



Alaskas Agricultural Production Potential: An Economic Analysis
by Wayne Eugene Burton

A thesis submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY in Agricultural Economics
Montana State University
© Copyright by Wayne Eugene Burton (1968)

Abstract:

This thesis is concerned with the reasons why Alaska's agricultural industry has remained relatively undeveloped and with possible alternative directions that the industry might take in accelerating its rate of growth. The general hypothesis of the study is that some agricultural production is economically sound, and an economic opportunity for further growth exists.

Chapter I is a general description of the Alaska agricultural development problem situation in its general socio-economic setting. Chapter II is a review of agriculture development at the present times. Chapter III explains the goals and objectives, as they have been interpreted, for development of the agricultural industry for both Federal and State levels of government. Specific emphasis is placed on Federal goals within the National interest and State goals within the State's interest.

Chapter IV treats Alaska agricultural development in terms of philosophical and theoretical aspects of an undeveloped agricultural region where many of the institutions and agency services of a highly developed society are directly or indirectly provided.

Chapter V provides a descriptive profile of partially developed segments of the production sector of the industry. Costs of production data are provided for a number of agricultural products.

Chapter VI discusses resources available, yield potentials by land capability class, projected demand for agricultural products that can be grown in Alaska, and potential production expansion for a limited number of products.

Chapter VII summarizes the salient points discussed in the study.

The conclusions of this study are that opportunities for agricultural expansion and growth do exist. Economic input-output relationships for farm production indicate the opportunity for moderate continuing growth. In order to achieve this growth, non-divergent objectives, policies and programs that are conducive to agricultural development and growth of an agriculture industry in a "modern frontier" situation must be pursued. Active public participation is necessary in development activities but as yet procedures and sequences of implementing all facets of new lands settlement and agricultural growth and development in such a situation do not appear to be well understood.

ALASKA'S AGRICULTURAL PRODUCTION POTENTIAL:
AN ECONOMIC ANALYSIS

130

by

WAYNE EUGENE BURTON

A thesis submitted to the Graduate Faculty in partial
fulfillment of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

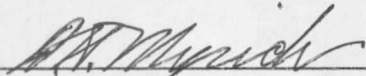
in

Agricultural Economics

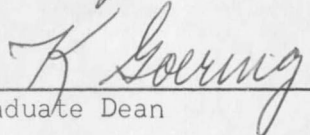
Approved



Head, Major Department



Chairman, Examining Committee



Graduate Dean

MONTANA STATE UNIVERSITY
Bozeman, Montana

August, 1968

ACKNOWLEDGEMENT

The author wishes to express his appreciation to the Committee which provided guidance and encouragement in preparing the manuscript, Dr. Dana Myrick, Chairman, Dr. Charles H. Rust, Dr. Walter G. Heid, Dr. Clarence W. Jensen, and Dr. William Lassey. Particular thanks are extended to Mrs. Dorothy Thomas for her cheerful patience and persistence in typing and caring for the many details of final assembly of the thesis.

A special acknowledgement is extended to the Alaskan farmers who gave so generously of their time and information; Mr. Blaine Holliday, State Conservationist, S.C.S. who provided data and a continuing encouragement; the many Alaskan Agricultural Agency people who have vigorously pursued solutions to Alaska's agricultural development problems; and the Alaska Agricultural Experiment Station for providing the opportunity to study a number of facets of agricultural farm development. A special acknowledgement is also extended the University of Alaska for granting a nine-months leave-of-absence to the author to prepare the thesis.

A very special acknowledgement is extended to my wife, Vivian, for her patient and enduring confidence and encouragement, without which the task would have been infinitely more difficult.

Finally, I wish to express my thanks to Dr. Clarence W. Jensen for his friendship, and understanding patience that made the completion of the task possible.

Although much of this study is based on the contributions of many other people, any errors or deficiencies in thought or preparation are entirely the responsibility of the author.

TABLE OF CONTENTS

	<u>Page</u>
VITA	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	xiii
ABSTRACT	xiv
CHAPTER I: INTRODUCTION	1
The Problem Situation	1
Territory to Statehood: Goals, Objectives, and Policies	3
Historical Perspective	7
The Research Problem	12
Hypothesis	13
Assumptions	13
Procedure	13
CHAPTER II: AGRICULTURAL DEVELOPMENT IN ALASKA	18
Population Growth	21
Past Production of Agricultural Crops, Livestock and Livestock Products	23
The Demand for Agricultural Products That Are Grown in Alaska	30
Production Status of Present Farming Areas	36
General Problems Faced By Agricultural Producers	40
Source of Farmers and Entry Into Farming	42
Credit and Loan Capital	44
Management and Consultant Services	45
Ranch Problems	46
Other Problems	46
CHAPTER III: GOALS AND OBJECTIVES FOR AGRICULTURAL DEVELOPMENT IN ALASKA	48
Federal Goals and Objectives for General Economic Development	50
Agriculture as a Specific Entity in the Discussion of Federal Goals	53

	<u>Page</u>
State Goals and Objectives for Agricultural Development	57
 CHAPTER IV: THEORETICAL ASPECTS OF AGRICULTURAL DEVELOPMENT PROBLEMS 68	
The Conflicting "Philosophies"	69
The Conflict	73
Theoretical Aspects of Farm Development in Newly Settled Regions	78
Matanuska Valley	99
Kenai Peninsula	101
Growth of the Farm Business Firm in Newly Settled Regions	104
The Growth Process	109
Acquiring and Combining Economic Resources Into Viable Farm Firms	111
Management as a Resource Problem	113
Functions of Management	115
Capital as a Resource Problem	118
 CHAPTER V: A PROFILE OF SELECTED FARM PRODUCTION ENTERPRISES IN ALASKA 122	
Characteristics of the Alaska Grade A Dairy Industry, 1965.	125
Location of Supply	125
Producer Characteristics	125
Farm Organization	126
Size of Herd	127
Volume of Production	127
Other Characteristics	128
Size of One and Two Man Units	131
Investment, Costs and Receipts	132
Farm Expenses and Costs Per Hundredweight of Milk Produced	134
Costs of Producing Dairy Herd Replacements	136
Source of Data	136
Costs	137
Costs of Producing Oat-Pea Crop for Silage	140
Source of Data	140
Land and Materials	141
Costs	143
Raising Crop	144
Harvesting Crop	145
Return to Capital	146
Total Cost of Production	146

	<u>Page</u>
Costs of Producing Barley for Grain	149
Sources of Data	149
Land and Materials	150
Costs	151
Raising Crop	151
Harvesting Crop	152
Return to Capital	152
Total Costs of Production	153
Costs of Producing Bromegrass-Timothy for Green Chop,	
Pasture, Hay and Silage	155
Source of Data	155
Land and Materials	156
Establishing the Stand	156
Costs	157
Total Costs of Production	163
Costs of Producing Hogs in Alaska	163
Sources of Data	164
Physical Production Requirements	164
Costs of Production	165
Costs of Production on Potato-Vegetable Farms	168
Characteristics of Potato Production Firms in the	
Matanuska Valley	169
Costs of Production	170
Costs of Producing Beef Cattle in Alaska	174
Sources of Data	178
Costs of Production	178
CHAPTER VI. POTENTIAL FOR AGRICULTURAL DEVELOPMENT	182
Land Suitable for Farming	182
Land Suitable for Livestock Grazing	191
Water Suitable for Agricultural Purposes	192
Present and Potential Yield Capabilities	195
Projected Demand for Agricultural Products That Can Be	
Grown in Alaska	209
Production Expansion and Costs of Production	220
Expansion of Potato Acreage	220
Vegetable	226
Expansion of Hog Production	226
Expansion of Dairy Production	231
Expansion of Beef Production	238
Expansion of Sheep Production	239

	<u>Page</u>
CHAPTER VII. SUMMARY	241
Conclusions	246
Suggestions for Further Research	250
APPENDIX	252
LITERATURE CITED	259

LIST OF TABLES

<u>Number</u>		<u>Page</u>
I	ALASKA'S POPULATION GROWTH BY REGIONS, 1880-1967	22
II	TOTAL QUANTITY OF AGRICULTURAL COMMODITIES PRODUCED IN ALASKA 1953-67	27
III	VALUE OF AGRICULTURAL COMMODITIES PRODUCED IN ALASKA 1953-1967 INCLUSIVE	28
IV	LIVESTOCK ON ALASKAN FARMS AND RANCHES ON JANUARY 1 -- 1954-1968	29
V	ESTIMATED PER CAPITA CONSUMPTION OF SELECTED FOOD PRODUCTS IN ALASKA BY CROP REPORTING DISTRICTS, 1967	31
VI	ESTIMATED CONSUMPTION OF SELECTED PRODUCTS IN ALASKA BY CROP REPORTING DISTRICT, 1965 . . .	32
VII	DEFICIT OF ALASKA CROP PRODUCTION TO SUPPLY INTRASTATE DEMAND, 1965	33
VIII	LAND AVAILABILITY AS REPORTED BY SOIL CONSERVATION SUBDISTRICT, 1967	35
IX	CROPLAND UTILIZATION BY AREAS, 1966	38
X	DISTRIBUTION OF HERD SIZE BY CLASS, AS REPORTED BY 41 MATANUSKA VALLEY GRADE A MILK PRODUCERS, JUNE, 1965	127
XI	DISTRIBUTION OF PRODUCERS AND PRODUCTION BY SIZE GROUP, 41 GRADE A MILK PRODUCERS, FOR CALENDAR YEAR, 1964	128
XII	DISTRIBUTION RENTED LAND BY FARM SIZE GROUP, 41 DAIRY FARMS, 1964	129
XIII	AVERAGE INVESTMENT, COST AND RECEIPTS 15 MATANUSKA VALLEY DAIRY FARMS, 1965	133

<u>Number</u>		<u>Page</u>
XIV	FARM EXPENSES AND COSTS PER HUNDREDWEIGHT OF MILK PRODUCED ON 15 MATANUSKA VALLEY DAIRY FARMS, 1965	135
XV	AVERAGE COST PER HEIFER RAISED AND PLACED IN MILKING HERD, MATANUSKA VALLEY	139
XVI	ESTIMATED SEEDING RATES FOR OAT-PEA CROP ON EIGHT SELECTED MATANUSKA VALLEY DAIRY FARMS, 1966	142
XVII	RATES OF APPLICATION OF MAJOR FERTILIZER NUTRIENTS FOR OAT-PEA PRODUCTION ON EIGHT MATANUSKA VALLEY DAIRY FARMS	143
XVIII	AVERAGE COSTS PER ACRE FOR PRODUCING OAT- PEA CROP ON EIGHT MATANUSKA VALLEY DAIRY FARMS	148
XIX	ESTIMATED SEEDING RATES AND RATES OF APPLICATION OF MAJOR FERTILIZER NUTRIENTS ON BARLEY CROP ON NINE MATANUSKA VALLEY FARMS	150
XX	ESTIMATED COSTS PER ACRE FOR PRODUCING BARLEY ON NINE SELECTED MATANUSKA VALLEY FARMS	154
XXI	ESTIMATED SEEDING RATE AND RATE OF APPLICATION OF MAJOR FERTILIZER NUTRIENTS FOR ESTABLISHING A BROMEGRASS STAND ON EIGHT MATANUSKA VALLEY FARMS	157
XXII	COSTS OF PRODUCING HOGS, OPTION A, 1964	166
XXIII	COSTS OF PRODUCING HOGS, OPTION B, 1964	167
XXIV	COSTS OF PRODUCING POTATOES ON SEVEN MATANUSKA VALLEY FARMS, 1966	171
XXV	BEEF CATTLE ON ALASKA FARMS 1953-1968	176

<u>Number</u>		<u>Page</u>
XXVI	INVESTMENTS, COSTS AND INCOMES FOR CATTLE RANCHES WITH MIXED HERDS, SELLING TWO- YEAR-OLDS	180
XXVII	SUMMARY OF CAPABILITY CLASSES OF LAND SUITABLE FOR CULTIVATION IN ALASKA	185
XXVIII	SUMMARY IN CAPABILITY CLASS OF LAND SUITABLE FOR CULTIVATION	186
XXIX	APPROXIMATE PROPORTIONATE EXTENT, BY LAND CLASSES, OF SOILS IN MAJOR SOIL ASSOCIATIONS .	190
XXX	SUMMARY OF RANGE AREAS SUITABLE FOR LIVESTOCK GRAZING	191
XXXI	ESTIMATED YIELD POTENTIAL BY LAND CAPABILITY CLASS FOR TWO LEVELS OF MANAGEMENT: TANANA VALLEY AREA OF ALASKA, 1967 (CROP REPORTING DISTRICT NO. 1) .	197
XXXII	ESTIMATED YIELD POTENTIAL BY LAND CAPABILITY CLASS FOR TWO LEVELS OF MANAGEMENT: MATANUSKA-SUSITNA AREA OF ALASKA, 1967 (CROP REPORTING DISTRICT NO. 2)	201
XXXIII	ESTIMATED YIELD POTENTIAL BY LAND CAPABILITY CLASS FOR TWO LEVELS OF MANAGEMENT: WESTERN KENAI LOWLANDS, ALASKA, 1967 (CROP REPORTING DISTRICT NO. 3) .	205
XXXIV	ESTIMATED YIELD POTENTIAL BY LAND CAPABILITY CLASS FOR TWO LEVELS OF MANAGEMENT: N. E. KODIAK ISLAND AREA OF ALASKA, 1967 (CROP REPORTING DISTRICT NO. 5)	208
XXXV	PROJECTED POPULATION IN ALASKA, BY CROP REPORTING DISTRICT	210
XXXVI	ESTIMATED ANNUAL CONSUMPTION OF SELECTED AGRICULTURAL PRODUCTS IN ALASKA BY CROP REPORTING DISTRICT, 1975	212

<u>Number</u>		<u>Page</u>
XXXVII	ESTIMATED ANNUAL CONSUMPTION OF SELECTED AGRICULTURAL PRODUCTS IN ALASKA BY CROP REPORTING DISTRICT, 1985	214
XXXVIII	PRODUCTION POTENTIAL FOR CROP REPORTING DISTRICTS 1, 2, 3, AND 5, 1975	218
XXXIX	PRODUCTION POTENTIAL FOR CROP REPORTING DISTRICTS 1, 2, 3, AND 5, 1985	219
XL	COSTS OF PRODUCING POTATOES WITH DIFFERENT YIELD LEVELS, MATANUSKA VALLEY (43.3 ACRES POTATOES)	224
XLI	COSTS OF PRODUCING POTATOES WITH DIFFERENT YIELD LEVELS, MATANUSKA VALLEY (80 ACRES POTATOES)	225
XLII	ESTIMATED INVESTMENT AND PRODUCTION COSTS FOR THE HOG ENTERPRISE	230
XLIII	INVESTMENTS, RECEIPTS, AND COSTS ON ABOVE-AVERAGE SIZED DAIRY FARMS IN THE MATANUSKA VALLEY, 1966	233
XLIV	PROJECTED CHANGES IN INVESTMENT, COSTS, AND INCOME FOR CASE FARM A	235
XLV	SUMMARY OF 1965 AND PROJECTED INVESTMENT, EXPENSES AND INCOME	237

LIST OF FIGURES

<u>Number</u>		<u>Page</u>
1	Farming Areas in Alaska	19
2	Estimated Average Population for Alaska, 1940-1960 (as of July 1).	24
3	Alaska Crop and Livestock Reporting Districts	37
4	Alaska Soil Survey Areas.	183
5	Major Soil Series in the Tanana Valley. . .	187
6	Major Soil Series in the Matanuska Valley .	188
7	Major Soil Series in the Western Kenai Lowlands	189

ABSTRACT

This thesis is concerned with the reasons why Alaska's agricultural industry has remained relatively undeveloped and with possible alternative directions that the industry might take in accelerating its rate of growth. The general hypothesis of the study is that some agricultural production is economically sound, and an economic opportunity for further growth exists.

Chapter I is a general description of the Alaska agricultural development problem situation in its general socio-economic setting. Chapter II is a review of agriculture development at the present time.

Chapter III explains the goals and objectives, as they have been interpreted, for development of the agricultural industry for both Federal and State levels of government. Specific emphasis is placed on Federal goals within the National interest and State goals within the State's interest.

Chapter IV treats Alaska agricultural development in terms of philosophical and theoretical aspects of an undeveloped agricultural region where many of the institutions and agency services of a highly developed society are directly or indirectly provided.

Chapter V provides a descriptive profile of partially developed segments of the production sector of the industry. Costs of production data are provided for a number of agricultural products.

Chapter VI discusses resources available, yield potentials by land capability class, projected demand for agricultural products that can be grown in Alaska, and potential production expansion for a limited number of products.

Chapter VII summarizes the salient points discussed in the study.

The conclusions of this study are that opportunities for agricultural expansion and growth do exist. Economic input-output relationships for farm production indicate the opportunity for moderate continuing growth. In order to achieve this growth, non-divergent objectives, policies and programs that are conducive to agricultural development and growth of an agriculture industry in a "modern frontier" situation must be pursued. Active public participation is necessary in development activities but as yet procedures and sequences of implementing all facets of new lands settlement and agricultural growth and development in such a situation do not appear to be well understood.

CHAPTER I

INTRODUCTION

"Agriculture is a relatively small part of the Alaskan economy ... and is an industry in crisis. The general condition of agriculture in Alaska can be expressed simply. The State today produces less of its food supply than any other state in the Union, even though it has only 250,000 people to feed and 586,400 square miles of land on which to grow its food supply ... At no time has it produced more than 8 per cent of the food products consumed by its people." ^{1/}

The Problem Situation

Alaskans, and the nation, are now facing a critical question: "What is the future of agriculture in Alaska and what direction should it take if it is to develop?" The agricultural industry is small by any standard and has been described as an industry that is chronically depressed. Production has been dropping for several years. New entry into the production sector of the industry is at a virtual standstill. An intermediate marketing structure for most agricultural products is conspicuous by its absence. Present production is inadequate to support processing facilities for any product other than milk. Efforts must be made to salvage human and capital resources for more productive uses; however, if the industry is to survive and expand, careful consideration must be given

^{1/} Douglas N. Jones, "Alaska's Economy - The State of the State." Alaska Review, Alaska Methodist University: Anchorage, Vol. II, Number 3, page 20, Fall and Winter, 1966-1967.

adjustments that will encourage and stimulate development in those areas where greatest opportunities lie.

Seven decades of experimentation have provided some of the production information needed for agricultural development. A lesser number of decades of effort and experience by various agricultural agencies has provided most of the services available to agricultural producers elsewhere in the continental United States. However, many development problems still exist that are both extensive and diverse in nature. The lack of formulation and expression of a comprehensive policy for agricultural development in Alaska has allowed continuing diffusion of research and agency efforts that, while adding to the "storehouse of knowledge", contributed little to the ongoing development of the agricultural industry. Agricultural research has been too fragmented in its relation to Alaska development problems. Agricultural extension has been without the research support needed for development programming and has exhibited little interest in developing programming that would elicit such research support. There has been no university curriculum that provided a disciplinary focus for inquiry into socio-economic problems of agricultural development within the state.

Federal homestead policy in Alaska has done little to bring about an orderly transfer of land from public domain to private agricultural use. Few agency programs have been oriented to the

"problems" of agricultural settlement and growth. An often repeated response to questions regarding agricultural development may be summarized: "Farm and agricultural marketing firms will spontaneously arise when and where the need exists." The complete burden of gathering the unlabeled threads of farm and market development has been left to the interested individual, who in most instances has attempted to weave all facets of production, processing and distribution into a single firm structure.

Territory to Statehood: Goals, Objectives, and Policies

Alaska was subject to a fairly typical colonial pattern of natural resource exploitation, military establishment, and emphasis on adequate population for service and supply of the federal establishment from purchase in 1867 until statehood in 1959. Goals, objectives, and policies throughout that period were typically described as "for the good of the Nation," and justified in terms of the colonial status of the territory. According to Cooley, the period was characterized by an appalling lack of essential information about the region's lands and resources and the absence of coordination among the numerous federal agencies with major responsibilities in Alaska. Numerous recommendations were made during territorial days regarding a long range integrated plan for development of the region.

These recommendations went unheeded and National policy toward Alaska continued to drift with the shifting winds of politics. ^{2/}

When Alaska attained the status of a sovereign state, with the prerogatives and responsibilities of such a status, certain changes occurred with regard to goals, objectives, and policies. The sovereign state of Alaska was immediately faced with the need for developing or improving a full range of social, economic, and political institutions, programs, and services in response to the desires of the people within the state. Development of Alaska, as a sovereign state, had a far more critical time priority than development of the territory of Alaska. The criterion of evaluation changed to "for the good of the State and the Nation." Priority was assumed to be given the State in those areas where the State had prerogatives and responsibilities to its people. Federal programs and policies retained their position of dominance where National interests were presumed to be at stake. The transition from federal territorial status to that of a sovereign state was not without its problems. Proprietary interests of existing agencies were slowly and grudgingly relinquished in many instances, if at all. Agriculture has generally remained under the domination of a strong proprietary position of policy determination by the U. S. Department of Agriculture. The lack of agricultural development has continued from territorial days.

^{2/} Richard A. Cooley, Alaska, A Challenge in Conservation, The University of Wisconsin Press: Madison, Milwaukee and London, 1966, pp. 108-111.

There is a consensus that agricultural development has not responded adequately to the input of public resources over time. During the recent period while Federal and State agricultural agency appropriations have steadily increased, farming has steadily declined both in numbers of farmers and in total volume of agricultural products. The Federal Field Committee for Economic Development Planning for Alaska ^{3/} summarized the consensus in a Presidential Report:

While it finds an acute awareness of the immediate problems of the farmer and the principal producing areas, it also finds an almost total lack of the type of economic analysis that would permit an accurate assessment of the long-range potential for food production in Alaska. Nor does it find any systematic search for new and novel methods of production in northern regions as distinguished from research into products which can grow and mature in such regions ... Farming in Alaska is still in a primitive state of development, faced with serious economic and climatic roadblocks ... Federal and State governments might then follow one of two courses in their future involvement. The first course would be a continuation of the present yearly investment of men and money by the Federal and State

^{3/} The Federal Field Committee for Economic Development Planning in Alaska was established by Executive Order 11182 dated October 2, 1964. The Field Committee is responsible for developing coordinated plans for all federal programs that contribute to economic and resource development in Alaska. It was directed by the executive order to cooperate with the State of Alaska in surveys and studies. The Committee established task forces for each of the industries in question made up of representatives of all Federal, State and local agencies along with interested individuals. A more complete discussion of the Committee and its activities may be found in Cooley's, Alaska, A Challenge to Conservation, University of Wisconsin Press: Madison, Milwaukee and London, 1966, pp. 111-117.

governments, consisting of product research, experimentation, loans, statistical compilation, dissemination of new scientific information and other normal government assignments. These activities, diligently carried out by several Federal and State offices, have certainly aided the farmers and farming in general over the past few years; but as we previously noted, the competitive odds faced by these efforts have meant a slowly losing battle.

A second possible course of action might be gradual withdrawal of the Government's agricultural activities to a minimum degree of involvement. This position would recognize that further agricultural programs and efforts are expenditures whose success are so questionable that they should not be made.

The committee concluded that an analytical review of the current status and future potential for agricultural development should be carried out.

The Federal Field Committee's Agricultural Task Force carried on extended discussions and worked on preparation of a report on the agricultural situation in Alaska. A number of preliminary papers were prepared, but to date no final report has been compiled since the project was put in abeyance when a cooperative agreement was developed between the University of Alaska and the Economic Research Service, United States Department of Agriculture. One preliminary report was prepared by an E.R.S. consultant, a second report was prepared by the Institute of Social, Economic and Government Research, University of Alaska. The first report was primarily concerned with the opportunity for processing firms to develop in the current economic environment. The second placed primary emphasis on a preliminary review of the present situation within Alaska's agricultural industry.

The continuing study and development of Federal and State goals and objectives for general economic development has placed a strong emphasis on the need for critical study of each of the industries that go to make up the Alaskan economy. Since agriculture is currently a minor industry in the State, it is necessary to explore its future potential in overall economic development planning. Future Federal and State goals and objectives with respect to agriculture may necessarily be quite different if viewed in terms of overall economic development goals and objectives and the necessary plans and programs required to accomplish them, than in the past where apparently the only considerations were how agriculture could support military needs or what effect Alaska agriculture might have on other regional "surpluses". It is in light of this possible change in goal structure that a critical need exists for a comprehensive evaluation of the current status and future potential for agricultural development in Alaska.

Historical Perspective

The pendulum of opinion about what Alaska is or can be has swung wildly back and forth from optimism to pessimism during the 100 years since its purchase; and today one still finds many contrasting views about this land and what the future may hold for it. The differences spring in part from the differing philosophies, desires and yearnings of the people who have come north to populate Alaska, but they also reflect its enormous size and the great diversity of its natural and physical features, which make generalizations about the future extraordinarily difficult. ^{4/}

^{4/} Cooley, op. cit., p. 8.

There is little from previous frontier experience in agricultural settlement with which to compare Alaska. Alaska differs in many important respects. The people who first came to Alaska were not looking for permanent locations, they came to get rich quickly - if possible - and were looking back over their shoulders to "home". Alaska's location in the northern latitudes, with its severity of climate, locational isolation, and transient population is in dramatic contrast with the westward pioneer migration. Much of what had been learned from those early pioneer settlements had to be painfully unlearned in Alaska.

The State's great land area stimulates perennial dreams of agricultural development, and at the same time stirs virilient criticism of the rate and form of development. The clarion cry of "The Last Frontier!" along with the image of vast areas of unoccupied land has stimulated preconceptions of grandeur that continue to haunt the individual who wanders through the morass of problems resulting from the physical and economic conditions of Alaska in the Twentieth Century.

Dreams of agricultural development are not new in Alaska. Early reports relate accounts of cattle being brought to Unalaska and Kodiak Islands as early as 1795. One report indicates that a Russian trading company kept a herd of some 300 cattle on Kodiak Island from 1795 until 1868. Cattle production was in progress at each of the principal Russian settlements when the United States purchased the

territory from Russia. Only limited mention was made of vegetables and grain production in the Russian settlement records. ^{5/} With the United States' acquisition of the Alaska Territory, it truly became "Seward's Icebox" in terms of agricultural interest and development.

On October 24, 1867, just six days after the Alaska acquisition was officially consummated, the Secretary of the Interior announced that any attempt to claim lands in the territory under the land laws of the United States would be considered illegal; intruders would be removed by military force if necessary. ^{6/}

Some thirty years elapsed before public lands could be entered and patented for purposes other than mining. Not until 1897-1898 did official Washington begin to recognize food production possibilities in the territory of Alaska.

During the summer of 1897 a party headed by Walter H. Evans of the Office of Experiment Stations, Washington, D. C. made a preliminary survey of Alaska. Their report was sufficiently encouraging that a second survey was made in 1898. Cattle, sheep, vegetables and forage crops were found in the coastal areas and to a limited extent in the Yukon Valley. Vegetables were found growing as far up the Yukon Valley as Circle City. The beginning of "organized agriculture" was to come about with the establishment of experiment stations in the territory. Stations were located at Kodiak and Sitka in 1898, Kenai

^{5/} H. H. Bancroft, History of Alaska 1730-1885 (New York: Antiquarian Press, reprint 1959).

^{6/} Cooley, op cit., pp. 18-22.

on the Kenai Peninsula in 1899, Rampart on the Yukon River in 1900, Copper Center in the Copper River Valley in 1903, Fairbanks in the Tanana Valley in 1906, and Matanuska in the Matanuska Valley in 1915. Work was immediately begun at each of the stations to investigate conditions peculiar to that area. Much of the work done at these early stations was of a pioneering nature, a mixture of manual labor interspersed with scientific work. Researchers, combating vagaries of weather in an unknown land, carried on continuous testing of plant materials. While some stations carried out extensive hybridization of plant materials, others concentrated on livestock in a continuing attempt to develop genetic stock suited to the Alaskan environment. ^{7/} Work initiated at the early stations has been continued with varying degrees of emphasis and intensity.

Disenchanted gold seekers and hungry miners found the opportunity to raise vegetables and horse feed during the gold-rush period. A limited number developed agricultural homesteads. Further homesteading was encouraged by the construction of the Alaska Railroad. World War I, however, provided the stimulus for an out-migration which severely decimated the ranks of Alaska's "farmers". The Alaska Railroad initiated an agricultural settlement program during the late 1920's with little success. The Matanuska Colony settlement of 1935 was the first concerted effort in agricultural settlement in Alaska.

^{7/} G. W. Gasser, A Brief History of Agriculture in Alaska, Unpublished Mimeograph.

World War II provided a stimulus for interest in food production, but it was not until the influx of veterans in the post-war period that interest was translated into efforts in agricultural development. Homesteading rose to a turmoil of activity, only to be confronted with the brutal economic facts of life. The romanticism of free land and a cottage in the wilderness soon took on the drudgery of a "boot-strapping" homestead with limited markets, even more limited credit and a very primitive agricultural environment. One circumstance that was generally overlooked was that of timing. Even though people were looking "to get away from it all," or wanting to "pioneer new lands," or following the allure of "free land" or perhaps just wanting "a piece of ground of their own", they were not conditioned as were their grandfathers to the hardships of pioneer homestead settlement. They were social creations of the abundant life of the mid-Twentieth Century. Good roads, schools and close neighbors, modern homes, nearness to trading centers and other manifestations of the good life were taken as a matter of course. The meager life of a pioneer homesteader and the social problems of isolation were beyond comprehension and generally resulted in disillusion and abandoning the homestead for a job "in town" or to go back "outside." The social and psychological stresses were more than many could bear.

Although infusions of institutional credit during the 1950's and early 1960's aroused new hope for agricultural development, an exodus

of "homestead farmers," that started during the 1950's, had also included many established farmers by the mid '60's. The 1964 Census of Agriculture preliminary reports show only 382 "farmers" in the State and, if a definition were used that better reflected the stages of farm development, one would find some one hundred farms producing agricultural products for commercial sale, the remainder being "agricultural homesteads" in varying stages of development.

The Research Problem

The research problem is concerned with the competitive posture of present agricultural producers in Alaska and the future potential for developing additional farm firms in various geographic areas. The problem has a number of distinct facets: (1) availability of productive resources, (2) physical production potential by geographic area, (3) competitive posture of present farm firms, (4) future production potential within the framework of Alaska's economic and physical environment, and (5) social, political, and economic institutions that structure development of farm firms.

The specific problem of the study is to appraise the future of the production sector of the agricultural industry in Alaska and then evaluate possible alternative directions that the industry might take in terms of alternate development goals and objectives. Specific objectives of the study were: (1) to review past agricultural development in terms of resources available, past settlement efforts

