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CHANGING LAND USE PATTERNS IN
CASS COUNTY, NEBRASKA
1941-1971

A Thesis
Presented to the
Department of Geography
and the
Faculty of the Graduate College
University of Nebraska at Omaha

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
Horst Dieter Albrecht
June 1972

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Accepted for the faculty of The Graduate College of the University of Nebraska at Omaha, in partial fulfillment of the requirements for the degree Master of Arts.

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Horst D. Albrecht

ABSTRACT

This thesis is a study of the changing land use patterns of Cass County, Nebraska. Data for this thesis was obtained from government agencies and field research conducted by the author.

The economic base of the county has traditionally been agriculture and agriculture continues to comprise the largest single occupation in the county.

Average farm size is increasing, a trend which will continue to reduce the number of smaller, family operated farms. Although the number of farms has been steadily declining, the value of land and per capita income has been rising.

In terms of value received, cattle raising has now exceeded crop cultivation in the area. While corn has remained the major crop, sorghum and soybeans have become increasingly more important, and the traditional wheat production has steadily declined. Low prices and government policy have forced the tiller of the soil to make changes in land use.

Limestone quarrying and processing are second only to agriculture in land utilization and in the order of economic importance.

Government involvement in maintaining the county's natural resources is evident throughout the county. Conservation is practiced energetically by the majority of farmers with the help of government subsidies.

Urban, conservation, and industrial land uses are examined because such uses have removed land from agricultural classification. However, the primary focus of this study was upon the agricultural land use changes and related phenomena in the county.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS.....	ii
ABSTRACT.....	iii
LIST OF TABLES.....	iv
LIST OF ILLUSTRATIONS.....	v
LIST OF DIAGRAMS.....	vi
 Chapter	
I. INTRODUCTION.....	1
Location and Size.....	1
Justification for the Study.....	1
Statement of the Problem.....	4
Significance of the Study.....	4
Scope.....	5
Methodology.....	6
II. CULTURAL CHARACTERISTICS.....	9
Historical Background.....	9
Population.....	10
Physical Characteristics.....	13
Physiography.....	13
Platte River Region.....	13
Missouri River Region.....	13
Weeping Water Region.....	16
Southwestern Region.....	16
Climate.....	17
Drainage.....	19
Soils.....	20
Natural Vegetation.....	20
III. LAND USE PATTERN SUMMARY.....	22
Generalized Land Use.....	24
IV. DETAILED ANALYSIS OF LAND USE OF SAMPLE AREAS.....	31
Sample Area A.....	33
Sample Area B.....	36
Sample Area C.....	40
Sample Area C1.....	43

TABLE OF CONTENTS - Continued

Chapter	Page
Sample Area D.....	47
Sample Area D ₁	49
Sample Area E.....	53
Sample Area F.....	57
Sample Area F ₁	59
Sample Area G.....	62
Summary of Land Use Changes of the Sample Areas.....	66
V. MAJOR AGRICULTURAL COMMODITIES.....	71
Wheat.....	72
Sorghums.....	73
Soybeans.....	76
Other Crops.....	79
Livestock and Poultry.....	81
Beef Cattle.....	81
Hogs.....	83
Poultry.....	85
Dairy Cattle.....	85
Summary of Agricultural Commodities.....	86
Agricultural Trends.....	86
Size of Farms.....	86
Types of Tenancy.....	91
Full Owners.....	91
Part Owners.....	92
Tenant Farmer.....	94
Government Influence.....	94
Agriculture Conservation Program.....	95
Cropland Adjustment Program.....	96
Price Support Program.....	98
1970 Wheat Program.....	99
1970 Feed Grain Program.....	100
VI URBAN DEVELOPMENT AND EXPANSION.....	102
Urban Expansion.....	105
Future Urban Expansion.....	105
Industrial Land Use.....	106
Transportation.....	108

TABLE OF CONTENTS - Continued

Chapter	Page
VII. CONCLUSION.....	111
BIBLIOGRAPHY.....	114
APPENDIX.....	118

LIST OF TABLES

Table	Page
1. Population Trends of Cass County.....	12
2. Climatic Summary.....	18
3. Acreage Changes of Major Land Use Divisions.....	23
4. Land Use by Capability Class and Subclass.....	28
5. Total Land Inventory for 1970.....	29
6. Cropland Use in 1970.....	30
7. Land Use and Changes in Sample Area A.....	35
8. Land Use and Changes in Sample Area B.....	39
9. Land Use and Changes in Sample Area C.....	42
10. Land Use and Changes in Sample Area C ₁	45
11. Land Use and Changes in Sample Area D.....	48
12. Land Use and Changes in Sample Area D ₁	51
13. Land Use and Changes in Sample Area E.....	56
14. Land Use and Changes in Sample Area F.....	58
15. Land Use and Changes in Sample Area F ₁	60
16. Land Use and Changes in Sample Area G.....	65
17. Summary of Land Use Changes of Areas Sampled.....	67
18. Market Price Fluctuations of Major Commodities.....	75
19. Major Cropland Uses and Production in 1969.....	77
20. Acreage of Major Crops Grown.....	80
21. Livestock and Poultry Production.....	84
22. Types of Tenancy.....	93
23. Summary of Major Conservation Accomplishments.....	97

LIST OF ILLUSTRATIONS

Figure	Page
1. Nebraska -Southeastern Region in Detail.....	2
2. Geographic Location of Cass County.....	3
3. Traverse Routes.....	7
4. Major Land Resource Areas for Nebraska.....	14
5. Relief Map of Cass County.....	15
6. Topographic Quadrangles Coverage of Cass County.....	32
7. Land Use Sample Area A.....	34
8. Land Use Sample Area B.....	38
9. Land Use Sample Area C and C ₁	46
10. Land Use Sample Area D and D ₁	52
11. Land Use Sample Area E.....	54
12. Land Use Sample Area F and F ₁	61
13. Land Use Sample Area G.....	63
14. Abandoned and Removed Farmsteads.....	69
15. Farmsteads Removed since 1941.....	70
16. Townships of Cass County.....	103
17. General Highway Map of Cass County.....	109

LIST OF DIAGRAMS

Diagram	Page
1. Acreage Changes of Major Crops.....	78
2. Average Size and Value of Farms.....	87
3. Number and Average Size Farm Trends.....	88
4. Land in Farms and Proportion of Total Land Area.....	90

CHAPTER I

INTRODUCTION

In 1940 there were 1,983 farms in Cass County, occupying 339,939 acres, or 97 per cent of the total land area. The average farm size was then 171.4 acres (Census of Agriculture, 1940). By 1969 the number of farms declined to 1,086, and their acreage decreased to 326,264 (Census of Agriculture, 1969).

Location and Size

Cass County is located ten miles south of Omaha, and six miles east of Lincoln. It is bounded on the east by the Missouri River and the State of Iowa, by the Platte River and Sarpy County on the north, by Lancaster County on the west, and by Otoe County on the south (Figures 1 and 2).

Cass County extends 33 miles, east to west; and ranges 19 miles, north to south. The area of the county comprises approximately 555 square miles or 355,200* acres (United States Department of Agriculture, 1941, p. 1).

Plattsmouth, the county seat, is located in the northeast corner of the county, about 15 miles south of Omaha, twenty-five miles north of Nebraska City, and sixty miles east of Lincoln.

Justification for the Study

Extensive research of literature indicates that no work

* Another source states that the total land area consists of 354,560 acres.

FIGURE 1

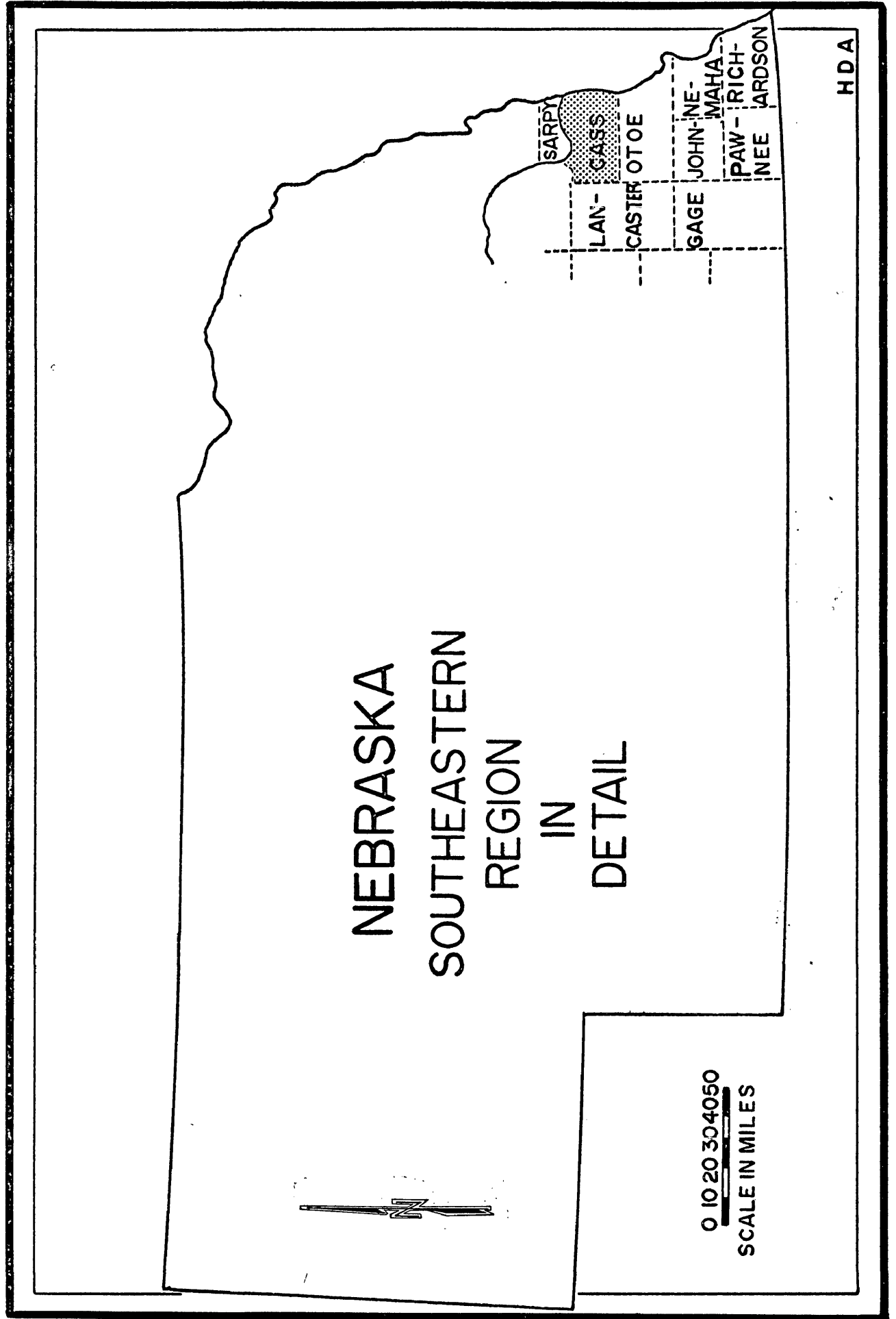
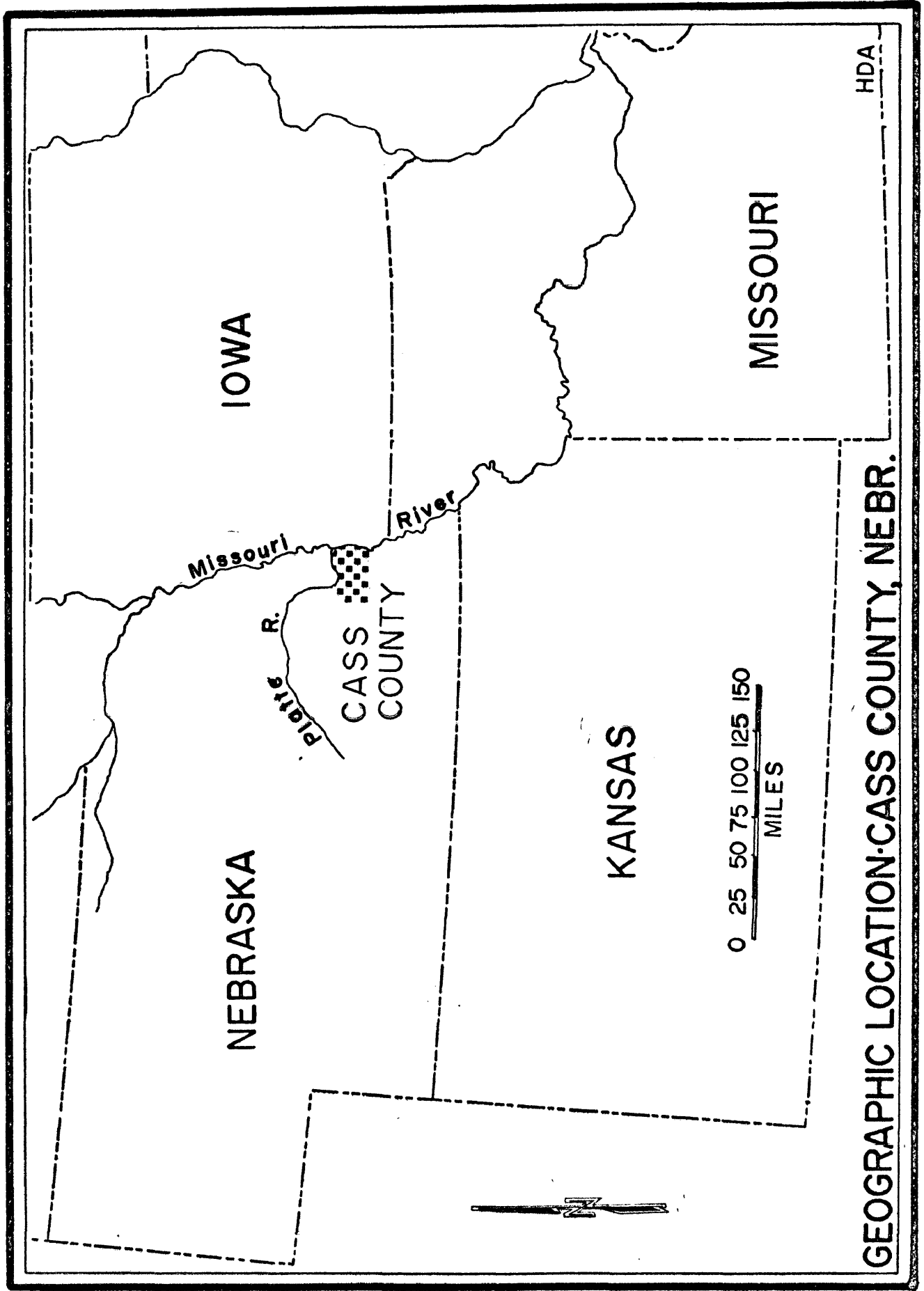


FIGURE 2



similar to the proposed study has been made for the county.

It is hypothesized that present land use changes in Cass County are largely resultant from (1) a continuing decline of family farms as the major source of income with a consequent abandonment of individual farmsteads; (2) a declining total acreage of land in farms; (3) an increasing size and value of farms; and (4) the rising employment of the populus in nearby urban areas, and the extension of suburbia in Cass County itself.

Statement of the Problem

The purpose of this study is to examine changing land use patterns in the county for the period 1941 through 1971. Many changes in land use have occurred during this 30 year period. These changes, their basic causal factors, and their impact will be examined in this study.

The changing land use patterns of Cass County present an excellent "model" situation which may be considered typical of an urban fringe area of the midwest. The proximity to the Omaha-Council Bluffs metropolitan area has not only provided a market for most of the products grown in Cass County, but has also influenced the urban growth of the county. These cultural and social factors are playing an increasingly significant role in the transformation of the county's landscape.

Significance of the Study

As the demand for both urban and agricultural land increases, it becomes increasingly important to properly plan land uses, as

it is in the fringe area that land use changes take place most rapidly.

It is hoped that the results of this study will (1) contribute to the general fund of knowledge on the county; (2) enable county governments in rural urban fringe areas to benefit from the findings when determining future land use priorities; and (3) act as a guide for similar studies.

Scope

General descriptions of the county's background, such as population and physiography, are used to acquaint the reader with the forces that effect land uses, both past and present. Land use patterns, because of their scale and complexity, are analyzed by employing generalized land use classifications. Although the land use was classified precisely during field work, it became necessary to use more generalized land use classifications in treating past usage since it was impossible to interpret precise land uses from the available aerial photographs. In this study three land use classifications are discussed and mapped in detail; cropland, pastureland, and woodland. To present more detailed patterns of land use changes, seven sample areas, evenly distributed throughout the county, were selected for detailed study to portray changes between 1941 and 1971.

Cultural phenomena affecting land use involve changes of farm sizes and land tenure, the abandonment of farms, and governmental influences. Social factors are examined since these have affected land use changes. In analyzing these factors the author

limited the scope to the more significant changes occurring in the agricultural patterns after 1941.

Methodology

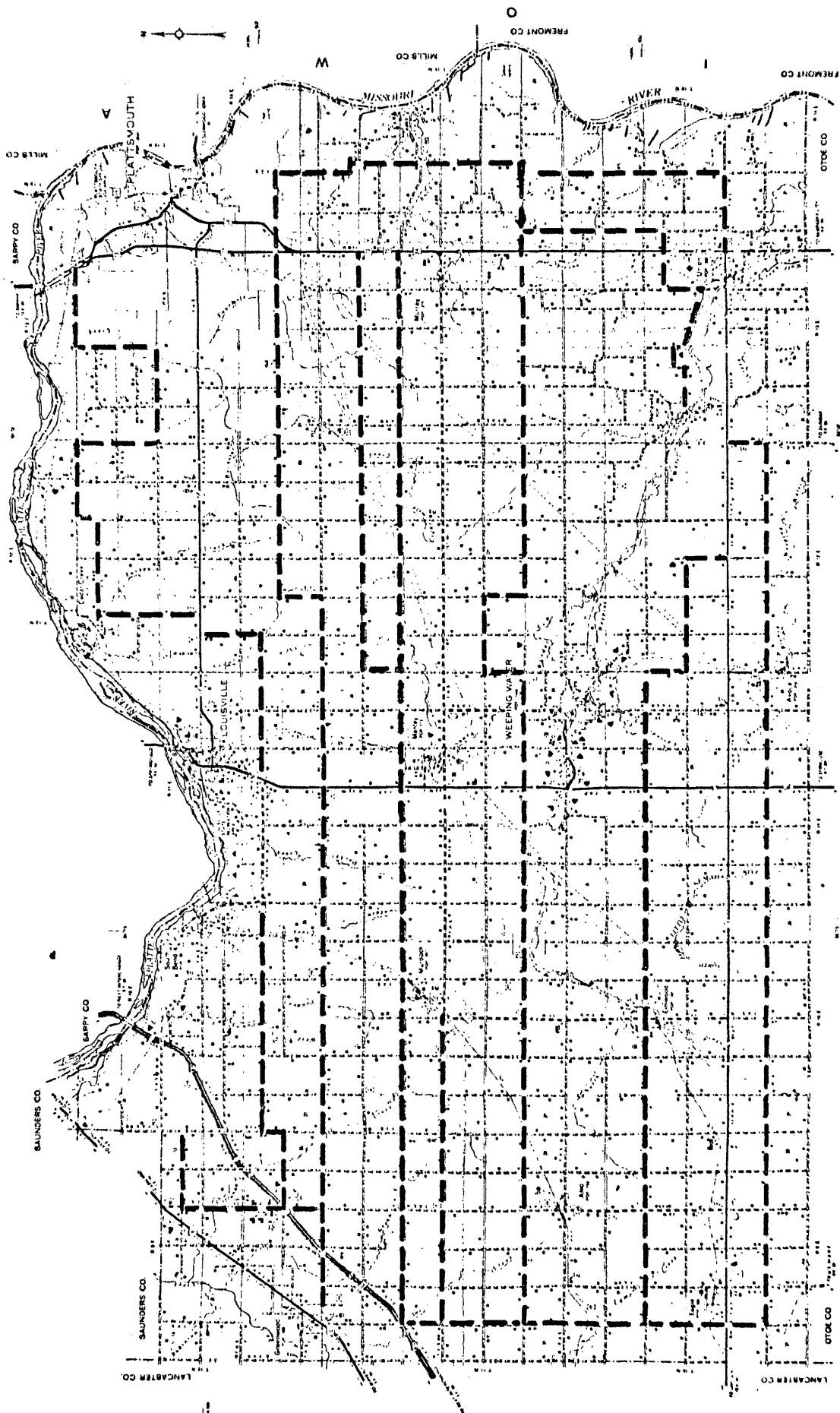
A thorough search of library materials was made to construct a background knowledge as to the development of land uses in Cass County. Field work constituted a major portion of the research. Between September and November 1971, the author made a 223 mile field survey along county roads (Figure 3). An inventory of land use by "windshield method" was made for a depth of one-quarter mile (40 acres) on both sides of the roads traversed. The traverses were then recorded on United States Geological Survey Quadrangles. A 40-acre land locator was used to compute totals for the quadrangles traversed.*

United States Department of Agriculture aerial photographs for the year 1941 were interpreted by the author to gather land use information. These were the earliest photographs available which provided approximately 95 per cent of county coverage. Appropriate photographs were interpreted along routes of the 1971 field survey; and the 1941 land use patterns were recorded on United States Geological Survey maps. The 1941 land use information was differentiated from the 1971 information on the maps used in the field by employing a color coding scheme.

The 223-mile traverse information was recorded on fourteen different maps. Of this total, seven maps which would give the

* The "40 acre land locator templet", produced by the Jero Templet Co., Fontana, California, broke down a section (640 acres) of a 7.5 minute 1:24,000 U.S.G.S. map into 10, 40, 80, 160, 320 and 640 acres. Measurements were made by superimposing this templet on a U.S.G.S. map and counting the squares.

FIGURE 3
 TRAVERSE ROUTES - CASS COUNTY, NEBRASKA



--- Indicates field survey routes between September and November 1971.
 Base Map Source: General Highway Map, U.S. Department of Transportation.

county an even distribution, were selected for sampling (Figure 6).

Land use information for 1971 and 1941, recorded on the base maps, was lifted graphically by means of mylar acetate overlays at the same scale (1:24,000) as the base maps. Zipatone was used on the mylar to depict main land use classifications. The mylar overlays were photographically reduced to conform to standard thesis format.

Areas selected for sampling were portrayed separately for each map for easy visual comparison. Each 1971 sample area is compared with the identical 1941 area. The year of land use is identified as 1971 or 1941 on the plots.

CHAPTER II
CULTURAL CHARACTERISTICS

Historical Background

Owing to its Missouri River frontage, Cass County was explored by travelers in the 17th and early 18th century. Before settlement, this territory was occupied by the Pawnee and Otoe Indians (Plattsmouth Journal, 1954, p. 11).

Samuel Martin, in the spring of 1853, obtained permission to establish a trading post on the ground now occupied by the city of Plattsmouth, and thus became the first white settler to locate in what is now Cass County (Plat Book of Cass County, 1904).

Through treaties with the Pawnee and Otoe Indians, these lands were opened for settlement as a part of the Nebraska Territory. Cass County was one of the first of eight counties to be organized in the Nebraska Territory. On March 14, 1855, Plattsmouth was officially incorporated, and designated as the county seat of Cass County by the Territorial Legislature (Plattsmouth Journal, 1954, p. 13).

The early settlers, clustered mostly along the Missouri River, made their living from trading with the river traffic and people changing mode of transportation at ferry crossings. Income was derived by outfitting immigrants heading west with the essential staples of life, such as flour, salt pork, clothing, and ammunition. With the decline of immigration and its conse-

quent river traffic, farming became increasingly more important.

The soil of Cass County was very fertile and productive farming was well established by the 1860 decade. The extension of railroads into the area during the 1860's had a significant influence on the agricultural economy. The steamboat era began to decline, and the railroads removed the dependence on river transportation for exporting agricultural products.

According to the 1860 United States Census of Agriculture, the county had 55,977 acres in farm lands of which 39,014 acres were unimproved and 16,963 acres were improved. The major crops produced, in order of importance by bushels, were: Indian corn, 362,800; wheat, 74,966; potatoes, 20,850; oats, 15,876. Livestock, in order of importance by head, were: swine, 4,392; cattle, 1,363; milk cows, 849; horses, 674; and working oxen, 482.

Population

From the time of settlement to 1890, the population of Cass County increased steadily. The steady flow of immigrants was the primary factor in the continued growth of the county. According to United States Census data, the county had 24,080 inhabitants in 1890, the highest number since its settlement. After 1890 the population had decreased in every decade until it reached a low of 16,361 in 1950. The 60 year decline of population can be attributed to: (1) a decrease of immigrants arriving from Europe, especially after 1930; (2) a decline of the birth rate, particularly during the depression years; and (3) by the out-migra-

tion of younger citizens in search of better economic opportunity. After 1950, Cass County reversed its downward trend in population, and began to gain slowly. In 1970, the total population for the county was 18,076, an increase of 1,084 persons in thirty years. This slight increase in population was largely due to the urban overflow of the Omaha-Council Bluffs Metropolitan Area. The out-migration of younger persons continued due to lack of economic opportunities within the county.

Cass County's population has been basically rural. During the last thirty years most of the precincts of the county have lost population and are continuing to do so (Table 1). Most urbanized areas have gained slightly in population, especially those located closest to Omaha. Plattsmouth, the largest city and county seat, gained only 127 persons between 1960 and 1970. The rural population is fairly evenly distributed over the county (Table 1). Farms or rural homes average about four units per square mile.

Present construction of housing in Plattsmouth gives evidence that Cass County is entering a new period of growth. The future population will probably be concentrated in the areas having the greatest access to the job markets of nearby urban centers. Plattsmouth, because of its easy access to Omaha, can expect the largest increase in population. Present and planned housing developments alone will increase the population of Plattsmouth considerably. Urban expansion is discussed in more detail on page 102.

TABLE 1

POPULATION TRENDS - CASS COUNTY, NEBRASKA
1940-1970

Precincts and Communities	1940 ^a	1950 ^a	1960 ^a	1970 ^b	Percent Change 1960-1970
Avoca precinct	552	446	389	382	-1.8
Avoca village (part)	152	143	152	170	11.8
Center precinct	620	545	506	486	-4.0
Manley village	113	150	32.7
East Rock Bluff's precinct	328	232	201	255	26.9
Eight Mile Grove precinct	541	550	548	513	-6.4
Elmwood precinct	669	647	651	638	-2.0
Murdock village	199	225	247	262	6.1
Greenwood precinct	555	495	437	442	1.1
Alvo village (part)	177	153	126	134	6.3
Liberty precinct	896	736	719	622	-13.5
Union village	364	277	303	275	-9.2
Louisville precinct	1,347	1,302	1,434	1,323	-7.7
Louisville village	977	1,014	1,194	1,036	-13.2
Mount Pleasant precinct	489	386	337	327	-3.0
Nehawka precinct	687	515	468	474	1.3
Nehawka village	352	272	262	298	13.7
Plattsmouth city	4,268	4,874	6,244	6,371	2.0
Plattsmouth precinct	839	755	1,074	1,150	7.1
Salt Creek precinct	668	640	636	749	17.8
Greenwood village	350	364	403	506	25.6
South Bend precinct	473	392	344	403	17.2
South Bend village	100	100	86	86	...
Stove Creek precinct	871	851	848	898	5.9
Elmwood village	456	445	481	548	13.9
Tipton precinct	764	690	729	801	9.9
Alvo village (part)	38	37	33	17	-48.5
Eagle village	289	255	302	441	46.0
Weeping Water city	1,139	1,070	1,048	1,143	9.1
Weeping Water precinct	569	524	518	414	-20.1
Avoca village (part)	45	53	66	59	-10.6
West Rock Bluff's precinct	717	711	690	685	-0.7
Murray village	209	244	279	286	2.5
Total:	16,992	16,361	17,821	18,076	

Sources: ^aU.S. Bureau of the Census: 1960, part 29, table 7, p. 29-11
^bU.S. Bureau of the Census: 1970, part 29, table 10, p. 29-19

Physical Characteristics

Physiography

The underlying structure of Cass County has been modified by the work of continental ice sheets. The county lies in the western part of the Central Lowland, a province of the Interior Plains physiographic division (Atwood, 1964). Within the Nebraska physiographic regions, the eastern bluffs of Cass County lie in the Iowa and Missouri Deep Loess Hills regions, and the remainder of the county is in the Nebraska and Kansas Loess Drift Hills (Figure 4).

Cass County is part of an eroded drift plain that is capped with irregularly distributed loess of variable thickness which is cut by numerous valleys partially filled with alluvium. The average elevation of Cass County is about 1,100 feet above sea level, ranging from 1,360 feet at Eagle to about 930 feet in the extreme southeastern corner (Figure 5).

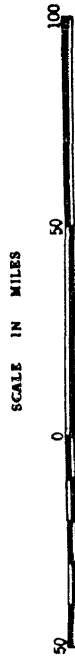
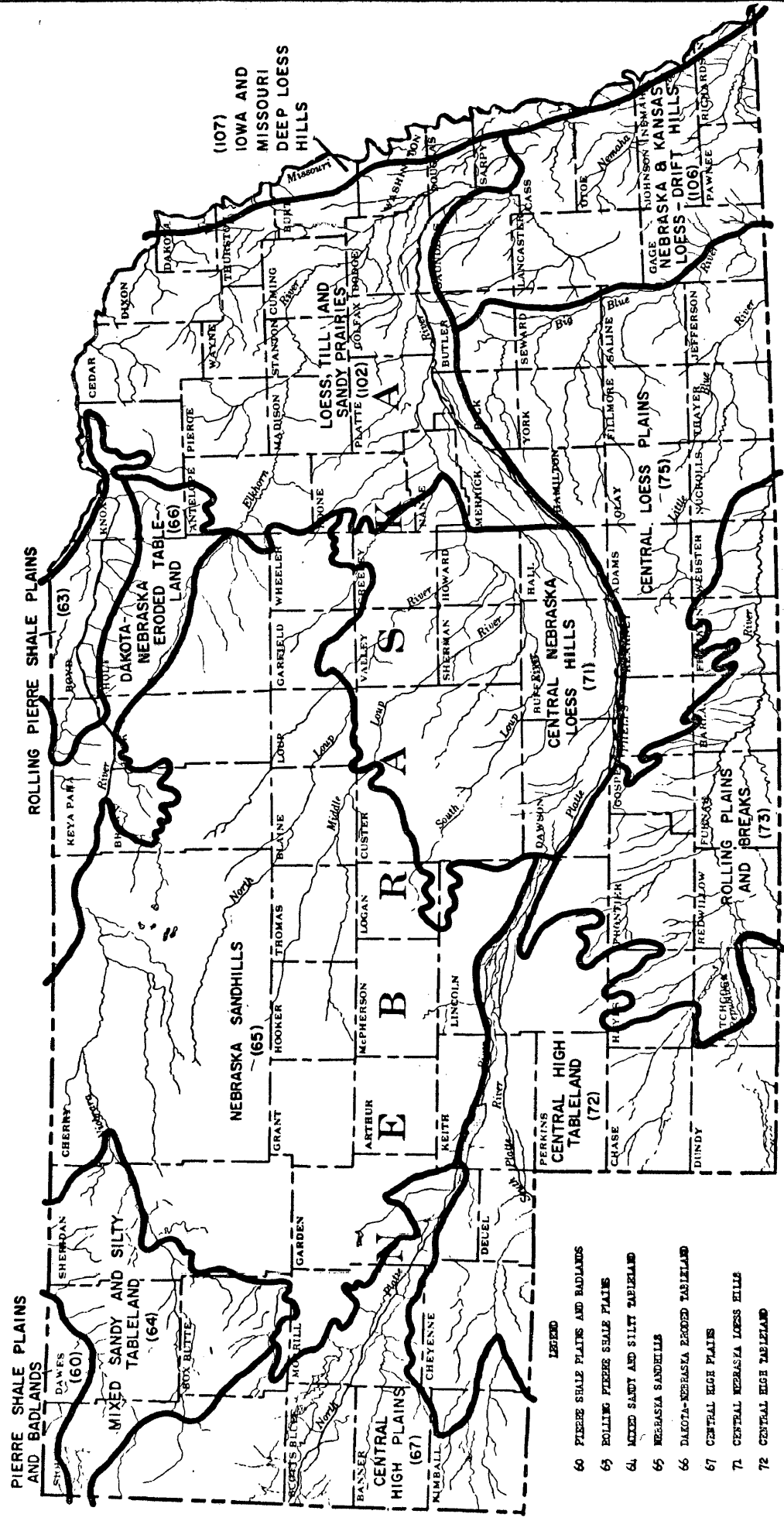
Several distinct topographic divisions are identified in the landscape of Cass County (Barbow, 1903):

Platte River Region. The bluffs along the Platte River rise abruptly, then gradually subside towards the rolling interior. This area, extending from east to west, is from one-half to two miles wide. The bluffs nearest the river are covered with forests, and the rolling interior is cultivated.

Missouri River Region. This region presents the roughest topography found in the county. Except for a few narrow valleys,

FIGURE 4

MAJOR LAND RESOURCE AREAS FOR NEBRASKA



— LAND RESOURCE AREA BOUNDARY

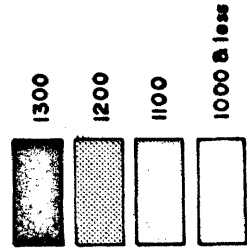
FIGURE 5

RELIEF MAP CASS COUNTY, NEBRASKA



BASE MAP SOURCE: NEBRASKA GEOLOGICAL SURVEY, THE GEOLOGY OF CASS COUNTY, LINCOLN, NEBRASKA: 1903, p. 283

ELEVATION IN FEET



this region is best adapted to trees which aid in preventing the relatively thin topsoil from washing away. The interior of the bluffs are more rounded and are farmed; however, erosion is a problem in some areas.

Weeping Water Creek Region. The topography along Weeping Water Creek beginning west of Weeping Water, and extending beyond Nehawka is very rugged. Limestone outcrops near the summit of the bluffs are quite common. Except for some quarrying, these hillsides are valuable only for grazing.

Southwestern Region. This area of the county has the highest elevation, and is quite hilly. Erosion is a serious problem due to the abundance of sand and gravel associated with the easily eroded loess subsoil.

The most nearly level land extends east and west across the central part of the county. The divide (between Platte River and Weeping Water Creek Basins) is about a mile wide at most places, and has an undulating to gently rolling relief.

Alluvial lands occupy only a small part of the county. The largest areas of such land are along Salt Creek in the extreme northwest. The Platte and Missouri River valleys in Cass County possess only limited flood plain areas. These few places are the most fertile land in the county.

Approximately two-thirds of the county is underlain by bedrock consisting of limestone, shale, and fine-grained sandstone of Pennsylvanian age. The remaining bedrock of the county consists of sandstones, shales, and clays of the Dakota Group of Cretaceous

age (Nebraska Conservation and Survey Division, 1969, p. 6).

Unconsolidated sediments of variable thickness; deposited by ice, water, and wind; mantle a considerable part of the county. These deposits are of fairly local origin, consisting of bedrock materials that have been reduced to clay, silt, sand, and gravel by weathering. The underlying glacial materials are largely composed of local materials, but small amounts of materials that were transported into the state may be found.

Climate

Cass County is within the temperate continental climatic zone (Humid Microthermal, Dfa) (Van Riper, 1962, p. 276). Its location in the midwest makes it vulnerable to severe summer thunderstorms when cold and warm fronts collide over the area. Cold fronts moving down from the north cause periods of severe cold, especially during January and February. Temperature variations of 60 Fahrenheit degrees in a 24 hour period are not unknown.

The annual mean temperature for the county is 51 degrees Fahrenheit. The average January temperature averages 23 degrees Fahrenheit with the month of July averaging 77 degrees. Extreme temperatures of 113 degrees during summer and -34 degrees during winter have been recorded (United States Department of Agriculture, 1941, p. 967).

The average annual precipitation in the eastern part of the county is about 30 inches, and is slightly less in the western

TABLE 2

CLIMATIC SUMMARY OF CASS COUNTY, NEBRASKA*

Month	Average Precipitation (inches)	Average Temperature	Last Killing Frost
January	.84	22.8° F	
February	1.09		
March	1.38		
April	2.33		
May	3.48		May 4
June	4.42		
July	3.28	77.2° F	
August	3.78		
September	3.61		
October	1.95		October 8
November	1.58		
December	.97		

Total annual average: 28.71

Maximum temperature: 113° F

Minimum temperature: -34° F

Growing Season: 157 days

* All readings were taken at Weeping Water, Nebraska, located in central Cass County.
 Source: U.S. Department of Agriculture. "Climate and Man, 1941 Yearbook of Agriculture."
 Washington, D. C., Government Printing Office, p. 967.

part. Most of the annual rainfall occurs from April through October. Sometimes short dry periods occur during the early spring and late summer months. Lack of moisture during the late summer effect summer crops; and in the early spring winter crops.

During the winter months, the prevailing winds are from the northwest. During the rest of the year they are generally from a southerly direction. Strong winds, especially from the southwest, cause erosion in the spring after the fields have been cultivated, if the soil is dry.

The mean date of the last killing frost is May 4; and that of the first, is October 8. The 157 day frost-free growing season is sufficiently long for growing crops such as corn, sorghums, soybeans, and wheat (Table 2).

Drainage

All of the county's drainage is part of the Missouri Basin system. The principal streams draining the southern half of the county generally flow west to east into the Missouri River. They are the Nehawka and Weeping Water streams. Weeping Water Creek with its tributaries drains about 40 per cent of the region.

The northern half of the county is drained by two principal streams generally flowing south to north to the Platte River. Salt Creek, flowing through the northwestern corner of the county, has numerous tributaries. The north-central portion of the county is drained by numerous small creeks of which Eight Mile Creek is the largest.

The rest of the county has a well-matured drainage system which drains the area swiftly. Some of the flood plains that are being farmed along the Platte and Missouri River have drainage problems which affect crops.

Soils

The soil parent material of Cass County consists of loess, except along the Salt Creek, Platte and Missouri River basins where the soil is alluvial. Nearly all topsoil is modulated by black, well-decomposed, organic matter extending to a depth of 24 inches or more. The upper horizons are underlain by dark-brown, or grayish-brown, silty clay loam subsoils.

The soil, except in some bottomlands, is well drained. Severe erosion, where run-off is particularly rapid, has been curtailed through conservation practices.

Soils are well suited for the growth of crops common to this area. Topography is a major factor in determining field patterns. Cultivated crops are grown on the gentle slopes and rolling hills, while the steeper slopes are in permanent vegetation.

Natural Vegetation

Native deciduous forests occur among the bluffs of the Platte and Missouri Rivers. All forests have been cut over at least once since the settlement of the county. The covering of the steeper hills with trees has prevented serious erosion and helped re-build the soil with organic matter. Burr Oak, Red Oak,

Black Oak, Linden, Cottonwood, and Hickory are the main type of trees found along the river bluffs (Weaver, 1965, p. 20).

CHAPTER III

LAND USE PATTERN SUMMARY

Early settlers of Cass County found themselves in possession of a land of rich soil and gentle topography, which was ideal for farming. In the early years of settlement the land of Cass County was primarily used for subsistence farming. In 1860 only ten per cent of all land in the county was in farms (Census of Agriculture, 1860, p. 172). The first crops grown were mainly corn, wheat, oats, barley, rye, potatoes, and garden vegetables required to supply the home needs.

As the population of the county and nearby urban centers increased, the farmers began to practice intensive cultivation due to a ready market for their agricultural products. The total land in farms in 1860 was approximately 55,000 acres. By 1959 it had increased to 340,746 acres or 96.1 per cent of the total land area. From 1950 to 1969 the total land in farms decreased to 326,172 acres or 91.8 per cent of the total land area (Census of Agriculture, 1969).

After 1870 the production of cash crops, mainly corn and wheat, increased tremendously due to the extension of the railroad into the area, which made it possible to transport these commodities to urban markets. The shipment of livestock by rail to Chicago provided another steady source of income for the farmers of Cass County.

The European heritage of the early settlers made itself felt

TABLE 3
ACREAGE CHANGES OF MAJOR LAND USE DIVISIONS
CASS COUNTY, NEBRASKA

Land Use	1939	1944	1949	1954	1959	1964	1969
Cropland	b	217,124	273,966	b	b	266,373	270,062
Pastureland	b	19,173 ^a	19,599 ^a	b	21,783	49,776 ^c	45,710 ^c
Woodland	21,310	21,599	24,827	25,378	b	18,712	14,541

a Excludes woodland and cropland pastured.

b Not cited in totals.

c Includes woodland, rangeland and cropland pastured.

Source: Bureau of the Census. United States Department of Agriculture. 1944, 1954, 1959, 1964 and 1969.

upon the county's early land use. By 1909, for example, orchards consisting of about 270,000 various trees dotted the landscape, and about 80,000 grape vines were grown (Census of Agriculture, 1910). Today, only occasional patches of orchards and vines remain adjacent to the older farmsteads. The 1969 Census of Agriculture lists less than 100 acres in orchards and vines.

Whittlesey suggests that "an agricultural region is the landscape's expression of a particular agricultural system" (Whittlesey, 1936). Cass County, situated at the western end of the Corn Belt, is no exception. Farmers have sought to economize on their productive resources by producing those commodities which will yield them a maximum of value for the resources used.

The present-day agriculture is well diversified. It consists mainly of the production of feed and cash grains, and the raising of livestock. Less than one-half of the county's income is derived from feed and cash grain sales, while the remainder is derived from the sale of livestock (Census of Agriculture, 1969, p. 109).

Generalized Land Use

As has been previously noted, the impossibility of interpreting precise land uses from 1941 aerial photography necessitated the use of a generalized land use classification. To complement census data and other sources, seven sample areas, evenly distributed throughout the county, were selected for detailed study. Sample areas A through G have the following

generalized land use classes: (1) cropland; (2) pastureland; (3) woodland; and (4) other.

Land use in Cass County has been relatively stable over the last thirty years. The urban built-up areas have expanded slowly within their corporate limits. Between 1940 and 1970, the county gained only 1,084 inhabitants. Industrial activity has not increased in the last years. Quarrying activities near Louisville and Weeping Water have remained stable, and constitute the county's most important industrial activity. Elsewhere, one small quarry along the Missouri River and one southeast of Nehawka show evidence of being active*.

There have been gradual changes in the distribution of land in farms and in the acres of cropland harvested. Woodland areas throughout the county have declined relatively little. Interpretation of 1941 aerial photography revealed extensive removal of windbreaks and shelterbelts along county roads and property lines. (Windbreaks and shelterbelts were included as woodland in the sample areas).

Although there has been an increase in the number of farm ponds, and adoption of conservation practices such as contour plowing, terracing, and strip cropping, such changes have not affected the overall land use patterns significantly.

Recreational and semi-permanent developments along the Platte and Missouri Rivers are significant in land use changes. South Bend, Cedar Creek, and Lake Waconda are important recreational, or second home development areas. Recently, 1,200 acres of farm

* Based on aerial observation by author on May 30, 1972.

land have been removed from agricultural production for a private recreational development known as Beaver Lake. When developed, it will have numerous homesites for summer and year-round use.

As previously noted, all land in the sample areas were originally classified as to its specific use with the intent of comparing it against 1941 aerial photography. Only cropland, pastureland, and woodland could be interpreted from these photographs due to their scale and quality. Sample Areas A through G compare only the generalized land use changes between 1941 and 1971. In order to make the relationships of cropland to pastureland and woodland more meaningful, the 1971 sample areas were analyzed more carefully in order to present the current land use.

Land Capability and Utilization

All land in Cass County has been grouped into seven capability classes according to their suitability for use in terms of their limitations and hazards (See p. 28). The soils with no or slight limitations which require no special conservation practices are in Class I. The soils with very severe limitations and the most restricted use are in Class VIII. The use becomes more restricted, and conservation treatment requirements become more intensive as classes progress from Class I to Class VIII.

The first four Classes, I through IV, are considered suitable for cropland, whereas Classes V to VII are not suitable for cropland, but are suited to pasture or woodland. Class VIII is suitable only for wildlife, or recreational purposes.

The seven capability land classes of the county are briefly defined as follows (Cass County Conservation Needs Committee):

- Class I Soils have few limitations that restrict their use.
- Class II Soils have some limitations that reduce the choice of plants or require moderate conservation practices.
- Class III Soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Class IV Soils have very severe limitations that restrict the choice of plants, require very careful management, or both.
- Class V Soils have little or no erosion but have other limitations which are impractical to remove that limit their use largely to pasture, range, woodland or wildlife food cover.
- Class VI Soils with severe limitations that make them generally unsuitable for cultivation and that limit their use largely to pasture, range, woodland or wildlife food and cover.
- Class VII Soils with very severe limitations that make them unsuitable for cultivation and that restrict their use largely to grazing, woodland or wildlife.

The E, W, and S attached to the land class stand for the principal kind of limitation of the soil. The limitations are: "E" for erosion, "W" for wetness or flooding, and "S" for soil limitations such as salinity, shallowness, claypan presence, stonyness, and others.

Table 4 cites the acreage by land use, and capability class and subclass for Cass County. Land use of rural land in 1970 is summarized on Table 5. Table 6 gives specific data on cropland.

TABLE 4

LAND USE BY CAPABILITY CLASS AND SUBCLASS - 1970
CASS COUNTY, NEBRASKA

Class & Subclass	Cropland	Pasture	Range	Forest	Other	Total
1	7,599	657	0	550	0	8,806
2E	69,214	6,046	0	4,999	2,500	82,759
2W	5,250	493	0	500	1,250	7,493
2S	963	0	0	0	0	963
3E	176,746	7,882	300	8,351	2,700	195,979
3W	2,794	1,150	0	0	0	3,944
4E	12,266	4,299	500	1,651	250	18,966
4S	245	0	0	0	0	245
5W	0	164	0	0	0	164
6E	2,001	1,642	200	2,200	0	6,043
6W	229	164	0	4,949	750	6,092
6S	0	164	0	500	0	664
7E	229	1,150	0	500	250	2,129
Total:	277,536	23,811	1,000	24,200	7,700	334,247

Source: Cass County Conservation Needs Committee. "Cass County Conservation Needs Inventory." Weeping Water, Nebraska. December 1970.

TABLE 5
TOTAL LAND INVENTORY - 1970
CASS COUNTY, NEBRASKA

Major Land Use	Total Acres
<u>Inventory Land</u>	
Cropland (Non-Irrigated)	277,536
Rangeland (Native Grasses)	1,000
Pasture (Introduced Grasses)	23,811
Forest and Woodland	24,200
Other Land	<u>7,700</u>
Total Inventory Land:	334,247
<u>Non-Inventory Land</u>	
Urban and Built-up Areas (Roads & Railroads included)	18,290
Water Areas*	<u>2,023</u>
Total Non-Inventory Land:	20,313
Total Land:	354,560

* Includes farmsteads, farm roads, feedlots and other non-farm uses of rural land.

Source: Cass County Conservation Needs Committee. "Cass County Conservation Needs Inventory." Weeping Water, Nebraska. December 1970.

TABLE 6

CROPLAND USE IN 1970 - CASS COUNTY, NEBRASKA

Cropland Use (Principal Crops Grown)	Non-Irrigated (acres)
<u>All Row Crops</u> - corn, sorghum, soybeans	173,878
<u>Close Grown Crops</u> - wheat, oats, barley, rye, sudan	<u>39,606</u>
Total Field Crops:	213,484
<u>Rotation Hay and Pasture</u> - grasses and legumes used for hay or pasture less than five years	8,013
<u>Hayland</u> - perennial grasses and legumes used for hay or seed -- five years or more	24,039
<u>Conservation Use Only</u> - acres diverted from cropland, including pasture and hay not harvested	<u>32,000</u>
Total Tillage Rotation:	64,052
Total Cropland:	<u>277,536</u>

Source: Cass County Conservation Needs Committee. "Cass County Conservation Needs Inventory." Weeping Water, Nebraska. December 1970.

CHAPTER IV

DETAILED ANALYSIS OF LAND USE OF SAMPLE AREAS

As previously stated, a 223 mile traverse of Cass County was surveyed and mapped according to its specific use in the Fall of 1971. Of the total area traversed, about 60 miles of traverse were selected to be compared for land use changes between 1941 and 1971. Sample areas A through G, were selected as being representative of the entire county. The route of the traverses are shown with respective quadrangles on Figure 6. The traverses identified as 1971 represent the actual field work, while the traverses identified as 1941 represent the identical area with the information being derived from United States Department of Agriculture aerial photographs. Both the 1941 and the 1971 areas are plotted on the same map for easy comparison. Totals for each sample area are given according to three generalized land use classifications for each year on a separate table. All 1971 sample areas, besides being compared against 1941 land uses, are totaled as to specific land uses within the selected traverses. All figures were estimated by using a 40 acre land locator templet.

It was not possible to interpret precise land uses for crops from the 1941 aerial photographs due to both their scale and their quality. For this reason, the comparisons consist of generalized land use changes. The total area sampled consists of 22,390 acres, or about 6.2 per cent of the total land in farms in Cass County.

(Diagram 4 shows the total land in farms for specific years).

Sample Area A

Sample Area A begins three miles east of Louisville on Highway 66 (Figures 6 and 7). The topography is undulating, and the elevation varies between 1,203 and 1,033 feet above sea level (Figure 5).

Cropland occupies 77.4 per cent of the area's 3,140 acres and constitutes the major land use of the area.

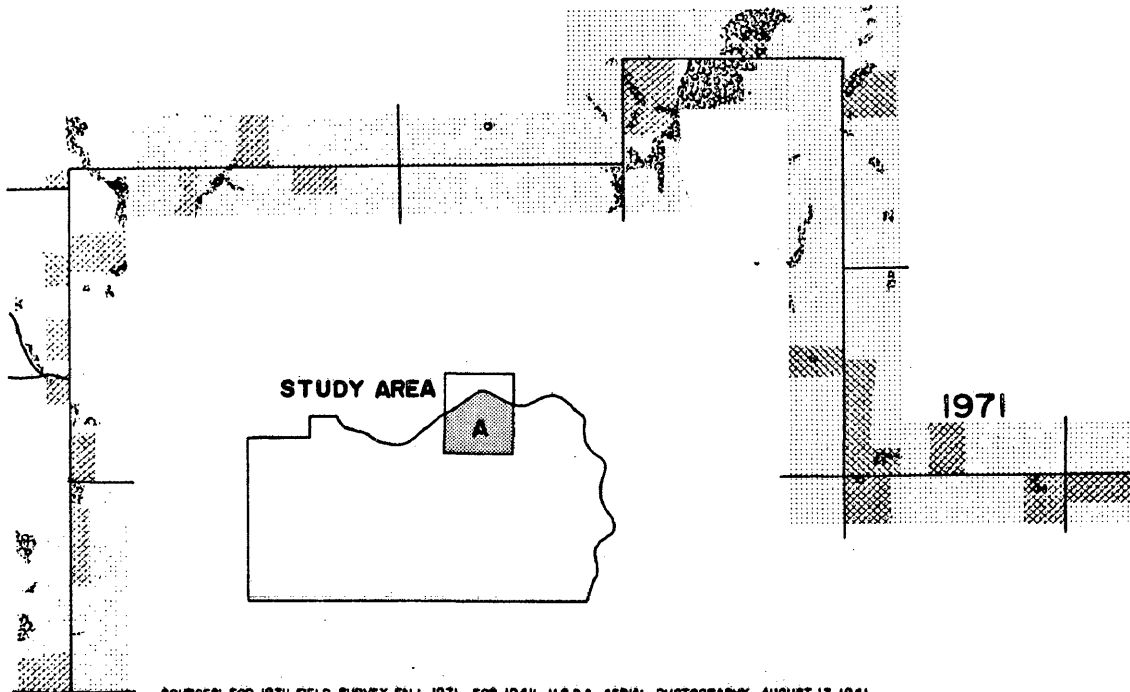
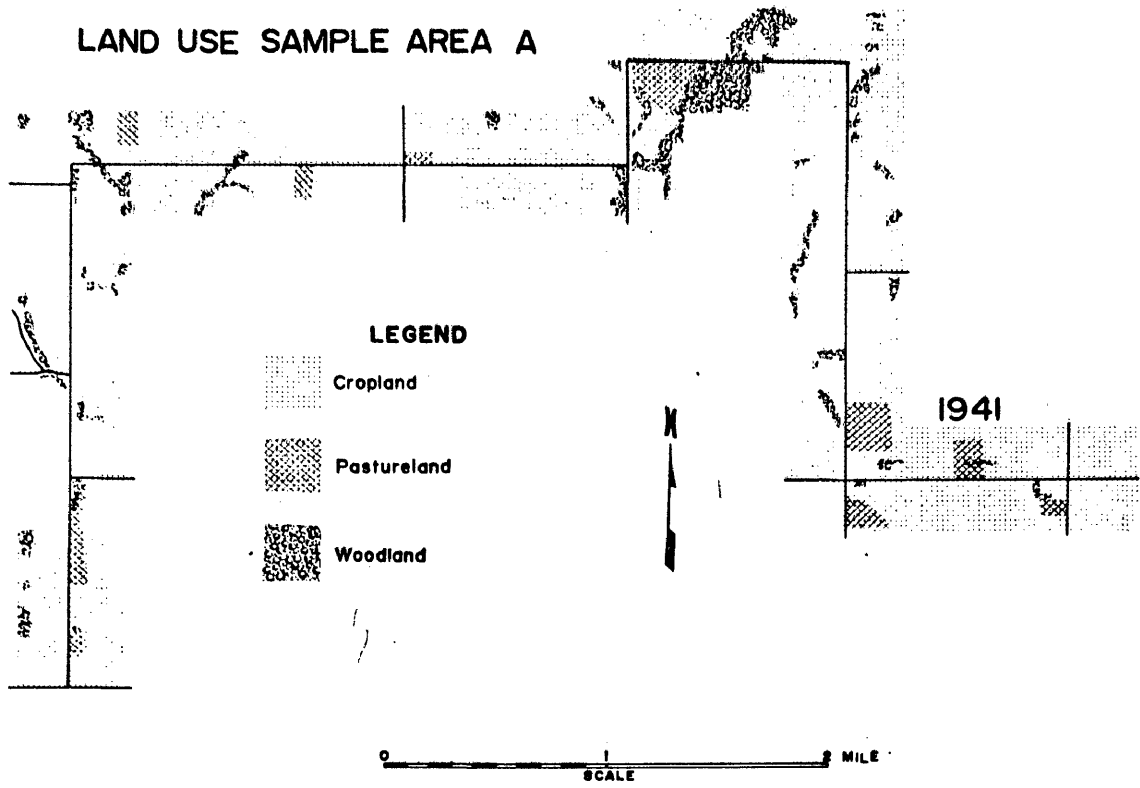
Pastureland covers 490 acres, or 16.4 per cent of the land area; and is second to cropland in land use. Pastureland has increased considerably in relation to the area in 1941. Pastures, almost always located near farmsteads for easy access, vary in size from 10 to 50 acres. One large pasture of about 55 acres is located in the northeast corner of the sample area.

Woodland occupies the least amount of the area, with only 200 acres. Most of the woodland is found along creeks where the land is too steep and irregular to be cropped.

The northern portion of the area lies within the Platte River Bluffs Region. This area had been cleared extensively prior to 1941. Today only one large continuous tract of woods (about 55 acres) remains in the northeastern corner. Between 1941 and 1971, about 40 acres of woodland has been removed. As noted in other sample areas, the loss of woodland resulted mostly from removal of woods along creeks and shelterbelts.

Intensive cultivation, except along creeks, is practiced

FIGURE 7



SOURCES: FOR 1971: FIELD SURVEY, FALL 1971. FOR 1941: U.S.D.A. AERIAL PHOTOGRAPHY, AUGUST 13, 1941.

TABLE 7

LAND USE AND CHANGES IN SAMPLE AREA A
CASS COUNTY, NEBRASKA

Land Use	1941	1971	Percent of Total 1941	Percent of Total 1971	Percent Change
	(acres)				
Cropland	2,740	2,440	87.2	77.4	-9.8
Pastureland	145	490	4.6	16.4	11.8
Woodland	240	200	8.0	6.0	-2.0
Other ^a	15	10	.2	.2	...
Area Totals:	3,140	3,140			

	Cropland Use in 1971 (acres)
Corn	1,250
Sorghums	520
Soybeans	335
Fallow ^b	200
Alfalfa	75
Wheat	60
	<u>2,440</u>

^a No attempt was made to compute this category. Includes homesteads, roads, railroads, etc.
^b Includes recently plowed land which may have been in wheat or soybeans.

Sources: Field Survey by Author, September-November 1971.
United States Department of Agriculture Aerial Photographs, dated August 13, 1941.

throughout the sample area. Corn is the most important crop, and occupies half of the total cropland. Corn fields average between 60 and 80 acres, but fields over 100 acres are not uncommon.

In terms of acreage, sorghum is the second most important grain crop of the area. Fields of sorghum are found only on the western and northern portion of the area. The sorghum fields are somewhat smaller in size than corn fields, and average between 40 and 60 acres each.

A small portion of cropland is in alfalfa, comprising about 75 acres with the fields occupying 10 to 20 acres each. Only three fields of alfalfa (all adjacent to farmsteads) were noted in this sample area. Idle or recently plowed land was classified as fallow*. It was estimated that 200 acres of fallow land exist throughout the area. Total cropland has declined from 2,740 acres in 1941 to 2,440 acres in 1971 - a decline of 9.8 per cent. This is proportionately in line with the decline of total land in farms and cropland in the county. Table 7 shows the major crops grown and their estimated acreage in 1971.

Only one abandoned farm was noted during the 1971 field survey (Figure 14). Since 1941, only one farmstead was noted as having been removed (Figure 15).

Sample Area B

Sample Area B is located just south of Plattsmouth and runs

* Land recently plowed was classified as fallow during field work. Wheat and soybeans had already been harvested, and many plowed, by the time field work was conducted.

through the western portion of the Missouri River bluffs area (Figures 6 and 8).

The topography throughout the area is hilly in contrast to Area A. The hills, which vary in local relief up to 150 feet, have been cleared of natural vegetation extensively. All land not too rugged is under cultivation; however, sizeable tracts of woodland still exist within the area and are usually found in areas too steep to be farmed. Terracing, strip cropping, and contour plowing are practiced in an attempt to curtail erosion of cropland located on hilly terrain. Past quarrying activity was noted along Rock Creek.

The sample area consists of 1,920 acres of which 1,500 acres (or 78.1 per cent of the total) was in cropland in 1971. (Table 8 gives the percentage and acreage of each land use studied). Total cropland has declined relatively little in the last thirty years.

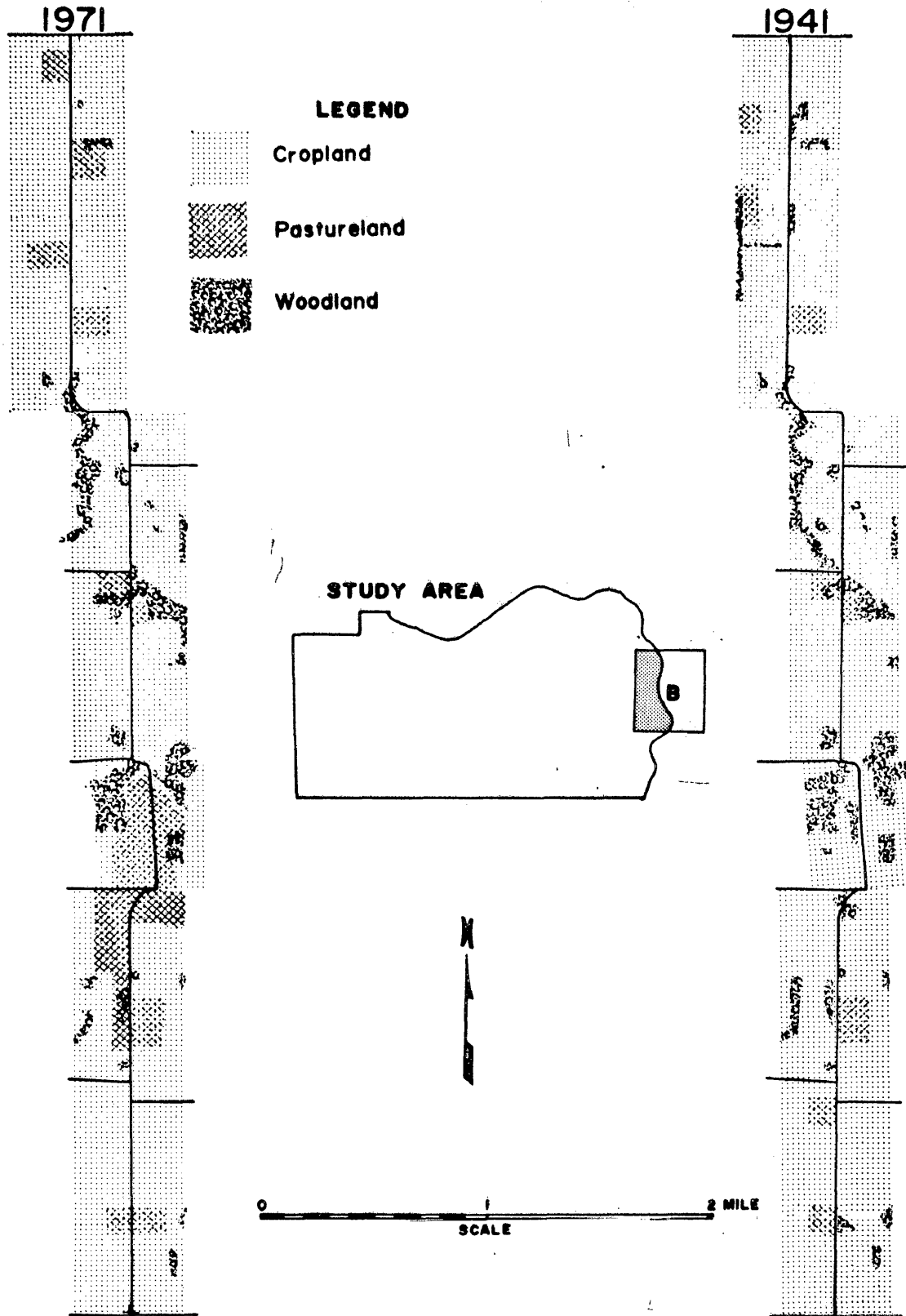
As in sample Area A, corn is also the most important crop of Area B. The eastern portion of Cass County receives more annual rainfall than the western portion. Corn, requiring abundant moisture, increases in acreage from west to east.

Wheat, sorghums, soybeans, and alfalfa are insignificant. Corn dominates the cropland with 1,230 acres, or almost 80 per cent of the total cropland. Although the size of fields varies from 80 to 160 acres, large tracts of woodland limit most corn fields to about 60 to 80 acres each.

Within the sample area, only one wheat and sorghum field

FIGURE 8

LAND USE SAMPLE AREA B



SOURCES: FOR 1971: FIELD SURVEY, FALL 1971. FOR 1941: U.S.D.A. AERIAL PHOTOGRAPHY, AUGUST 13, 1941

TABLE 8

LAND USE AND CHANGES IN SAMPLE AREA B
CASS COUNTY, NEBRASKA

Land Use	1941	1971	Percent of Total 1941	Percent of Total 1971	Percent Change
	(acres)				
Cropland	1,600	1,500	83.7	78.1	-5.6
Pastureland	95	260	4.9	14.6	9.7
Woodland	200	140	10.1	7.0	-3.1
Other ^a	25	20	.3	.3	...
Area Totals:	1,920	1,920			
<u>Cropland Use in 1971</u> (acres)					
				1,230	
Corn					
Fallow ^b				100	
Soybeans				70	
Alfalfa				60	
Sorghums				20	
Wheat				<u>20</u>	
				<u>1,500</u>	
				Cropland Total:	1,500

^a No attempt was made to compute this category. Includes homesteads, roads, railroads, etc.
^b Includes recently plowed land which may have been in wheat or soybeans.

Sources: Field Survey by Author, September-November 1971.
United States Department of Agriculture Aerial Photographs, dated August 13, 1941.

was noted. Wheat occupies about 20 acres, and sorghums the same amount. Soybeans consists of only 70 acres, all located in the southern portion of the sample area. Four fields, averaging 10 to 15 acres each, were observed. Table 8 shows acreage of the crops planted in area B in 1971.

Pastureland in sample area B has increased from 95 to 260 acres, an increase of 9.7 per cent of the total area since 1941. All pastures are situated adjacent to farms or along very hilly terrain. Pastures located next to woodlands are large, and one pasture near Rock Creek consists of at least 100 acres. All other pastures are relatively large when compared to those in sample area A. Unlike crops, pasture is limited to the land unsuitable for farming.

Woodland accounts for 140 acres in 1971, a decline of 60 acres over 1941. Some land has been cleared for quarrying activity but most of the loss of woodland resulted from the clearing of woods for use as pastures.

A total of five abandoned farmsteads were noted in this sample area during field survey, indicating that this part of the county is less prosperous.

Sample Area C

Sample Area C, located northeast of Weeping Water, occupies some of the more level land in the county (Figures 6 and 9). Every piece of suitable land is in cropland.

Here, cropland has remained relatively stable between 1941 and

1971. In 1941 cropland consisted of 2,200 acres or 91.1 per cent of the total area, and by 1971 it decreased to 2,100 acres or 86.7 per cent of the total area.

Pastureland, scattered throughout the area, comprises little acreage in relation to the total area. Half of the woodland is located in one continuous strip in the northwestern corner of the area and the remainder occupies small areas next to creeks. Cropland occupies 2,100 acres or 86.7 per cent of the total land area. Corn clearly dominates all other crops with 1,545 acres. Of all the areas sampled, area C has the most intensive corn cultivation. Corn is grown in fields averaging from 80 to 160 acres.

Other crops in the area occupy an insignificant amount of cropland. Wheat, second to corn, covers only 200 acres. It is found throughout the area in fields averaging about 40 acres each. Soybeans occupy a mere 150 acres of the total cropland. The size of fields are relatively small in comparison to corn and wheat. Tracts of soybeans average 10 to 20 acres each. In an area where sorghums were expected to be second to corn, only 20 acres of sorghums exist. In contrast, sample area A located just north of this area, contains about 520 acres of sorghums. The 20 acres of sorghums consisted of one field located in the central portion of the area studied.

Pastureland, as in sample areas A and B, has increased from 90 acres in 1941 to 230 acres in 1971, an increase of 5.9 per cent over 1941. Most pastures are located adjacent to farmsteads and range in size from ten to twenty acres each. Others are located

TABLE 9

LAND USE AND CHANGES IN SAMPLE AREA C
CASS COUNTY, NEBRASKA

Land Use	1941	1971	Percent of Total 1941	Percent of Total 1971	Percent Change
		(acres)			
Cropland	2,200	2,100	91.1	86.7	-4.4
Pastureland	90	230	3.7	9.6	5.9
Woodland	125	80	4.9	3.3	-1.8 (-1.6)
Other ^a	5	10	.3	.4	.1
Area Totals:	2,420	2,420			
Cropland Use in 1971 (acres)					
Corn				1545	
Wheat				200	
Soybeans				150	
Fallow ^b				100	
Alfalfa				85	
Sorghums				20	
				<u>2,100</u>	
				Cropland Total:	2,100

^a No attempt was made to compute this category. Includes homesteads, roads, railroads, etc.
^b Includes recently plowed land which may have been in wheat or soybeans.

Sources: Field Survey by Author, September-November 1971.
 United States Department of Agriculture Aerial Photographs, dated August 13, 1941.

next to creeks and average about the same size as those next to farmsteads.

Woodland has declined by 45 acres since 1941. Areas cleared along creeks account for most of the loss. Minor clearings of windbreaks and shelterbelts added to the loss of woodland. Most of the woodland cleared along creeks is used as pastureland.

A total of three removed, and four abandoned, farmsteads were noted in this sample area (Figures 14 and 15).

Table 9 summarizes the crops grown in this area during 1971.

Sample Area C₁

Sample area C₁, located five miles due south of area C, traverses a generally level terrain (Figures 5 and 6). At the east, the elevation is 1,127 feet; and towards the west it increases to 1,235 feet above sea level. The total area sampled covers the same amount of land as area C and varies little in land use. This area has 85 per cent of its land cleared for cropland in contrast to 86.7 per cent for sample area C. Pastureland comprises 320 acres or 11.6 per cent of the total area, or 90 acres more than area C. Woodland, scattered in small patches along numerous creeks, covers 84 acres or 3.1 per cent of the total land area.

Grain farming is the dominant use of cropland. Corn, the most extensive grain in sample area C₁, occupies 1,200 acres or slightly over half of the total cropland. Fields of corn are found throughout the sample area, and average 60 to 100 acres.

Wheat, the second most important grain crop, occupies 325 acres or more than the combined wheat acreage of areas A, B, and C. It is found in fields throughout the area averaging between 30 and 40 acres each.

Soybeans, third to corn, cover 285 acres in contrast to 150 acres in area C. In comparison to corn and wheat fields, the size of fields for soybeans average about 20 acres each.

Sorghums, covering 250 acres, are more significant than in area C. The increasing acreage of sorghums is in line with observations made during field work which indicated increased cultivation of sorghums from east to west across Cass County. More than half of the 285 acres of sorghums is located in the western half of the sample area, averaging 30 to 50 acres per field. Table 10 summarizes the remaining categories of cropland uses.

Total cropland has declined from 2,536 acres in 1941 to 2,330 acres in 1971, a decline of 7.3 per cent of the total sample area. Almost all cropland loss has been taken up by the increase of pastureland. Pasture has increased from 96 acres in 1941 to 320 acres in 1971. Like previous sample areas, pastures occupy areas adjacent to farmsteads or along creeks where land erodes easily.

Woodland declined by about 20 acres over the last 30 years. The decline has occurred in the eastern half of the sample area where creeks and shelterbelts have been cleared.

Of the 2,330 acres in cropland, corn is the most important feed and cash crop. Other grains; wheat, soybeans, and sorghums cover sizeable tracts of land and are significant as a cash crop.

TABLE 10

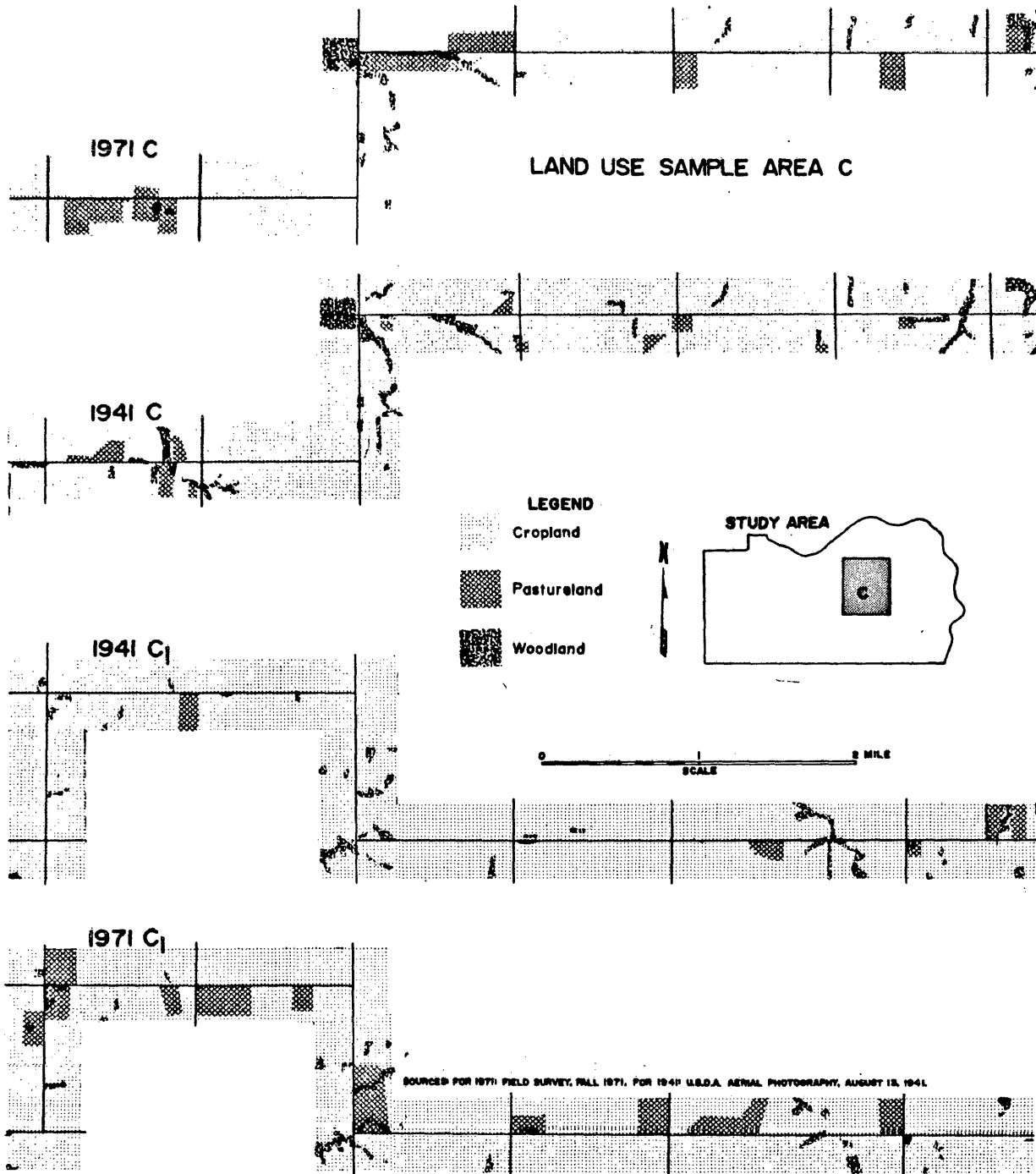
LAND USE AND CHANGES IN SAMPLE AREA C1
CASS COUNTY, NEBRASKA

Land Use	Percent of Total		Percent Change
	1941	1971	
Cropland	2,536	2,330	-7.3
Pastureland	96	320	8.1
Woodland	104	84	-0.8
Other ^a	4	6	...
Area Totals: 2,740 - 2,740			
<u>Cropland Use in 1971</u>			
Corn		1200	
Wheat		325	
Soybeans		285	
Sorghums		250	
Fallow ^b		190	
Alfalfa		80	
		2,330	
Cropland Total: 2,330			

^a No attempt was made to compute this category. Includes homesteads, roads, railroads, etc.
^b Includes recently plowed land which may have been in wheat or soybeans.

Sources: Field Survey by Author, September-November 1971.
United States Department of Agriculture Aerial Photographs, dated August 13, 1941.

FIGURE 9



Four abandoned farmsteads were noted in this sample area during field survey (Figures 14 and 15).

Sample Area D

Sample Area D, marked by rolling terrain, is located six and a half miles east of area C (Figures 6 and 10). The entire length of the area has a local relief of about 100 feet. The area covers 2,280 acres, of which 88.2 per cent consists of cropland. All land uses have remained unusually stable in this sample area when compared to other areas (Table 17).

Cropland acreage losses have been minimal, declining only to 2,010 acres in 1971 from 2,085 acres in 1941. Pastureland is less important in acreage than in areas A, B, C, and C₁. Woodland, as in previous sample areas, is found in small plots of land along creeks and comprises only a total of 142 acres, most of which is concentrated in three large tracts.

Cropland is the most extensive of the land use categories. All cash and feed grains common to this area are found in sizeable tracts.

By acreage, corn is the most important grain crop of the area, covering about 620 acres. The size of corn fields is smaller in this area, averaging between 20 and 40 acres per field.

Other grain crops occupy sizeable areas of the land. Sorghums, second to corn, occupy 460 acres. They are grown in fields averaging between 30 and 50 acres each. The largest field noted (120 acres) is located in the central portion of the area studied.

TABLE 11

LAND USE AND CHANGES IN SAMPLE AREA D
CASS COUNTY, NEBRASKA

Land Use	1941	1971	Percent of Total		Percent Change
			1941	1971	
Cropland	2,085	2,010	91.2	88.2	-3.0
Pastureland	40	110	1.8	4.8	3.0
Woodland	150	142	6.6	6.2	-0.4
Other ^a	5	18	.4	.8	0.4
Area Totals: 2,280 - 2,280					
Cropland Use in 1971 (acres)					
Corn	620				
Sorghums	460				
Fallow ^b	325				
Soybeans	225				
Wheat	220				
Alfalfa	160				
Cropland Total:					2,010

^a No attempt was made to compute this category. Includes homesteads, roads, railroads, etc.
^b Includes recently plowed land which may have been in wheat or soybeans.

Sources: Field Survey by Author, September-November 1971.

United States Department of Agriculture Aerial Photographs, dated August 13, 1941.

All soybeans, found in plots averaging 10 to 20 acres, are concentrated along the eastern two-thirds of the sample area. They occupy 225 acres out of a 2,010 acres total cropland area.

Wheat covers 220 acres of cropland. It is found in plots of land averaging 20 to 40 acres throughout the area. One large wheat field, estimated at 80 acres, was noted at the extreme western border of the sample area.

Alfalfa comprises 160 acres of the total cropland area. It is scattered throughout the area in small patches, usually adjacent to farmsteads.

Pastureland has increased slightly from about 40 acres in 1941 to 110 acres in 1971. As noted in other sample areas, pastures are small and usually are located adjacent to farmsteads or along creeks.

Area D receives about two inches less rainfall annually than the eastern part of Cass County. Unlike the eastern portion, corn does not dominate the landscape. The planting of sorghums, soybeans, and wheat diminishes the risk of low yields due to lack of moisture. The other crops require less moisture than does corn. Also, sorghums and soybeans make for profitable farming which motivates the farmers to plant less corn and wheat which may demand a lower price on the market.

Table 11 summarizes the acreage of various grain crops estimated during the 1971 field survey.

Sample Area D₁

Sample Area D₁ is located in the southern portion of the

Murdock Quadrangle, or three miles south of Murdock. The area selected for sampling covers some of the more hilly land of the county (Figures 5 and 10). Numerous creeks which form the headwaters of the Weeping Water drainage system dissect the area.

Local relief averages 40 feet; and along Beaver Creek relief ranges up to 80 feet. However, the topography is gentle enough in most of the area to make intensive farming possible.

Of all the sample areas, area D₁ has had the most stable acreage of cropland, for example, it has had the least amount of cropland decline in comparison to other sample areas (Table 17). In 1941 it totaled 1,790 acres and by 1971 it declined to only 1,776 acres.

Pastureland has not increased as rapidly as in the eastern sample areas. Total pastureland consisted of about 91 acres in 1941 and in 1971 it totaled about 140 acres. The relatively sparse population in this area reduces the need for more land for use as pastures in the opinion of the author.

Woodland, as in all other areas, has decreased considerably in relation to the total land area. Most of the woodland is concentrated in a continuous strip of land along Beaver and Weeping Water Creeks. It has decreased from 175 acres in 1941 to about 97 acres in 1971. All woodland loss has occurred along the area's numerous creeks.

Cropland covers 85.4 per cent or 1,776 acres of the total land area. Sorghums, corn, and soybeans are the most important crops in terms of acreage. Sorghums have replaced corn as the

TABLE 12

LAND USE AND CHANGES IN SAMPLE AREA D₁
CASS COUNTY, NEBRASKA

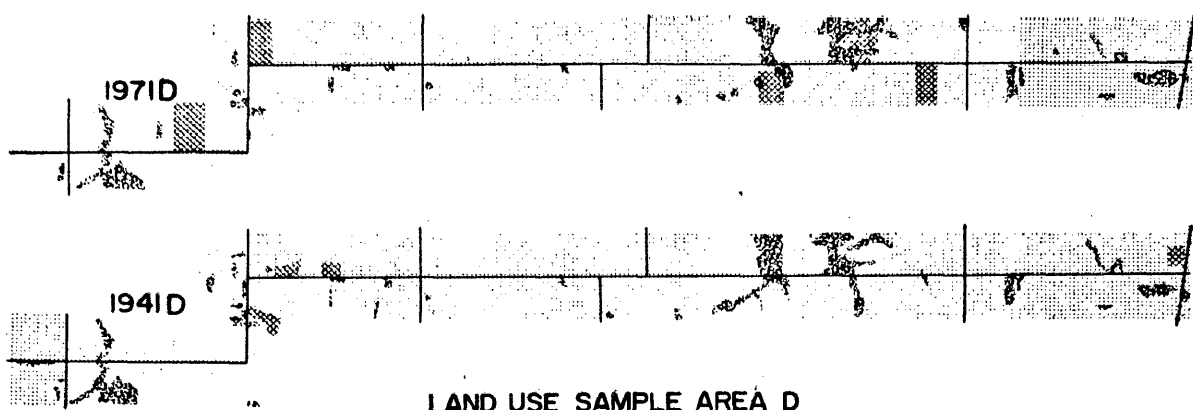
Land Use	1941	1971	Percent of Total 1941	Percent of Total 1971	Percent Change
	(acres)				
Cropland	1,790	1,776	86.3	85.4	-0.9
Pastureland	91	140	4.4	6.8	2.4
Woodland	175	97	8.3	4.6	-3.7
Other ^a	24	67	1.0	3.2	2.2
Area Totals: 2,080 - 2,080					
Cropland Use in 1971					
	(acres)				
Sorghums	575				
Corn	425				
Soybeans	385				
Alfalfa	200				
Fallow ^b	111				
Wheat	<u>80</u>				
Cropland Total:					1,776

^a No attempt was made to compute this category. Includes homesteads, roads, railroads, etc.
^b Includes recently plowed land which may have been in wheat or soybeans.

Sources: Field Survey by Author, September-November 1971.

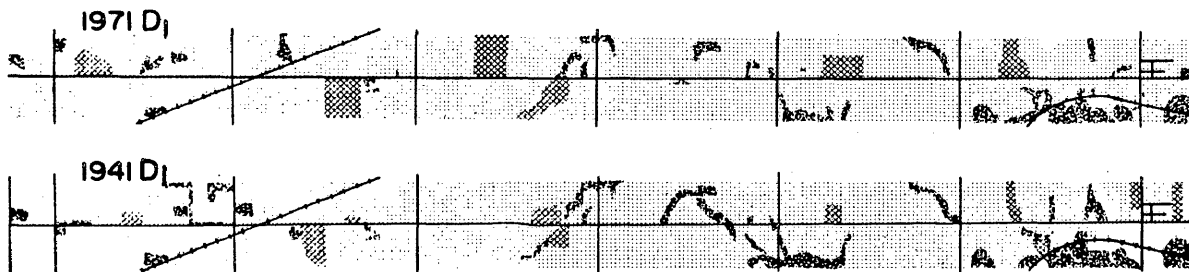
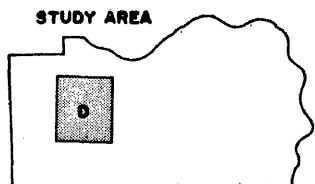
United States Department of Agriculture Aerial Photographs, dated August 13, 1941.

FIGURE 10



LEGEND

- Cropland
- Pastureland
- Woodland



SOURCES: FOR 1971: FIELD SURVEY, FALL 1971. FOR 1941: U.S.D.A. AERIAL PHOTOGRAPHY, AUGUST 13, 1941.

major grain crop. They are grown throughout the sample area in fields of about the same size as is corn. They cover 575 acres and are found in large plots of land up to 120 acres.

Corn, second to sorghums, totals about 425 acres. Corn is grown in fields somewhat smaller than sorghum fields. The largest field noted covered approximately 55 acres.

Soybeans, the third most important crop, occupy 385 acres. They are grown throughout the sample area in fields of about the same size as is corn.

Sample area D₁ has the most acreage of alfalfa of all the sample areas. Alfalfa covers 200 acres, and, as in other areas, is found in small plots adjacent to farmsteads.

Wheat, covering about 80 acres, is relatively insignificant in relation to the total cropland. Wheat is a suitable crop for this part of the county, but farmers prefer soybeans and sorghums which demand a better market price in the opinion of the author. Table 12 summarizes the uses of cropland for 1971.

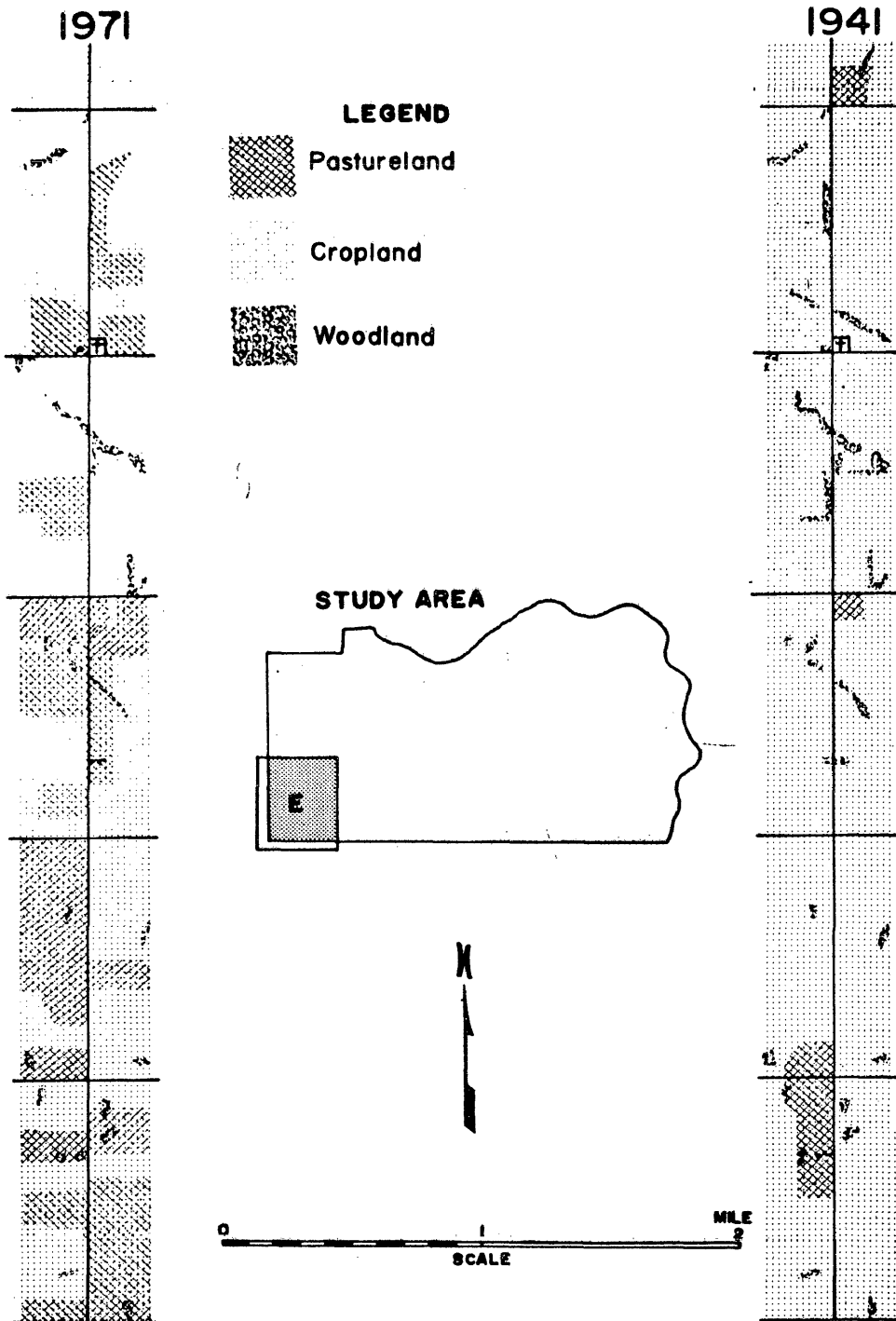
Sample Area E

Sample area E is located at the extreme southwestern portion of Cass County and covers an area of 1,690 acres (Figures 6 and 11). As indicated in Figure 5 the area studied occupies the county's highest area, ranging from 1,209 to 1,362 feet in elevation.

The total cropland area has declined more in this area than in any other area studied thus far. In 1941 cropland covered

FIGURE 11

LAND USE SAMPLE AREA E



SOURCES: FOR 1971: FIELD SURVEY, FALL 1971. FOR 1941: U.S.D.A. AERIAL PHOTOGRAPHY, AUGUST 13, 1941.

1,550 acres, and by 1971 it had declined to 1,082 acres, a change from 91.8 per cent of the total area to 64 per cent for the respective years.

Almost all cropland loss may be attributed to the large increase in pastureland over 1941. In 1941, a mere 85 acres were in pasture; and by 1971, 560 acres were in pasture. Pastures are larger in size here than in any other area examined. For example, the southern portion of the area has one pasture comprising about 130 acres (Figure 11).

Total acreage of woodland consists of only 45 acres, a decrease of about 5 acres since 1941.

All crops common to the county are found in this area. In contrast to other sample areas, this area has the largest acreage of sorghums, totaling about 600 out of 1,082 acres total cropland. Perhaps the fact that this area has somewhat less rainfall than the eastern part of the county makes sorghums more reliable as a profitable crop. It is grown throughout the sample area in fields from 40 to 80 acres.

Corn, in terms of acreage, is the next most important crop with about 167 acres, and wheat follows with about 150 acres. Both corn and wheat occupy smaller tracts of land in relation to sorghums.

The remaining cropland acreages are insignificant in contrast to sorghums, corn, and wheat. Table 13 gives figures for the remaining cropland uses in 1971.

TABLE 13

LAND USE AND CHANGES IN SAMPLE AREA E
CASS COUNTY, NEBRASKA

Land Use	1941	1971	Percent of Total		Percent Change
			1941	1971	
Cropland	1,550	1,082	91.8	64.0	-27.8
Pastureland	85	560	4.9	33.1	28.2
Woodland	50	45	3.0	2.6	-0.4
Other ^a	<u>5</u>	<u>3</u>	0.3	0.3
Area Totals: 1,690 1,690					
Cropland Use in 1971 (acres)					
Sorghums	600				
Corn	167				
Wheat	150				
Fallow ^b	85				
Alfalfa	55				
Soybeans	<u>25</u>				
Cropland Total:			1,082		

^a No attempt was made to compute this category. Includes homesteads, roads, railroads, etc.
^b Includes recently plowed land which may have been in wheat or soybeans.

Sources: Field Survey by author, September-November 1971.
United States Department of Agriculture Aerial Photographs, dated August 13, 1941.

No abandoned farmsteads were noted during the 1971 field survey. This is an indication that this area is a healthy farming region.

Sample Area F

This area is located one and a half mile south of Weeping Water (Figures 6 and 12). It is comprised of 2,080 acres of rolling terrain. From east to west, a distance of six and one-half miles, the elevation increases by only 100 feet.

The same changing land use patterns occur as in the other areas surveyed. Cropland, totaling 1,660 acres in 1941, declined to about 1,462 acres in 1971. Pastureland has increased at the expense of cropland from 270 acres in 1941 to 505 acres in 1971. Woodland declined from 135 to 95 acres for the same period. Almost all woodland loss occurred along creeks to make room for expanded pasture acreage.

In 1971, 70.3 per cent of the total area was in cropland as compared to 80.1 per cent in 1941. Corn is the major crop, covering 680 acres of the 1,462 acres total cropland. Fields of corn are found throughout the sample area, averaging about 50 acres each. Two tracts of corn were observed to be about 80 acres each.

Sorghums occupy 230 acres and soybeans 360 acres. Each is planted in fields averaging 20 to 40 acres. Wheat occupies only 110 acres in the area, and is usually found on small plots. A crop used as feed, alfalfa covers 60 acres; and, acreage-wise

TABLE 14

LAND USE AND CHANGES IN SAMPLE AREA F
CASS COUNTY, NEBRASKA

Land Use	1941	1971	Percent of Total		Percent Change
			1941	1971	
Cropland	1,660	1,462	80.1	70.3	-9.8
Pastureland	270	505	12.9	24.4	11.5
Woodland	135	95	6.5	4.6	-1.9
Other ^a	15	18	.5	.7	0.2
Area Totals:		2,080	2,080		
Cropland Use in 1971					
				(acres)	
Corn				680	
Soybeans				360	
Sorghums				230	
Wheat				110	
Alfalfa				60	
Fallow				22	
Cropland Total:				1,462	

^a No attempt was made to compute this category. Includes homesteads, roads, railroads, etc.
^b Includes recently plowed land which may have been in wheat or soybeans.

Sources: Field Survey by author, September-November 1971
United States Department of Agriculture Aerial Photographs, dated August 13, 1941.

is the least important crop, consequently it is found in plots averaging five to ten acres.

The absence of abandoned farmsteads might indicate that area F is a healthy farm region. Table 14 summarizes the various acreages of crops grown in 1971.

Sample Area F₁

Area F₁, located three miles south of area F, covers 2,080 acres of gentle rolling terrain. The major land uses have changed relatively little, especially when compared to area F, located three miles to the north (Figures 6 and 12).

Cropland is the most extensive land use division, covering 1,630 acres or 78.4 per cent of the total land area. It has declined from 1,763 acres in 1941 to 1,630 acres in 1971.

By acreage, corn is the most important cash and feed crop of the area, and usually occupies relatively large fields. One field of corn of about 100 acres was noted in the central portion of the sample area during field work.

Sorghums and soybeans, each covering 200 acres, are the next most important crops after corn. These crops are grown throughout the area, and occupy fields smaller in size than corn. Wheat occupies fields of smallest size. In terms of acreage, it is the least important crop with 120 acres. Fallow land accounts for approximately 120 acres of the total cropland.

In 1941, pastures were more numerous but smaller in size. Pastureland occupied 210 acres in 1941, and 385 acres in 1971.

TABLE 15

LAND USE AND CHANGES IN SAMPLE AREA F1
CASS COUNTY, NEBRASKA

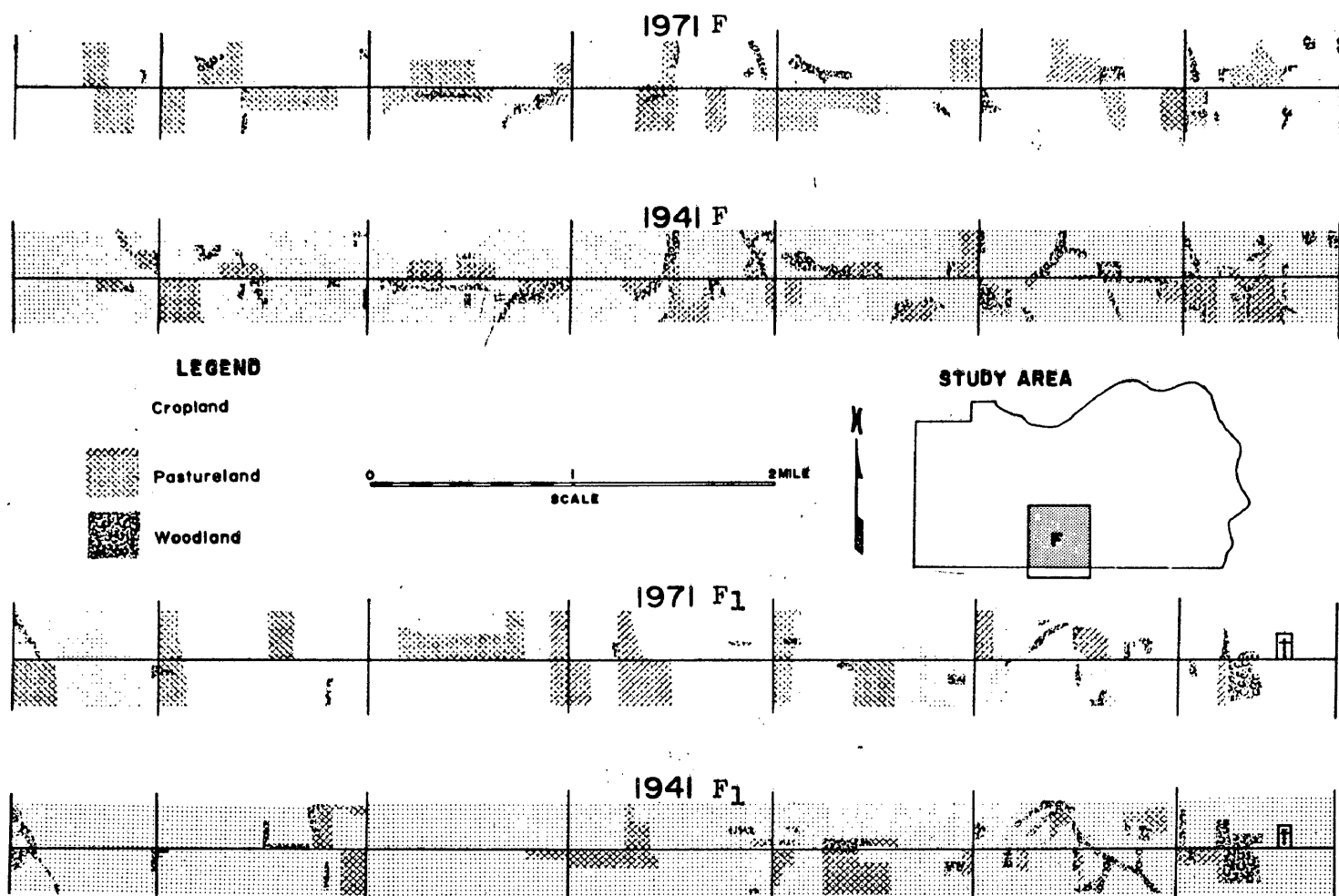
Land Use	1941	1971	Percent of Total 1941	Percent of Total 1971	Percent Change
		(acres)			
Cropland	1,763	1,630	84.4	78.4	-6.0
Pastureland	210	385	10.8	18.5	7.7
Woodland	100	55	4.5	2.6	-1.9
Other ^a	7	10	.3	.5	0.2
Area Totals:	2,080	2,080			
			<u>Cropland Use in 1971</u> (acres)		
				825	
				200	
				200	
				155	
				130	
				<u>120</u>	
				1,630	
			Cropland Total:		

^a No attempt was made to compute this category. Includes homesteads, roads, railroads, etc.
^b Includes recently plowed land which may have been in wheat or soybeans.

Sources: Field Survey by author, September-November 1971.
 United States Aerial Photographs, U.S. Department of Agriculture, August 13, 1941.

FIGURE 12

LAND USE SAMPLE AREA F



SOURCES: FOR 1971: FIELD SURVEY, FALL 1971. FOR 1941: U.S.D.A. AERIAL PHOTOGRAPHY, AUGUST 13, 1941.

Woodland declined by 45 acres. Half of the decline resulted from clearing along the Weeping Water and Nemaha Creeks. The removal of shelterbelts added to the loss of woodland. It is estimated that 55 acres of woodland occupied the area in 1971.

In comparison to areas A, B, and C, area F₁ is next most important in terms of total corn acreage. With 825 acres it is a major source of income for the farmers as a cash and feed crop.

One abandoned farmstead was noted at the extreme western portion of the area during 1971 field work. Table 15 summarizes the various cropland uses for 1971.

Sample Area G

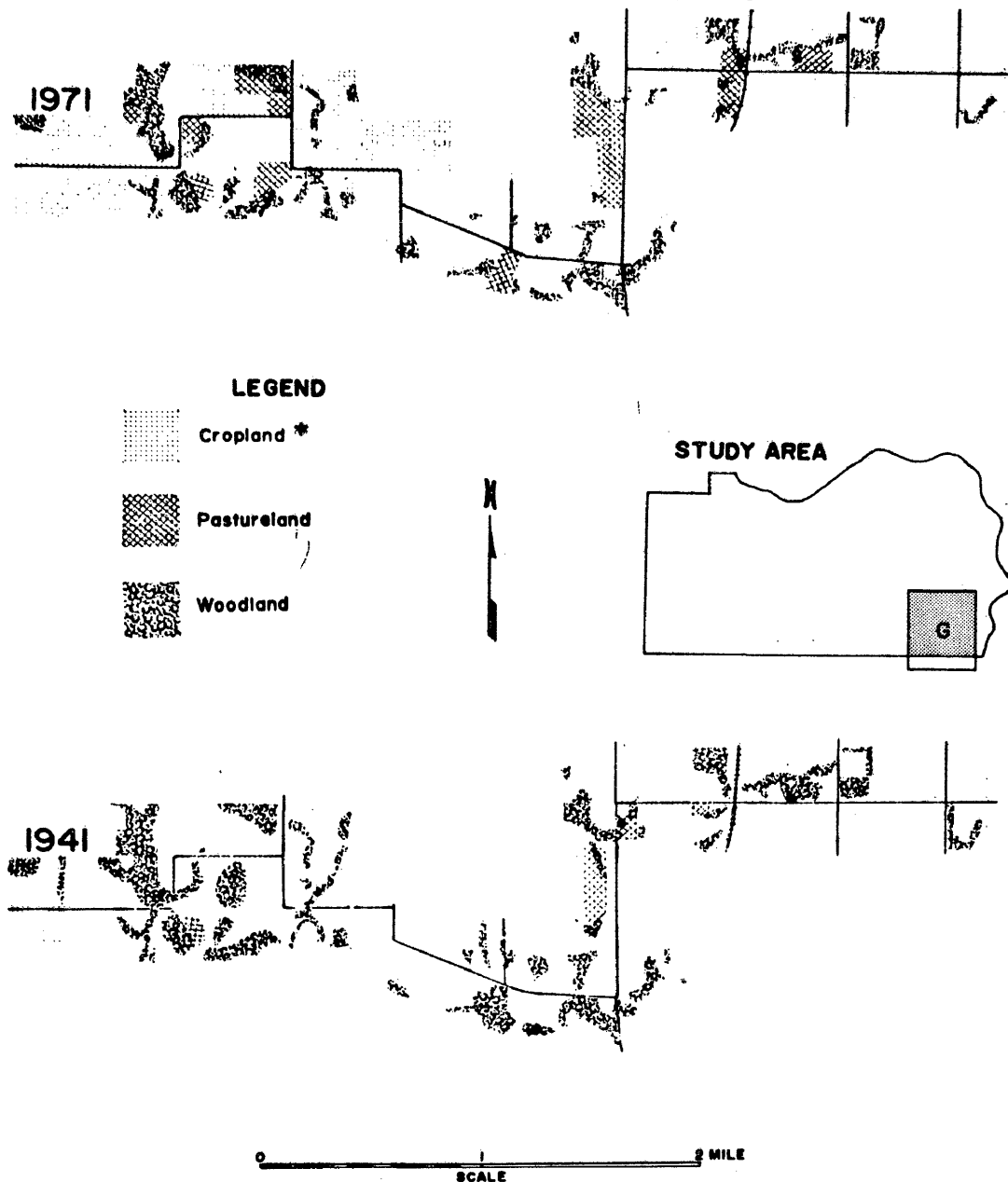
Area G is located just north of Union (Figures 6 and 13). The western half lies adjacent to the Weeping Water Creek and follows part of its flood plain. One large inactive quarry of at least 20 acres was noted in this portion of the sample area. Easy access to limestone made the area east of Nehawka an important quarrying area in days past. Today only one small quarry was observed to be in operation*. The eastern half of area G lies in gently rolling terrain.

Total area examined is 1,960 acres. Area G is the only area, of the ones examined, where cropland actually increased slightly. The one large inactive quarry was re-vegetated and was therefore counted as pastureland in 1971.

* Based on aerial observation by author on May 30, 1972.

FIGURE 13

LAND USE SAMPLE AREA G



* blank areas also constitutes cropland

SOURCES: FOR 1971: FIELD SURVEY, FALL 1971. FOR 1941: U.S.D.A. AERIAL PHOTOGRAPHY, AUGUST 13, 1941.

Cropland constitutes the area's major land use. In 1971, 82.6 per cent of the total area was in cropland. Of all the areas studied, area G has had the least amount of changes in land use. Cropland increased from 1,570 acres in 1941 to an estimated 1,600 acres in 1971.

Corn, with 900 acres, dominates all the remaining crops. It is grown throughout the area, but is in heavier concentration in the eastern half of area G. Corn fields are large in contrast to the other crops grown.

Next to corn, soybeans are the major cash crop with about 300 acres in total area. Field work revealed that soybeans are concentrated in the eastern half of the area. Sorghums, with 200 acres, are the third most significant crop and are mostly found in the western portion of area G. Wheat, occupying about 40 acres of the total area, is the least important crop.

More than half of the total woodland is located in the western half of the study area. Sizeable tracts of woodland occur along the Weeping Water Creek or along bluffs too steep for use as cropland. Woodland, comprising an-estimated 230 acres in 1941, declined to 170 acres in 1971. The 60 acre loss resulted from removal of woodland along the Weeping Water and other creeks. Removal of shelterbelts also added to the loss.

Area G has relatively little pasture in relation to its total land area, and pastures are smaller than in other areas examined. Pastureland in reality remained constant, except for

TABLE 16

LAND USE AND CHANGES IN SAMPLE AREA G
CASS COUNTY, NEBRASKA

Land Use	1941 - 1971		Percent of Total		Percent Change
	1941	1971	1941	1971	
	(acres)				
Cropland	1,570	1,600	80.2	82.6	2.4
Pastureland	150	170	7.7	8.5	0.8
Woodland	230	170	11.8	8.5	-3.3
Other ^a	<u>10</u>	<u>20</u>	.3	.4	0.1
Area Totals:	1,960	1,960			
	Cropland Use in 1971				
	(acres)				
	Corn	900			
	Soybeans	300			
	Sorghums	200			
	Fallow ^b	120			
	Wheat	40			
	Alfalfa	<u>40</u>			
	Cropland Total:	1,600			

^a No attempt was made to compute this category. Includes homesteads, roads, railroads, etc.
^b Includes recently plowed land which may have been in wheat or soybeans.

Sources: Field Survey by author, September-November 1971.
 United States Department of Agriculture Aerial Photographs, dated August 13, 1941.

the fact that the 20 acre inactive quarry was considered pasture in 1971 but not in 1941. This accounts for the only increase of pasture over the 150 acres total in 1941.

Only one abandoned farm was noted in the study area during field work. Table 16 summarizes the various cropland uses for 1971.

Summary of Land Use Changes of the Sample Areas

The production of four main crops (corn, sorghums, soybeans, and wheat) constitutes the major land use of the areas sampled. Corn clearly dominates the amount of acreage, totaling more than the combined acreage of the three other crops. All areas, except area G, declined in total cropland. Area E has the largest decline of cropland with a loss of 468 acres.

In every case, except in area G, loss of cropland has occurred due to an increase in pastureland. Every sample area increased in total pastureland acreage. According to field work and interpretation of aerial photographs, area E increased its pastureland the most since 1941 (Table 17). The more rugged topography makes this southern portion of the county (area E) less desirable for tilled crops. However, part-time farming may be another factor in the increase of pastures*.

No really large tracts of woodland were found in the sample areas. Areas A and G have sizeable stands of woods. Area G has one stand of woods, estimated at 40 acres. All areas have ex-

* Many farmers have jobs and pasturing is the least time-consuming farming practice.

TABLE 17

SUMMARY OF LAND USE CHANGES OF AREAS SAMPLED
CASS COUNTY, NEBRASKA

Sample Area	Cropland (acres)		Pastureland (acres)		Woodland (acres)		Other (acres)	
	1941	1971	1941	1971	1941	1971	1941	1971
A	2,740	2,440	145	490	240	200	15	10
B	1,600	1,500	95	260	200	140	25	20
C	2,200	2,100	90	230	125	80	5	10
C1	2,536	2,330	96	320	104	84	4	6
D	2,085	2,010	40	110	150	142	5	18
D1	1,790	1,776	91	140	175	97	24	67
E	1,550	1,082	85	560	50	45	5	3
F	1,660	1,462	270	505	135	95	15	18
F1	1,763	1,630	210	385	100	55	7	10
G	1,570	1,600	150	170	230	170	10	20
Total:	19,494	17,930	1,272	3,170	1,509	1,108	115	182
1941-1971 Change:		-1,564		1,898		-401		67

Sources: Field Survey by author, September-November 1971.
United States Department of Agriculture Aerial Photographs, dated August 13, 1941.

perienced a decrease of woodland (Table 17). Most of the reduction has occurred along the numerous creeks in order to make more land available for pastures. Area D₁ has had the greatest decline of woodland (Table 17).

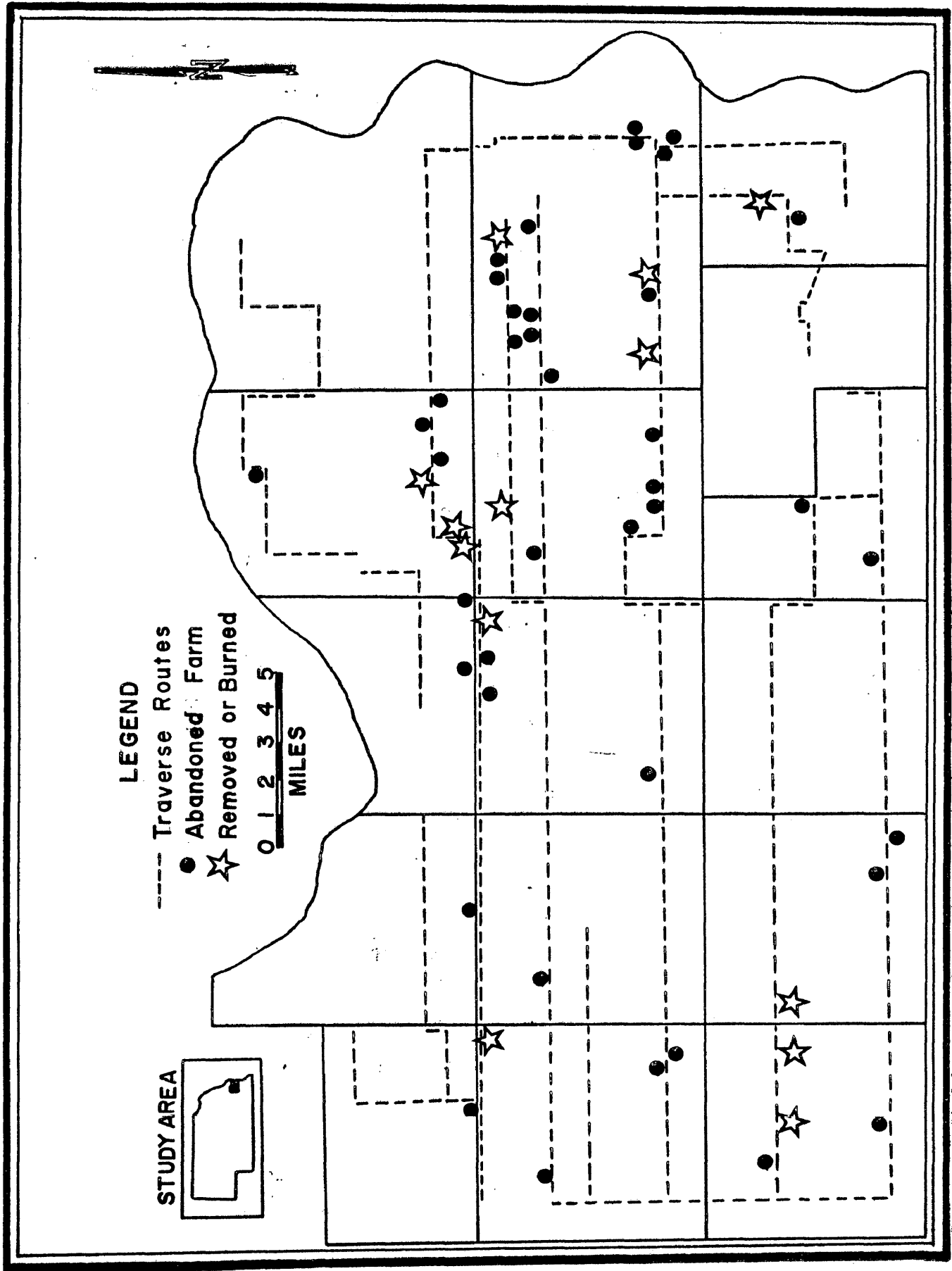
Not all areas surveyed were selected for sampling. Throughout the 223 mile traverse, 40 abandoned and 13 recently removed farmsteads were noted. Both types are fairly well distributed (Figures 14 and 15). Based on these findings, it appears that some farmers are finding it increasingly difficult to make a living. The county has averaged an annual loss of fifty farms during the last 30 years (Census of Agriculture, 1969; Nebraska Department of Agriculture, 1866-1954). This figure is expected to increase in 1972*.

No really outstanding land use changes have occurred in the sample areas. The major differences apparent in the land uses between 1941 and 1971 lie in the amounts and distribution of cropland, pastureland, and woodland in the various parts of the county.

* Rural property was reassessed in 1970 and tax on property has increased considerably.

FIGURE 14

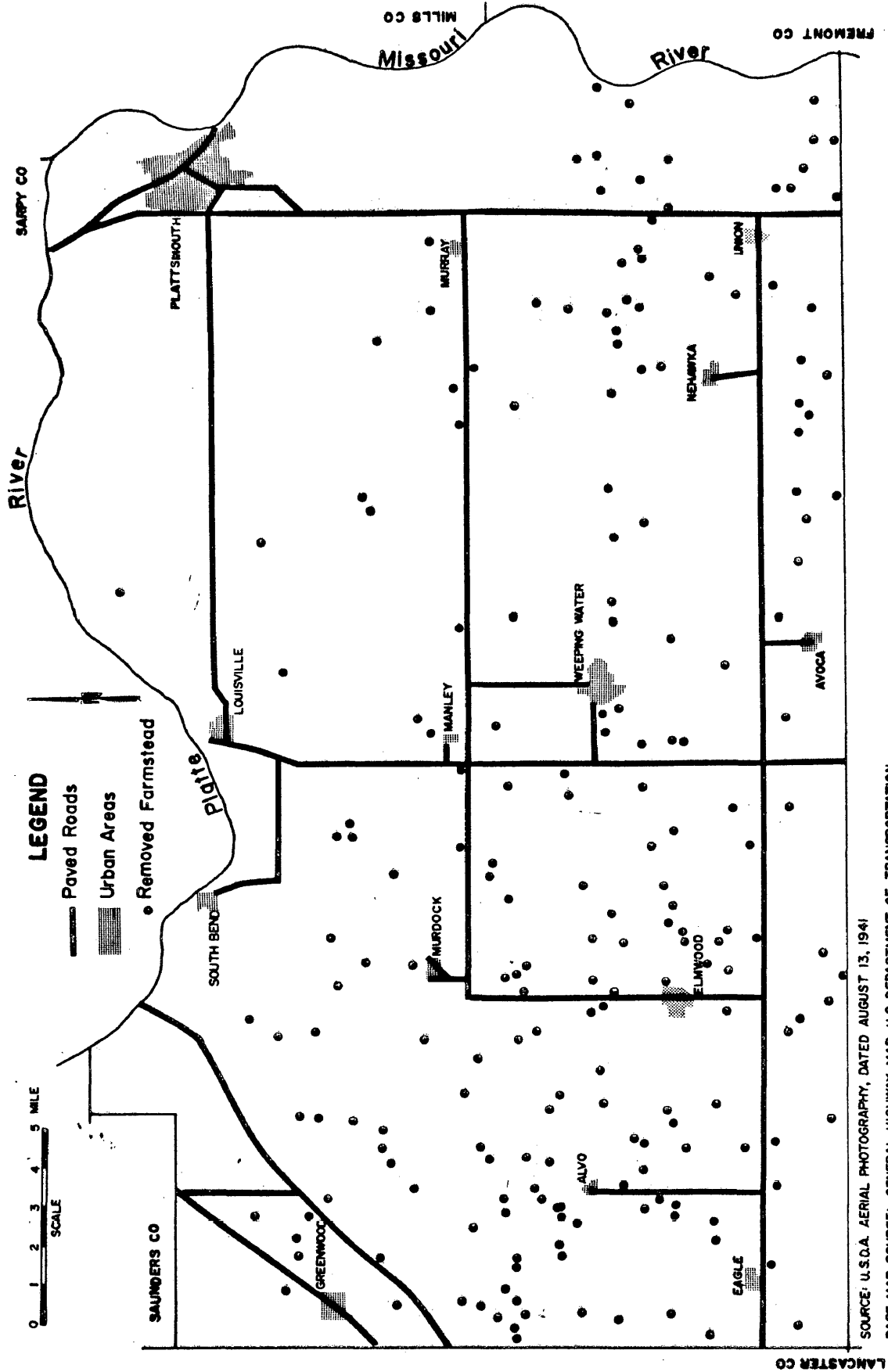
ABANDONED AND REMOVED FARMSTEADS



Source: Field survey by author, September-November 1971.

FIGURE 15

FARMSTEADS REMOVED SINCE 1941



CHAPTER V

MAJOR AGRICULTURAL COMMODITIES

Since its settlement, corn has been Cass County's major grain crop. In 1944 total acres planted to corn reached an all-time high 151,886 acres (Diagram 1). After 1944, acreage in corn declined until it reached a low of 64,475 acres in 1964. In 1969, 76,543 acres of corn were planted (Census of Agriculture, 1969). Most of the corn grown was harvested for grain and very little was cut for silage or hogged. It is estimated that 89,080 acres of corn were planted in 1970.

Corn is grown throughout the county, but total acreage decreases from east to west. Corn requires ample moisture to have good yields. In the western part of the county it is necessary for farmers to plant crops which require less moisture. The majority of corn is planted along contours to protect the soil from erosion. In the fall it is combined up to 10 inches off the ground with the stalks left standing over the winter to protect the soils and afford wildlife cover. Improved seeds and cultivation methods have increased the county's corn yields over the years. Yields per acre between 1950 and 1954 averaged 34 bushels per acre for about 130,000 acres planted, totaling 4,393,230 production bushels. By 1969 acreage declined to 79,770 acres, but yields per acre almost tripled with respect to the 1950 to 1954 period. A yield of 98 bushels per acre pushed total

production to an all-time high of almost eight million bushels in 1969 (Nebraska Agricultural Statistics, 1969). Exceptional weather was largely responsible for the banner year. The average yield, however, between 1966 and 1970 was about 50 bushels per acre.

It is expected that corn will continue to decrease in importance for lack of a good price and due to government policies. For example, farmers received about \$2.00 a bushel in 1947 (Nebraska Agricultural Statistics, 1866-1954) for their labor, and today they receive only \$1.15* for their investment. Many farmers use their corn as feed for livestock rather than sell it at the current low price.**

Farmers, especially those with no or little livestock, are planting increasingly more sorghums and soybeans because they currently demand a better market price. (Diagram 1 and Table 20 gives a summary of the crop production trend over the last 30 years.

Wheat

Historically, wheat has been the second most important crop in Cass County. In 1919, wheat acreage reached a peak of 59,138 acres and averaged about 17 bushels per acre (United States Department of Agriculture, 1941, pp. 8 and 9). After World War II, total acres of wheat began to decline. Between 1964 and 1969,

* Price quoted by Nehawka Farmers Co-Op on June 9, 1972.

** Based on interviews with farmers. Grain farms with no livestock are forced to sell their commodity at prevailing prices.

total acres of wheat declined from 26,902 to 20,029 (Census of Agriculture, 1964 and 1969). Like corn, loss of total acreage planted in wheat has been offset by increased yields. In 1969, 20,029 acres produced about 744,000 bushels in comparison to an average of 719,070 bushels for a total of 36,110 acres between 1950 and 1954 (Nebraska Agricultural Statistics, 1866-1954). Wheat normally occupies the more level land, and in most cases, it is strip-cropped.

Field survey revealed that wheat is grown throughout the county in relatively small plots. Of the four major crops grown, wheat ranks as the least important. Thirty years ago, wheat ranked second to corn in importance.

Wheat was marketed for about \$2.25 a bushel in 1947 (Nebraska Agricultural Statistics, 1866-1954); and, as of June 9, 1972, it was selling at \$1.35 per bushel*. Farmers in Cass County, and throughout the state, have reduced production because there is little profit in wheat. Large world surpluses of wheat and government restrictions are further reasons for decreased wheat production. Because of low prices and government policies, wheat production can be expected to decline in the future.

Sorghums

Sorghums are the county's second most important crop in terms of both value and total acres planted. It is a relatively new crop to the county, having been introduced around 1939. The development of hybrid types have made it possible for sorghums to be

* Price quoted by Nehawka Farmers Co-Op on June 9, 1972.

introduced into this area.

In 1939, only 2,841 acres of sorghums were planted. By 1949, this declined to 226 acres. Since 1949, acreage increased until it reached a high of 39,514 acres in 1964. There was a decrease from the 39,514 acres planted in 1964, to 34,519 acres in 1969 (Diagram 1). The 5,000-acre decrease between 1964 and 1969 was discussed with a farmer employed at the Cass County Agricultural Stabilization Conservation Service. He attributed the decline partly to the problem farmers have been having with shatter cane (also called wild cane) and government restrictions. Shatter cane (*Sorghum bicolor* and belonging to the Grass Family Gramineae), a tall cane-like plant, is an escaped forage sorghum that has become a weed because of its ability to establish itself from seed that remains viable in the soil for one or more seasons (Nebraska Department of Agriculture, 1968, p. 5-27). The weed is a favorite feed for birds who drop this bothersome weed in new areas where it spreads profusely. This weed cuts yields; and farmers must invest heavily in herbicides to eliminate it.

Good yields and acceptable prices are factors which tend to influence farmers to plant more sorghums. In 1963, sorghums yielded about 73 bushels an acre. By 1969, yields had increased to 92 bushels per acre. It is apparent that climate affects yields from year to year, but improved cultivation has been largely responsible for increased sorghum yields. (Even with 5,000 acres fewer sorghums in 1969 than in 1964, total production and value

TABLE 18

MARKET PRICE FLUCTUATIONS OF MAJOR COMMODITIES
CASS COUNTY, NEBRASKA

Commodity	March 6, 1972	April 19, 1972	June 9, 1972	June 15, 1972	June 27, 1972
Corn	\$1.10	\$1.13	\$1.15	\$1.10	\$1.11
Sorghums*	\$1.75	\$1.80	\$1.79	\$1.72	\$1.74
Soybeans	\$3.12	\$3.30	\$3.39	\$3.12	\$3.24
Wheat	\$1.35	\$1.38	\$1.37	\$1.35	\$1.26

* Per hundred weight.

Source: Nehawka Farmers Co-Op, Nehawka, Nebraska.

reached the highest level in 1969 that had been attained since the crop was introduced in 1939).

The price of sorghums has steadily risen since the early 1960's. As of June 9, 1972, the Nehawka Farmers Co-Op quotes sorghums at \$1.79 per hundred weight. Better prices, and almost the same yield per acre as corn, should encourage farmers to plant more acres in sorghums in the future.

Soybeans

The rapid growth of soybean production has been one of the most striking agricultural developments in Cass County in recent times. Between 1939 and 1969, the acreage planted in soybeans increased from 286 acres to 31,458 acres (Diagram 1). This rise in production has been encouraged by the adaptability of soybeans to mechanized farming, and their profitableness as a cash crop.

Reasonable returns are not the only factor in increased soybean production. As a crop, soybeans require little or no fertilizer, and their resistance to disease and insect damage lessens investment in terms of labor and expenses. Also, soybeans are planted later than corn, and are harvested early enough to permit wheat seeding on the same land in the fall. This means that two profitable cash crops can follow each other, whereas only one crop may be grown if corn is planted. Many farmers plant soybeans as a soil-conserving crop as a result of the influence of state, county, and government programs. As a soil-conserving crop, soybeans make an excellent legume rotation crop for land to build

TABLE 19

MAJOR CROPLAND USES AND PRODUCTION IN 1969
CASS COUNTY, NEBRASKA

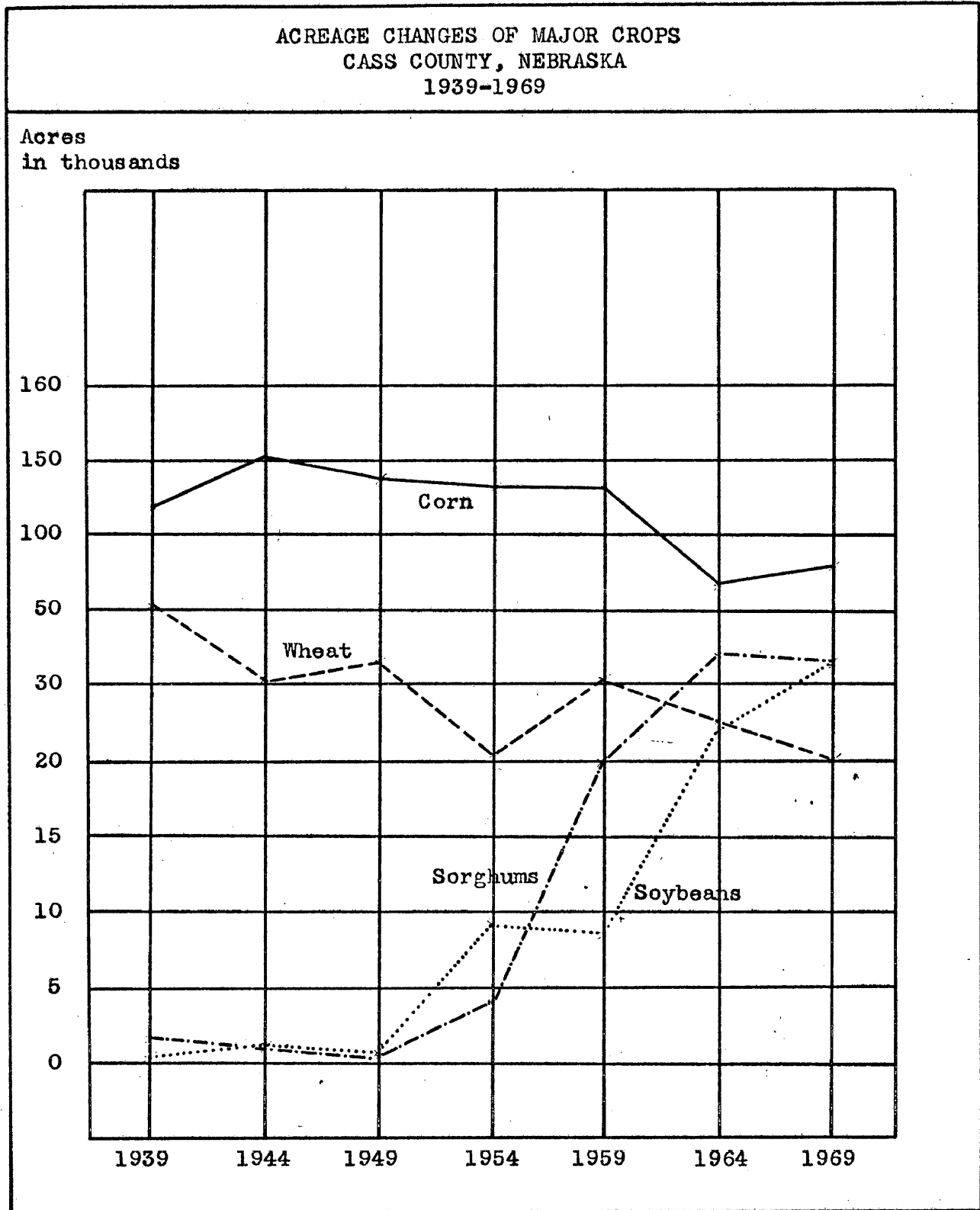
Cropland Uses	Acres Harvested	Yield Per Acre	Production Bushels	Total Value
Corn	79,770	98.1	7,825,860	\$8,518,960
Sorghums	38,300	92.1	3,526,200	\$3,385,150
Soybeans	34,500	38.0	1,311,020	2,949,780
Wheat	22,780	42.2	-962,000	1,202,500
All Hay ^a	17,670	3.32 ^b	58,590 ^b	1,154,220

^a Includes alfalfa.

^b Production tons.

Source: Nebraska Agricultural Statistics. Nebraska Department of Agriculture. Lincoln, Nebraska, June 1969, pp. 45-77.

DIAGRAM 1



Source: U.S. Census of Agriculture, 1939, 1949, 1959, 1964 and 1969.

up its nutrients, particularly nitrogen, in preparation for other crops (Rookenbach, personal interview, January-May 1972).

Field work indicated that soybean production is not concentrated in any particular area of Cass County. Soybeans are distributed in small plots throughout the county; and, like wheat, occupy some of the more level land.

Improved farming methods have increased the yield of soybeans steadily. The yield per acre has almost tripled since 1941. From 1963 to 1969, yields have increased from 28 to 38 bushels per acre (Nebraska Agricultural Statistics, 1963 and 1969).

A steady increase in price has further encouraged the farmer to increase his soybean acreage. Price per bushel was \$1.51 in 1954 and in 1969 it increased to \$2.25 (Nebraska Agricultural Statistics, 1866-1954 and 1969). According to the Nehawka Farmers Co-Op, the price per bushel was \$3.39 on June 9, 1972.

The ease of cultivation and harvesting, and reasonable prices have made soybeans an increasingly important crop to the economy of the county. With continued high prices and no government restrictions, total acreage can be expected to increase*.

Other Crops

In terms of total acreage, hay ranked fifth in production and value in 1969 (Table 19). Total acres of hay and alfalfa have declined, especially since the replacement of draft animals by tractors. Feed grains, not hay, are the most important livestock

* In the opinion of the author.

TABLE 20

ACREAGE OF MAJOR CROPS GROWN
CASS COUNTY, NEBRASKA

Crops.	1939	1944	1949	1954	1959	1964	1969
Corn	114,896	151,886	143,376	130,331	127,928	64,475	76,543
Wheat	50,803	34,889	40,971	21,936	32,030	26,902	20,029
Sorghums	2,841	1,669	226	4,781	20,059	39,514	34,519
Soybeans	286	1,460	409	9,963	8,513	25,331	31,458
All Hay*	...	18,389	24,554	25,957	18,153	18,480	17,670**

* Production tons.

Sources: Bureau of the Census. United States Department of Agriculture. 1944, 1954, 1959, 1964 and 1969.

** Figure derived from: Nebraska Agricultural Statistics. 1969, p. 77.

feed today. Hay not used for local consumption is baled, or harvested for seed, and sold. Excess hay provides a ready source of income to the farmer when he sells it to the county's largest feedlot operator for \$34.00 a ton*.

In 1969, 17,060 acres of hay were harvested as compared to 25,378 acres in 1954. About 85 per cent, or 13,980 acres, of the total hay land consisted of alfalfa in 1969 (Nebraska Agricultural Statistics, 1969).

Livestock and Poultry

Beef Cattle

The farmers of Cass County primarily concentrate on the production of beef cattle. Today over half of their income is derived from the sale of cattle. Between 1940 and 1969, production of cattle more than doubled (Table 21). In 1969, the sale of beef surpassed the sale of crops as the main source of income. Two of the more important reasons for this upward trend in beef production are: (1) there has been an increased per capita consumption of beef in the nation** and (2) as a whole there has been an increase of part-time farm owners, for whom the raising of beef is less time-consuming than the cultivation of crops.

The increased emphasis on beef production is evidenced by the shift of cropland to pastureland. In every area sampled, pasture-

* Price quoted by Mr. Robert Rockenbach, District Conservationist, June 15, 1972.

** According to Nebraska Agricultural Statistics on Beef Cattle (June 1969, p. 12), beef consumption per person rose from about 60 pounds in 1940 to about 112 pounds in 1969.

land increased at the expense of cropland and woodland. Most of the farmers in the county cannot afford to hire labor; and many of them have full-time or part-time jobs in order to supplement their farm income. Pasturing provides the most efficient type of land utilization for a farmer who has a job in town. In every sample area, it was noted that most farmsteads have small pastures conveniently located nearby. Most of the larger pastures were usually located on land not suitable for cropping.

Beef production operations are distributed throughout the county since no area has land too rugged to be pastured. Hereford cattle comprise the majority of the total cattle population. Angus cattle are next in importance; and a few of the more exotic breeds were noted.

In the fall, many cattle are grazed on cropland after it has been harvested. Farmers supplement the cattle's forage with locally produced hay, especially during severe winter months.

About 51,000, or 86 per cent, of all cattle in the county were on feed in 1969 (Nebraska Agricultural Statistics, 1969, p. 101). Corn was the main grain used as feed. As stated earlier, during depressed corn prices, farmers would rather feed their corn to livestock than sell it at depressed market prices.

Most farmers have feedlots next to their farms for ease of feeding. The more prosperous farmers have 50 to 100 head of cattle, and the marginal farmers average between 15 and 50 head.

One large feedlot, located northwest of Manley, has about one-half of the county's total cattle on feed. It is estimated

that this feedlot has a capacity of 25,000 head of cattle. (It also buys locally produced hay at \$34.00 a ton).

Three other feedlots, larger than the average size, were noted in the county. The largest, located two miles east of Plattsmouth airport, has a capacity of about 500 head. Another, located in north-central Cass County, appeared to contain about 350 head of cattle. The third, containing about 200 head, is located five miles south of Plattsmouth, on Highway 73-75*.

Hogs

Hogs are a familiar feature on the farms of the county. The sale of pork contributes significantly to the economy of the county. Hog production in Cass County increased between 1940 and 1959. In 1959, hogs numbered 39,054; and by 1969, the number had declined to 25,252 (Census of Agriculture, 1964 and 1969). Although not a major activity, hog production is important to many farmers as another source of income.

Hog production has declined in recent years (Table 21) as national per capita consumption has fluctuated since early 1940, and prices have steadily declined**. The farmer, in order to maximize his returns for his investment, has shifted production to those commodities which are more profitable.

Hog production occurs on farms scattered throughout the county. In 1969, 746 farms reported hogs and the average hog count per farm was 32 (Nebraska Agricultural Statistics, 1969). Hog raising can be

* All estimates of large feedlots based on aerial observation by author on May 30, 1972.

** According to Nebraska Agricultural Statistics on Beef Cattle (June 1969, p. 94), pork sold for \$0.61 a pound in 1947; \$0.78 in 1965, and \$0.61 in 1969.

TABLE 21

LIVESTOCK AND POULTRY PRODUCTION
CASS COUNTY, NEBRASKA

Livestock & Poultry	1939	1944	1949	1954	1959	1964	1969
All Cattle	21,492	34,503	31,047	41,951	36,446	44,723	58,598
Hogs	18,301	32,088	32,964	38,799	39,054	30,527	25,252
Milk Cows	7,681	7,536	6,910	5,403	3,206	2,095	1,231
Horses	6,041	5,024	2,268	738	...	83	546
Chickens	165,652	209,817	154,666	176,313	128,906	78,729	31,491

Source: Bureau of the Census, United States Department of Agriculture. 1939, 1949, 1954, 1959, 1964 and 1969.

expected to decline if current consumption and prices prevail*.

Poultry

Poultry production has declined drastically in the last 30 years. The number of chickens declined from 165,652 in 1940 to 31,491 in 1969. In view of low meat and egg prices, it is significant that 244 farms reported chickens in 1969 (Nebraska Agricultural Statistics, 1969).

Chickens are raised in scattered areas of the county. For example, between Plattsmouth and Louisville (Highway 66), six farms with chickens were counted out of a total of 28 farms along the highway. It is suspected that many farmers raise small flocks because they like to have them around. One farmer, employed full time at the Cass County Soil Conservation Service, has about 700 hens. Every Saturday he spends the entire day peddling a one week's egg crop.

Dairy Cattle

A total of 144 farms reported dairy cattle in 1969. The number of milk cows has declined steadily since 1940. In 1940 the county counted 7,681 milk cows, and only 1,231 in 1969 (Census of Agriculture, 1940 and 1969). During field work it was a rare sight to see dairy farms. Of those noted, the majority of milk cows were of the Holstein breed.

The decline of dairying appears to be closely related to the

* In the opinion of the author.

decline of farms. Those remaining small farms with a few milk cows, are forced to diversify or go out of business altogether. The increased number of beef cattle and cash crop acreage (soybeans and milo) is evidence that farmers are investing their labor and money into commodities that will bring them a better return. Small dairy operations may be expected to decline.

Summary of Agricultural Commodities

The traditional crops (corn and wheat) of the county are declining in acreage due to low market prices and government influence. Acres of cropland diverted are mainly planted in soybeans or sorghums which bring the farmer a better return for his investment.

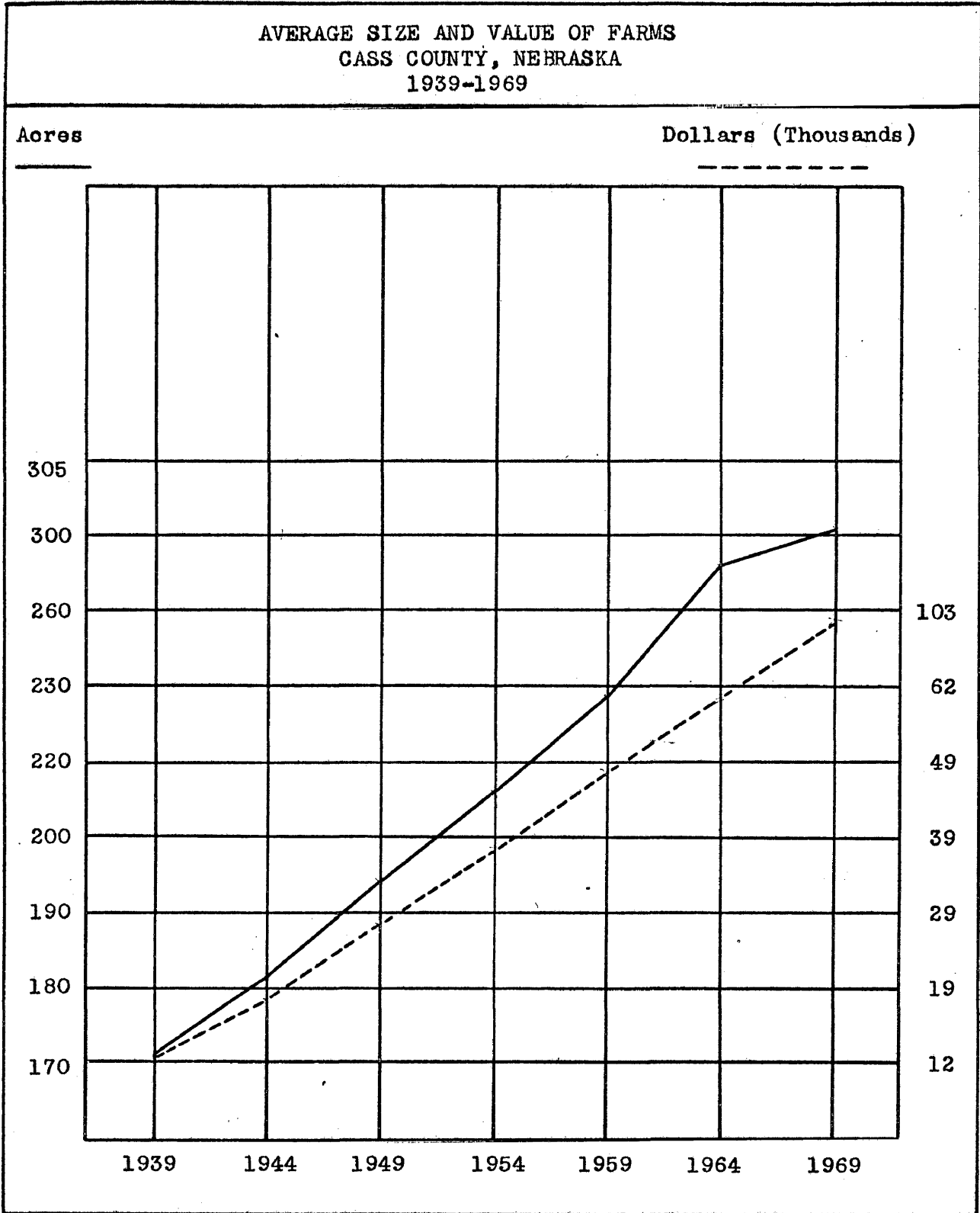
The production of beef cattle is increasing due to high market prices and a continued demand for beef. Crops are second to cattle as the main source of income in 1969. The changing use of farm land is evidence of intelligent management of the land by the farmers of Cass County in order to minimize investments and maximize profits.

Agricultural Trends -

Size of Farms

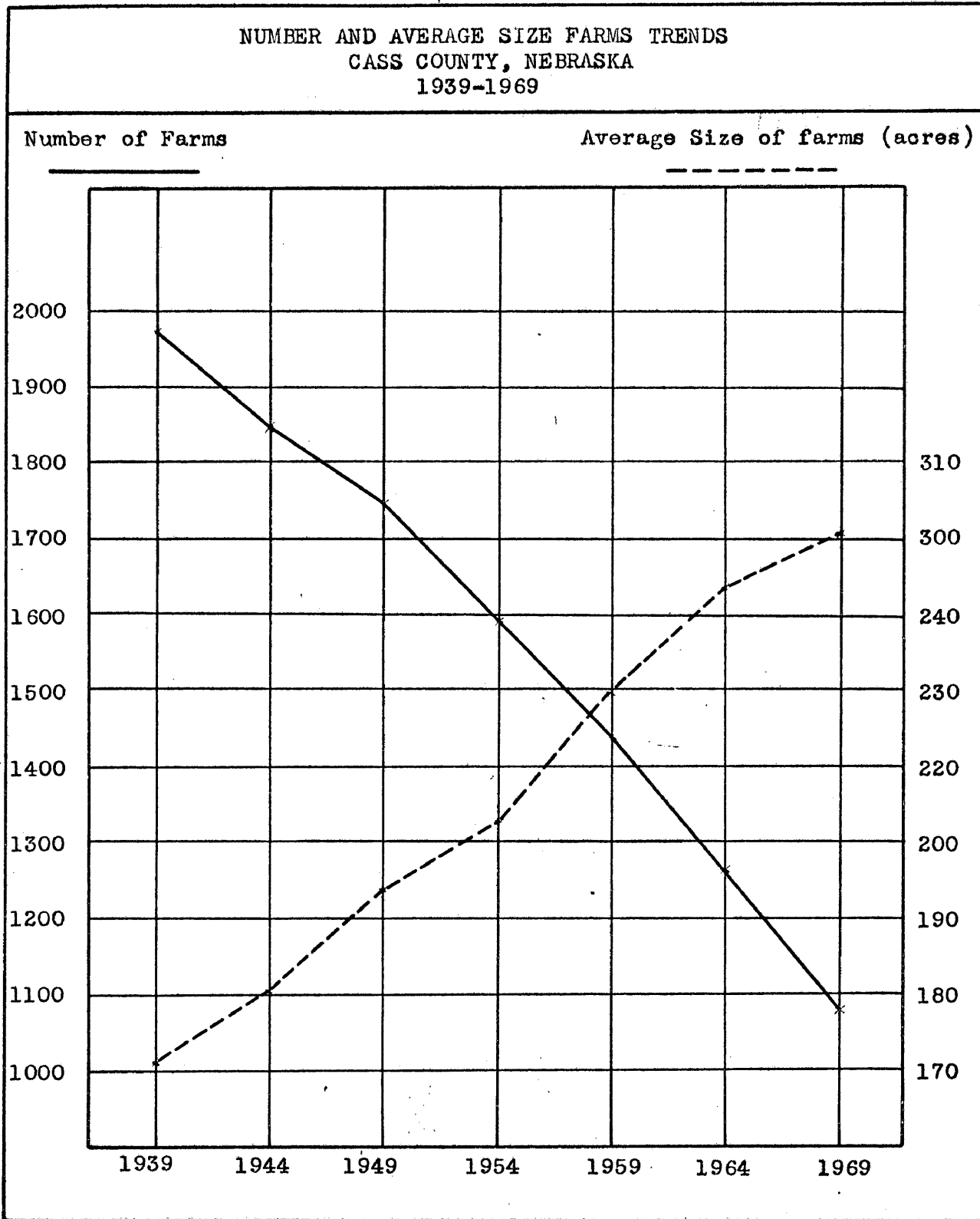
After the county was settled farms increased in number and size. By the year 1900, Cass County, according to the census, had 2,179 farms. Since then the county has followed a trend common to most agricultural counties in the midwest. Farms have declined in number, and existing farms have increased in size. Between 1900

DIAGRAM 2



Source: U.S. Census of Agriculture, 1939, 1949, 1959, 1964 and 1969.

DIAGRAM 3



Source: U.S. Census of Agriculture, 1939, 1949, 1959, 1964 and 1969.

and 1925, the number of farms decreased by about 10 farms annually. Around 1925 the county had 1,926 farms - a decrease of 253 from 1900. After 1925, the annual loss of farms began to fluctuate according to the prevailing economic conditions. The highest recorded loss in number of farms occurred between 1950 and 1954, when the county lost 123 farms (Nebraska Agricultural Statistics, 1866-1954). Between 1925 and 1950, the average yearly loss was about 20 farms.

The tempo of a declining number of farms increased after 1954. The average annual loss in number of farms has been around 30. (Total loss of farms in 30 years averages out to about 50 farms annually (Diagram 3)). Farms in Cass County totaled 1,086 in 1969, and averaged 300 acres each (Census of Agriculture, 1969).

The size of farms has changed considerably since 1944 (Diagram 2). In 1945, about half of the total farms were in the 100 to 199 acre size; and 327 farms fell into the 200 acres and over category. By 1969, the large farms of 1945 had become even larger; and the number of small farms had decreased.

The increasing size of farms in the county reflects the present-day economic situation of the farmer. He must expand in order to survive. Those operating profitable farms manage to expand by purchasing additional acreage, or by leasing land. There has been an increase in the number of farms in the 260 to 499; and to 500 to 999 acre category.

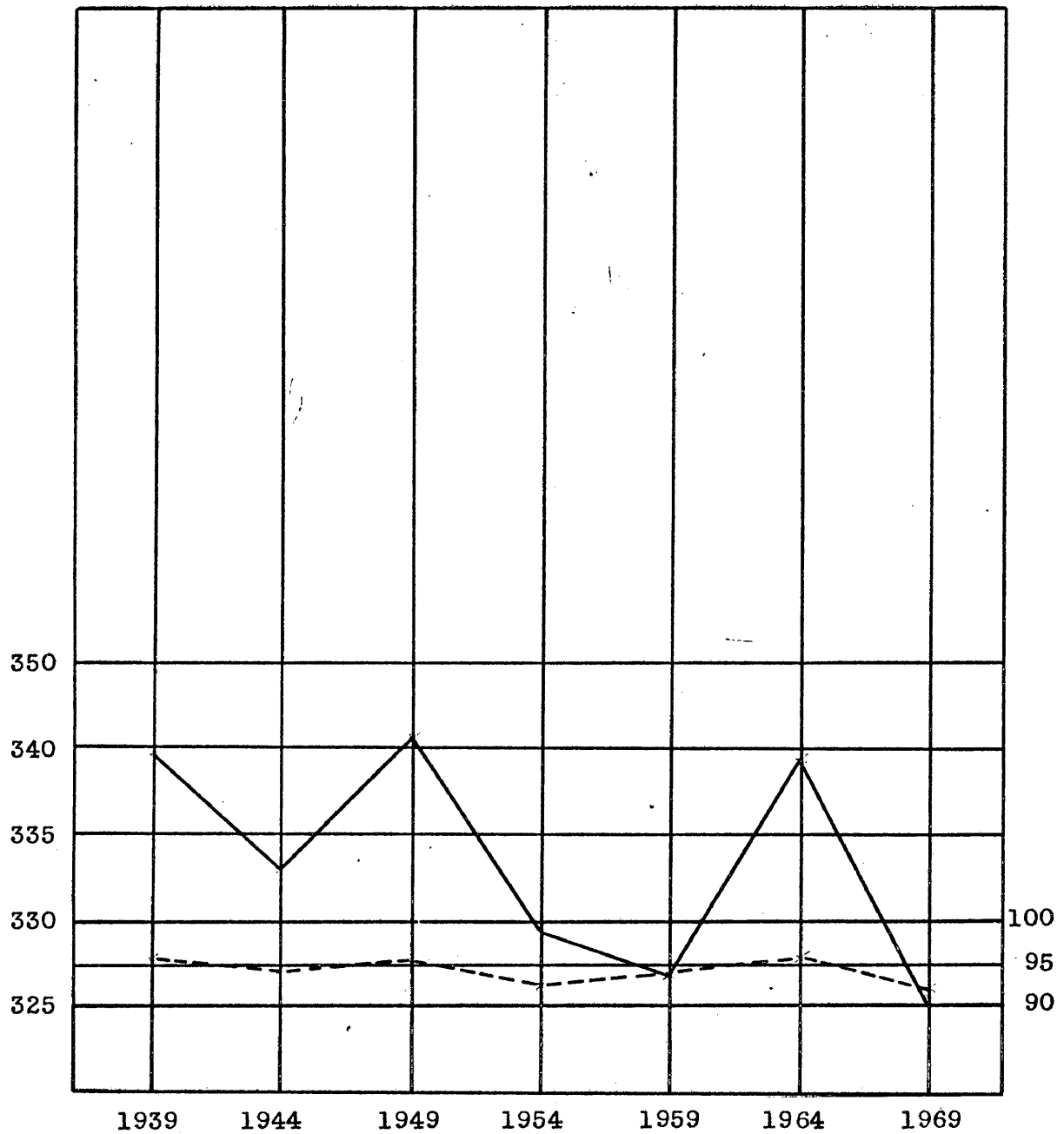
The farmers with 200 acres or less are declining rapidly.

DIAGRAM 4

LAND IN FARMS AND PROPORTION OF TOTAL LAND AREA*
 CASS COUNTY, NEBRASKA
 1939-1969

Acres (thousands)

Percent of Total Land Area



* 354,560 acres comprise the total land area of the county.
 Source: U.S. Census of Agriculture, 1939, 1949, 1959, 1964 and 1969.

Many have full time jobs in order to hold on to their farms. Most farmers are older men who have inherited the farms from their fathers and are reluctant to leave a farm on which they have spent all their lives. As they retire, the land will change hands since most of the present generation prefer an 8 to 5 working day.

In 1970, the value of property in Cass County was reassessed for the first time since 1960. As a result, many marginal farmers are in financial difficulty*. Based on this fact, it is expected that more farmers will be forced out of farming because of high taxes. While government programs may help some small farmers to remain in business, increased taxation forces many out of farming.

Types of Tenancy

The changing pattern of occupancy have closely paralleled changes in the commodities produced and in mechanization. The 1969 census gives 1,086 persons as farm operators. The term "farm operator" is used to designate a person who operates a farm, either doing the work himself, or directly supervising the work. Farm operators are further classified as (1) full owners, (2) part-time owners, and (3) tenants.

Full Owners

The majority of farms in the county are owner-operated. In 1969, there were 429 full-owner-operated farms, 383 part-time-

* During research at the Cass County Soil Conservation Service, two persons complained in person in one day about increased property taxes. One person complained about a five-fold increase and the other person complained that his taxes had doubled.

operated farms and, 274 tenant-operated farms. The number of full-owner farms has steadily declined in the last 30 years (Table 22). This is explained by the decrease of smaller size farms. The number of full-owners can be expected to decrease as the larger operators buy out the smaller ones. The number of abandoned farmsteads, noted along a comparatively small area in relation to the total land area of the county, is evidence that this trend is continuing (Figures 14 & 15).

As the number of full-owners declines, the only ones remaining are expected to be the most prosperous farmers of the county. It was noted that several apparently more prosperous farmers are building modern ranch-style homes adjacent to their older homes.

Part Owners

Farm operators classified as part-owners, have increased in number. In 1939, 292 operators were considered part-owners. By 1969 this number had increased to 383 (Table 22).

Many farmers, possessing insufficient land, are required to seek local employment in addition to practicing part-time farming. The extra income helps them maintain their farmsteads which they take care of on weekends.

This author considers those who farm at least 200 acres, part-time farmers*. Their way of life is preserved, substantially, through government programs. Some of the government programs affecting the farmers of the county will be discussed in a later chapter.

* Interviews with farmers of Cass County and Mr. Robert Rockenbach repeatedly confirmed that most farmers with 250 acres or less have part-time or full-time employment. The 200 acre figure was arbitrarily chosen by the author based on these interviews.

TABLE 22

TYPES OF TENANCY - CASS COUNTY, NEBRASKA

Farms by Tenure of Operator	1939	1944	1949	1954	1959	1964	1969
Full Owners	654	627	649	548	498	477	429
Part Owners	292	313	369	375	390	400	383
Managers	10	8	5	4	..	3	..
Tenants	1,067	901	730	670	537	398	274

Source: Bureau of the Census. United States Department of Agriculture. 1944, 1954, 1964 and 1969.

The large increase of land in pastures since 1941 is apparently related to part-time farming. These farmers are forced to utilize their land in the manner which requires the least amount of labor, yet provides the greatest amount of profit. This is the apparent reason for the almost 2,000 acre increase in pasture between 1941 and 1971.

Tenant Farmer

Of the three types of tenancy, the number of tenant farmers have declined most rapidly as shown in Table 22. The apparent reasons for the decline of the tenant farmer are: (1) the rising cost of production resulting from increased mechanization and increased costs of chemicals used in farming, (2) the continued consolidation of small farm units, and (3) a lack of desire for this way of life during prosperous times.

Many farms have been in the same family for almost one hundred years. As the farmers become older, they resist selling the land to "outsiders" because of strong ties to the land. Rather than sell, they rent or lease their lands to tenants or neighboring farmers. This may explain the still rather high number of 274 tenant farmers in 1969 in relation to a total of 1,086 farms (Census of Agriculture, 1969).

Government Influence

There is no other single factor that has had more effect on the changing land use patterns in Cass County than has governmental

programs designed to limit production and maintain prices for agricultural commodities. Without the involvement of the government, family-type farms would decrease even more rapidly*. In order to improve the economic stability of agriculture, maintain an even flow of quality products at a reasonable price, and improve and protect soil and water resources; the United States Department of Agriculture created the Agricultural Stabilization Conservation Service. It is the agency of the Department of Agriculture that administers specified commodity and related land use programs. (The Cass County Soil Conservation Service is the agency of the Department of Agriculture that provides technical assistance to carry out conservation measures).

The Cass County Soil and Water Conservation District has powers to adopt land use ordinances if approved by a favorable vote. District regulations may prohibit or compel. They may prohibit the use of land in specified harmful ways, or they may require special methods of cultivation; such as contour plowing, strip cropping, rotation of crops, terracing, or shifting any steep or erodible land from cultivation into trees or grass**.

The principal government programs affecting Cass County are discussed below:

Agricultural Conservation Program (ACP). This program provides funds to share with farmers the cost of establishing

* In the opinion of the author.

** Based on interview with Mr. Robert Rockenbach, District Conservationist.

conservation measures that: (United States Department of Agriculture, 1970, p. 5)

establish or improve a protective cover of grasses, legumes, or trees; conserve or dispose of water; and other measures that protect, improve, and make better use of farm and rangeland by preserving and improving the fertility of the soil; promoting the economic use and conservation of land; and minimizing the exploitation, wasteful, and unscientific use of the natural resources.

Participation in this program is strictly voluntary. Any farmer, operator, owner, or tenant is eligible for cost-sharing under this program to help solve a conservation problem affecting their farm. Costs are shared on an approximately 50-50 basis, and the farmer usually does the work which must be completed to meet minimum standards.

The participation of farmers in this program is evident on almost every section of land. Interpretation of 1941 aerial photographs showed very little evidence of conservation practices. Of the practices discernible, contour plowing was the only one noted to be practiced to a limited degree in 1941.

In 1970, there were 233 farms participating in the ACP program, and the cost-sharing for the government was \$110,093 (United States Department of Agriculture, 1970, p. 6). Some of the more important accomplishments are shown on Table 23.

Cropland Adjustment Program (CAP). The "Food and Agricultural Act of 1965" authorized a new long-term cropland adjustment program. It is a voluntary program designed to help farmers divert cropland to protective conservation uses. Under

TABLE 23

SUMMARY OF MAJOR CONSERVATION ACCOMPLISHMENTS
CASS COUNTY, NEBRASKA

Description	July 1, 1964 to June 30, 1965	July 1, 1971 to October 2, 1971
Conservation Cropping System	90,751 acres	112,476 acres
Contour Farming	131,309 acres	145,598 acres
Field Border	1,045,942 feet	2,521,337 feet
Grass Waterway	7,297 acres	8,914 acres
Terrace Gradient	36,263,650 feet	41,964,217 feet
Tree Planting	10 acres	56 acres
Land Adequately Treated	176,847 acres	209,531 acres
Cropland to Grassland	999 acres	4,743 acres
Cropland to Wildlife and Recreation	10 acres	368 acres

Source: Soil Conservation Service Summary Reports, pp. 47-48 and pp. 53-54.

long-term agreements, participating farmers may remove cropland from production for periods of five to ten years.

Participants receive annual adjustment payments calculated as a portion of the value of the crop which otherwise would be produced on the land. Government cost-sharing for carrying out the needed conservation usually amounts to approximately 50 per cent of the cost.

Under another provisions, CAP will help local, state, and other government agencies to acquire cropland for non-farm uses such as the preservation of open spaces, natural beauty, wildlife development, recreation, and the prevention of air and water pollution. The program will also share the cost with these agencies for establishing conservation practices on the cropland.

In 1970, 18 farms participated, diverting 1,452 acres of cropland for uses specified under this program. The participants received a total of \$39,443, or approximately \$2,200 each (United States Department of Agriculture, 1970, p. 25).

The effect of this program can be seen throughout the county. Conservation practices have not only retarded the loss of natural resources such as soil and water, but also enhanced the landscape of the county.

Price Support Program. This is another program that has helped the farmer stay in business. Under this program the Federal Government supports prices of grain and commodities by loans and direct purchases.

A loan provides a farmer an immediate cash return for his commodity at the harvest support level, permitting him to hold his crops for later marketing without financial risk. Participation in the loan program by many farmers results in orderly marketings that reduce the extent of market fluctuations. If the market price rises above the loan level, the farmer is free to pay off the loan and sell his commodity on the open market. On the other hand, if market prices fall below loan price levels, the participant delivers the commodity to the government instead of repaying the loan.

Purchases are similar to loans, in that they guarantee a participating farmer the support rate for eligible commodities. As a result, the farmer can count on a guaranteed price if market prices drop.

In 1970, the Federal Government spent over a million dollars for loans on corn and sorghums (United States Department of Agriculture, 1970, p. 30).

1970 Wheat Program. This program is designed to curb overproduction of wheat. The Secretary of Agriculture determines the annual wheat allotment acreage. County committees establish county acreage allotments. Each known wheat farmer is recommended an allotment of wheat acres that he can farm. Farmers wishing to participate in this program are required to limit their production of wheat; or substitute oats, rye, or barley for wheat. Only those farms participating in the volun-

tary program were eligible for price support loans on wheat.

In 1970, the allotment for Cass County was 24,800 acres, however, only 20,247 acres of the allotment were planted (United States Department of Agriculture, 1970, p. 58). As a result of the wheat program, (which varies from year to year) wheat production has declined in the county.

1970 Feed Grain Program. The Feed Grain Program is another voluntary program devoted to reduce surplus corn, grain sorghums, and barley. To qualify for this program, participating farmers are required to limit feed grain acreage or other cropland in order to become eligible for loans and payments. Specifically, 20 per cent of the feed grain base has to be diverted to conservation uses, the feed grain base underplanted by 20 per cent, and the conservation base of the farm maintained. Farmers with corn bases of less than 25 acres may earn diversion payments for the minimum 20 per cent diversion requirement. Each participating farm receives a price support payment on the planted feed grains not to exceed 50 per cent of the feed grain base. Each participator receives a cash amount for the acres diverted into conserving uses.

In 1970, 42,312 acres were diverted from the corn base*. Eligible farmers received \$922,840 for 20,521 acres of corn

* Bases for specified crops are in need of revision. The Agricultural Stabilization Conservation Service computes figures from a base established in 1959-1960. The corn base for 1970 was 126,665 acres. Preliminary Nebraska Agricultural Statistics figures in 1969 estimate 93,730 acres for 1970 and it cites 82,220 acres of corn harvested in 1969, while the corn base for this commodity was 125,665 acres for Cass County.

out of the 42,312 acres diverted (United States Department of Agriculture, 1970, pp. 67-68).

Many farmers of Cass County participate in the feed grain program. This has kept the production of feed grain lower than it would be if there were no government programs. Without such a program, the nation's surpluses would inevitably be larger; and market prices would, no doubt, be even lower than they are now.

The program has been helpful to the part-time farmer. While he works, he receives payments from acres he has diverted from production, and his only expense is for labor to keep weeds under control. Extensive participation has brought more land under protective cover. This protective cover preserves land from further erosion and improves the fertility of the soil.

CHAPTER VI

URBAN DEVELOPMENT AND EXPANSION

In spite of its proximity of the Omaha-Council Bluffs, Metropolitan Area, Cass County has had comparatively little urban expansion. In 30 years the county gained a mere 1,084 inhabitants (Table 1). Plattsmouth, the largest city and the county seat, had 6,371 residents in 1970, a gain of only 127 persons in ten years. Louisville with 1,036 persons, and Weeping Water with 1,143 are the only other communities noteworthy in terms of population.

Cass County has a precinct-type government, generally following township boundaries* (Figure 16). Out of a total of 17 precincts, nine have lost population according to the 1970 census. The percentage of loss between 1960 and 1970 has been greatest in the Weeping Water precinct (Table 1).

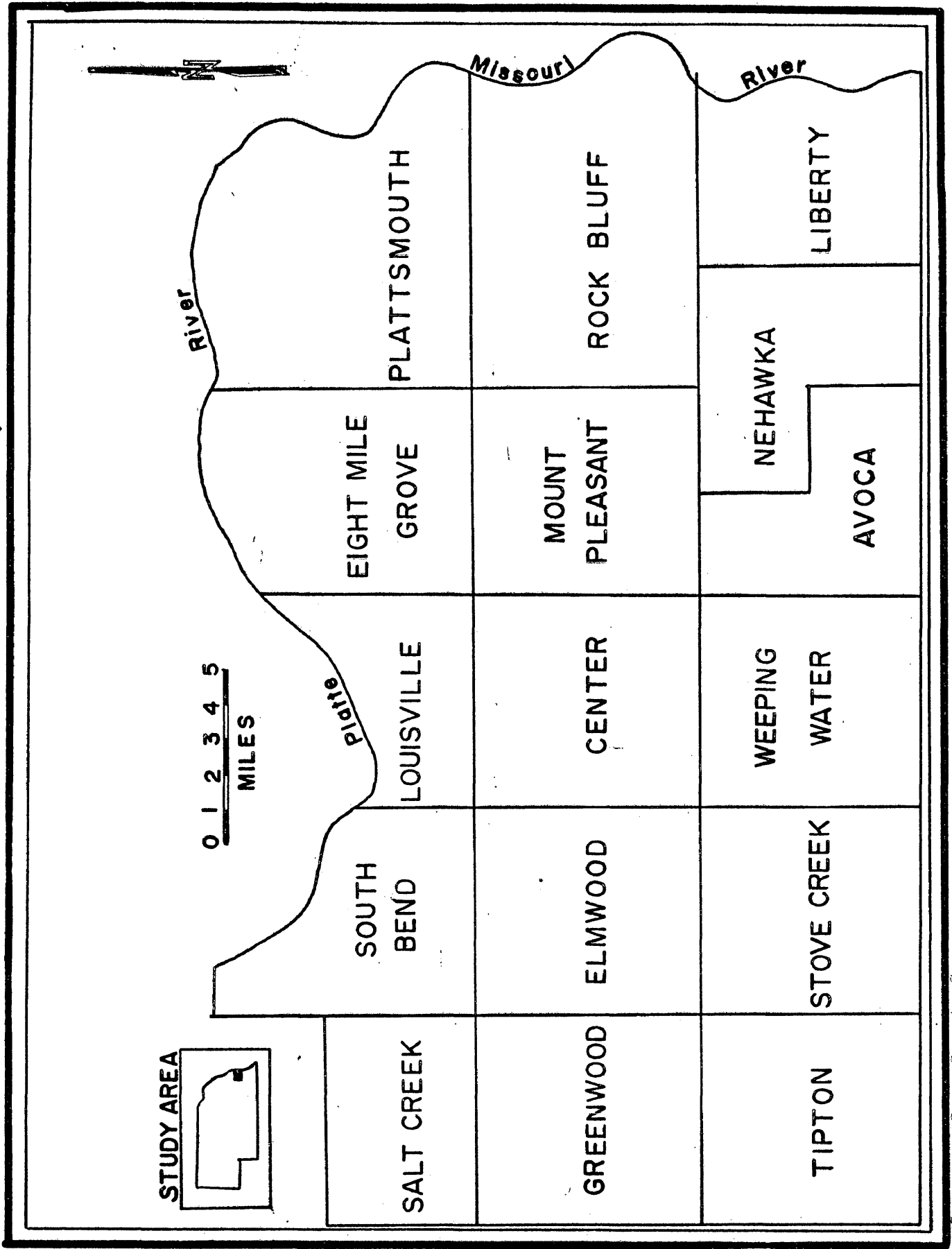
Most of the urban expansion has occurred within the corporate limits of areas easily accessible to the Omaha economic area. The growth of permanent and semi-permanent dwellings along water areas are largely responsible for the county's increase of inhabitants and urban expansion.

The expansion of nearby metropolitan areas has created a demand for seasonal dwelling units. Many of these dwelling

* Figure 16 shows only 16 townships or precincts. According to the Cass County Clerk, 17 precincts exist for voting purposes only. Precincts are governed by Commissioners elected by districts.

FIGURE 16

TOWNSHIPS OF CASS COUNTY, NEBRASKA



Source: Cass County Surveyor.

units are occupied by persons living in Lincoln or Omaha-Council Bluffs.

Areas of such occupancy are located: (1) west of South Bend along the Platte River, (2) by the Platte River in the area of Cedar Creek, and (3) at Lake Waconda on the Missouri River northeast of the town of Union.

The South Bend Area comprises 67 acres. About 75 homes are located around two lakes which appear to be former sand or gravel pits.

Cedar Creek is the largest of these three areas with 185 acres. The area has numerous small lakes around which a total of about 150 homes have been build. As in South Bend, this area appears to have been a sand and gravel mining area. Expansion of the area is occurring on the eastern edge of the area*.

The remaining area, Lake Waconda, is located on the Missouri River and comprises 67 acres (Clark, 1968, p. 110). Unlike the previous areas discussed, Lake Waconda occupies a former oxbow lake of the Missouri River. Its northern end has been reinforced by a dam to prevent the river from making it an active channel during high water levels. It is estimated that about 100 homes have been build here**.

Inspection of 1941 aerial photographs indicated that none of these areas had residential developments. Once considered

* Dredging activity was noted during aerial overflight by author on June 12, 1972. Sizeable stands of trees were being bulldozed into the Platte River.

** Estimates of all areas based on aerial observation by author on May 30, 1972.

waste land, the utilization of such areas has added taxes to the county's coffers and helped urbanize the county.

During this writing, another seasonal-type recreation area is under construction known as Beaver Lake. When completed it will hold a 350 acre lake. The total area will remove 1,200 acres of valuable farmland from production.

Urban Expansion

About 47 single family dwellings and 100 apartment units are presently under construction within the corporate limits of Plattsmouth. Another 30 homes are being built throughout the city. A contractor who is presently building 47 homes plans to begin construction of another 45 homes in Plattsmouth during July, 1972*.

Some construction, on a limited scale, is occurring throughout the county. The most noteworthy, known as Copper Corral, is located outside the Plattsmouth city limits, south of Highway 66. Two expensive homes have been built, and others are planned. New streets have already been laid out.

Future Urban Expansion

Future urban expansion is directly related to the growth of the Omaha-Council Bluffs Metropolitan Area. The present building of new homes in Plattsmouth may be considered a boom. The extension of the "bedroom" type of expansion will increase

* According to Mr. Arnold E. Schlechte, Cass County Bank, June 14, 1972. Also based on aerial observation by author on May 30 and June 12, 1972.

the county's residential area. Residents will live in Cass County communities, but will work in the larger population centers. This urban expansion is expected to occur mostly in Plattsmouth or along Interstate 80, where access to major highways minimize commuting time.

Industrial Land Use

The traditional economic base of Cass County has been agriculture, and today this is still the case. Considering the nearness to a large population center, the county has no large industrial enterprises involved in manufacturing. All the necessary ingredients - labor, transportation, land and services - provide ample opportunity for the county to share the state's industrial development. This the county has failed to do.

The lack of a diversified economic base can be attributed to: (1) land set aside for industrial development within communities is not always the most suitable or desirable for industrial development*, and (2) an apparent lack of desire for industrial development**.

Cass County has lost several important industries during years past. Among the most recent was the closing of the Burlington railroad repair shop in Plattsmouth. An estimated

* Some of Plattsmouth's land zoned for industrial use is located on the Missouri River flood plain which has flooded twice since 1967. Other land zoned for such use is located in undesirable areas.

** Discussions with influential citizens pointed out that industry is not wanted. Conversations with Plattsmouth city officials pointed out similar facts.

185 persons lost their jobs when this establishment closed in 1967*. Most of the residents employed in manufacturing work in Omaha.

The mining of limestone, sand, and gravel remains the county's most important industry after agriculture. Limestone deposits are quarried at exposed outcroppings in two main general areas: (1) in the north-central area near Louisville, and (2) in the south-central area along Weeping Water Creek. Quarrying is most intensive in these two locations. Evidence of former quarrying activity was noted in the southeast along Weeping Water Creek, and at the county's eastern border along the Missouri River**. Today both areas have only one small active quarry each.

Limestone is utilized as aggregate in concrete, for road-stone, riprap, ag-lime, and fillers in various products. It is estimated that 4,000,00 metric tons of limestone are mined annually in the county. Weeping Water and Louisville each mine half of the total amount.

Quarrying employs about 250 persons near Louisville, and approximately 200 persons find employment in quarrying around Weeping Water***. At the present time, ten companies are involved in the quarrying and processing of limestone in Cass County. Fifty-one quarry sites have been identified by the

* According to Mr. Arnold E. Schlechte, Cass County Bank, June 14, 1972.

** Based on aerial observation by author on May 30, 1972.

*** All figures on mining gained through interview with Mr. Chester Hopper, Hopper Brothers Quarries, Weeping Water, April 4, 1972.

Nebraska Geological Survey in Cass County, and 23 of them are classified as inactive (Nebraska Conservation and Survey Division, 1971).

Most of the county's sand and gravel deposits lie in the Platte River Valley. South Bend and Cedar Creek have areas of former sand and gravel mining. No figures of tonnage mined or number of employed are available.

Transportation

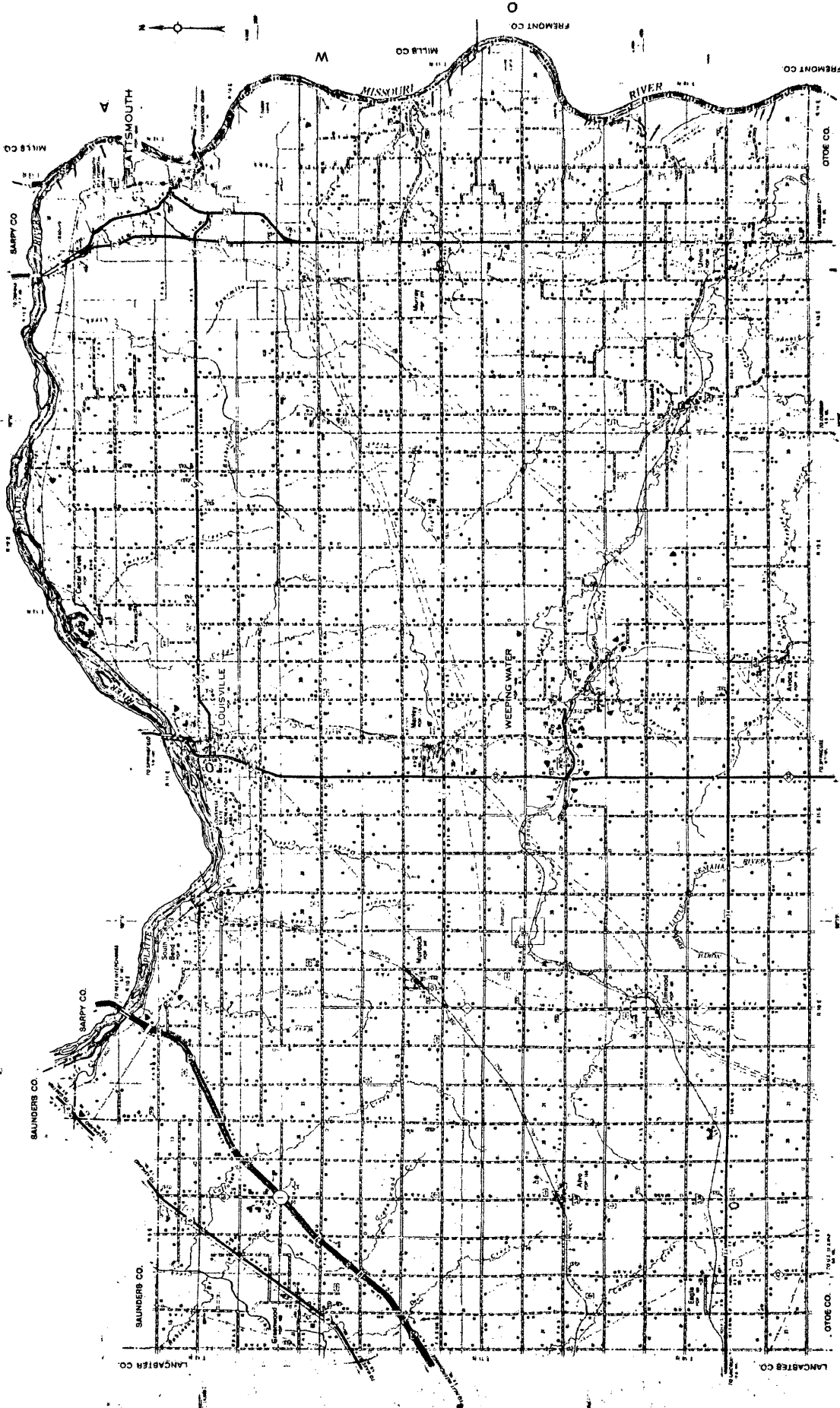
The cities of Cass County are linked together by an excellent system of Federal, State, and County roads (Figure 17). Interstate 80, dissecting the northwestern corner of Cass County, is the most recent addition to the county's many miles of roads. The eleven mile stretch of highway cost the county about 850 acres of the most level and fertile alluvial land within the Salt Creek watershed.

Another approximately 130 miles of U.S. and state highways provide excellent transportation to all areas of the county. U.S. Highway 73-75 is a major road which provides north-south transportation. Its volume of traffic has declined in recent months in Cass County because Interstate 29 in western Iowa has been completed as far as Nebraska City on the opposite side of the Missouri River.

The remaining area of the county is criss-crossed with unpaved county roads. A total of 900 miles of roads are presently in existence, and this figure is increasing. 95 per cent of the

FIGURE 17

GENERAL HIGHWAY MAP - CASS COUNTY, NEBRASKA



Adapted from: Department of Roads, U.S. Department of Transportation.

county roads are paved with crushed limestone, and the remainder are dirt or unimproved*.

Cass County is served by three railroads - the Burlington, the Rock Island and the Missouri Pacific. The Missouri Pacific maintains a fairly extensive system of branch lines linking Plattsmouth, Weeping Water, Louisville, and a number of smaller cities.

The over 1,000-mile network of roads, although a modern necessity, is a large consumer of valuable agricultural land. The Cass County Assessor lists 6,155 acres of road in its 1971 abstract for agricultural land valuations.

* Based on interview with Mr. Francis C. Rotter, Cass County Surveyor, March 1972.

CHAPTER VII

CONCLUSION

Cass County has undergone remarkably few major changes in land usage and patterns of usage in the past thirty years. Agriculture continues to be the dominant economic activity. However, definite trends may be established as to changes within the admixture of land uses comprising the traditional agricultural system.

In general, farm size has increased; and farm families have decreased, as has the number of farms. Mechanization has allowed the farmer to cultivate increasingly larger acreages; and those farms having the larger acreages have the greater profit potential.

Corn remains the major cash crop of the county; however, there is a definite trend toward increasing sorghum and soybean acreages. Wheat production is steadily declining. These changes are due to market demand and prices, and present governmental policies. These trends may be expected to continue, unless changes in governmental policies involving foreign nations modify the market for such cash crops.

The greatest change in acreage and field patterns involves pastureland, which has increased at the expense of both cropland and woodland. Pastureland has expanded most notably into formerly wooded areas adjacent to streambeds. The pasturing of beef cattle is a profitable endeavor which requires less time than crop cultivation. Cattle raising is rapidly becoming the mainstay of part-time farmers in the county. It was also noted

that the raising of dairy cattle has declined; an apparent result of relatively low profits when one considers the investment in time and money required for dairy operation, and the rigid schedule imposed upon dairymen.

Many of the county's present "farms" are vestiges of the past operated by long-time residents, and supported by government subsidy. Increasing numbers of the agrarian society are turning to the job markets of Omaha and Council Bluffs to supplement or supplant farm incomes. Part-time, or full-time, employment within the nearby urban areas has become an economic necessity for the small-farm operator.

Only in the past few years has suburbia stemming from the nearby metropolitan centers begun to spread into Cass County, and this has occurred largely at Plattsmouth. In the past few years, a considerable amount of land has been developed for recreational purposes. At present, most recreational development is devoted to the "lake and cabin" market of the Omaha area. Increasing residential and recreational land use will broaden the county's tax base slowly.

The quarrying of limestone is the second-largest activity within the county. During the period covered by this report, numerous small quarries were developed, and later folded. Successful quarry operation is dependent upon immediate rail access.

The county received an economic blow when the Burlington

railroad repair shop which employed an estimated 185 persons was closed in 1967.

Although the county is endowed with good transportation systems; road, water, and rail; no effort to bring in non-farm related industry is evident at this time.

One can expect the trends noted during this study to continue until the present residents of the county are supplanted by newcomers with less traditional concepts as to the best land uses of the county. Under the present economic conditions one can also expect an ever-increasing percentage of the county's populus to be employed in nearby metropolitan areas.

SELECTED BIBLIOGRAPHY

Atwood, Wallace W. The Physiographic Provinces of North America.
New York: Blaisdell Publishing Company, 1964.

Barbow, Erwin H. Nebraska Geological Survey. Fremont, Nebraska:
Hammond Printing Company, 1903.

Bureau of the Census. United States Census of Agriculture, 1860.
Washington, D. C., Government Printing Office, pp. 172-174.

_____. United States Census of Agriculture, 1910.
Washington, D. C., Government Printing Office, Tables 2
through 6, pp. 40-57.

_____. United States Census of Agriculture, 1940.
Washington, D. C., Government Printing Office.

_____. United States Census of Agriculture, 1964.
Washington, D. C., Government Printing Office, Volume 1,
Part 20.

_____. United States Census of Agriculture, 1969.
Washington, D. C., Government Printing Office, pp. 105-112.

_____. United States Census of Population, 1960.
Washington, D. C., Government Printing Office, Part 29,
Table 7, p. 29-1.

_____. United States Census of Population, 1970.
Washington, D. C., Government Printing Office, Part 29,
Table 10, p. 29-19.

Cass County Conservation Needs Committee. "Cass County
Conservation Needs Inventory." Weeping Water, Nebraska:
December 1970.

Clark, Enerson, Olsson, Burroughs and Thomsen. "Comprehensive
Plan, Cass County, Nebraska, 1985." September 1968, pp.
1-416.

Nebraska Conservation and Survey Division. "Directory of
Nebraska Quarries, Pits, and Mines." Resource Report # 6.
Lincoln, Nebraska: March 1971.

_____. "Soils of Nebraska." Resource Report # 2.
Lincoln, Nebraska: May 1969.

Nebraska Department of Agriculture. "Nebraska Agricultural Statistics." Annual Report, 1969. Lincoln, Nebraska.

_____. "Nebraska Agricultural Statistics". Annual Report, 1963. Lincoln, Nebraska.

_____. "Historical Record, 1866-1954." Lincoln, Nebraska.

_____. "Nebraska Weeds." Lincoln, Nebraska. 1968, p. 5-27.

Plat Book of Cass County. (Estimated date, 1904).

United States Department of Agriculture. Climate and Man, 1941 Yearbook of Agriculture. Washington, D. C., Government Printing Office, pp. 967-978.

_____. 1941 Aerial Photographs. Washington, D. C., frames UL1B7 through UL1B149 and UL2B5 through UL2B 187.

_____. Agricultural Stabilization Conservation Service Committee. "Nebraska Annual Report, 1970." pp. 1-80.

_____. Soil Survey of Cass County, Nebraska. Washington, D. C., Government Printing Office. March 1941, pp. 1-55.

Van Riper, Joseph E. Man's Physical World. New York: McGraw-Hill Book Company, Inc., 1962, p. 276.

Weaver, J. E. Native Vegetation of Nebraska. Lincoln, Nebraska: University of Nebraska Press, 1965, pp. 14-20.

Whittlesey, Derwent. "Major Agricultural Regions of the Earth." Annals of the Association of American Geographers. Volume 26, (1936) pp. 199-240.

Personal Interviews

Beller, Norman D. Director State-Federal Division of Agricultural Statistics. Lincoln, Nebraska. February 7, 1972.

Boyeson, Ray H. Supervisory Engineering Draftsman, Cartographic Unit, U.S. Department of Agriculture. Lincoln, Nebraska. February 7, 1972.

Burchett, Raymond R. Research Geologist, University of Nebraska Conservation and Survey Division. Lincoln, Nebraska. February 7, 1972.

- Culver, Jim. State Soil Scientist. U.S. Department of Agriculture.
Lincoln, Nebraska. February 7, 1972.
- Ervin, Don. Soil Conservation Service Technician. Weeping Water,
Nebraska. January-June 1972.
- Fitzgerald, F. E. Area Conservationist, Soil Conservation Service.
Lincoln, Nebraska. February 7, 1972.
- Hopper, Chester. Hopper Brothers Quarries. Weeping Water, Nebraska.
April 4, 1972.
- Houtchens, Wilber. Chief, Property Tax Division. Lincoln, Nebraska.
February 11, 1972.
- Lancaster, Neil H. Cass County Superintendent of Schools.
Plattsmouth, Nebraska. February 4, 1972.
- McDonald, W. J. B. Cass County Clerk. Plattsmouth, Nebraska.
February 4, 1972.
- Olson, Clara. Cass County Assessor. Plattsmouth, Nebraska.
February 4, 1972.
- Ostrom, Jane M. Plattsmouth City Clerk and Treasurer. Plattsmouth,
Nebraska. February 4, 1972.
- Rockenbach, Robert. District Conservationist. Weeping Water,
Nebraska. January-June 1972.
- Rotter, Francis L. Cass County Surveyor. Plattsmouth, Nebraska.
January-May 1972.

OTHER BIBLIOGRAPHY

A. Books

- Bradford, Harry E. and George A. Spidel. Nebraska: Its Geography
and Agriculture. New York: The MacMillan Company, 1950.
- Clawson, Marion and Charles L. Stewart. Land Use Information.
Baltimore: The Johns Hopkins Press, 1965.
- Haring, L. Loyd and John F. Lounsbury. Introduction to Scientific
Research. Dubuque, Iowa: Wm.C. Brown Company Publishers, 1971.
- Higbee, Edward. Farms and Farmers in an Urban Age. New York:
The Twentieth Century Fund, 1963.
- Searcy, N. D. and A. R. Longwell. Nebraska Atlas. Kearney, Nebraska:
Nebraska Atlas Publishing Company, 1964.

B. Public Documents

- Nebraska Conservation and Survey Division. "Guidebook to the Geology along Portions of the Lower Platte River Valley and Weeping Water Valley of Eastern Nebraska." Lincoln, Nebraska: April 1971.
- Nebraska Department of Agriculture. "Nebraska Agricultural Statistics, Centennial Edition." Lincoln, Nebraska: June 1967.
- _____. "Nebraska Agricultural Statistics, Beef Cattle." Lincoln, Nebraska: June 1969.
- _____. "Nebraska Hog and Pork Statistics." Lincoln, Nebraska: June 1971.
- Nebraska Soil and Water Conservation Commission. "The Framework Study." Lincoln, Nebraska: May 1971.

C. Reports and Articles

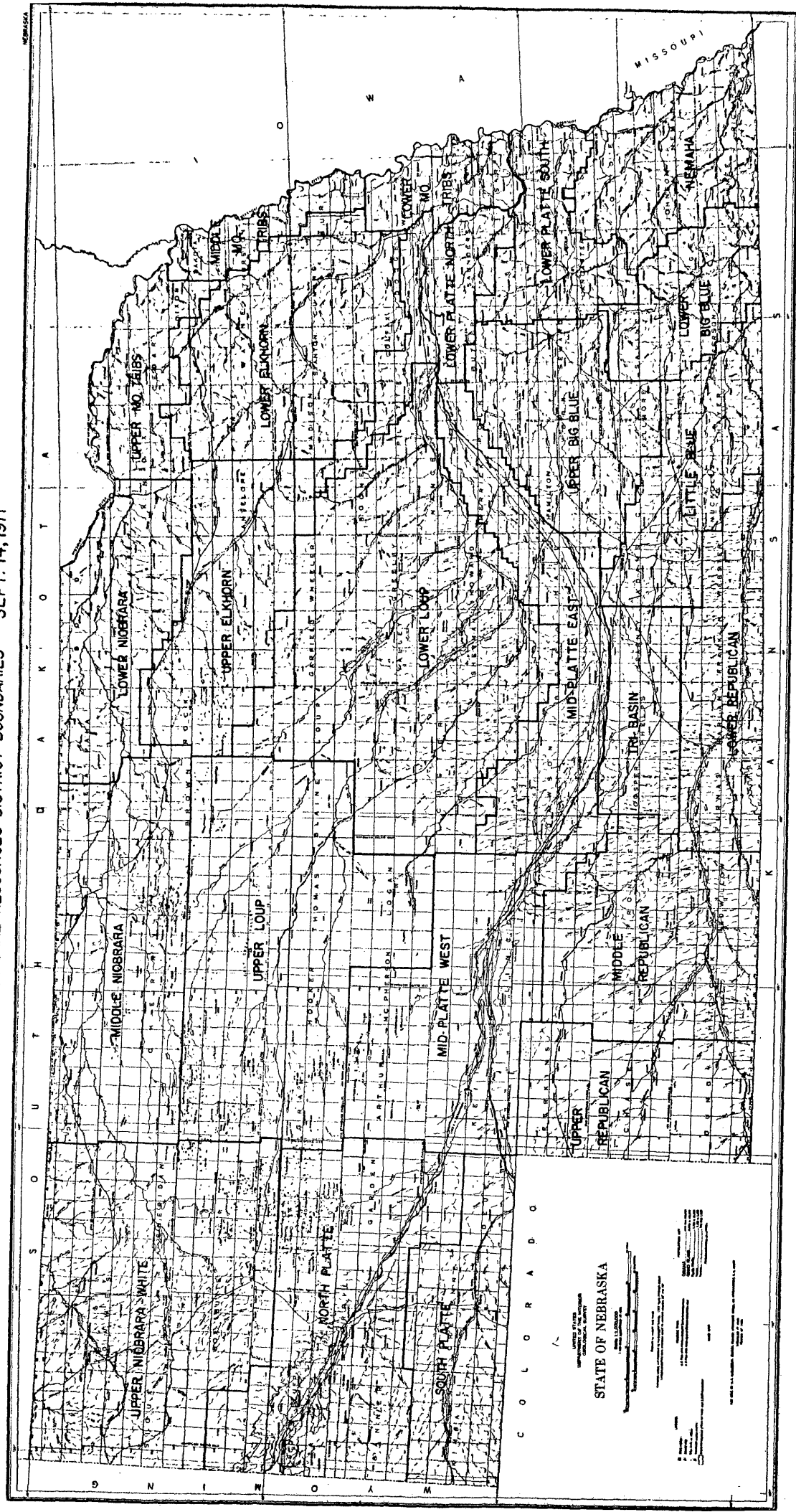
- Spencer, J. E. and Ronald J. Horvath. "How does an Agricultural Region Originate." Annals of the Association of American Geographers. Volume 53 (1963) pp. 74-92.
- Sinclair, Robert. "Von Thünen and Urban Sprawl." Annals of the Association of American Geographers. Volume 57 (March 1967) pp. 72-87.
- Weaver, John C. "Changing Patterns of Cropland Use in the Middle West." Economic Geography. Volume 30 (January 1954) pp. 1-47.
- Nebraska Soil and Water Conservation Needs Inventory Committee. "Nebraska Conservation Needs." Soil Conservation Service. Lincoln, Nebraska: 1969.
- Nebraska Public Power District. "Industrial Facts, Plattsmouth, Nebraska." Columbus, Nebraska: May 1971.

D. Unpublished Materials

- Cass County Assessor. "1971 Abstract for Agricultural Land Valuations." Plattsmouth, Nebraska: July 1971 (xerox copy).
- Cass County Soil and Conservation District. "Recreation Appraisal." Weeping Water, Nebraska: October 1968 (Pamphlet).

A

NEBRASKA SOIL & WATER CONSERVATION COMMISSION
NATURAL RESOURCES DISTRICT BOUNDARIES - SEPT. 14, 1971



B

RELIEF MAP OF NEBRASKA



SCALE 25 0 25 50 75 100 MILES

119

RELIEF MODEL PREPARED AFTER TOPOGRAPHIC
 QUADRANGLE MAPS OF U.S. GEOLOGICAL SUR-
 VEY BY STAFF OF CONSERVATION AND SURVEY
 DIVISION, UNIVERSITY OF NEBRASKA - 1958

C

