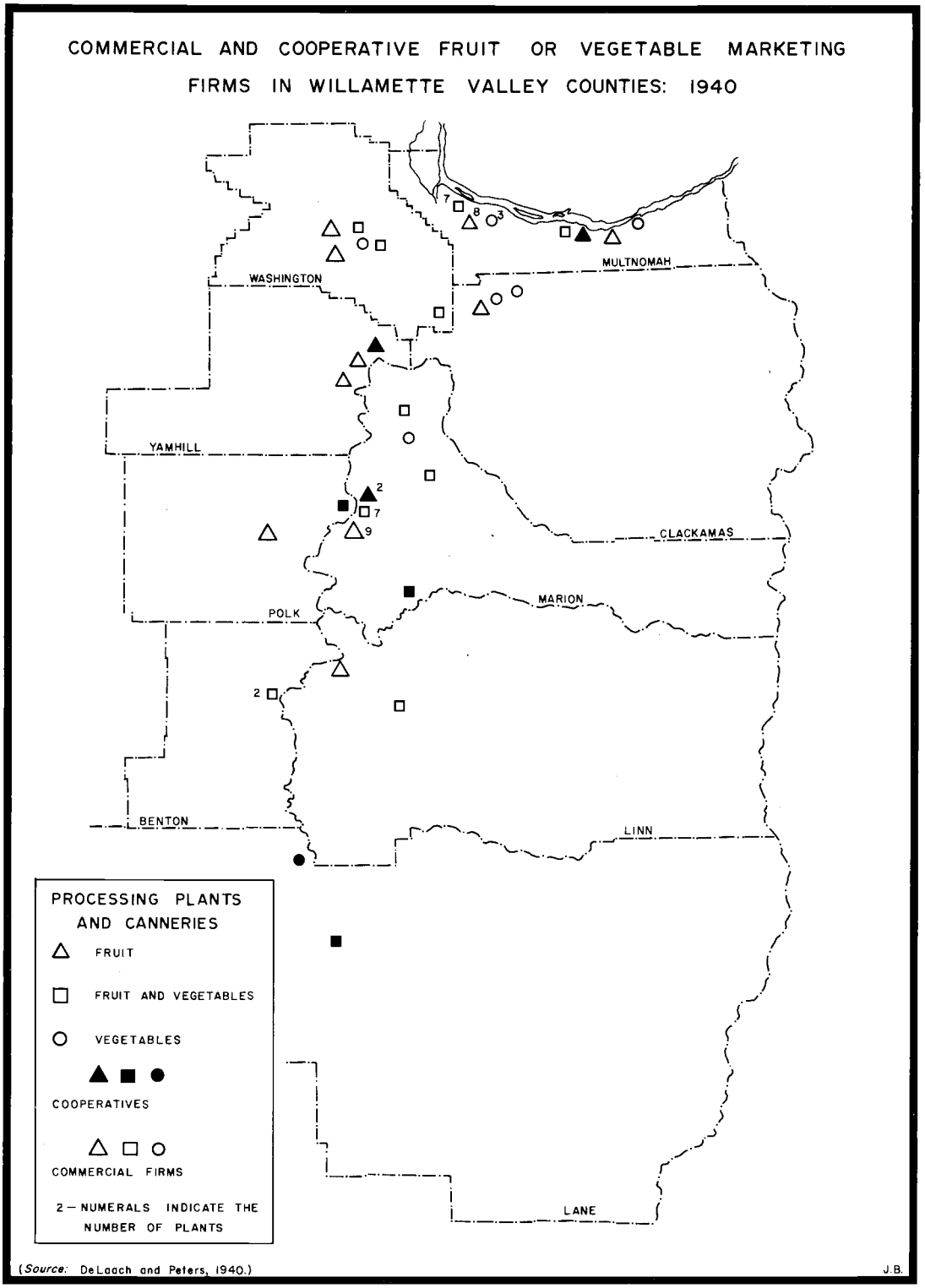
When local markets were adequately supplied by produce from the valley's farms the competition for market outlets grew keener, and the agricultural production strategies were effectively restrained in many areas. Contract farming became popular among fruit and vegetable farmers also, because it offered the most reliable guarantee that crops could be sold at reasonably set prices. By the 1930's, the Extension Service of the Oregon State Agricultural College was regularly issuing warnings that the acreages of small fruits or vegetables should not be expanded without contracts from reliable buyers or other dependable outlets (Oregon Agricultural Extension Service, 1936, p. 16).

During the 1930's and the 1940's, fruits and vegetables were marketed either fresh or processed. Most fruits and vegetables were marketed in processed forms. Fruit and vegetable products were either brined, canned, frozen, dried, preserved, or pickled. Fresh produce was marketed either by the growers or middlemen who were the growers' agents. The agents sold to other middlemen or directly to consumers. Processed products were marketed either by the growers or by growers' associations to the processors. Processing facilities in the Willamette Valley during this period were owned and

operated by both private packers and by cooperative packing associations (DeLoach and Peters, 1940, p. 11). In 1940, there were 52 commercial canning concerns engaged in packing fruits and vegetables. These firms also engaged in cold packing, brining, and quick-freezing. Collectively, the commercial firms ordinarily packed about 50 percent of the vegetables in Oregon, and 73 percent of the fruits and berries (DeLoach and Peters, 1940, p. 3). In 1938, cooperative canning associations packed 50.3 percent of the vegetables, and 27 percent of the fruits (DeLoach and Peters, 1940, p. 11-12).

At the close of the second agricultural growth stage the commercial and cooperative processing plants were strategically located in those areas where they could obtain consistent supplies of fruits and vegetables (Figure 15). The farms producing fruits and vegetables had to be located in the areas of most productive soils. The fundamental locational inter-relationship between the fruit and vegetable farms and the processing plants is one of a reciprocal nature. While a prerequisite for the farms is a location in areas of good soils, they must also be close to the processing plants. This is especially true for small fruits, most of which can withstand only very short hauls to the processing plants.

FIGURE 15


COMMERCIAL AND COOPERATIVE FRUIT OR VEGETABLE MARKETING FIRMS IN WILLAMETTE VALLEY COUNTIES: 1940
WASHINGTON
MULTNOMAH
YAMHILL
CLACKAMAS
MARION
POLK
BENTON
LINN
LANE
PROCESSING PLANTS AND CANNERIES
FRUIT
FRUIT AND VEGETABLES
VEGETABLES
COOPERATIVES
COMMERCIAL FIRMS
2 — NUMERALS INDICATE THE NUMBER OF PLANTS
(Source: DeLoach and Peters, 1940.)
J.B.

The Growing Involvement of Public and Private Institutions in the Affairs of Agriculture

For most of the first agricultural growth stage in the Willamette Valley, the agricultural system experienced positive growth trends. The numbers of farms, the nature of agricultural production, and, even the welfare of the non-farm population was strongly affected by the success or failure of the strategies of resource use employed by farmers in the pursuit of private goals and aspirations. Beginning in the 1880's, private commercial institutions, and publically sponsored instituations began to exert an increasing influence over the direction of agricultural development.

The private commercial institutions were mostly interested in stimulating a faster settlement of Oregon. To this end they acted individually and in cooperation with public agencies which were entrusted with responsibilities in achieving similar goals. Land development companies played a very important role in increasing the number of farms while they pursued private gains. They contributed directly to an increase of small fruit farms, many of which were viable commercially only during the years of most favorable prices. On other occasions the county, state, and federal governments instituted programs which were beneficial directly and indirectly to Oregon farmers.

During the first agricultural growth stage in the Willamette

Valley, a variety of groups interested in furthering agricultural education organized to form county fairs and a state horticultural society. When a pronounced diversification in agriculture began, such groups divided into factions according to their particular special interests. Fruit growers' associations, and other special interest groups figured importantly in the dissemination of the latest farming information. None of them, however, was equipped to do agricultural research and as a consequence they also occasionally passed on misinformation.

Experimentation in agriculture was a time-consuming and expensive proposition and it was not lightly undertaken by ordinary farmers unless there was good promise of an immediate reward for doing so. The farms of the Willamette Valley gradually became more complexly tied commercially with both the local non-farm sectors and more distant non-farm sectors of the national economy. As they did so the national business fluctuations which occurred during the 1880's and 1890's also had increasingly severe impacts upon Oregon's agriculture. Local agricultural groups were very much interested in improving the fit of their particular strategies of farm production to changing economic conditions in the country, and they backed every proposal for publically sponsored agricultural research that would in any way benefit them. Farmers political movements in the Willamette Valley, as elsewhere, gained acceptance partly

because of their stated goals of advancing agricultural education.

Perhaps the most important intrusion of a new institution into the affairs of agriculture in the Willamette Valley began with the founding of a state agricultural college under the provisions of the Hatch Act in 1887. In the second growth stage Oregon's State Department of Agriculture and Agricultural College, and the United States Department of Agriculture Cooperative Extension Service, which was founded in 1914, organized farmers' institutes to reach all the farmers with the latest scientific information beneficial to agriculture. Both collectively, and individually, the above institutions played an ever more important role in the creation of circumstances which caused farmers to change their strategies of agricultural resource use.

Private Commercial Institutions and the Growth of the Agricultural System

In the time since the connection of the valley's railroads with the national system, private commercial institutions actively boosted the growth of the agricultural system. In doing so the hopes were to enhance the growth of their own firms. The increased commercial interaction between the farm and business sectors of the local economy was accompanied by a shift toward a more diversified agricultural production. The most prevalent new strategies of

agricultural resource use employed in the Willamette Valley after 1900 were ones that were geared for a market oriented production.

The railroad companies that served the Pacific Northwest were specifically interested in accelerating the growth of population in the region. To this end they published booklets describing the opportunities for settling in the region. In 1883, the Northern Pacific Railroad Company published a pamphlet entitled, The Pacific Northwest, Information for Settlers and Others. In it, the Company detailed the productions of Oregon's agriculture and the procedures for obtaining land in the region. On the beginnings of a diversified agriculture the Company reported, "Towns are growing, farming is getting better, and mixed husbandry is being practiced to meet the changing conditions of the country." The company also advised newcomers with money that they could still purchase land in the Willamette Valley, ". . . the enormous farms sometimes being subdivided," when the older settlers in the valley sell out and move east of the mountains (Northern Pacific Railroad Company, 1883, p. 20).

After the turn of the century, the railroad companies took more direct steps to increase their business with the agricultural community. For example, both the Oregon Railroad and Navigation Company and the Southern Pacific Railroad Company sponsored farming demonstration trains that toured the Willamette Valley four times during

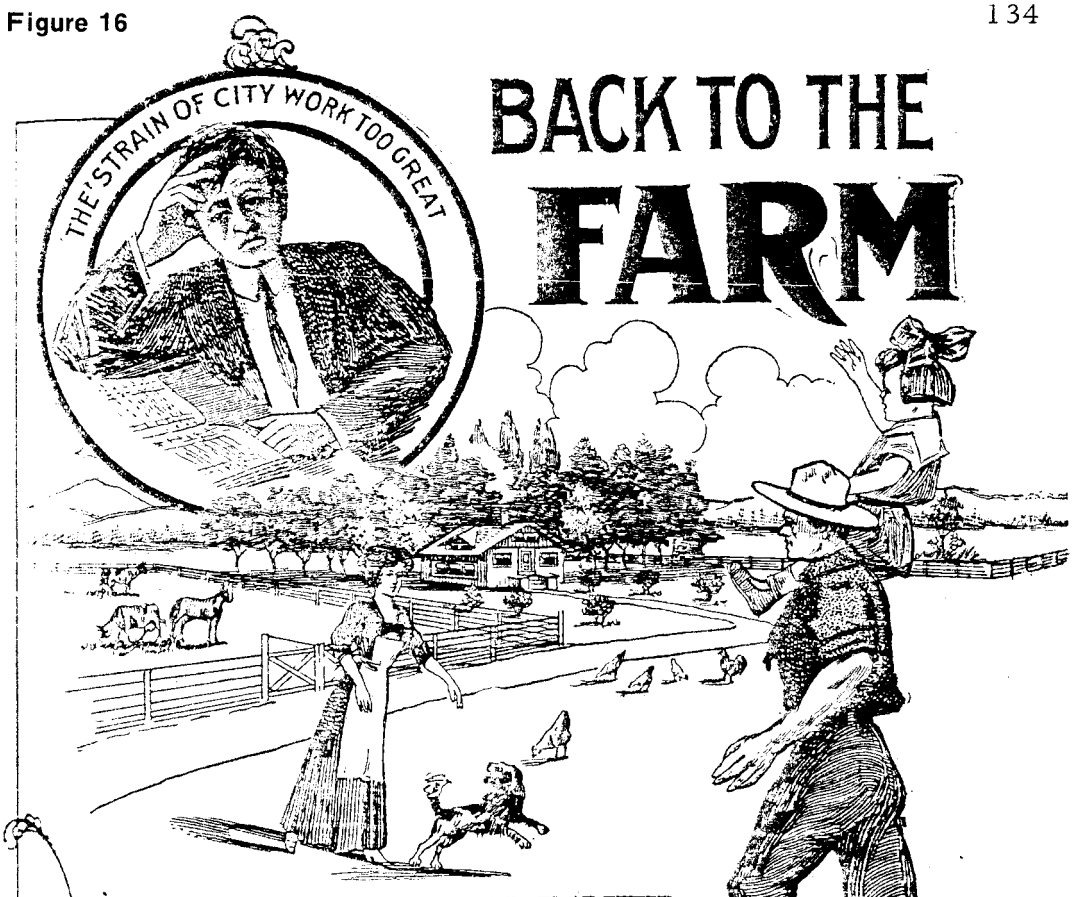
the summers prior to 1910. The educational exhibits were staffed by members of the faculty at the Oregon State Agricultural College in Corvallis. They gave instruction in the latest budding and grafting techniques, in the control of insect pests, in the best uses of problem soils, in the testing of milk quality, and in the use of portable electric generators on the farms (Morse, 1909, p. 11).

The railroads also took a more active role in enticing prospective new farmers to Oregon. The advertisement shown in Figure 16 is just one example of the kinds of ads published across the country designed to lure immigrants to Oregon to take up farming.

Sometimes in conjunction with the advertising campaigns carried out by the railroads, in advertising "colonist fares", were the separate campaigns carried out by farm real estate development companies. In the early decades of this century numerous land development companies were acquiring large tracts of land, subdividing them into 5, 10, and 20 acre tracts, and selling them to any prospective farmer. A. E. Hofer, secretary of the Salem Board of Trade, reported on events taking place around Salem in 1911:

> The wholesale process of planting vast orchards and subdividing them for retail to eastern buyers is gradually gaining a foothold hereabouts, and some companies are planting as high as 2, 000 acres, which will finally claim a family for every ten acre tract, and add materially to the rapid development of this country (Hofer, 1911, p. 14).

In the advertising efforts to sell either five or ten acre tracts



COLONIST FARES

TO ALL POINTS IN OREGON, DAILY

MARCH 1 TO APRIL 15, 1912

OVER THE

SOUTHERN PACIFIC

FARES FROM

CHICAGO	$33.00
ST. LOUIS	32.00
OMAHA	25.00
KANSAS CITY	25.00
ST. PAUL	25.00

FROM OTHER CITIES CORRESPONDINGLY LOW

Colonist Fares are **WEST-BOUND** only, but they can be prepaid from any point. If you have friends or relatives in the East who desire to "Get back to the Farm," you can deposit the fare with your local agent and a ticket will be telegraphed to any address desired. Call on the undersigned for good instructive literature to send East.

JOHN M. SCOTT, GEN. PASSENGER AGENT, PORTLAND, ORE.

Source: The Chamber of Commerce Bulletin, Vol. 16, No. 2, 1912.

of fruit trees as complete farms, the development companies frequently quoted extravagant income potentials for their small plots based on the years in which the highest prices were received. The advertisement shown in Figure 17, which appeared in the July, 1910, issue of Portland's Chamber of Commerce Bulletin, made the claim that the tracts of fruit orchards being sold by the Fargo Orchards Company would provide high incomes to their buyers for life! The sizes of the tracts offered for sale were not given but five and ten acre tracts were the most common sizes sold for such purposes. Assuming that the Fargo Orchards Company sold both five and ten acre tracts, the "income for life" quoted in their advertisement would have been based upon anticipated earnings of $1,000 per acre. If, on the other hand, the company sold only ten acre tracts, the earnings claimed would have ranged between $500 and $1,000 per acre, a range that was still higher than average earnings per acre at the time the claims were made.

The practice of land development companies in quoting bonanza prices when selling farm tracts came under attack from faculty members of the Oregon Agricultural College. C. I. Lewis, writing in the Oregon Agricultural College Bulletin in 1911, warned against the ten acre fruit tracts. He noted that although the highest fruit prices had on occasion resulted in earnings of $1,000 per acres, the net profit under more average circumstances was closer to $200 per

FIGURE 17

Fargo Orchards

Only an Hour's Ride on the Main Line of the Oregon Electric R. R.

22--Trains Daily--22

Pass through our Orchard Lands. Quick and cheap transportation, nearness to market, its educational and social advantages, practically a suburb of a great city, are factors that must appeal to the man who wants a home that will provide a life income of from $5000 to $10,000 per year, or to the shrewd investor who desires to quadruple his investment in five years.

We plant and cultivate every tract for 4 years. Price $300 to $500 per acre, without interest and on very easy payments.

FARGO ORCHARDS CO.

85 Fifth Street Ground Floor Portland, Oregon

Source: The Chamber of Commerce Bulletin, Vol. 8, No. 1, 1910.

acre. Lewis observed that the ten acre fruit tract could well be used for a sideline income, but should not be used for the sole support of a family. He wrote in the Bulletin, "The average ten acre tract is not sufficient for a family for a series of years," and he commented further that a 40 acre tract was the best sized unit on which to start a self-sustaining fruit farm because it was one on which a man and a pair of horses could do all the work required to get the orchards into production (Lewis, 1911, p. 12).

When prices received for fruits, vegetables, and poultry products reached their highest levels, part-time farming became a popular method of acquiring extra income. Some land development companies marketed five acre parcels of land for part-time farming purposes, frequently leaving it to the buyers to determine the best uses of the land. In the 'Industrial Notes', contained in the January, 1911, issue of the Chamber of Commerce Bulletin of Portland, it was reported that the Chapin-Herlow Mortgage and Trust Company, of Portland, had acquired a 600 acre tract of land at Willamina, near the Polk and Yamhill County boundary. In the subsequent issues of the Bulletin, the Company advertised the sale of small farm tracts of five acres, and larger, for the growing of market garden crops. Their advertisement, seen in Figure 18, extolled the advantages of the location of their property in relation to the availability of markets and part-time employment.

FIGURE 18

WHY WILLAMINA OFFERS THE BEST CHANCE TO GET BACK TO THE SOIL

LOOK — LISTEN — LEARN

AT WILLAMINA IS:

A large, modern, steam brick plant, operated by the Pacific Face Brick Company and employing from 80 to 100 men the year around. Preference being given the owners of tracts.

A large, modern evaporator erected by the World's Keepfresh Company, which offers a home market for all small crops.

These plants will furnish work to the settlers until they get their garden tracts into such a state of cultivation as to require all the farmer's time.

The workingmen's needs furnish a splendid home market for the farmer.

This happy combination of farm work and work in the plants gives every industrious man a chance to make good.

The Willamina garden tracts are in small units of five or more acres and ranging in price from $150 an acre. The terms are so easy that one need not hesitate. We want our people to make good, and will arrange terms so that they can do so. Think it over. Get out of the old rut and get a real start in life.

Chapin-Herlow Mortgage & Trust Company

Third Floor Chamber of Commerce, Portland, Oregon

Source: The Chamber of Commerce Bulletin, Vol. 18, No. 3, 1912.

The combined influences of various private institutions upon the size of the agricultural system, and upon its rate of growth, were great. The interference in the affairs of agriculture had both beneficial and detrimental effects. Improvements in transportation, which opened up new lands for agriculture, were generally beneficial, but the creation of too many small farms contributed to unstable conditions in rural societies when the effects of the Depression were felt.

Publicly Sponsored Institutions and the Growth of the Agricultural System

The diversification and commercialization of agriculture in the Willamette Valley saw the formation of special farm product associations which were organized to further the interests of their members. Fruit growers' associations attempted to improve the quality of their products hoping to enhance their marketability. The Willamette Valley Prune Association, founded in 1901, was one such organization, and it marketed prunes all over the world. Other crop and livestock groups were formed to boost the reputations of their particular products. Growers' associations, livestock associations, and farmers' political groups, such as the Grange, all supported the formation of a national department of agriculture, and subsequently, the establishment of a system of agricultural colleges. It was generally felt at the

times when the agitation for the establishment of such institutions was strongest, that only public agencies could be entrusted with the responsibilities of collecting and disseminating the climatological, economic, social, and technological information needed to avoid overproduction that could lead to business fluctuations (Wiest, 1923, p. 5).

The work of the Oregon Agricultural College got enthusiastic backing because its purpose was to conduct research on the contemporary problems facing agriculture. Equivalent research programs could only have been carried out with great difficulty by private individuals or private interest groups. Diversification and the increasing commercialization of farms in the Willamette Valley led to a greater demand for the application of research to local agricultural problems. E. R. Lake, writing in Portland's Chamber of Commerce Bulletin in 1904, declared that his was, ". . . an age of the specialist in agriculture", and that the agricultural college, which had 35 teachers and investigators and equipment valued at $250,000, was, ". . . capable of rendering great service to the wide-awake soil tiller" (Lake, 1904, p. 7).

Business groups were conspicuous supporters for the founding of the Oregon State Immigration Commission, whose goal it was to attract more settlers to Oregon. The Commission published a series of almanacs, entitled The State of Oregon, Its Resources and

Opportunities, for the benefit of homeseekers, settlers, and investors. In the 1912 Oregon Almanac, it was reported that, ". . . the chief opportunity for settling is on farms," and, it was added, at no greater expenditure of money or time, to be successful, then was required elsewhere (Oregon State Immigration Commission, 1912, p. 4). The same almanac also assured prospective farmers that the state agricultural college provided assistance to beginning farmers on six separate demonstration farms covering a total of 1, 500 acres (Oregon State Immigration Commission, 1912, p. 21).

The approach of enticing farmers to Oregon by accentuating all the positive aspects of agricultural conditions in Oregon persisted for several more decades. In 1929, the state legislature appropriated $25, 000 to promote, ". . . agricultural development and land settlement work" (Oregon State Chamber of Commerce, 1931, p. 1). The money funded for this work was spent in part for the publication, in 1931, of the Oregon State Chamber of Commerce publication, Oregon Beckons with Opportunities. This publication resembled the almanacs previously described, in many respects. Both were designed primarily to boost the economic outlook for Oregon and the opportunity for settling on farms.

It was not until after 1914 that the state's agricultural institutions, aided by the United States Department of Agriculture, under the provisions of the State Relations Service legislation, cooperated

in providing Extension programs to all the counties (Wiest, 1923, p. 7 and 62). Under the auspices of the Extension Service, county conferences were held to guide local agricultural development. At one such conference, held in Polk County in 1924, 200 representative farmers and interested businessmen from the county were present to hear reports from committees set up to study the outlooks for specific crop and livestock enterprises. The stated goal of the conference in Polk County was to:

> Inventory the present status of agriculture in Polk County, analyze the balance between production and market demands, and arrive at conclusions that might form the basis for the best development of local agriculture (Oregon Agricultural Extension Service, 1924, p. 3).

Agricultural conferences of this type, with similar objectives, were held periodically for most of the counties in the Willamette Valley. Conferences on Polk County agriculture were held again in 1936, and 1946. At the 1936 conference, the following recommendations were made following the committee reports: 1) prune orchards not producing at least 2,000 pounds per acre should be taken out of production and no new orchards planted; 2) small fruit markets must be found for oncoming production and vegetable acreages must not be expanded without contracts; 3) dairy production can be expanded slightly and the summer feed shortages can be relieved by growing ladino clover, sudan grass, or alfalfa under irrigation; and 4) the emphasis on

cereals should be changed by growing less wheat and oats, but more barley (Oregon Agricultural Extension Service, 1936, p. 14, 16, 19-20, and 4). In 1946, the conference on Polk County's agriculture was attended by 300 county farmers and businessmen. They heard reports and recommendations from committees which studied the trends in, and prospects for, poultry raising, horticulture, dairying, livestock raising, farm crop production, land use problems, and labor supplies (Oregon Agricultural Extension Service, 1946, p. 5).

The kind of cooperation between individual producers and public agencies, characterized by the above conferences held for all Willamette Valley counties, was exemplary of the changed circumstances under which farmers came to select their strategies of agricultural resource use.

In addition to the guidance provided by the agricultural conferences were the research programs carried out by the agricultural college. The duties of the Experiment Station of Oregon State Agricultural College were to carry out research programs aimed at reducing crop and livestock losses and at determining ways to lower farm operating costs, thereby increasing farm incomes. In 1934, the funding for the college came from federal, state, and private sources. Federal funds contributed 57 percent of the operating budget, state funds provided 26 percent of the budget, 14 percent of the budget was met by sales and fees, and three percent of the

funding came from private gifts (Besse, 1934, p. 18). Between 1926 and 1930, the cost to Oregon for supporting the experimental work of the State Agricultural College amounted to $87,733 annually. It was claimed that the research programs carried out by the Experiment Stations were saving Oregon's farmers $10,000,000 annually in reduced losses and increased incomes, during the same period (Besse, 1934, p. 27).

The nature of the research programs undertaken by the research division of the agricultural college underwent a transition concurrently with changes in the agricultural resource strategies that were employed in the Willamette Valley. Both the studies carried out and the strategies of agricultural resource use employed were reflective of the growing concentration of specialized agricultural activities on fewer and more efficiently operated farms. Ralph S. Besse, writing in an Oregon Agricultural College Experiment Station Bulletin, in 1937, summed up the changes in agriculture as follows:

> The problems of the farm have increased and broadened with the progress of civilization and its complexities. The self-sufficing farm of yesterday is today a commercial unit that must compete in the markets of the world not only in amount and quality of products but in efficiency of production as well. Only those farmers who can compete in producing high quality products economically are likely to survive and succeed in maintaining a desireable standard of living (Besse, 1937, p. 5).

Accordingly, the nature and the scope of the research projects

carried out during the second agricultural growth stage came to reflect the increasing complexity of the interactions between the agricultural system and the non-farm sectors of the geographical environment, with which the system had become interconnected.

Still other spheres of public involvement in the affairs of agriculture came into being through the passage of legislation specifically designed to regulate the quality of products marketed for public consumption, and through the passage of major legislative programs designed to enhance the welfare of farmers in the United States. Involvement along such lines was initiated at county, state, and federal levels.

Some examples of the kinds of regulatory federal legislation which imposed restrictions upon the freedom of farmers to produce and market any manner of products they wanted to, were those that came with the passage of the Food and Drug Act in 1906 and the Net Weight Act in 1913. Agitation for pure foods and drugs came to a head as a result of campaigns to improve the sanitation conditions in food and drug processing industries. The legislation that followed imposed food product quality standards upon farmers and guarded against the adulteration of any foods marketed by them to the public (Wiest, 1923, p. 139). The Net Weights Act placed restrictions upon the allowable moisture contents of cereals and other agricultural products to assure the public that agricultural products were of

uniform weights and quality (Wiest, 1923, p. 14). The occasional passage of such laws resulted in an incremental growth of government regulatory powers over an increasing array of farm products.

Of greater importance to the development of the agricultural system was the enaction of broad gauged legislation aimed at improving the welfare of farmers after the collapse of the economy during the Depression. Legislative action at the federal level unfolded in three stages, the first, lasting from 1933 to 1936, saw the passage of the Agricultural Adjustment Act in 1933, the aim of which was to control agricultural production. To accomplish this end, the government entered into contracts with producers, extended commodity loans, established marketing quotas and agreements, provided export subsidies, and bought up farm surpluses. The central aim of all the means employed was to give agricultural commodities a purchasing power equivalent of that enjoyed during a base period between 1910 and 1914. When features of the 1933 A.A.A. legislation were declared unconstitutional, the government initiated a second legislative phase to assist farmers directly.

Coinciding with the declining economic fortunes was the occurrence of a severe drought in the Great Plains states that caused the degradation of large areas and 'dust bowl' conditions. The enactment of legislation establishing the Soil Conservation Service grew out of the recognized need to conserve the nation's soil

resources. In the second phase of the legislation, beginning in 1936, farm incomes were supplemented as payments were made directly to farmers for practicing sound soil conservation methods.

The third phase of the federal legislation commenced with the enactment of the Farm Act in 1938. The conservation measures instituted in 1936 were continued and were supplemented with parity payments and price supports (Blaisdell, 1940, p. 40). Means employed to achieve parity conditions for farmers included the granting of farm loans, the imposition of marketing quotas and acreage allotments, the provision of assistance to farmers selling farm commodities on foreign and domestic markets, and the creation of reserves for the protection of consumers (Blaisdell, 1940, p. 60-61).

The effects of federal legislation were felt unevenly among the valley's farms. Commercial crop farms were greatly influenced by the food quality laws. Specifically, they rewarded farmers who had endeavored to produce and to market the finest quality farm products, and they induced others to do likewise. The New Deal programs directly affected a greater number of farms. Commercial farms participated in, and benefitted the most, from Agricultural Adjustment Act programs. Subsequently, the larger farms again received greater benefits for participating in soil conservation programs. It has already been pointed out that an indirect effect of the national

conservation programs was the stimulation of Oregon's grass seed industry.

The emergency programs set up at the national level to assist farmers were matched by county and state efforts to solve local problems. In Oregon, special state agencies were created to regulate the production and the marketing of some farm products and to carry out land resource inventories to assist in solving land use problems. After 1935, Willamette Valley counties started planning commissions to study local land use problems. The counties also reviewed taxation policies with an eye toward stemming the reversion of rural lands to public ownership because of tax delinquency.

State regulatory agencies were created to stabilize the marketing of farm products to the public. In the Depression, farmers attempted to sell even small quantities of farm products they had never, or seldom before sold directly to consumers, causing disruptions of established commercial links between producers, middlemen, and consumers. Between 1930 and 1934, there was a large influx of producers trying to sell milk in Oregon, which led to instability of prices and to a diminuation of sanitation standards in the fluid milk industry. In an attempt to remedy this situation the state passed the Milk Control Act in 1933, which gave the state broad powers to stabilize prices and markets and to ensure the quality of the milk being sold to the public. The Act established the Oregon Milk

Control Board, which set prices, enforced milk quality standards, delimited marketing districts for producers, and licensed firms that produced and marketed milk. The stated objectives of the measures undertaken by the milk control board were to provide prices that were fair to producers, middlemen and consumers (DeLoach and West, 1940, p. 4-5).

The need of planning for more appropriate land uses became readily apparent when large numbers of small farms failed to provide adequate incomes for their owners. A state planning board was created in 1935 to investigate land use problems, and to make recommendations for ways to improve them. The Oregon State Planning Board identified the agricultural use of marginal and unsuitable lands as the major land use problem. The Board proposed that a scientific classification be made of rural land to determine its most appropriate long-term uses. It also recommended that improper uses and settlement of marginal lands be officially discouraged (Oregon State Planning Board, 1938, p. 27-38).

Involvement of state and local agencies in agricultural production through regulatory powers, through land use planning and zoning, and through the implementation of taxation policies had created a complex institutional environment in which farmers operated. During the second agricultural growth stage, the institutional environment became so important to agriculture that farmers gave primary

considerations to farm policies of the public institutions when making their resource strategy decisions.

CHAPTER IV

THE STRUCTURAL AGRICULTURAL GROWTH STAGE 1950 TO 1973

The single most distinguishing characteristic of the Structural Agricultural Growth Stage, which sets the present period apart from previous stages, is an agricultural system in which production continues to increase despite annual decreases in the total agricultural acreage (see Figure 12). The yields of most commercially produced crops and livestock animals, per unit of land, have been increasing steadily since 1950. The agricultural system of the Willamette Valley is increasing in its productivity per acre, but it is declining in both its total acreage and in the number of farms. In the balance, the growth in farm productivity has resulted not from an increase in the size of the system, or from larger numbers of producing units, as it did in previous growth stages, but from an increased complexity of inter-relationships between agriculture and other sectors of the economy.

Progress and Changes in the Size of the Agricultural System

In the decades since 1950, the changes that have occurred in the agricultural system of the Willamette Valley have been fundamental ones. Agricultural resource strategies have undergone a

shifting consistent with the changing relationships between agriculture and the non-farm sectors of the population and the economy. Since 1950, farmers have encountered rapidly rising levels of complexity with both public and private institutional environments. Among the farmers' responses in countering the increased levels of complexity have been efforts to increase the size, the specialization, and the organizational and managerial efficiencies of their particular farming operations. Simultaneously, farmers have increased the use of non-land resource inputs, especially agricultural chemicals.

Willamette Valley farmers have had the choice of going along with the trends of the times or of getting out of agriculture. The decisions by farmers to continue farming in the face of rising production costs and rising taxes required that they attempt to expand the sizes of farms or the intensity of farm operations in order for their farms to remain economically viable. The choice of expanding farm production through the use of more non-land resources, or through capital improvements of land, such as by providing needed irrigation or drainage facilities, was not open to all farmers. They were often limited by budgetary restraints or by unsuitable farm site characteristics. Similarly, the opportunities to expand the size of farms was limited by the availability of additional land where it was needed and by the availability of capital to buy land or lease land when it was needed.

The total number of farms in the Willamette Valley declined rapidly after 1950. The demands for farm products were capable of being met after that date by an increased production from a diminishing agricultural acreage. Farms in the larger size classes survived with only minor decreases in number after 1950, but the smaller size classes of farms decreased rapidly over the same period (see Figure 13). As the number of farms decreased, but particularly because of the decrease in smaller farms, the average size of farms increased. The average size of all farms in Marion and Polk Counties rose from 99.7 acres in 1950 to 154.8 acres in 1970.

The average size of commercial farms, however, was substantially larger at each census than that of all farms. In 1970, commercial farms were those that sold at least $2,500 worth of agricultural products, and their average size in Marion and Polk Counties was 231.4 acres. Between 1950 and 1970, the total agricultural acreage in the two counties had decreased by slightly more than 19 percent (see Figure 12).

Two very important features associated with the increasing farm sizes are the rapid increase in farm values per unit and the increased proportion of the total agricultural acreage taken up by larger size classes of farms. Because of both the increasing farm real estate values and the increasing sizes of farms, their average

values jumped by about 440 percent, from a value of $23, 520 per commercial farm in 1949, to a value of $103, 144 per commercial farm in 1969. Althought these figures are only averages, they do illustrate the magnitude of the increase in farm values.

A more representative distribution of farm values among the various size classes of farms can be gained by computing their values from the average land values per acre, $507 per acre for both counties in 1969. In 1969, 55 percent of all the farms in Marion and Polk Counties (2, 568 farms) were smaller than 100 acres per farm and were valued at less than $50, 700 per farm. Forty-five percent of all the farms were valued at more than that amount. Fourteen percent of the farms (558 farms) were larger than 260 acres but less than 499 acres in size and were valued at $131, 820 per farm or more. Nearly five percent of all the farms (194 farms) were larger than 500 acres, but less than 999, in 1969, and they were valued at $253, 500 per farm or more. Approximately one percent of the farms in 1969 (41 farms), were larger than 1, 000 acres and were valued at $507, 000 per farm or more. The figures are merely representative ones and do not necessarily portray conditions exactly. Farm acreage values vary greatly with the levels and kinds of capital improvements, farm locations, and land uses. Values vary significantly between counties also. In 1969, the average farm acreage

value for Polk County was $384 per acre, and for Marion County it was $630 per acre.

The fact remains that farm land values have been increasing rapidly and that the rate of increase has climbed steadily since 1950 (See Figure 19). Some of the consequences of the rapidly rising land values are increased property taxes, increased pressures to convert rural land to competing uses, and a greater difficulty for young farmers to enter into commercial agriculture. Field interviews with farmers and county agricultural extension agents carried out in May of 1971, and in June, 1973, confirmed that the increasing values of farm land contribute to some of the contemporary problems facing agriculture in Marion and Polk Counties. In spite of the impediments to entering agriculture that high prices create, one young farmer who had the financial backing to buy a 680 acre farm in Polk County in 1969, confided that one of the main reasons he chose to buy a farm was because of the rapidly appreciating land values (Mitchell, 1973).

One method of increasing farm size for the purpose of creating a more viable commercial farm is through farm consolidations. Farm consolidations have occurred both in Marion and Polk Counties since 1950, but the expense of additional farm land has become too great in many cases now to justify its purchase for farming purposes. The main alternative has been to lease additional land. Of all the commercial farms in Marion and Polk Counties in 1950, 67.7

percent were owned completely by their operators. Farmers owning only part of the land they farmed, and who leased additional land, operated 22.5 percent of the commercial farms in 1950. By 1969, the proportion of all the commercial farms owned by their operators had dropped to 61.8 percent, and the proportion operated by farmers who leased additional land increased to 30.4 percent.[17]

The size of farms has played a dominant role in their ability to survive, as Figure 22 demonstrates. Since 1950, the numbers of farms in size classes of farms larger than 260 acres have remained fairly stable. Farms in the smaller size classes have declined much more rapidly in number. Concurrently, the larger size classes of farms are gradually coming to occupy larger proportions of the total agricultural acreage in Marion and Polk Counties. In 1950, farms with more than 500 acres, but less than 999 acres (132 farms), occupied 14 percent of the total agricultural acreage. By 1969, the farms in this size class (153 farms), occupied 20.3 percent of the

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[17] The definition of commercial farms has changed since the 1950 Census of Agriculture, so data from 1950 and 1969 are not strictly comparable. The primary changes have occured in the uppermost and lowest income classes. Commercial farms in 1950 ranged from Class I farms, which earned more than $25,000 annually, to Class VI farms, which earned more than $250 but less than $1,999 annually. Commercial farms in 1969 ranged from Class I farms, which earned more than $40,000, to Class V farms, which earned no less than $2,500 annually. Comparisons of commercial farm data made in this dissertation between consecutive agricultural censuses are made mainly to illuminate trends in farm, crop, and livestock characteristics.

FIGURE 19

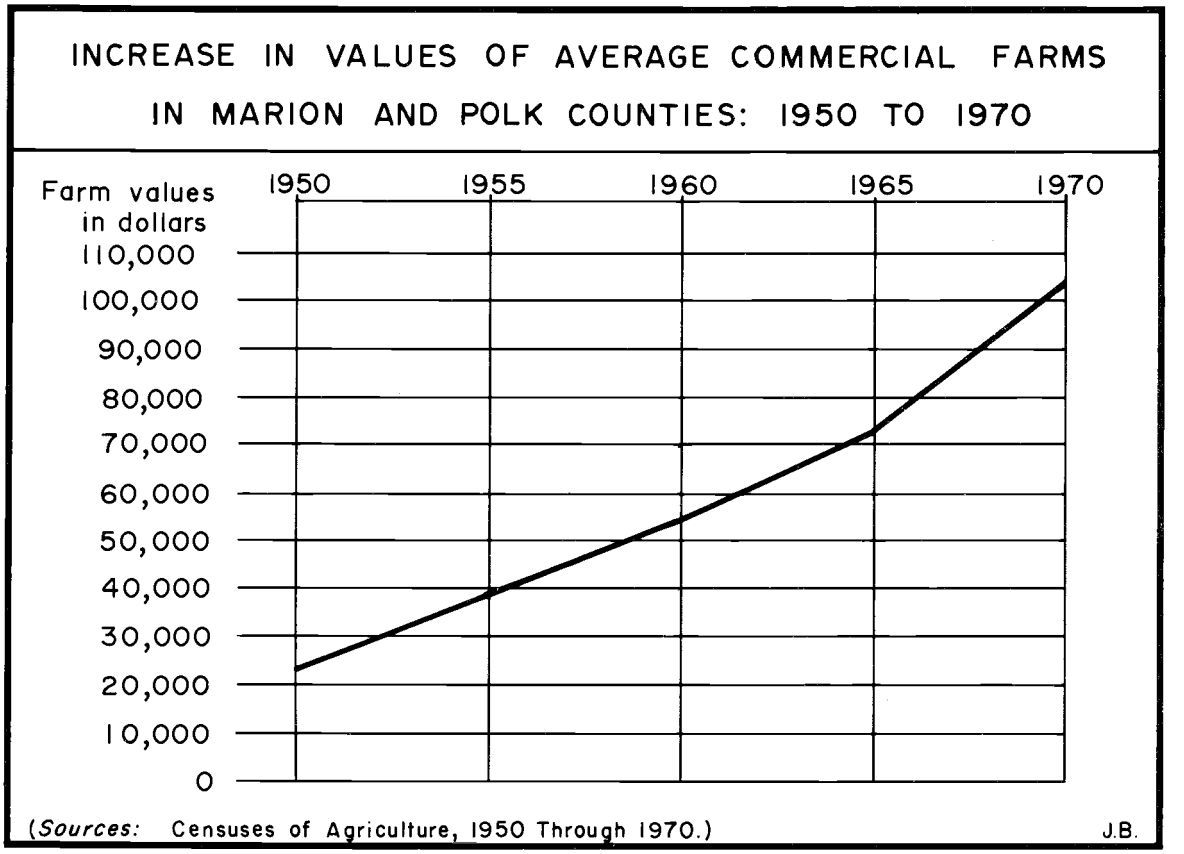
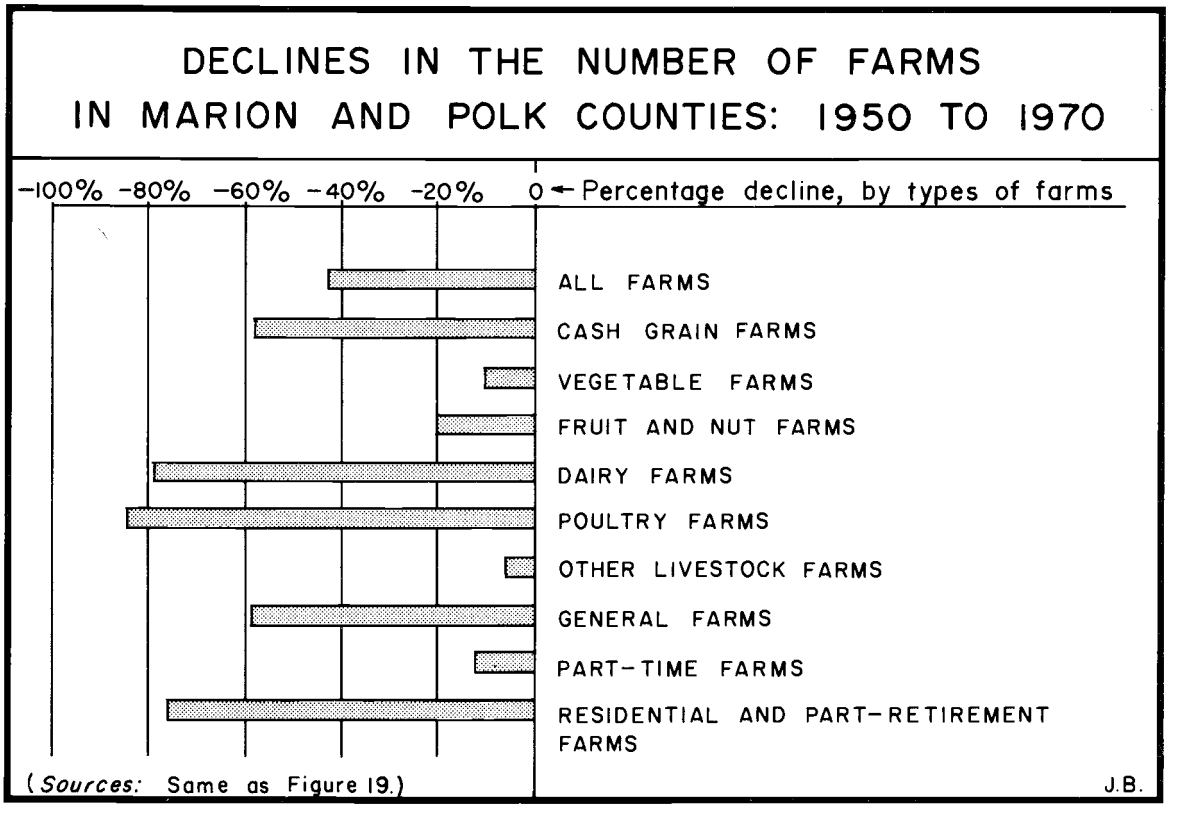


FIGURE 20



total agricultural acreage. Farms with more than 1,000 acres in 1950, 35 farms, occupied nearly eight percent of the total agricultural acreage. In 1969, there were 41 farms that were larger than 1,000 acres, and they occupied 14 percent of the total agricultural acreage (compare Figures 13 and 14).

Trends in Crop and Livestock Production

There has been an across the board decline of all kinds of farms, as defined by their predominant agricultural production enterprises. The relative significance of the declines in various types of farms can be seen in Figure 20. All farms in Marion and Polk Counties decreased by 43 percent, from a total of 6,746 in 1949, to 3,856 in 1969. As can be seen in Figure 20, farms reporting cash grains, dairying, and poultry raising as their main enterprises all experienced greater proportional declines than all farms combined. Farms that reported vegetables, fruits and nuts, or other livestock enterprises declined much more slowly in number. The smaller proportional declines in the above three types of farms, and the more rapid decline of the general farms category, were the result of a trend toward increased specialization that occurred simultaneously with the trend toward larger farm sizes.

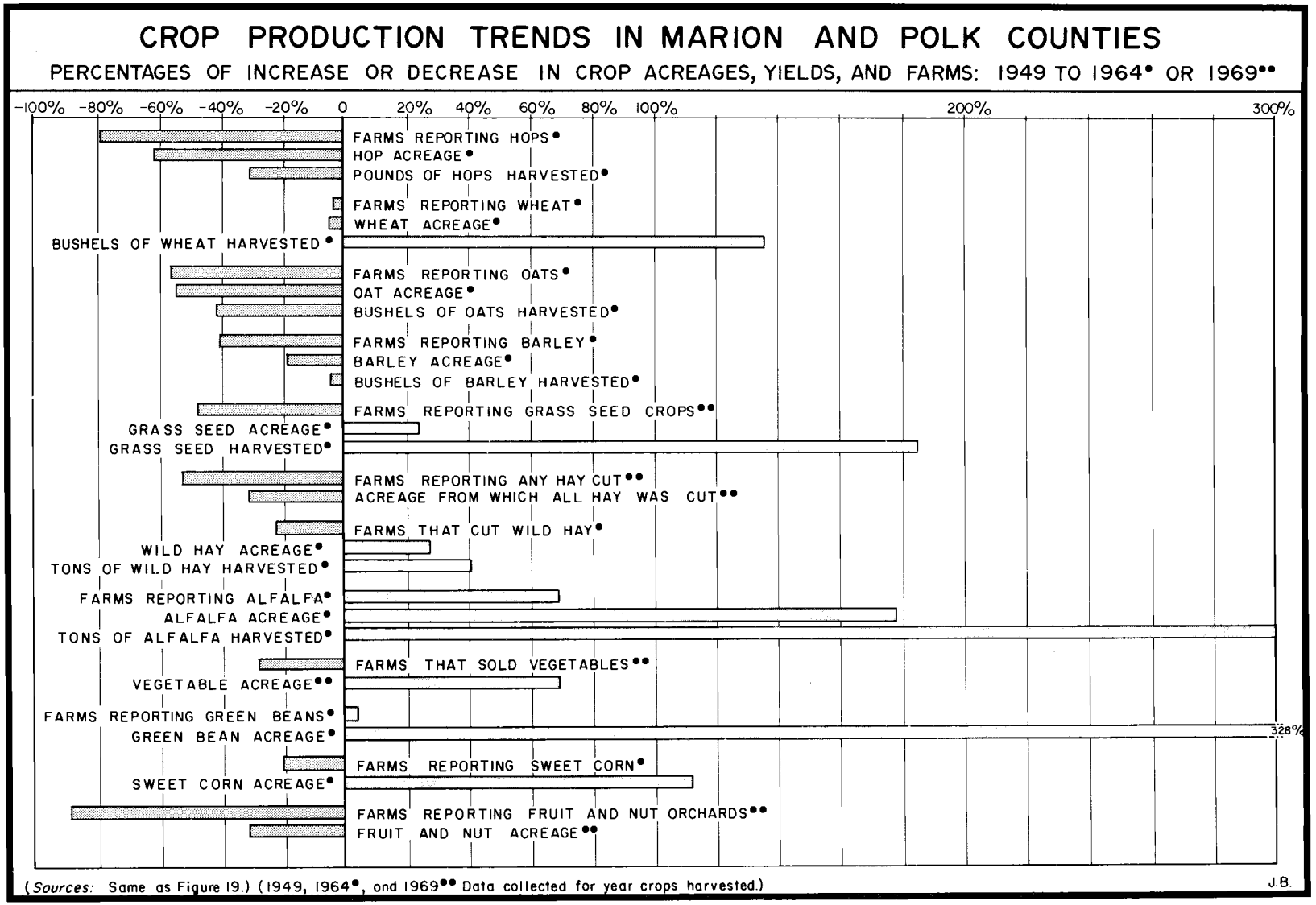
Crop Specialization Trends

A most noticeable departure in individual farm management from the preceding Diversified Agricultural Growth Stage was the greater selectivity displayed by farm operators. Time consuming and marginal farm enterprises were discontinued by farmers in favor of those enterprises which they were certain were the most remunerative. Diversified farming did not cease to exist after 1949, but multiple enterprises on single farms were selected on the basis of demonstrated complementarity and compatibility in their demands for agricultural resource inputs.

In most cases where commercially important crops are concerned the trend has been toward larger scales of production on fewer more efficiently managed farms. Figure 21 shows that the number of farms reporting commercially important crops declined, on a proportionate basis, much more after 1949 than either the acreages or the harvest yields of the reported crops.

A good example of these trends is seen in the case of grass seed and other seed crops. Between 1949, and 1969, the number of farms reported raising any field seed crops declined by 47 percent. The field seed acreage on the farms that continued to grow seed crops was increased by about 24 percent. Although the acreage was increased by this percentage, the harvest of all seed crops in 1964 was 185 percent greater than it was in 1949. The average yield of

FIGURE 21


CROP PRODUCTION TRENDS IN MARION AND POLK COUNTIES
PERCENTAGES OF INCREASE OR DECREASE IN CROP ACREAGES, YIELDS, AND FARMS: 1949 TO 1964• OR 1969••
-100% -80% -60% -40% -20% 0 20% 40% 60% 80% 100% 200% 300%
FARMS REPORTING HOPS•
HOP ACREAGE•
POUNDS OF HOPS HARVESTED•
FARMS REPORTING WHEAT•
WHEAT ACREAGE•
BUSHELS OF WHEAT HARVESTED•
FARMS REPORTING OATS•
OAT ACREAGE•
BUSHELS OF OATS HARVESTED•
FARMS REPORTING BARLEY•
BARLEY ACREAGE•
BUSHELS OF BARLEY HARVESTED•
FARMS REPORTING GRASS SEED CROPS••
GRASS SEED ACREAGE•
GRASS SEED HARVESTED•
FARMS REPORTING ANY HAY CUT••
ACREAGE FROM WHICH ALL HAY WAS CUT••
FARMS THAT CUT WILD HAY•
WILD HAY ACREAGE•
TONS OF WILD HAY HARVESTED•
FARMS REPORTING ALFALFA•
ALFALFA ACREAGE•
TONS OF ALFALFA HARVESTED•
FARMS THAT SOLD VEGETABLES••
VEGETABLE ACREAGE••
FARMS REPORTING GREEN BEANS•
GREEN BEAN ACREAGE•
328%
FARMS REPORTING SWEET CORN•
SWEET CORN ACREAGE•
FARMS REPORTING FRUIT AND NUT ORCHARDS••
FRUIT AND NUT ACREAGE••
(Sources: Same as Figure 19.) (1949, 1964•, ond 1969•• Data collected for year crops harvested.)
J.B.

all seed crops per acre rose from 292 pounds per acre in 1949 to 550 pounds per acre in 1964.

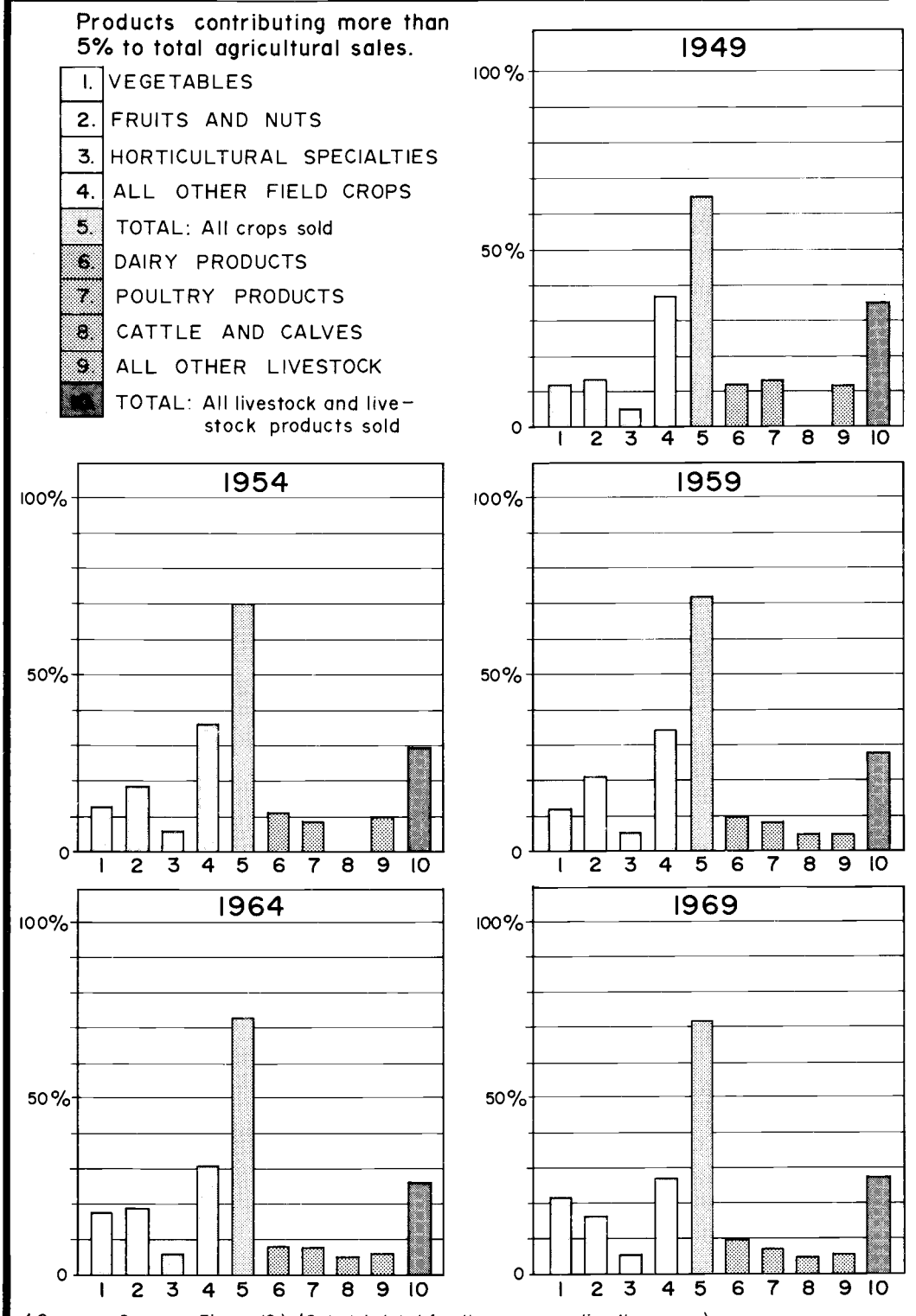
The increased acreages of commercial crops on individual farms and the increased sizes of farms represented attempts to enhance their economic viability by extending scales of operations. The increased per-acre yields of crops resulted from a combination of other factors, including the use of improved plants; the use of more sophisticated chemical fertilizers, dusts, and sprays; and the provision of irrigation to more extensive acreages. These factors, in various combinations, were largely responsible for the increased yields of wheat and other grains, of fruits and nuts, and of vegetables raised on Marion and Polk County farms.

Of all the crops sold by farms in Marion and Polk Counties, tree fruits and nuts were consistently the most remunerative until surpassed by vegetable sales sometime between 1964 and 1969 (see Figure 22). Fruit and nut crops increased in value despite an overall decline in orchard acreage as indicated in Figure 21. The greatest declines in acreage were suffered by plum and prune orchards followed by walnuts (see Figure 23). Cherries and filberts, on the other hand, both displayed declines in acreages after 1949, with increases in acreages following again after 1959.

The sales of vegetables, fruits, and nuts became increasingly more valuable causing total crop sales to increase from 65 percent

FIGURE 22

RELATIVE VALUES OF AGRICULTURAL PRODUCTS SOLD IN MARION AND POLK COUNTIES: 1949 TO 1969

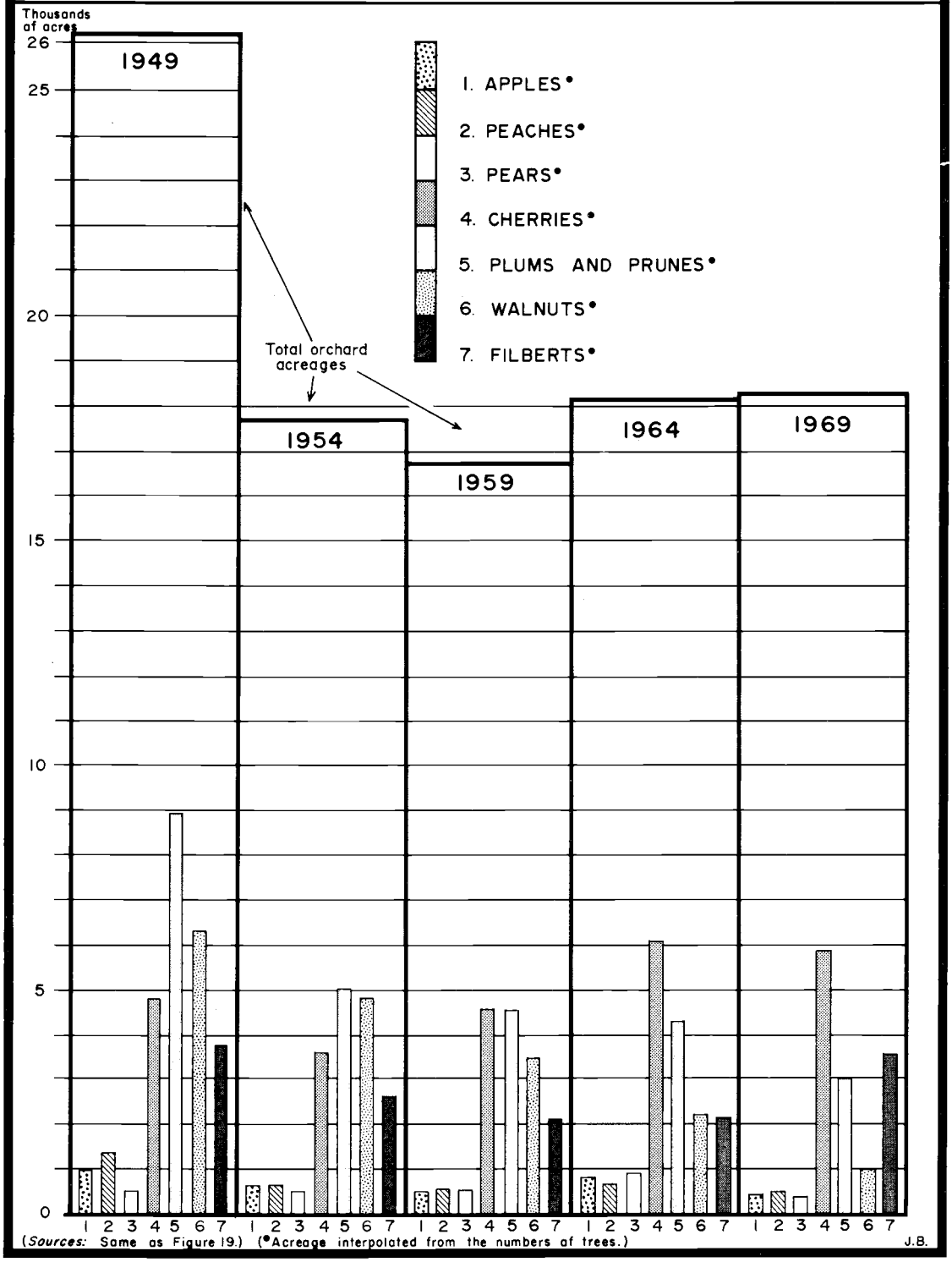


(*Sources:* Same as Figure 19.) (Data tabulated for the year preceding the census.)

J.B.

FIGURE 23

FRUIT AND NUT ACREAGES IN MARION AND POLK COUNTIES: 1949 TO 1969



(*Sources:* Same as Figure 19.) (*Acreage interpolated from the numbers of trees.)

of all agricultural product sales in 1949 to 72 percent in 1969 (see Figure 22).

A variety of vegetables are produced in Marion and Polk Counties, but the two which experienced the greatest expansion in acreage after 1950 were snap beans (green beans) and sweet corn. These two crops accounted for 76 percent of the total vegetable acreage in 1964, and presumably contributed a similar proportion to the total value of all vegetables sold.

Trends in Livestock Enterprises

Since 1949, the livestock and livestock products portion of the total agricultural sales of Marion and Polk Counties has slowly declined. In 1949, the sales of such products constituted 35 percent of the total value of all agricultural products sold, but by 1969, they had declined to 28 percent of the total (see Figure 22). Sales of dairy products and poultry products, although generally increasing in value from year to year, declined in their relative contributions to total agricultural sales (see Figure 22). An exception in the sale of poultry products occurred between the censuses of 1964 and 1969, when earnings reported by the poultry industries of Marion and Polk Counties dropped by 15 percent. As the relative positions of dairying and poultry raising declined in importance, the sale of cattle and calves increased. Farms selling cattle and calves gradually

accounted for higher proportions of total agricultural sales, and at each census after 1954, earnings from the sale of cattle and calves contributed at least five percent to the total value of all agricultural products sold (see Figure 22).

The preferences displayed for specialization and larger scales of operation in crop raising were also much in evidence with livestock enterprises on Marion and Polk County farms after 1950. Typical trends included the selection of superior breeds of animals by farmers raising livestock; a decrease in the numbers of farms reporting commercial livestock enterprises; and larger numbers of animals on farms continuing to specialize in various livestock enterprises.

The decline in farms by farm type is particularly noteworthy in the case of farms that reported either dairying or poultry enterprises as being their predominant commercial activity in 1949 (see Figure 20). Farms on which dairying was claimed as the dominant enterprise declined by 79 percent in number between 1949 and 1969. Similarly, farms that had reported poultry raising in 1949, declined by 85 percent in number over the same period.

With the decline in numbers of farms reporting livestock, the size of livestock enterprises on the remaining farms increased. The total number of dairy cows in Marion and Polk Counties declined by 47 percent between 1949 and 1969. The average size of the dairy herd on commercial farms increased from six cows per farm in 1949,

to 25 cows in 1969 (see both Figures 10 and 24). Of all the commercially significant livestock animals on farms in 1949, only cattle (other than dairy cattle), numbered more in 1969. The numbers of commercial farms reporting cattle and calves declined by 67 percent in number between 1949 and 1969, while the average number of cattle on them increased from 12 per farm to 39 per farm. The average numbers of livestock on commercial farms are generally too low for farms classified as specializing in livestock raising, but they do illustrate the trend toward increasing specialization in livestock enterprises which occurred in Marion and Polk Counties during the latest agricultural growth stage.

Agricultural Resource Strategies After 1950

The farmers of Marion and Polk Counties have witnessed a reduction in the number of farms at a rate of approximately 145 farms per year between 1949 and 1969. Although the decline was greatest in the smallest size classes of farms, it occurred among all types of farms. Even the commercial farms, which normally averaged around 60 percent of all farms, underwent a decline of 40 percent between 1949 and 1969 (see Table 1). In the face of this trend the success or failure of agricultural resource use strategies became all the more important. Failures in farm strategies occurring since 1950 ran more than the risk of temporary setbacks

FIGURE 24

LIVESTOCK ON COMMERCIAL FARMS IN MARION AND POLK COUNTIES: 1949 TO 1969

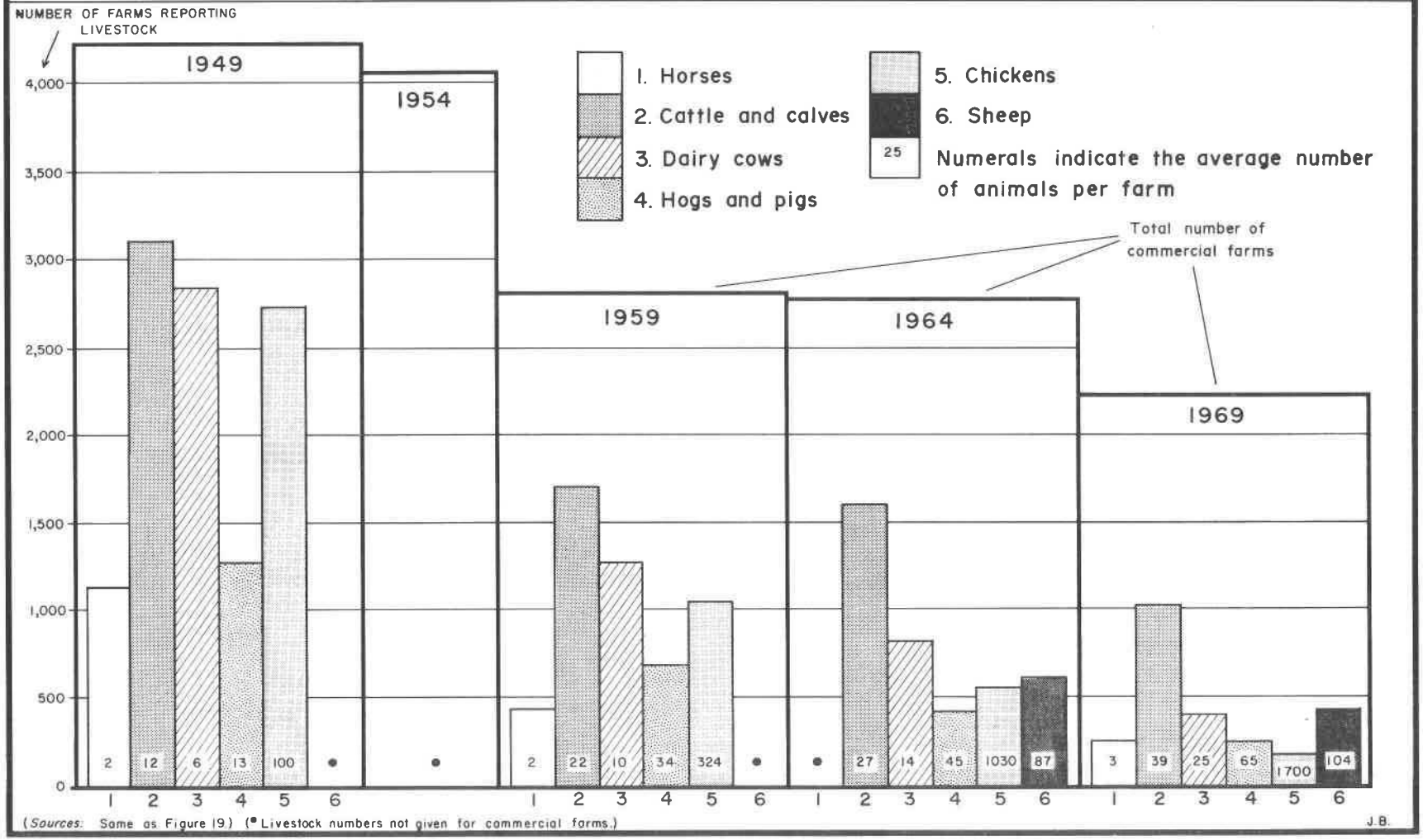


Table 1. Trends in Numbers of Farms in Marion and Polk Counties.

	Census Year	1949	1954	1959	1964	1969	% Decline 1949 - 1969
1.	Number of all farms	6,746	6,048	5,147	4,623	3,856	46
2.	Number of part-time farms	1,196	950	1,790	1,342	1,052	12
3.	Percent of all farms	17.7	15.7	34.8	29.0	27.3	
4.	Number of residential or part-returement farms	1,427	1,050	601	495	339	76
5.	Percent of all farms	21.2	17.4	11.7	10.7	8.8	
6.	Percent of all farms, part-time farms and residential or part-retirement farms	38.9	33.1	46.5	39.7	36.1	
7.	Number of commercial farms	4,220	4,064	2,796	2,780	2,226	40
8.	Percent of all farms	62.0	67.0	54.0	60.0	57.0	

for farmers, but came to place the survival of their farms in much greater jeopardy. Consequently, any prospect of eliminating an element of risk in either the marketing of crops or the prices received for them, received the closest scrutiny. Above all else farmers endeavored to incorporate any feature in the agricultural resource strategies that would help to eliminate risks, or, at best, minimize them.

The diversification of farms which was so prevalent during the second agricultural growth stage was diminished considerably after 1950. Diversification, it had been argued, fostered income stability on farms in times when farm commodity prices slumped. This may have been more the case during the second agricultural growth stage, but an extensive study of a wide variety of agricultural enterprise combinations, reported on in 1959 by Yu and Castle, concluded otherwise. Yu and Castle concluded from their study that, for most types of farming areas, diversification is ineffective in reducing price variability (Yu and Castle, 1959, p. 3). They observed that specialization allowed production in greater volumes with lower production costs, and that this fostered greater profits for farmers. The reason Yu and Castle gave for reaching their conclusion was that they found that most commodity prices tended to increase or decrease simultaneously, affecting most agricultural producers at the same time (Yu and Castle, 1959, p. 9). The farmers of Marion

and Polk Counties also discovered this to be the case, for the trends in farm characteristics, crop specialization, and livestock specialization all confirm that they increased the scale and specialization of farm enterprises. Nowhere was this more evident than in the grass seed industry.

Grass seed farming was especially well suited to the modernization trends occurring in agriculture after 1950. Seed crops were grown on extensive acreages and they required relatively low per-acre labor inputs. Studies made of farms growing grass seed crops in the Willamette Valley indicated that they were among the most remunerative of farms at the outset of the third agricultural growth stage. Of 197 farms growing grass seed crops when they were studied in 1948, 75 were revisited the following year to determine the profitability of various kinds of farm enterprises. Included in the farms revisited were 30 seed and grain farms, 24 general farms, and 21 dairy farms. The seed farms proved to be the most profitable, returning on the average a 9.3 percent profit on investments. General farms received an average return of 3.9 percent on investments, and dairy farms received an average return on investments of 2.7 percent (Hyer et al., 1950, p. 13). Subsequently, as has been pointed out, the numbers of general farms and dairy farms declined in numbers substantially. The poorer profit performances,

indicated by the 1949 study, undoubtedly contributed to the declines.

Whenever opportunities presented themselves that looked as if they would help in reducing marketing or price risks, farmers took immediate advantage of them. Such was the case when the government offered price supports for alta fescue grass seed in 1949. The following season the acreage of alta fescue was greatly expanded. In analyzing this development, Hyer, Becker, and Mumford observed in 1950:

> The stimulation came not necessarily from the magnitude of the support price but rather because the farmers had an indication of the price they could depend on in years to come. It appeared to them that much of the risk had been removed (Hyer et al., 1950, p. 14).

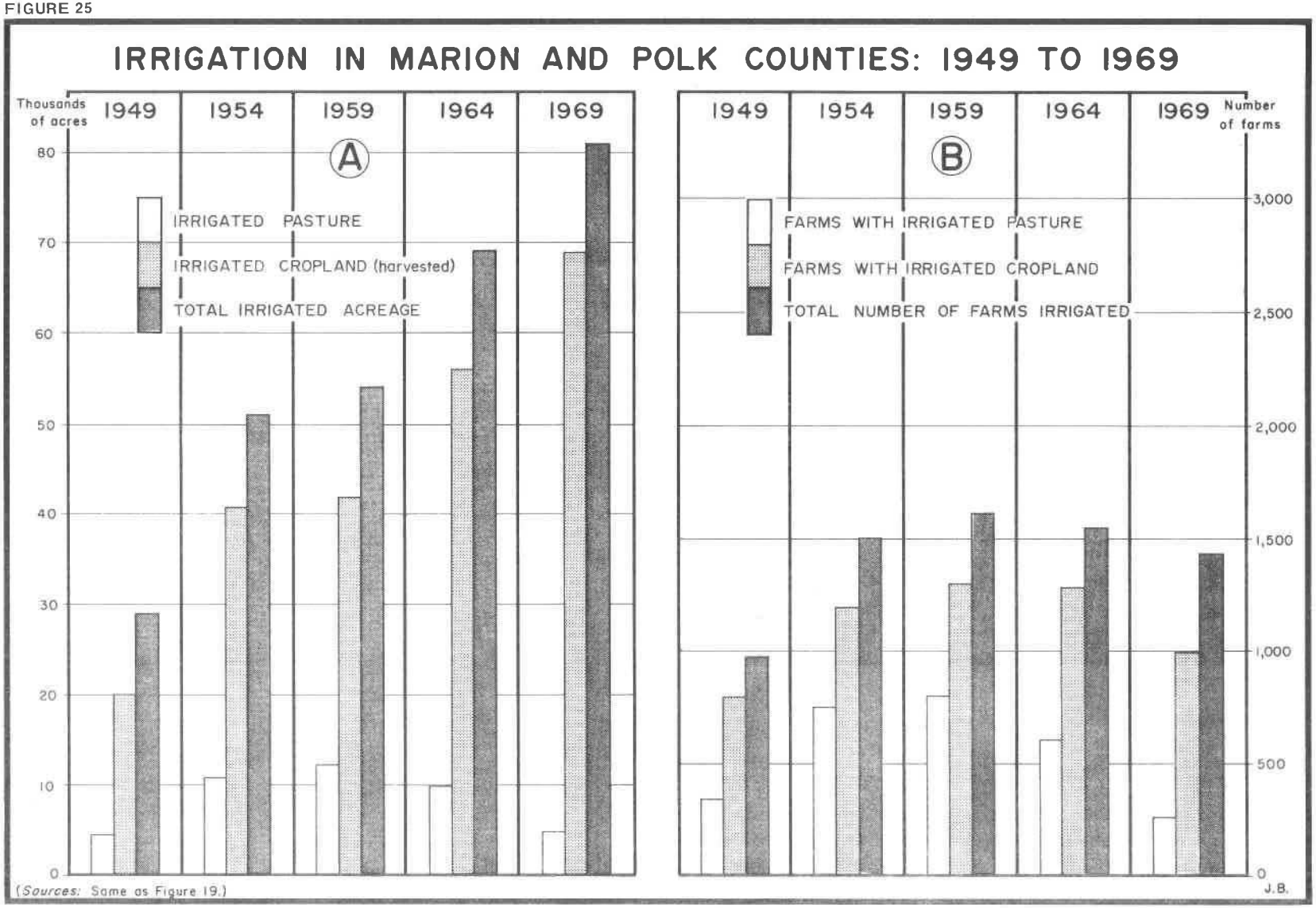
For a variety of other crops, but especially for fruits and vegetables, price stability and assurance of markets were sought by means of farming under contract. Although contract farming was well established in the Willamette Valley during the Diversified Agricultural Growth Stage, it took on added significance after 1950. There was a greater awakening to the advantages that contracts offered farmers, especially in the area of fiscal planning. Besides assisting in the management of individual farms, Davis and Korzan pointed out in 1961, that contracts served to schedule agricultural producers among marketing firms and that a lack of coordination between them led to lowered profits for both (Davis and Korzan, 1961, p. 3). With the increased specialization on Marion and Polk

County farms, contract farming became the best guarantee farmers could have that their crops would find markets. Competition for contracts among producers became keener from time to time when farmers preferring to work under contract fared better than those who gambled that they could get higher prices for their crops independently. Under such conditions it behooved farmers to produce better yielding and better quality crops to establish their reputations as reliable growers. To achieve this goal farmers turned to heavier applications of commercial fertilizers, made more frequent use of chemical sprays and dusts, and they extended and improved their irrigation practices.

The drive by farmers to remain competitive was instrumental in causing the irrigated acreage in Marion and Polk Counties to increase. The expansion of the irrigated acreage was well under way when the third agricultural growth stage started but the rate of expansion after 1950 was higher. Between 1949 and 1969, the irrigated acreage in Marion and Polk Counties increased by slightly over 213 percent. The irrigated cropland acreage showed the most consistent rate of increase, and irrigated pasture was expanded more slowly until 1959, after which time it declined in area (see Figure 25A).

The numbers of farms in both counties that reported either irrigated cropland or pasture or both, also increased until 1959.

FIGURE 25



(*Sources:* Same as Figure 19.)

Thereafter, the numbers of farms reporting irrigated acreage declined (see Figure 25B). The significant fact that remains is that there was an average of 26.7 acres of irrigated land on farms reporting irrigation in 1949, and that this figure was expanded to 56.9 acres per farm reporting irrigation in 1969.

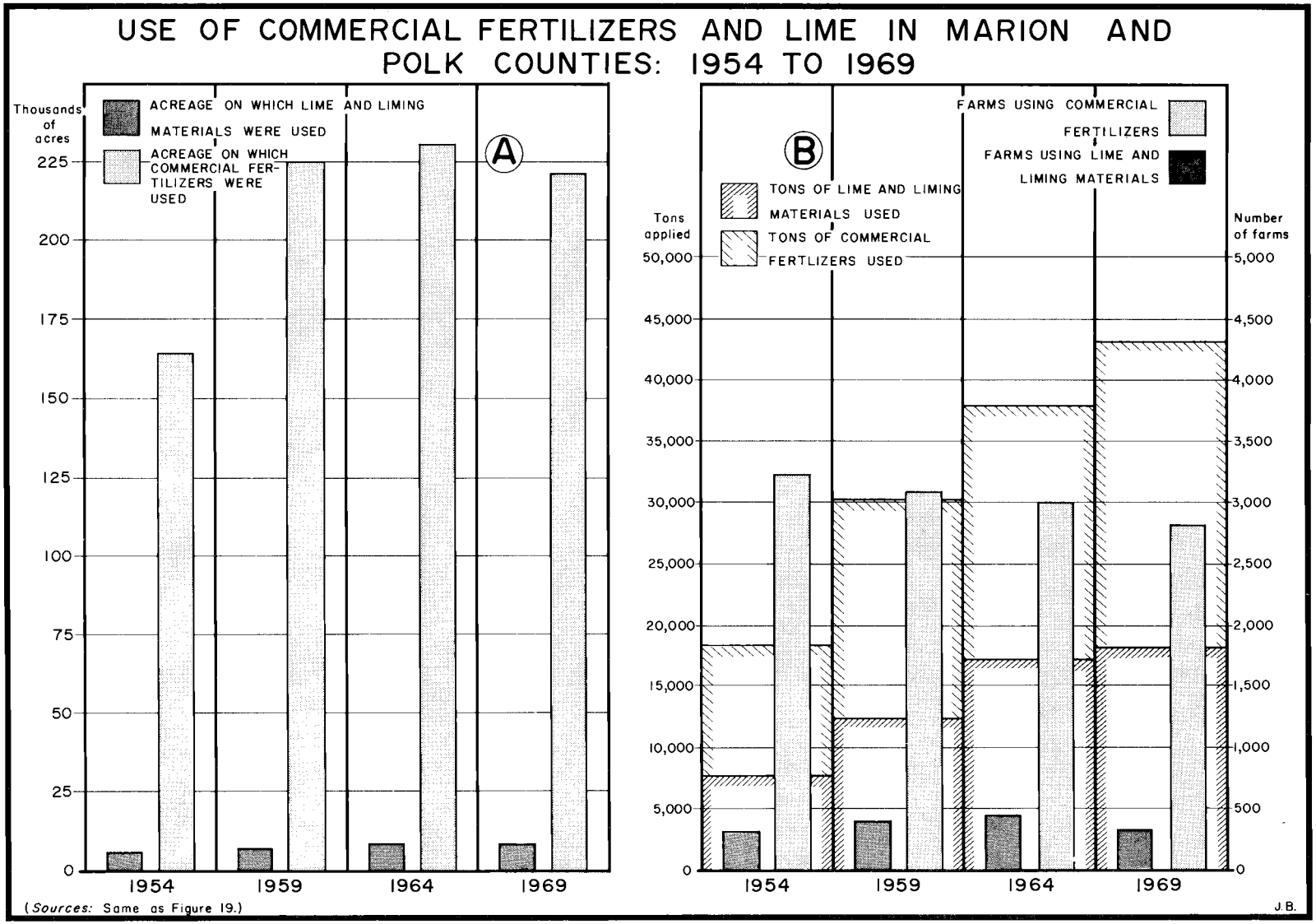
Many of the reasons for expanding irrigation practices also hold for the increased usage of commercial fertilizers. The basic difference between the two trends is that irrigation was not a possibility on all farms growing crops, whereas the increased usage of commercial fertilizers was. The acreage on which commercial fertilizers were used in Marion and Polk Counties increased until 1964, but between 1964 and 1969, the acreage declined slightly. The numbers of farms reporting the use of commercial fertilizers decreased gradually, but consistently between 1954 and 1969. However, this decline was not as great as the decline in the number of all farms. Even without the decline in the number of farms that reported the use of commercial fertilizers or the decline in acreage on which it was used, the amount of fertilizer used per acre would have increased. In 1954, an average of 252 pounds of commercial fertilizers were used per acre, and by 1969, it had risen to 410 pounds per acre. On farms reporting the use of lime and liming materials, the average amounts used per acre increased from 3,340

pounds in 1954 to 4,320 pounds per acre in 1969 (see Figure 26, parts A and B).

Social, Economic, and Political Institutional Influences on Agricultural Resource Use Strategies

The Agricultural system of the Willamette Valley has become more intimately involved with a greater variety of publicly sponsored and privately sponsored institutions than ever before. Since 1950, the public institutions most directly involved in agricultural research and development have retained among their objectives the improvement of the farmers' welfare, and that of their customers as well. Simultaneously, substantial contributions to agricultural progress have been made through the aegis of research undertaken at private expense. Individual companies have contributed immensely through their accomplishments in the development of agricultural chemicals, in the design of specialized farm machinery, and in the extension of fiscal management services to farmers. Marketing firms, food processors, and financial institutions have become so involved in some aspects of farming as to make them virtual partners with farmers in a variety of agricultural production enterprises. In recent years still other special interest groups have become involved politically in attempts to shape public policy with regard to the restriction of certain agricultural activities, and in attempts to influence land use planning.

FIGURE 26



(*Sources:* Same as Figure 19.)

The increased institutional involvement in the affairs of agriculture has proceded apace with the rate of population increase and the rates of development in other sectors of the economy in the Willamette Valley. Some unsettling aspects of this increased involvement are the unplanned disruptive ramifications to existing stable agricultural practices by the interjection of influences from such institutions.

Population Growth, Employment in Agriculture, and Pressures for Rural Land Conversion in Marion and Polk Counties

The trends in population growth and agricultural employment that have continued in Marion and Polk Counties since before 1950, are both rather striking (see Figures 8 and 9). The rapid increase in total population, in evidence throughout the Diversified Agricultural Growth Stage, continued after 1950. Between 1950 and 1970, the population of the two counties increased by almost 47 percent, from a level of 127, 718 to 186, 658. The most noticeable aspects of this overall growth were the decline of the farm population and the accelerated rate of urban population increase. During this period the farm population of the two counties declined by 45 percent from 27, 906 to 15, 351. The urban population climbed by 127 percent, from 53, 776 in 1950, to 122, 199 in 1970. The rural non-farm population increased by only seven percent, so the total non-farm

population's growth consisted basically of an increasing urban component.

Concurrent with the increasing population was a decline in the proportion of the labor force gainfully employed in agricultural occupations. In 1950, 19 percent of the labor force in Marion and Polk Counties worked in agriculture, but by 1970 this proportion had declined to 5.9 percent. Both the decline in farm population and the decline in the agriculturally employed are continuing in Marion and Polk Counties.

The rate of increase in the total non-farm population has resulted in an equivalent increase in pressure to convert rural land to residential uses. This pressure has become all the more intense for land of marginal agricultural quality, especially in view of the annual decline in the agricultural acreage in the two counties. The rate of rural land conversion has, accordingly, also been increasing (see Table 2). Most of the urban growth has occurred near the fringes of the city of Salem, the majority of it in Marion County. Six subdivisions were filed for in Polk County between January 1, 1969, and January 1, 1972. They created 222 lots for homesites on 313.9 acres of land (Marion County, 1971).

Polk County has less direct a problem of urban encroachment from Salem, but the county is presently experiencing considerable pressure to allow the subdivision of some farms into planned, large

lot, rural residential developments. One such proposed planned development is located in a now exclusively agricultural area of southeastern Polk County, near the town of Airlie. This area of the county was notoriously short of water for even domestic uses on farms. The situation was remedied in 1970, with the completion of the Luckiamute Domestic Water System. There are 54 miles of pipeline in the system reaching from wells on the American Bottom's area of the Willamette River floodplain to Airlie, along Suver road. A local committee spearheaded the drive to get the system built, and it was financed with backing from the Farm Home Securities Administration. Within one year of its completion the water system generated increases in values of some adjacent oak covered hillside property from $200 to $1,000 per acre (Blok, 1971, p. 10).

Table 2. Subdivisions Built in Marion County, 1960-1971.

Year	Subdivisions Filed For	Number of Lots	Acreage
1960	19	508	---
1961	22	680	---
1962	20	568	---
1963	19	683	---
1964	26	883	---
1965	17	455	---
1966	13	582	---
1967	23	605	---
1968	20	644	294
1969	27	509	279
1970	39	1,027	939.5
1971	64	1,635	1,379.7

Source: Marion County, 1971, Surveyor's Annual Report.

The increased land values are a potential benefit to farmers in the vicinity when they choose to sell their property, but until they do, it saddles them with higher property taxes and entices them to "develop" their own land. At least one owner of a 780 acre farm, who also happened to be the chairman of the water development committee, has now begun to subdivide his property. The request for a 36 lot development of 20 acres each was turned down by the Polk County Planning Commission. However, under the existing local zoning ordinance two 20 acre lots on existing road frontage may be developed per year. Two rural residential households have already been established, with more soon to follow.[18]

Clearly, the extension of domestic water systems into rural areas plays a key role in permitting scattered urban type developments. In an effort to influence the establishment of guidelines for future developments, the Polk County Planning Department staff submitted the following recommendations for review by the county Planning Commission in February, 1973:

> 1) The county, in cooperation with the cities shall strive to encourage future growth in specific areas within and

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[18] The two families occupying the newly built houses have seven school aged children between them. The families have already begun to agitate for county road improvements which would enable school buses to pick up the children at their homes, and the improvements would facilitate mail deliveries. The neighboring farms with larger road frontages want nothing to do with assessments for road improvements.

adjacent to these communities where the full range of urban services are available.

2) That the county shall discourage densities in rural areas that are likely to cause the development of urban service needs.

3) The county shall discourage the development of rural water systems capable and intended to provide water supply to an agricultural area with greater capacity than needed by the present residents of the area.

4) The county shall encourage development of rural water systems in areas designated for rural (exurban) acreage homesites (Wyckoff, 1973, p. 50).

The recommendation for restricting the development of rural water systems to capacities of present needs was called into question by both the engineering firm engaged by the county to do rural water systems planning and by an Ad Hoc Citizens Advisory Committee to the county Planning Commission. The engineering firm questioned the need for incorporating the recommendation in any future county planning policy. They pointed out that rural water systems are almost always designed with an extra capacity of from 100 to 1,000 percent above the existing need. They added that rural water systems are already limited in size by the repayment capabilities of the areas being served. On this particular issue, the firm concluded that in view of increasing per capita water consumption the possibilities of controlling development by restricting capacities would be limited (Boatwright, 1973, p. 21). The Ad Hoc Citizens Advisory Committee on development in Polk County reviewed the

recommendations of the Planning Department and rejected the suggestion that rural water systems be restricted in their allowable capacities. The committee stated flatly, in its recommendations to the County Planning Commission, that increasing water consumption levels will make it impossible to control rural development by restricting system capacities to meet only current needs (Ad Hoc Committee, 1973, p. 17).

A variety of other groups have gotten involved in both county and state levels in efforts to influence policy guidelines for public land use planning. Some groups, who favor the preservation of open space or the creation of agricultural green belts, have found themselves allied with farmers who are interested in the establishment of exclusive farm use zones with adjusted taxation levels. Other groups, interested in the protection of either water or air quality, find themselves in open conflict with farmers who rely on the use of either agricultural chemicals or open field burning of grass seed or grain acreages after harvesting. The impacts and effectiveness of such groups in shaping public policies varies considerably from county to county depending upon the predominance of constituent interests in the counties.

The climate of opinion among Polk County farmers for the establishment of exclusive farming zones varies considerably between different parts of the county. Several such zones have been

established with the consent of all the property owners within them. Acceptance by farmers of such zones, means that they must accept zoning regulations that prohibit subdivision for residential purposes. Their participation frequently hinges upon the effectiveness of local farmer leadership in articulating the advantages or disadvantages of exclusive farm use zones. There are areas in Polk County where such leadership for acceptance of exclusive farm use zones is lacking, and where planning department recommendations are met with suspicion and hostility.[19] Presently, two rural zoning ordinances are in wide use in Polk County that restrict developments without Planning Commission approval to two lots per year, and then with minimum lot sizes of either five or 20 acres.

The pressure for rural subdivisions is markedly greater in Marion County than in Polk County. The Marion County Planning Commission now enforces restrictions on rural development according to the policies laid out in the recently completed (May, 1972) Comprehensive Plan for Marion County under which three agricultural management zones have been established. They include a

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[19] A Polk County planner revealed in an interview on June 12, 1973, that exclusive farm zone proposals were opposed vigorously in February, 1973, in an agricultural district near Perrydale and Buell, north of Dallas. He attributed the unfavorable response to a lack of effective local leadership. Where such leadership was present among farmers in other parts of the county, the potential benefits of exclusive farm zones were fairly debated.

Floodplain Management Corridor, in which residential developments will not be permitted in favor of maintaining in exclusive agricultural use: a Primary Agricultural zone, in which all clustered developments of rural residences will be discouraged, and a minimum lot size of five acres will be recommended; and a General Agricultural zone, which already has scattered development and in which development will be permitted to continue (Mid-Willamette Valley Council of Governments, 1972, p. 80-81).

Irrespective of policy guidelines established by the Comprehensive Plan, any farmer in Marion County may still develop at least two partitions along existing road frontages on his property each year.[20] With the annual reductions in agricultural acreage occurring in both counties, planning officials are being hard pressed to justify their disapprovals of rural residential developments on the basis of preserving agricultural land.

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[20]Anne Mounteer, a planner with the Mid Willamette Valley Council of Governments, stated in an interview on June 12, 1973, that once a farmer decides to make partitions on his property, all he needs to do is acquire permits from the county sanitarian, who determines the adequacy of proposed lot sizes for septic tanks to ensure public health standards. She stated, diplomatically, that the Council of Governments would like the county sanitarian to be more conservative in granting permits than he sometimes is.

Business Institutions and Agricultural Resource Use Strategies

Food processors, marketing firms, and banks have become so involved in certain kinds of agricultural production that decisions made by them have far reaching implications for agricultural producers. On the other hand, farmers who have cooperated most effectively with such firms often enjoy greater financial security because of their associations. Food processors and marketing firms have consistently dealt with those supplier-producers whom they have found to be most cooperative and efficient in meeting their product requirements.

It is in the growing of intensive crops that these relationships are most strongly developed. Tree fruits and nuts, small fruits, and vegetables are all largely produced under contractual arrangements with processing and marketing firms. When contracts are readily available to farmers they offer a greater degree of security by eliminating the risk that markets can not be found for crops at anticipated prices. The extent of vegetable acreages in Marion and Polk Counties, at any particular time, is largely a function of the level of cooperation between growers and the firms that serve as their market outlets. At the present time, decisions made by processing and marketing firms can determine the agricultural production strategies that are employed on a large proportion of the

farms. The decisions these firms make that are so capable of influencing agricultural strategies are in turn based upon anticipated market conditions, inventories, plant capacities, and grower production capabilities. When their judgments closely match the levels of consumer demands with production, farmers can look forward to contracts. When, however, consumer demand analyses are wrong, and inventories accumulate, the numbers of contracts offered to farmers can be cut back drastically. In 1970, inventories of snap beans and sweet corn were very large, requiring a cut back in contracts for those crops. The acreage of sweet corn in the Willamette Valley in 1970 was 11,000 acres less than it was in 1968 (Conklin, 1971, p. 6). Acreage reductions in both snap beans and sweet corn were cut back in Polk County by about 30 percent because of the accumulated inventories (Anderson, 1973).

Even with contracts, the risk is not completely taken out of agricultural production. For a variety of crops, especially those having larger harvesting labor requirements, the risk factors may still be relatively great. Some farmers have come to regard certain berry crops and pole beans, both of which require large amounts of harvesting labor, as nuisance crops because of the uncertainties in amount or quality of labor supplies. To ensure adequate supplies of such crops, contracts are sometimes conditional, calling for a given acreage of sweet corn or bush beans, which can be harvested

mechanically, in addition to acreages of crops farmers are more reluctant to grow (Anderson, 1973).

Some complicating factors in crop production levels are the farmers' own initiatives in coaxing increased yields from their crop acreages. Each farmer acting independently has worked toward his own best interest. Farmers have tried to remain competitive by the increased use of fertilizers, chemical dusts and sprays, and irrigation. They have felt impelled to resort to such means to increase production because of such factors as higher taxes, higher insurance rates, and higher interest rates, but also because neighboring farmers have been employing the same means to increase their production. This situation has made farmers both receptive to, and vulnerable to, the promotional efforts by manufacturers of agricultural chemicals, farm machinery, and irrigation equipment. One observer has remarked that the rate of irrigation development in the Willamette Valley seems to have followed concentrated promotional efforts by sprinkler systems irrigation companies, rather than simply documented evidence that crops responded favorably to irrigation (Shearer, 1965, p. 1). Agricultural chemicals manufacturers and custom work contractors who specialize in agricultural chemical applications both rely heavily on advertising. Throughout the year their advertisements can be found in local newspapers, and seen and heard on local radio and television stations.

The effect of the increased use of non-land resources has been increased crop yields. In 1950, sweet corn yields averaged 4.5 tons per acre in the valley, but by 1970, they were 7.1 tons per acre (Conklin, 1971, p. 6). Increased yields in a variety of crops have contributed to smaller acreage requirements to meet the demands for them, thereby also contributing to the decline in the number of farms.

Success in agriculture today also depends largely upon the accessibility of financial backing to meet farm operating expenses. To obtain bank financing for today's farm operations, a criteria for the extension of credit is no longer just the possession of collateral, but the ability of farmers to demonstrate sound management decisions (Oregon Agricultural Extension Service, 1968, p. 11). These management decisions must demonstrably be based upon the farmers' records of their own cost and production expenses and upon knowledge of the outlooks for their particular farm enterprises.

CHAPTER V

SUMMARY

The agricultural system of the Willamette Valley has undergone continual change since the arrival of American pioneers swelled the population of the agricultural settlement begun by French Canadians. The comparisons of data from each agricultural census of Oregon counties taken since 1850 confirms that change has been continual. Farm characteristics such as their numbers, sizes, and values have continually been changing, as crop or livestock practices were modified and upgraded.

The line graphs constructed to show the trends in farm characteristics, crop acreages, and livestock numbers between 1850 and 1970, each show some conspicuous similarities. The similarities provided the basis for selecting the dates that divide the agricultural history of the valley into the three growth stages that have been employed in this analysis.

During the General Agricultural Growth Stage, from 1840 to 1900, the numbers of farms, the total agricultural acreage, the acreages of the most important crops, and the numbers of livestock all experienced large increases, with only a few interruptions occurring in the rates of increase. The progress or growth of the

agricultural system during this stage followed a relatively simple course. The components of the system, its farms, were rather homogeneous in their production strategies. It was their increasing number which was most responsible for the persistent gains in crop acreages and livestock numbers seen in Figures 10, 11, and 12.

The farm population grew steadily in the first agricultural growth stage of the Willamette Valley, and throughout the period the family farm was home for a large majority of the people. The numbers of people living in the cities and towns of Marion and Polk Counties began to grow more rapidly after the completion of the railroads. Even with the impetus railroad transportation gave to non-farm development, 72 percent of the population in the two counties still lived on farms in 1900. Town merchants depended heavily upon trade with farm families for their livelihoods. Thus the success or failure of agricultural resource use strategies was a matter of great importance to the whole community.

The American farmers who settled in the Willamette Valley brought farming strategies with them from elsewhere in the United States, particularly from the Middle West. In most cases their farming systems were adaptable to conditions in the valley with few adjustments. The most significant change necessitated by local environmental constraints was the substitution of wheat, which grew well in the valley, for corn, which did not.

Since the bulk of the population lived on farms there was a very limited potential for an increased local commerce in commodities that typical farm families produced for home consumption. Furthermore, few of the commercially significant crops that were raised could withstand either the cost or the difficulty of getting to more distant markets. One consequence was that the agricultural system underwent a relatively simple form of growth or development. The system increased in extent as farms were added whose operations closely resembled those of farms already in the system; this reinforced the stability of resource use strategies which favored self-sufficiency.

The agricultural system's interactions with other sectors of society also developed slowly because of the relatively simple form of growth that the system experienced. During and after the 1880's a noticeable trend toward diversification in agricultural products of commercial importance began in response to increased urban growth and easier accessibility of more distant markets via the railroads.

The agricultural resource use strategies that were most commonly employed in the Willamette Valley during the first stage were formulated by individuals who exercised a greater degree of control over the distribution, the sale, and the kinds of commodities they produced than is presently the case. As long as most of the agricultural products were traded locally such control was relatively

easy to maintain. However, when agricultural products began to find their way to more distant markets the farmers relinquished much of this control to more knowledgeable special purpose organizations that provided a variety of marketing and transportation services. These special purpose organizations increased in number as the local non-farm markets grew larger and more distant markets became accessible by railroad transportation. Farmers had to take the growing number of public and private institutions into account when they made strategy decisions. As agricultural products came to be marketed nation-wide, the need for information on price, market, and transportation conditions became apparent. Farmers' Organizations emerged to satisfy the interests of farmers for up-to-date information on all kinds of agricultural production and marketing techniques.

As long as most rural roads remained in poor condition during the first agricultural growth stage, communications remained difficult and strategies were slow to change. The organizational efforts among farmers were also made more difficult. To a large extent the hesitancy for changing agricultural strategies was based upon the sense of values of the agrarian society. The ownership of a self-sufficing farm remained a primary goal throughout the first agricultural growth stage and it persisted well into the second growth stage.

The Diversified Agricultural Growth Stage, from 1900 to 1950, began with a proliferation of small acreage farms whose operations followed newly adopted agricultural production strategies. The frequency of strategy changes increased in agriculture during the second growth stage as farmers experimented with different enterprise combinations. A number of conditions contributed to the faster pace of development in the agricultural system, including vastly improved means of transportation and communication, continued rapid growth of the non-farm population, and increased government involvement in agriculture during the two World Wars and the Depression.

The frequency of agricultural strategy changes increased during this stage largely because the flow of information on the compatibility and profitibility of different enterprise combinations reached farmers over steadily improving communications systems. The paving of existing and new roads, the extension of free mail deliveries to rural areas, telephones, radio, and television have in succession improved the farmer's awareness of consumers' preferences and helped farmers to more effectively meet demands for farm products.

The agricultural resource strategies employed in the Willamette Valley were modified during this second stage in the midst of sweeping social changes. The trends in population growth in evidence

toward the end of the first growth stage continued into the second. The population living on farms remained relatively stable in Marion and Polk Counties between 1900 and 1950. The size of the farm population fluctuated gradually. It increased by about ten percent in the first two decades of the period, then it declined somewhat, rose once more, and finally reached a level in 1950 that was less than one percent higher than the farm population was in 1900. However, the non-farm population in the two counties increased by about 185 percent between 1900 and 1920. This represented a very large increase in the local non-farm market for agricultural commodities. By 1920 the farm and non-farm populations were about equal in size. Farm real estate companies were in a good position when the non-farm population surged upward and they were able to sell many small farms as the demand for locally produced fruits, dairy products, poultry products, and truck crops increased accordingly. By 1950 the non-farm population was more than two and a half times as large as the farm population in Marion and Polk Counties.

Early in the second growth stage when small diversified farms came into vogue the philosophy was advanced that the financial independence of farmers could best be served by diversified farming. The opinions of J. R. Springer, who owned a 'twenty acre homestead', and boasted that he was not one to carry all his eggs to

market in one basket, typified this philosophy. He stated:

> The more nearly one can raise their living, the less dependent they are on others and the oftener they can market something from their farm the less need of running bills at the store. The nearer we can pay our own way the better for all concerned (Springer, 1909, p. 10-11).

The belief that diversified farming offered farmers the greatest means for security prevailed for much of the second agricultural growth stage. The Oregon Agricultural Extension Service gave Polk County farmers the following advice at a long range planning conference in 1924:

> Diversified farming offers better distribution of labor, permits the use of crop rotations, and offers a larger number of profit earning days per year than specialized or single purpose farming (Oregon Agricultural Extension Service, 1924, p. 35).

After 1935, when the largest numbers of farms were reported in Marion and Polk Counties, the average sizes of farms started to increase as the number of farms began to decline. A study of a wide variety of farm types in the valley in 1938 showed that farm size was becoming of increasing importance. Most farms covered by the study were well diversified having had both intensive and extensive farm enterprises in a number of combinations. In each case the largest farms were the most profitable because they permitted the most efficient use of labor and machinery (Davis and Mumford, 1947, p. 68).

Through the course of the second agricultural growth stage the extent of the agricultural system and the quantity and kinds of its farm products were determined to a greater degree by circumstances that originated outside of agriculture than ever before. Demand for farm products in local markets increased tremendously, more products found distant markets, and special service institutions became increasingly involved in agricultural processing and marketing. Firms doing business in agricultural commodities locally developed into large corporations with nation-wide sales capabilities. As the complexity of interactions between agriculture and the rest of the economy increased both public and private institutions came to exert stronger influences over farmers' resource strategy decisions.

Several trends became prominent in the latter part of the second agricultural growth stage. The size of a farm, regardless of the enterprise combinations became an essential ingredient in its financial success. The increasing cost of both labor and machinery militated in favor of specialized farms that were of sufficient size to permit the efficient use of hired labor and machinery. The host of activities associated with a family achieving self-sufficiency in the items they consumed on their farm, which were so prevalent in the early 1900's had nearly disappeared by 1950.

By the start of the Structural Agricultural Growth Stage in 1950 the agricultural system's inter-relationships with other sectors

of the economy were being subjected to complex institutional pressures. Any farm enterprise carried out by the farmers faced the possibility of being suddenly replaced if agricultural resource use strategies failed to keep in balance a growing number of public and private institutional variables. The future of even the most profitable farm enterprises could suddenly become uncertain when particular pressures originating within the institutional environment are brought to bear upon agriculture.

The structural ties between agriculture and the rest of society have become so intricately associated that increases in production costs, new technologies, governmental incentives, and political pressures can result in disproportionately larger impacts upon resource use strategies than were foreseen or intended by those responsible for introducing the new influences. This growing structural complexity and the farmers' responses to it are responsible for the conspicuous trends in farm characteristics and crop and livestock production.

Several trends have stood out prominently since 1950. The numbers of farms and the total agricultural acreage in Marion and Polk Counties fluctuated repeatedly in the previous growth stage, but after 1950 both experienced sharp and uninterrupted declines. The agricultural system lost farms at a faster rate than it did agricultural acreage because many smaller farms were discontinued

and some were consolidated into larger holdings. Crop and livestock production have followed a number of distinctive trends since 1950.

Three generalized crop and livestock trends can be discerned from Figures 10 and 11. The crop acreages and livestock numbers have either increased, remained approximately the same, or have declined between 1950 and 1970. When each is compared with the declines in farms and total agricultural acreage the implications of the trends are more easily understood. Where specific crop acreages and livestock numbers have grown larger, farmers have increased both their enterprise specializations and their scales of operations. Where crop acreages and livestock numbers have remained relatively stable several sets of circumstances are involved. The same levels of production have been maintained by fewer farms on a gradually diminishing agricultural land base. In this instance farm enterprise specialization has also been occurring along with the trend toward larger scales of operation. Crop and livestock yields have also been increasing due to intentional genetic manipulation to produce more efficient plants and animals, and because of better crop and livestock cultural practices. Finally, where crop acreages and livestock numbers have dropped sharply, increasing crop and livestock productivity per unit of resource inputs may be compensating for the declines through increasing farm productivity. The other alternative is that less profitable crop and livestock

enterprises are being phased out as components of contemporary agricultural resource use strategies.

There are a number of developments in the agriculture of the Willamette Valley which demonstrate the effects of institutional pressures upon the selection of resource use strategies. Among them are the substitution of labor saving machines for farm workers, the development of new technologies by privately and publicly funded research, and the inputs of citizens' groups into county land use planning and in erecting restrictions against particular agricultural practices.

A notable example is the increased willingness of farmers to substitute machinery for hired labor although it will increase their production costs (Hammonds et al., 1973, p. 6). Since 1950 two trends have contributed to this state of affairs. The supply of hired labor available to farmers has been declining simultaneously with a technological thrust aimed at replacing farm labor. The research for developing the farm machinery has come from both public and private sources. In addition, well intentioned social and political pressures have been brought to bear to improve the wages and working conditions of farm workers. The prospect of farm labor strikes has sometimes been inveigled as a part of such pressures. One result has been that farmers perceive increased labor costs and the potential for strikes as grave risks. Farmers are

increasingly willing to avoid such risks by paying even more for machines than they would for the increased cost of the labor. Recent studies have shown that if there was an increase in the minimum wages paid to hired labor in the Willamette Valley there would be a more than proportionate decrease in the number of farm workers employed (Hammonds et al., 1973, p. 6-7).

There has also been a marked increase in the use of non-land resources in the agricultural production of the Willamette Valley since 1950. Public and private funding of research on non-land resource inputs has been primarily responsible for the following: the increased utility of irrigation due to the determination of appropriate watering intervals for specific crops; the development of superior varieties of plants and animals; and the production of more sophisticated agricultural chemicals. The purposes of public and private involvement in agricultural research have been quite different, but the results of both have frequently had similar impacts upon the structure and functioning of the agricultural system. All the new technologies as well as the steady improvement in individual farm management have contributed directly to increased farm productivity. The end result of these institutional involvements has been that fewer farms now supply farm products. Public and private institutional involvement in agriculture has contributed indirectly to the declines in farms and total agricultural acreage. It is likely

that their continued involvement with agriculture along the same lines will result in more of the same.

At the present time in the Willamette Valley comprehensive county plans are being formulated to guide future land use decisions. Depending upon the outcomes of the plans agricultural areas may either be shielded from pressures to convert rural land to alternative uses, or the pressures may be increased. Special interest groups have formed to provide citizen inputs into the planning process. Their outlooks range from those seeking to preserve the widest possible range of private property rights to those who purport to represent the best interests of the public.

Polk County planners are preparing a comprehensive plan and Marion County completed one in May, 1972. In preparation of the agricultural provisions in the Marion County plan the county Agricultural Extension agents were asked to predict the future course of agricultural development. They proposed four alternative development scenarios, one of which they presumed agriculture would most likely follow. It was assumed that the county's agricultural acreage requirements would decline from its 1970 extent of approximately 320,000 acres to 270,000 acres in 1980, and to 250,000 acres in 2000 (Mid Willamette Valley Council of Governments, 1972, p. 78). In accepting these assumptions for the plan, future pressures to convert existing agricultural acreage to other uses will certainly be

directed more strongly to particular areas than would otherwise have been the case. In commenting upon the justifications for land use planning, two Marion County Agricultural Extension agents stated:

> The community has the responsibility of deciding what kind of community is desired and the role agriculture plays. The land use pattern should then reflect these desires by enhancing that type of agriculture (Pattie and Youmans, 1970, p. 2).

In the last few years the issue of open field burning by grass seed and grain farmers in the Willamette Valley has stirred considerable controversy. In this instance public pressures were successfully galvanized by the efforts of special interest groups outside of agriculture in opposition to open field burning. Their efforts resulted in the setting of January 1, 1975, as the date when open field burning will be completely prohibited in the valley. The potentially disruptive impacts of the ban are yet to be fully recognized. In 1969 there were close to 65,000 acres of land in Marion and Polk Counties that were devoted to the growing of grass seed crops. This figure amounted to approximately 25 percent of all the cropland harvested in 1969. Of this extensive acreage, much is confined to the "whitelands" soils, which are plagued by poor drainage. Presently grass seed crops are the most profitable ones grown on the "whitelands" soils. Of all the reasonable alternative crops, none are as tolerant of the boggy winter soil conditions as grass seed crops. Studies of a variety of crops experimentally produced on the "whitelands" soils

have demonstrated that there is presently no reliable alternative crop which can be produced at costs that are competitive with the same crops produced in areas of better soils (Conklin and Bradshaw, 1971, p. 14). Enforcement of the open field burning ban in 1975 will result in increased production costs to grass seed farmers if they are forced to rely upon mechanical and chemical means to affect the removal of straw and field sanitation now accomplished by burning. Lower profit margins are a definite possibility, and one that quite possibly will force marginal producers out of grass seed farming or even out of agriculture altogether. An outcome not likely anticipated by the opponents of field burning will be an acceleration of the conversion of rural land to non-farm uses should profit margins be substantially reduced by increased production costs stemming from the use of mechanical or chemical alternatives to field burning.

The study of the agricultural resource use undertaken in this dissertation was greatly facilitated by the use of the systematic growth stage concept. Once the growth stages' delimiting dates were decided upon they permitted an easier analysis of all the agricultural census data that were examined. The treatment of agriculture as a system of resource use tied its structure and functioning to simultaneous systematic developments occurring outside of agriculture.

The systematic growth stage concept might well be applied in the study of other agricultural areas to determine the rates of development for their corresponding growth stages. It is likely that such an exercise would yield different sets of dates for delimiting the growth stages of other areas, but it would make comparisons between areas more meaningful and raise questions as to why resource strategies in different areas evolved at different rates.

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