



Analysis of the Conservation Reserve Program in northeastern Montana  
by Leroy Carol Rude

A dissertation submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY in Agricultural Economics  
Montana State University  
© Copyright by Leroy Carol Rude (1971)

Abstract:

This study is concerned with the effects the Conservation Reserve Program had on controlling production, the physical descriptions of the farm firms that participated both before and during the contract period, the economic effects the Program had on the farm firms and participants, and attitudes of the participants toward the Program. The area of concern is northeastern Montana where there was a greater concentration of participation in the Program relative to other areas of the State.

Most of the data needed to examine the above concerns were obtained by personal interviews of a sample of participants. This together with historic research, and information obtained from people with knowledge about the Program fulfilled the data requirements.

The Program was well received by small farm operators as evidenced by a greater number of applications for the Program than could be accepted under the limited budget. Reasons for participation among the respondents were analyzed by the paired comparison technique. The top ranking two were inadequate size of farm to have an economic unit and increased farm income. The respondents indicated that about a third of their contracted cropland acreage would remain in grass after the contracts had expired.

In most instances this cropland was the least productive land.

Participation in the Program reduced the labor required on the farms which contributed to an increase in off-farm employment. All of the respondents who had off-farm employment found jobs within the immediate vicinity of their farm and there was little evidence of people moving out of their rural community because of participation. Prior to contracting, participants spent considerable money to produce crops but during the contract little expenditure was required to care for the land. Many respondents used this money to up-grade their level of living and to retire debts.

Attitudinal statements indicated that the respondents were highly favorable toward the Program. The area that appeared the most attractive was the continuation of the Program. The areas that seemed the least attractive were the effectiveness of the Program to control production as compared to the Acreage Allotment Program and in comparing the costs of these two Programs. Of all possible responses toward the statements, about 71 per cent were favorable, 23 per cent unfavorable, and six per cent were non-responses.

ANALYSIS OF THE CONSERVATION RESERVE PROGRAM  
IN NORTHEASTERN MONTANA

by

LEROY CAROL RUDE

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

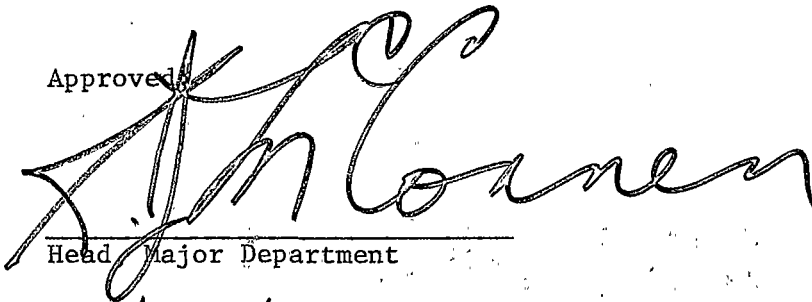
of

DOCTOR OF PHILOSOPHY

in

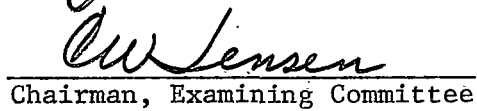
Agricultural Economics

Approved



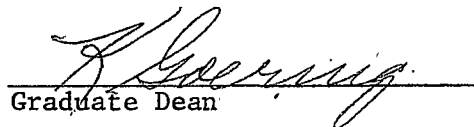
J. M. Conner

Head, Major Department



O. W. Jensen

Chairman, Examining Committee



A. Greening

Graduate Dean

MONTANA STATE UNIVERSITY  
Bozeman, Montana

June, 1971

ACKNOWLEDGMENTS

The author desires to express a sincere appreciation to Dr. Clarence W. Jensen, Committee Chairman and former Chairman of the Department of Agricultural Economics under whose guidance, encouragement, and direction this research was completed. Appreciation is also extended to Dr. Franklin S. McFeely, Dr. John Montague, Dr. Dana H. Myrick, Dr. Martin S. Stauber, Dr. Layton S. Thompson, and Dr. Richard O. Wheeler who aided in the organization and editing of this thesis.

Thanks is extended to Dr. Richard J. McConnen, Chairman of the Department of Agricultural Economics who encouraged the completion of this dissertation.

The author appreciates the cooperation of the farmers who participated in the interviews and other people who supplied information and direction in gathering data. Without these sources the study would not have been possible.

Gratitude is extended to the personnel in the Farm Production Economics Division, Economic Research Service, United States Department of Agriculture, who encouraged and promoted this research.

To his wife Bette and children for their encouragement and patience the author extends his sincere appreciation.

## TABLE OF CONTENTS

	<u>Page</u>
VITA . . . . .	ii
ACKNOWLEDGMENT. . . . .	iii
TABLE OF CONTENTS. . . . .	iv
LIST OF TABLES. . . . .	vi
LIST OF FIGURES . . . . .	viii
ABSTRACT. . . . .	ix
CHAPTER I. INTRODUCTION . . . . .	1
Historical Setting of Farm Programs . . . . .	4
Description of the Conservation Reserve Program . . . . .	12
Previous Studies . . . . .	20
Research Problem . . . . .	27
Objectives . . . . .	29
CHAPTER II. PROCEDURE . . . . .	30
Description of the Study Area . . . . .	31
Topography, Soils, and Climate . . . . .	31
Type of Farming . . . . .	32
The Schedule. . . . .	34
The Sample . . . . .	38
CHAPTER III. CHANGES IN RESOURCE USE DUE TO PARTICIPATION IN THE CONSERVATION RESERVE PROGRAM. . . . .	40
Description of the Respondents Prior to Participation . . . . .	40
Description of Farms and Resource Use Prior to Participation . . . . .	41
Adjustment in Resource Use During Participation . . . . .	45
Plans After Contract Termination . . . . .	51
CHAPTER IV. FACTORS THAT INFLUENCED PARTICIPATION IN THE CONSERVATION RESERVE PROGRAM. . . . .	56
Selecting the Major Factors for Participation. . . . .	59
Method Used to Rank the Reasons for Participation . . . . .	60
Advantages of Using the Paired Comparison Technique. . . . .	61
Ranking of Reasons Why the Respondents Participated in the Conservation Reserve Program . . . . .	62
Ranking of Reasons Why 55 Respondents, Who Were Actively Farming Prior to Participation, Participated in the Conservation Reserve Program . . . . .	63

TABLE OF CONTENTS  
(Cont.)

	<u>Page</u>
Ranking of Reasons Why 34 Respondents, Who Were Actively Farming Prior to Participation and Were Less than 55 Years of Age, Participated in the Conservation Reserve Program . . . . .	83
Ranking of Reasons Why Nine Respondents, Who Were Not Actively Farming Prior to Participation, Participated in the Conservation Reserve Program . . . . .	89
Evaluation of the Paired Comparison Reasons and Other Factors as to Why the 65 Respondents Participated in the Conservation Reserve Program. . . . .	91
Respondents' Reaction to a Continuation of the Conservation Reserve Program and a Similar Program. . . . .	96
 CHAPTER V. ATTITUDE OF THE RESPONDENTS TOWARD THE CONSERVATION RESERVE PROGRAM . . . . .	 99
Effect the Program had on Production . . . . .	102
Attitude Toward the Expansion, Continuation, and Contraction of the Program . . . . .	105
Effect the Program had on the Respondents' Welfare and on the Local Community . . . . .	108
 CHAPTER VI. SUMMARY . . . . .	 113
 APPENDICES . . . . .	 122
Appendix A. . . . .	123
Appendix B. . . . .	145
Appendix C. . . . .	149
Appendix D. . . . .	157
 BIBLIOGRAPHY. . . . .	 164

## LIST OF TABLES

<u>Table</u>	<u>Page</u>
I. ESTIMATE OF ADDITIONAL PRODUCTION THAT WOULD HAVE OCCURRED IN ABSENCE OF THE CONSERVATION RESERVE PROGRAM, UNITED STATES, 1957-1962 . . . . .	18
II. AVERAGE LAND-USE OF CROPLAND ON ALL GRAIN-LIVESTOCK AND CASH-GRAIN SAMPLE FARMS BEFORE CONTRACTING. . . . .	44
III. NUMBER OF RESPONDENTS THAT HAD FULL-TIME OR PART-TIME EMPLOYMENT BEFORE CONTRACTING AND IN 1962. . . . .	50
IV. NUMBER OF RESPONDENTS CONSIDERING AND SELECTING VARIOUS LAND-USE ALTERNATIVES FOR 1964 . . . . .	52
V. NUMBER OF RESPONDENTS PLANNING TO RAISE VARIOUS KINDS OF CROPS IN 1964. . . . .	53
VI. NUMBER OF RESPONDENTS PLANNING TO INVEST IN VARIOUS KINDS OF EQUIPMENT, LIVESTOCK, AND IMPROVEMENTS AFTER CONTRACT EXPIRATION. . . . .	55
VII. BUDGETS FOR TWO LAND-USE ALTERNATIVES FOR A 400-ACRE, CASH-GRAIN FARM IN NORTHEASTERN MONTANA . . . . .	58
VIII. F MATRIX: FREQUENCY WITH WHICH ONE REASON WAS CHOSEN OVER ANOTHER BY 55 RESPONDENTS. . . . .	65
IX. P MATRIX: PROPORTION OF TIMES ONE REASON WAS CHOSEN OVER ANOTHER BY 55 RESPONDENTS. . . . .	66
X. Z MATRIX: $P_{ij}$ VALUES OF THE PROPORTION MATRIX TRANSFORMED INTO $Z_{ij}$ VALUES USING A TABLE OF NORMAL DEVIATES "Z" CORRESPONDING TO PROPORTIONS "P" OF A DICHOTOMIZED UNIT NORMAL DISTRIBUTION, 55 RESPONDENTS . . . . .	67
XI. $Z_{ij}'$ MATRIX: THEORETICAL NORMAL DEVIATES $Z_{ij}'$ CORRESPONDING TO THE SCALE DISTANCES BETWEEN THE REASONS OF TABLE X . . . . .	71
XII. $P_{ij}$ MATRIX: THEORETICAL PROPORTIONS $P_{ij}'$ CORRESPONDING TO THE THEORETICAL DEVIATES $Z_{ij}'$ IN TABLE XI . . . . .	73

LIST OF TABLES  
(Cont.)

<u>Table</u>	<u>Page</u>
XIII. DISCREPANCIES BETWEEN THE THEORETICAL PROPORTIONS $P_{ij}'$ OF TABLE XII AND THE OBSERVED $P_{ij}$ VALUES OF TABLE IX . . . . .	74
XIV. VALUES OF THE OBSERVED PROPORTIONS $P_{ij}$ OF TABLE IX AND THE THEORETICAL PROPORTIONS $P_{ij}'$ OF TABLE XII CONVERTED INTO ANGLES IN TERMS OF DEGREES, $\theta$ AND $\theta'$ . . . . .	76
XV. CALCULATIONS OF THE DISCRIMINAL DISPERSIONS ( $\sigma_i$ ) OF THE RESPONSES TO THE REASONS BY THE 55 RESPONDENTS . . . . .	81
XVI. DISCRIMINAL DISPERSIONS OF THE RESPONSES TO THE REASONS BY 34 RESPONDENTS. . . . .	88
XVII. CALCULATIONS OF THE RELATIVE RANKING ( $\bar{S}_i$ ) OF REASONS BY THE COMPOSITE-STANDARD METHOD, NINE RESPONDENTS . . . . .	90
XVIII. FACTORS THAT INFLUENCED THE RESPONDENTS DECISIONS TO PARTICIPATE IN THE CONSERVATION RESERVE PROGRAM, RANKED IN ORDER OF IMPORTANCE . . . . .	94
XIX. ATTITUDE OF THE RESPONDENTS TOWARD THE EFFECT THE CONSERVATION RESERVE PROGRAM HAD ON PRODUCTION, AND NUMBER OF QUALIFICATIONS. . . . .	103
XX. ATTITUDE OF THE RESPONDENTS TOWARD THE EXPANSION, CONTINUATION AND CONTRACTION OF THE CONSERVATION RESERVE PROGRAM, AND NUMBER OF QUALIFICATIONS . . . . .	106
XXI. ATTITUDE OF THE RESPONDENTS TOWARD THE INFLUENCE THE CONSERVATION RESERVE PROGRAM HAD ON THE COMMUNITY AND ON THEIR PERSONAL WELFARE . . . . .	109

## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Relative Ranking of Reasons, by the Paired Comparison Method, Why 55 Land Owners, Actively Farming Prior to Contracting, Participated in the Conservation Reserve Program . . . . .	69
2. Relative Ranking of Reasons, by the Paired Comparison Method, Why 34 Respondents, Actively Farming Prior to Contracting and Less than 55 Years of Age, Participated in the Conservation Reserve Program. . . . .	85
3. Relative Ranking of Reasons, by the Composite-Standard Method, Why Nine Land Owners, Not Actively Farming Prior to Contracting, Participated in the Conservation Reserve Program. . . . .	92

## ABSTRACT

This study is concerned with the effects the Conservation Reserve Program had on controlling production, the physical descriptions of the farm firms that participated both before and during the contract period, the economic effects the Program had on the farm firms and participants, and attitudes of the participants toward the Program. The area of concern is northeastern Montana where there was a greater concentration of participation in the Program relative to other areas of the State.

Most of the data needed to examine the above concerns were obtained by personal interviews of a sample of participants. This together with historic research, and information obtained from people with knowledge about the Program fulfilled the data requirements.

The Program was well received by small farm operators as evidenced by a greater number of applications for the Program than could be accepted under the limited budget. Reasons for participation among the respondents were analyzed by the paired comparison technique. The top ranking two were inadequate size of farm to have an economic unit and increased farm income.

The respondents indicated that about a third of their contracted cropland acreage would remain in grass after the contracts had expired. In most instances this cropland was the least productive land.

Participation in the Program reduced the labor required on the farms which contributed to an increase in off-farm employment. All of the respondents who had off-farm employment found jobs within the immediate vicinity of their farm and there was little evidence of people moving out of their rural community because of participation. Prior to contracting, participants spent considerable money to produce crops but during the contract little expenditure was required to care for the land. Many respondents used this money to up-grade their level of living and to retire debts.

Attitudinal statements indicated that the respondents were highly favorable toward the Program. The area that appeared the most attractive was the continuation of the Program. The areas that seemed the least attractive were the effectiveness of the Program to control production as compared to the Acreage Allotment Program and in comparing the costs of these two Programs. Of all possible responses toward the statements, about 71 per cent were favorable, 23 per cent unfavorable, and six per cent were non-responses.

## CHAPTER I

### INTRODUCTION

The United States has been plagued with the recurring problem of the over-production of wheat since the early twenties. Except in times of widespread drought, war, and other emergencies, our capacity to produce wheat has exceeded market demands for food uses.

Probably the greatest factor contributing to the surpluses of wheat and feed grains is the rapid advancement of technology. Through the use of more efficient machinery and equipment, improved varieties, fertilizer, and improved farming methods, the production of grain has increased rapidly. The most rapid increases came during times of emergencies. For example, during the second world war farmers were encouraged by high prices to increase their production. Much new land was brought into production and improved techniques were adopted. After the emergency was over, that land was not taken out of production and hence contributed to the growing surplus.

Various farm programs to control wheat production have been in effect for many years. The most common type has been acreage control. Farmers who complied with these programs usually seeded their diverted acres to feed grains if permissible. Because of the increased feed grain acreage, some feed grain crops in the 1950's were considered in surplus and placed under voluntary control. Feed barley was placed in this category in 1962.

The major market demands for wheat are for domestic food, industrial use, feed, and export. 1/ The combined demand function for these four uses of wheat is generally considered inelastic. Therefore a sharp drop in price results in a relatively small change in quantity demanded. Thus, to keep the general price level of wheat relatively high, it was deemed necessary to control production.

The general purchasing power of the people in the United States has been steadily increasing. But the amount spent on foodstuff, especially cereal foods, has not risen in proportion to that spent on other goods. For example, from 1952 to 1965 wheat used for food in the United States only increased from 488.4 2/ to 515.1 3/ million bushels or approximately 5.5 per cent. During the same period the population of the United States increased from 152.0 to 194.6 million or about 28.0 per cent. 4/ This suggests that as people prosper they spend relatively less on staple goods such as those made from wheat and more on luxury goods.

---

1/ Demand is defined as the various quantities of the product that consumers will take off the market at all possible alternative prices in a given period of time.

2/ Economic Research Service, Wheat Situation, WS-182, (Washington, D.C.: United States Government Printing Office, 1963), p. 2.

3/ Economic Research Service, Wheat Situation, WS-202, (Washington, D.C.: United States Government Printing Office, 1967), p. 2.

4/ Bureau of the Census, Population Estimates, No. 377, (Washington, D.C.: United States Government Printing Office, October 20, 1967).

Another facet of this problem is that farmers have been experiencing a price-cost squeeze. Prices received from grain have fallen in proportion to production costs. Farm budgets indicate that the returns from a 450-acre cash-grain farm in Montana will approximately cover variable and depreciation costs leaving nothing for interest on investment or living expenses. 5/ This condition can only exist for a short period of time as evidenced by the decline in the number of small farms in the State. 6/

Because of these occurrences, farmers have been experiencing a period of adjustment. To offset the price-cost squeeze many have increased their farm size in order to reduce their unit production costs. Since the amount of cropland in Montana has remained relatively stable, indications are that some operators are quitting farming which is evidenced by the decreasing number of farms. 7/ Thus, there appears to be a migration of people from farming into other areas of employment, which in turn could create other problems such as:

---

5/ LeRoy C. Rude, Unpublished Data for W-54 Regional Wheat Adjustment Study, (Bozeman, Montana: Department of Agricultural Economics, Montana State University, 1966).

6/ LeRoy C. Rude, Projection of Farm Numbers in Montana, 1975-2000, Bulletin 608, (Bozeman, Montana: Montana Agricultural Experiment Station, Montana State University, October, 1966).

7/ Ibid.

whether the farmers are adequately equipped for other employment, whether other employment is available, and if these people move out of the community what effect does this have on its economy?

This study will focus on the Conservation Reserve Program in Montana with emphasis on that segment of the population who placed their entire farm in the Program. This segment was selected because it presents many facets of the agricultural problem. Emphasis will be placed on examining the physical characteristics of the farm firms, determining why owners participated, determining their attitudes toward the Program, and evaluating the effects the Program had on production.

#### Historical Setting of Farm Programs 8/

Since the beginning of the surplus wheat problem Congress has been attempting to curb production or to find other uses for surplus wheat.

9/ In the early twenties, farm leaders called upon the government for help in bringing about wheat production adjustments consistent with

---

8/ This is only intended to be a brief historical setting of farm commodity programs with emphasis on those that particularly affected Montana grain producers. Special provisions of the programs for small grain producers are not discussed because of their limited application in the State.

9/ Total wheat minus wheat for domestic use, export, and adequate reserve, equals surplus wheat.

economic demands of the market, more orderly marketing of wheat, and improved returns to wheat producers. These features were included in two McNary-Haugen Acts of the 1920's which were passed by Congress but vetoed by the President.

In 1929 Congress passed the Agricultural Marketing Act. This act established a Federal Farm Board to promote effective merchandising of agricultural commodities. The Board was instructed to promote, finance, and work with cooperative marketing associations. It was assumed that through the cooperatives, farmers could sell their wheat in a more orderly manner, withholding wheat when prices were low and increasing sales when prices rose. The cooperatives were also expected to influence farmers to control production to prevent large surpluses. But due to the economic depression and to a large crop in 1929 coupled with the farmers' need for cash, farmers did not control their production and the wheat surplus increased. The Federal Farm Board started to purchase wheat held by the cooperatives, plus new wheat, but wheat prices were very low and the Board was inadequately funded and in 1931 the Program was about finished.

The Agricultural Adjustment Act was passed in 1933. The objectives included the establishment of a balance between production and consumption in order to restore purchasing power for wheat and other agricultural commodities to their 1909-1914 level. Shortly after the enactment of the AAA, the Commodity Credit Corporation was created to

make non-recourse loans to farmers. These loans were, in effect, government purchase contracts in which the farmer had an option to buy back his produce within a stated period by repaying the loan. Thus, the farmer could take advantage of any price rise above the loan within the stated term of the loan. The loan rate became the price support floor for the commodity. Also during the first year of the Act, base acreages 10/ and normal yields 11/ were determined for each farm so farmers could participate in wheat production adjustment programs if they desired. If they participated, reducing wheat acres or marketings, they were to receive benefit payments or price guarantees. To help finance this, processing taxes were levied against processors who used the commodities. These taxes were declared unconstitutional by the Supreme Court in 1936 and thus ended the Program.

The Soil Conservation and Domestic Allotment Act of 1936 offered farmers benefit payments to encourage them to divert production away from wheat and other surplus crops and into other non-surplus commodities. The idea of soil conservation, seeding cropland to hay or grass, was stressed as a way to divert acreage from surplus production. Although farmers did divert potential wheat acreage to hay or grass

---

10/ The base acreage is that acreage of wheat normally raised on a farm over the past few years.

11/ Normal yield is current yield expected on a farm taking into consideration the historical yields.

under this Act, they also made use of continually improving technology to increase their yields and total production while reducing acreage.

A new type of price support for wheat was established by the Agricultural Adjustment Act of 1938. Under this Act, price supports were made mandatory rather than discretionary and could range from 52 to 75 per cent of parity. 12/ To control the wheat supply and adjust production to expected market demands, acreage allotments 13/ were implemented. Price supports to farmers were dependent upon compliance with their wheat allotment and penalties were applied to those who overplanted their allotment. The Act also provided for crop insurance, soil conservation, and research on utilization of surplus commodities. Many of the features of this program were retained in the Agricultural Act of 1956.

The Act of 1956 provided that a farmer would receive a supported price for his wheat if he did not seed over a predetermined acreage. This predetermined acreage or acreage allotment was the average of the part three-year wheat acreage history. If a farmer did not comply with

---

12/ Parity is the relationship between the prices received by farmers for his products and the prices he has to pay for goods and services. During the 1910-14 period this relationship was considered to be 100 per cent and the present use of this concept related back to this period.

13/ An acreage allotment is a portion of a farmer's wheat base. This concept was implemented as a means to reduce wheat acreage and in turn, production.

this regulation, he had to sell his wheat on the open market and he would have his future wheat base acreage reduced by one-third the amount he had overseeded. Whether or not wheat acreage controls would be in effect was determined annually by the farmers. This type of a wheat acreage control program was continued through 1965.

Another phase of the Act of 1956 was to subsidize farmers for shifting cropland to conservation uses. This entailed both the Acreage and Conservation Reserve Programs. Both programs specified that land under contract in the programs could not in any way be used for production unless authorized by the Government. The subsidies for both programs came in the form of direct annual payments. The Acreage Reserve Program was a temporary measure to reduce production of surplus crops. It was designed to last for four years (1956 through 1959), and the length of contract was for one year.

The Conservation Reserve Program was designed as a long-range program. This program was in effect for five years (1956 through 1960) and participants could sign either three, five, or ten-year contracts which stipulated that they would take a certain amount of cropland out of production and put it to some conserving use. Most of the contracted land in Montana was seeded to grass. 14/

---

14/ A more complete description of the Conservation Reserve Program is presented on page 12.

In 1964 a different type of wheat program was initiated, designed to help maintain the income of wheat farmers. It stipulated that if any farmer voluntarily complied with the provisions of the program he would be eligible to receive domestic and export marketing certificates. Domestic marketing certificates were given for that part of normal production 15/ of the farm wheat allotment which was used for food products consumed in the United States and export certificates for the part to be exported. The certificates had a cash value in addition to the sale price or the price support loan of the wheat and were redeemable at the Agricultural Stabilization and Conservation county offices. Domestic marketing certificates had a value of 70 cents a bushel and export marketing certificates 25 cents a bushel.

Wheat marketing certificates were issued for an amount equal to 90 per cent of normal production on the wheat allotment. Domestic certificates were issued for 45 per cent of this production and export certificates on the other 45 per cent. In order for a farmer to receive his maximum number of certificates he had to seed at least 90 per cent of his allotment. Since certificates were issued on the basis of acres planted for harvest and the normal yield, farmers did not have to produce their normal production to receive their full quota of

---

15/ Normal production equals the wheat allotment times normal yield.

certificates. In this respect the program had insurance features.

Other provisions of the 1964 wheat program included diversion payments and the choice to plant approved substitute crops on the diverted acres for conservation use. In Montana safflower was the only approved substitute crop. Diversion payments were made to farmer if they diverted an additional acreage from their wheat allotment not to exceed 20 per cent of their farm wheat allotment. The additional acreage was that above the 11.11 per cent they were required to divert in order to comply with the program. The diversion payment per acre amounted to 20 per cent of the county loan rate per bushel multiplied by the normal yield per acre for their farm.

In order for a farmer to be eligible for price-support loans and certificates he had to agree to produce within his farm wheat allotment and any other allotment crops, and meet the Program's conservation-use provisions. Most Montana farmers met the conservation-use provision by summerfallowing the diverted acres.

Next to wheat, barley is generally regarded as the most profitable cash-grain crop in Montana. In 1962 barley was included in the feed grain acreage diversion program. Farmers could receive price-support loans on all their barley production if they diverted 20 per cent of their base acreage to some conserving use with an option to divert an additional 30 per cent of their base. Payments were made on the acreage diverted. The per acre payment for the first 20 per cent equaled the

county support rate times 50 per cent of normal production, for the second 20 per cent it equaled county support rate times 60 per cent of normal production, and for the remaining 10 per cent it equaled the county support rate times 50 per cent of normal production.

The principle change in 1963 in the feed grain program for barley was that farmers received price support payments in addition to price support loans. And the major change in the wheat and feed grain programs in 1965 was that a farmer complying with both programs could raise wheat on his feed grain base and feed grains on his wheat allotment acreage.

The Food and Agricultural Act of 1965 continued the same types of voluntary feed grain and wheat programs in 1966 and stipulated that they would remain in effect through 1969. <sup>16/</sup> The commodity programs for cotton, wheat, and feed grains, encompassed in the Act, attempted to strike a balance between production potential and ample supplies, and between adequate farm income levels and reasonable government expenditures. The objective was to provide ample supplies to fill consumers' needs and to meet foreign obligations. It authorized acreage diversion programs to balance production with needs for all three crops with payments to maintain income from the retired acres.

---

<sup>16/</sup> Agricultural Stabilization and Conservation Service, The Food and Agricultural Act of 1965, (Washington, D.C.: United States Department of Agriculture, October, 1965).

A valuable addition to the Act of 1965 was the cropland adjustment program. It encouraged longer period of land retirement at lower annual cost. This program also allowed for converting cropland into other uses needed by the expanding urban populations. This would be accomplished by encouraging conservation uses aimed at beautifying the countryside and at preventing water and air pollution and by shifting land to recreational uses such as hunting, fishing, camping, and hiking.

The commodity programs were designed to work toward reduction of surpluses to reduce government outlay. The pricing provisions were intended to encourage maximum domestic use of all three commodities; at the same time the market price support would be around world levels. This would continue the competitive position of feed grains in world markets and would permit the continued export with little or no government subsidy assistance.

#### Description of the Conservation Reserve Program

The objectives of the Conservation Reserve Program of the Soil Bank were to reduce the stocks of commodities going into government and non-government storage and to promote conservation of land resources.

All farmers raising any kind of crops could participate in the Program and the participants had to put the land to some approved soil conserving use. The government paid the farmers 80 per cent of their

cost of establishing the conserving use, which in Montana was usually a vegetative cover. The participant could not use the contracted land for any kind of production and had to prevent it from becoming a source for spreading noxious weeds.

There were two types of contracts available to farmers, a whole-farm contract and a part-farm contract. The whole-farm contract specified that all cropland in the farm had to be put to some conserving use. In the part-farm contract, farmers specified how many acres they wanted to place in the Program and then put only this amount to a conserving use.

There were two payment rates at which land could be placed in the Program. One was the regular rate, which applied to contracts expiring in three years. The other was the regular rate plus ten per cent of the regular rate, which applied to five or ten year contracts.

Conservation Reserve Program contracts also had diversion and non-diversion payment rates. The diversion rate applied to the acres taken out of production and the nondiversion applied to the acreage that was not taken out of production. In Montana the nondiverted acreage was mainly summer fallow. The diversion rate was the same as the regular rate, or regular rate plus ten per cent depending upon the length of the contract. The nondiversion rate was a specified percentage of the diversion rate. Prior to 1958 the nondiversion rate was 30 per cent of the diversion rate. In 1958 the Agricultural Stabilization and

Conservation Service was authorized to raise the nondiversion rate up to 50 per cent of the regular rate for whole-farm contracts. In 1959 the nondiversion rate was raised again for whole-farm contracts to 100 per cent of the regular rate.

The maximum per acre payment that any farmer could receive was determined by the county Agricultural Stabilization and Conservation Service committee. First, the committee determined average yields for every allotment crop in the county. Then they varied these yields from the county averages according to the relative productivity and farming methods on each individual farm. By this means, a productivity index was determined for each farm. To determine the maximum payment per acre for a given farm, the committee would multiply the county average yield by the productivity index. This product was then multiplied by the National average price 17/ to obtain the maximum rate per acre that could be paid on a given farm. The maximum payment that could be paid on any one farm was \$5,000.

During the first two years (1956 and 1957) of the Conservation Reserve Program in Montana there was little participation. Farmers who

---

17/ National average price is the average price that farmers received for a commodity in the United States.

signed contracts during this period received payments at or about the regular rate. In 1958 and 1959 after the increases of diversion payments and after farmers had become better acquainted with the Program, there were more applications for contracts than could be accepted with the appropriated funds. At this time the Agricultural Stabilization and Conservation Service employed the following method for accepting applications: At the beginning of the program each farmer was sent notice of what his regular rate would be in case he wanted to participate. Each farmer was free to make application at this rate or at a lower rate. When the county committee had received all applications during a year, the bid rate of each application was divided by the regular rate giving the competitive rating. The applications were then separated into groups.

The first group contained those farmers who made applications the previous year but could not be accepted because of limited funds and had elected to accept a rate based on competitive averages of all applications. The second group contained applications where the competitive ratings were less than 70 percent, the third 70 to 74.9 per cent, the fourth 75 to 79.9 per cent, and on down to the last group, 95 to 100 per cent. In all there were eight groups.

After all eligible applications were grouped, approvals were given starting with the first group and continuing through the successive numerical groups to the extent that funds allocated to the county would

permit. In case applications had the same competitive rating and all these applications could not be accepted, applications within the group were given priority preference in the following order: 18/

1. Applications offering farms on which land was previously placed under contract and that contract was due to expire.
2. Applications offering land which includes all eligible land in the farm.
3. Applications offering land for the longest contract period.
4. Applications offering land which would be devoted to such practices as tree planting for forestry or erosion control, dams for cover protection or for fish, and water and marsh management were given priority over those that were devoted to vegetative cover.
5. Applications offering land at the lowest annual payment rate per acre.
6. Applications offering the largest acreage.

From 1956 to 1960 more than 300,000 farmers in the United States signed Conservation Reserve contracts. 19/ These contracts took approximately 28.3 million acres of cropland out of production.

---

18/ Commodity Stabilization Service, The 1960 Conservation Reserve, (Washington, D.C.: United States Government Printing Office, July, 1959).

19/ Ronald O. Aines, Release of Land from Conservation Reserve Contracts, Agricultural Economics Report No. 34, (Washington, D.C.: United States Government Printing Office, May, 1963).

Estimates of additional production that would have occurred during 1957 through 1962 in the absence of the Program are shown in Table I.

From 1957 to 1962 the wheat carryover in the United States increased from 908.8 million bushels to 1,321.9 million. 20/ If the Conservation Reserve Program had not been in effect during this period the surplus wheat would have been approximately 22 per cent greater than it was in 1962. During this period the carryover increased at an average yearly rate of 83 million bushels. Without the Conservation Reserve Program it would have increased by 139.3 million bushels per year. From this it may be hypothesized that if the Conservation Reserve Program would have been expanded approximately 40 per cent there would not have been any increase in carryover during this period.

Between 1956 and 1960 there was a maximum of 2,053 Conservation Reserve contracts in effect in Montana. They removed from production approximately 630,000 acres of cropland. More than 1,500 of these were whole-farm contracts involving around 495,000 acres. The cost of removing this land from production for one year was about \$5.7 million.

The Program started rather modestly in Montana with relatively few three-year contracts and with the emphasis on the five-year

---

20/ Economic Research, Statistical Reporting, Agricultural Research, and Foreign Agricultural Services, Handbook of Agricultural Charts, 1964, Agricultural Handbook No. 275, (Washington, D.C.: United States Government Printing Office, September, 1964), p. 66.

TABLE I. ESTIMATE OF ADDITIONAL PRODUCTION THAT WOULD HAVE OCCURRED IN ABSENCE OF THE CONSERVATION RESERVE PROGRAM, UNITED STATES, 1957-1962.\*

Crop	Unit	Estimated Production Avoided (000)
Corn	bu.	857,126
Wheat	bu.	283,254
Cotton	bales	2,123
Peanuts	lbs.	600,416
Rice	cwt.	855
Tobacco	lbs.	78,687
Oats	bu.	646,210
Barley	bu.	190,972
Soybeans	bu.	97,183
Sorghum grain	bu.	675,242
Flaxseed	bu.	18,682
Dry edible beans	cwt.	3,625
Irish potatoes	cwt.	34,016
Hay and pasture (hay equiv.)	tons	32,070

\* Source: Soil Bank Division, Agricultural Stabilization and Conservation Service, United States Department of Agriculture, Washington, D.C.

Production adjustment for 1957 through 1961 is based on each respective year's crop yields, adjusted for location and quality of the reserve acres; 1962 estimate is based on recent average yields adjusted for location and quality of land in the Program.

contracts. The big year in terms of number of contracts was 1959 after the diversion rate was raised to 100 per cent of the regular rate for whole-farm participation. Those contracting in 1959 appeared to be more enthusiastic and had less misgivings about their decisions, as evidenced by a large proportion of ten-year contracts.

In Montana the average cropland acreage of whole-farm contracts was approximately 335 acres and part-farm contracts was about 295 acres per farm. This probably indicates that the amount of acreage in any one contract was influenced by the \$5,000 limitation. Most of the participation occurred in northeastern Montana, where farms are relatively small and yields are relatively low as compared to most other areas of State.

Determining the effects that the Program had on production in Montana is difficult due to the lack of information. But apparently because of the relatively high average payment rate of \$8.30 per acre for part-farm contracts compared to about \$9.30 per acre for whole-farm contracts, it indicates that a much larger number of crop acres than summer fallow acres went into the Reserve Program from part-farm contracts. This, in turn, suggests that many of the farmers prior to contracting were partially following a double cropping system. If this was the case, the farmers probably contracted enough acreage at the regular rate so that their planted acreage would be the same as their summer fallow acreage. The crops most likely to be taken out of

production would be those producing the least income.

Most of the wheat acreage that was taken out of production was by whole-farm contracts. Montana's wheat allotment during the 1956-1960 period was approximately 4,020,000 acres. The Conservation Reserve Program reduced this acreage about four per cent and decreased production about three million bushels during its peak year.

#### Previous Studies

In 1957 the Farm Economics Research Division made farm surveys in selected areas of six states to determine the effects of the Conservation Reserve Program. <sup>21/</sup> The states included Maine, Wisconsin, South Carolina, Texas, South Dakota, and Oregon. More than 1,000 farm operators were interviewed of which about half were participating in the Program. The findings indicated that the Program was helping many farmers make adjustments in their farming operations and was speeding up adjustments already in progress. Payments under the Program appeared to represent a reasonable return on investment in land but did not compensate farm operators for reductions in earnings of labor, machinery, and other resources. The major reason among the older farmers for

---

<sup>21/</sup> Agricultural Research Service, The Conservation Reserve Program of the Soil Bank, Effects in Selected Areas, 1957, Agriculture Information Bulletin No. 185, (Washington, D.C.: United States Government Printing Office, March, 1958).

participating was that it helped them to retire and still get an income from their land. Others found it advantageous to put the land in the Program and find off-farm employment, and some utilized the Program to reduce both the size of their farming operations and their need for hired labor. Most of the farmers who did not participate indicated that they needed all their cropland to operate efficiently. Payment rates needed to be higher before participation would be profitable for most farm operators who work full-time on their farms.

Through 1957 about 1.5 per cent of all cropland in the United States was in the Conservation Reserve Program. Farmers indicated that this land was slightly lower in productivity than other cropland. Many of the farmers used the Program to get permanent pasture established to use for grazing when contracts expire. It was anticipated that participation would increase as more farm people became acquainted with the advantages of the Program.

A report of the Secretary of Agriculture discussed the total national operation of the Soil Bank Program, with emphasis on the 1960 Program activities. <sup>22/</sup> Estimates were presented of the total effect of the Program on production of major crops. The discussion emphasized the

---

<sup>22/</sup> Supplemental Report of the Secretary of Agriculture on the 1960 Soil Bank Conservation Reserve Program, Enlarging the Preliminary Report of January 13, 1961, (Washington, D.C.: United States Department of Agriculture, March, 1961).

success of the Conservation Reserve Program in establishing cover on erosive lands in the Great Plains, and speculated about the probability that much of this land would remain in grass.

In 1961 Bailey and Aines made a study to determine how wheat farmers would adjust to various farm programs. 23/ A section of this study discussed the Conservation Reserve Program. It indicated that the Reserve Program presented a different type of decision for the farmer than either the acreage allotment or marketing allotment programs. In the latter two programs the choice would be among crops within the present scale of farming operations. The Conservation Reserve offered the choice of reduced scale of operations, or of quitting farming. The farmer would need to consider what productive use he could make of his time and the capital that would be released from farming. He also had to make a decision as to the amount of participation that would be most profitable to him.

Aines made a nationwide mail survey in 1961 to obtain information on expected use of land under contracts expiring December 31, 1961. 24/ He also made a personal interview survey in six selected areas of

---

23/ Warren R. Bailey and Ronald O. Aines, How Wheat Farmers Would Adjust to Different Programs, Production Research Report No. 52, (Washington, D.C.: United States Government Printing Office, May, 1961).

24/ Aines, Op. Cit.

Minnesota, North Dakota, and Texas to gather more detailed information. His findings indicated that the Conservation Reserve Program would result in considerable land-use adjustments, with more adjustments taking place in areas with livestock than in cash crop farming areas. Farmers interviewed who were planning to make a permanent land-use adjustment from cultivated crops to grassland indicated that this land was of lower value and lower yield. The major crop which farmers intended to produce on their released land was feed grains. This was largely because nearly half this land was used to produce feed grains before being put under contract and therefore retained its feed base upon release. Farmers indicated that only a small amount of the released land would be returned to wheat production. In total the acreage of land going back into feed grains and wheat was relatively small.

The interest in new or continued land retirement contracts varied widely between the six areas studied. Farmers indicated that at diversion rates equal to or slightly above rates of their expiring contracts, they would recontract from 43 to 133 per cent as much land as that which would be coming out of contract. Farmers with livestock responded favorably to a land retirement program which would allow grazing at a reduced payment rate.

A study made in North Dakota included some of the major items this

study proposes to examine. <sup>25/</sup> In that study 59 participants with whole-farm contracts were interviewed. Their farms average 324 acres in size with an average of 246.5 eligible acres in the Soil Bank. Fifty of the farms were owner-operated and the owners averaged 52 years of age. Six of the 35 farmers who lived on their farms before placing them in the Soil Bank moved off the farms, and 13 of the 59 owners had retired. Among the primary reasons for placing farms in the Soil Bank, 44 per cent emphasized income, 37 per cent health and retirement, and 19 per cent other. The pattern of contract termination showed 13.3 per cent of the acreage emerging in 1963, 17.2 per cent in 1967 and 1969, and 31.9 per cent in 1968. This indicated a heavier proportion of long-term contracts than the national pattern, in which 40 per cent emerged in those last three years and the rest earlier. The results showed a slight increase in net income per farm under the Soil Bank, mostly due to off-farm employment. Farmers emphasized increased stability of income as the major advantage of participating. Eighty-three per cent of the farmers said they would be willing to renew their contracts with the same payments, and only 3.4 per cent would not renew.

In a Nebraska study a survey was made of both participating and

---

<sup>25/</sup> Fred R. Taylor, Laurel D. Loftsgard, and LeRoy W. Schaffnew, Effects of the Soil Bank Program on a North Dakota Community, Agricultural Economics Report 19, (Fargo, North Dakota: Department of Agricultural Economics, Agricultural Experiment Station, North Dakota State University, May, 1961).

non-participating landowners. <sup>26/</sup> A comparison indicated that the participants were slightly younger, a smaller proportion were actively engaged in farming, fewer were living on the farm, and a higher proportion had non-farm incomes of more than \$500. The farms of the participants average about 35 per cent larger than the non-participants but the cropland was only about 48 per cent as valuable. A comparison of livestock enterprises showed that 75 per cent of the participants and 53 per cent of the non-participants had some kind of livestock. Owners who did not participate had more productive farms, more intensive farm operations, more invested in land and machinery, and a higher percentage of land under cultivation.

As in the North Dakota study, a large proportion of the participants were retired or semi-retired. Other characteristics included off-farm employment, absentee landowners, and farmers who owned land that was not convenient to farm. The primary reason for participating was to increase farm income. About 85 per cent of the non-participants indicated that they could make a greater return from farming, and about seven per cent said they were not well informed about the Program.

A study in New Mexico, like the one in Nebraska, indicated that whole-farm participants were older than either the part-farm and non-

---

<sup>26/</sup> Ralph D. Johnson, The Conservation Reserve Program in Nebraska, SB 470 (Lincoln, Nebraska: Nebraska Agricultural Experiment Station, University of Nebraska, February, 1962).

participants. 27/ The major reason given for participation was prolonged drought and hopes to raise their farm income. Other reasons included conservation, shortage of labor, health, and retirement. The principal reason for not participating was that they could make more money from farming.

More than 60 per cent of the New Mexico participants planned to leave their Conservation Reserve land in permanent vegetation after contract termination. Less than 15 per cent intended to produce crops and the rest were undecided. About 86 per cent of the participants would renew their contracts if given the opportunity. Of those that would not renew at their present rental rates, nearly half would at increased rates.

The average size of the whole-farm contracts was about 290 acres and of the part-farm contracts the average was about 360 acres. The author indicated that many of the part-farm participants were on large farms that received the maximum rental payment of \$5,000 and had cropland in excess of the contracted acreage.

A study made in Georgia was very similar to those made in the

---

27/ Marlow M. Taylor, The Conservation Reserve Program in New Mexico, Research Report 54, (Albuquerque, New Mexico: Agricultural Experiment Station, New Mexico State University, May, 1961).

previously mentioned states. 28/ Objectives were to differentiate the characteristics of the participants and non-participants, and to determine the effects of the Program on crop and livestock production and on resources. Major reasons for participating were hopes for a larger income, to establish conserving crops, poor health, or advanced age. For those not participating the reasons were the belief that the conservation reserve would be less profitable than other uses of the land, or a lack of understanding the Program. In this area, the average age of the non-participants was three years older than the participants. More participants than non-participants resided off their farm and were engaged in part-time farm or full-time off farm work. The Program caused very little adjustment in livestock production on most sample farms. Approximately 60 per cent of the contracted acreage was expected to remain in vegetative cover or trees, and about six per cent was expected to go back into crop production.

#### Research Problem

Farmers have been experiencing a continuous period of adjustments and have been faced with making land-use decisions for many years. Probably the greatest economic pressure exerted against them has been

---

28/ W. C. McArthur, The Conservation Reserve Program in Georgia, Its Effects in the Piedmont and Coastal Plain, ERS-31, (Washington, D.C.: Economic Research Service, United States Department of Agriculture, December, 1961).

the squeeze caused by increasing costs and declining prices. Because of this situation farms are continually growing larger and fewer in number. This suggests that many of the small operators are finding themselves on uneconomical units and are going out of business.

Montana's largest cash-grain crop is wheat and barley is second. Some of the other important grain crops raised in the State include rye, flax, and oats, but the amounts of these produced are relatively minor in comparison to wheat and barley. Both wheat and barley have been considered as surplus crops and have been included in production control programs. To derive benefits from these programs farmers have had to reduce the acreage of these crops. The diverted acres were generally put to some conserving use or else used to produce non-surplus crops. But the number of non-surplus crops that can be profitably raised in Montana are relatively few in comparison to other states.

The advent of the Conservation Reserve Program of the Soil Bank presented a unique opportunity to study several aspects of the farm problem. The Program started rather modestly in Montana with relatively few three-year contracts and with emphasis on the five-year contracts. The big year in terms of number of contracts was 1959. Those that contracted in 1959 seemed more enthusiastic and had less misgivings about their decisions, as evidenced by a large proportion of ten-year contracts. The number of whole-farm, five-year contracts that terminated in 1963, indicates that important decisions were faced

during 1963.

The major concern of this study is to determine what economic effects whole-farm participation in the Conservation Reserve Program had on farm firms in Montana, what prompted these firms to participate, what adjustments were made because of participation, and what their plans were after contracts had terminated. It is hoped that the results from this investigation can be used as an aid to help formulate policy decisions regarding possible new land retirement programs.

#### Objectives

The general objective of this study is to survey and analyze the individual and aggregate problems involved in adjusting to participation in the Conservation Reserve Program, and those problems encountered upon termination of contracts. The specific objectives are to:

1. Determine the physical characteristics of the farm firms that were placed under contract.
2. Identify the circumstances that influenced the decision to enter the Conservation Reserve Program.
3. Determine what adjustments in resource use and family living and other activities resulted from participation.
4. Explore the plans, expectations, and attitudes with respect to contract termination.
5. Determine participants' subjective appraisal of the Conservation Reserve Program.

## CHAPTER II

### PROCEDURE

Data from the Agricultural Stabilization and Conservation Service were compiled to complete a general description of the Conservation Reserve Program in Montana. From this was separated the segment of concern in this study--the dryland farms in the Great Plains portion of the State.

There was a high concentration of contracts terminating in Montana in 1963 and 1968. To supplement secondary data, it was decided that a moderate sample of whole-farm participants from the terminal year 1963 be surveyed during the spring of 1963. At this time these participants were in the process of making land-use decisions. If they decided to turn the land back into cropland they would probably start working that land during the summer of 1963 so it would be ready for either fall or spring planting. If the land were to remain in grass, plans would be made for utilization by livestock.

December 31, 1963, was the termination date for 413 whole-farm contracts in Montana. Of these 413 contracts, 235 were in a ten-county area in northeastern Montana. From these ten counties, the five counties of Dawson, McCone, Richland, Roosevelt, and Sheridan were selected to represent the variation in characteristics of the area. These five counties contained 184 of the whole-farm contracts expiring in 1963 or about 44 per cent of the State's total.

An intensive survey in the Great Plains portion of Montana promised to be more meaningful than covering a larger, less homogeneous area. The concentration of Conservation Reserve participation in northeastern Montana provided for economy in the survey. Smaller sizes of farms and relatively lower yields in this area as compared to other undoubtedly contributed to this concentration because these characteristics seemed to invite greater participation. Whole-farm participation, which requires more drastic adjustment both at the inception and termination of contracts appeared of greater significance in terms of management decisions than part-farm participation. The greater changes made by whole-farm participants in type and amount of production, mobility of resources, and sources of income have a larger influence on the farming and related economics of an area.

#### Description of the Study Area

##### Topography, Soils and Climate

The northeastern area of Montana is typical of the Great Plains in that it is treeless, slopes generally to the east, and has large areas of fairly level plains. Major variations from the plains topography are the river valleys and associated breaks and badlands, and some fairly conspicuous ridges, plateaus, and buttes. Most of the area has been glaciated and the dark brown soils are the most prevalent.

Along the western and southern parts of the area the chestnut soils

are common. The topography is often favorable for cropping, but the light color is indicative of the dry climate in which these soils have been formed. Crop yields on chestnut soils are persistently low and highly variable. All soils in the area might contain, in various degrees, unfavorable farming characteristics such as a rugged topography and stoniness.

Temperatures are relatively low during the winters and high during summers. Lows of minus 20 degrees and highs of 100 degrees are not uncommon. Usually, the last killing spring frost occurs in May and the first killing fall frost in September with the average growing season being about 128 days.

Average annual precipitation varies among the weather reporting stations within the area, ranging from about 11 to 16 inches. Approximately half of the annual precipitation comes during the months of May, June, and July. 30/

#### Type of Farming

Because of the relatively short growing season, farmers are limited in the types of dryland crops they can raise. Of these, wheat is by far the most predominant with the spring varieties being more common than the winter. Next in order of importance is barley with

---

30/ Climate and Man, Yearbook of Agriculture, (Washington, D.C.: United States Government Printing Office, 1941), pp. 955-961.

miscellaneous crops such as oats, flax, rye, and safflower utilizing the remaining acreage. Because of the low and highly irregular rainfall, in addition to other crop hazards such as insects, diseases, and hailstorms, yields are highly variable and relatively low as compared to most other areas of the State. The most typical dryland grain operation is crop fallow where half the cropland is summer fallowed each year to conserve moisture and control weeds. Irrigation is generally confined to the suitable land adjacent to the Missouri River and its tributaries and the number of acres irrigated is very small in comparison to the total cropland acres in the area.

A large proportion of the land that is not used for crop production is usually unsuitable for cultivation and has remained in native grasses. When feasible this acreage is used for livestock production. Most of the livestock enterprises are extensive in nature, requiring a larger acreage of native pasture for summer grazing and very little labor. Frequently supplemental pasture is provided by grain stubble after harvest. Very little of the cropland acreage is used only for livestock production. During the winter months when grazing is limited because of shortage of grass and/or because of the severity of the winter, livestock are fed hay and in some cases hay is supplemented with a grain ration.

Of the livestock raised in the area, beef cattle are by far the most predominant. Sheep are next in order of importance followed by

dairy cattle which are comparatively minor.

The predominant types of farms in the area are cash-grain and grain-livestock. The number of farms producing only livestock are relatively few as compared to the other two types. Since a large part of the untillable land is intermingled with cropland, practically all farms have some acreage that would be suitable for grazing.

It appears that whether or not an operator has a livestock enterprise is determined by total farm income and the relative amount of income derived from each of the crop and livestock enterprises. For example, a farmer who realizes an average gross return of \$4,000 per year from his cash crops and has the facilities to support a small livestock operation will be more apt to do so than an operator who averages \$12,000 a year from cash crops and has the same facilities for livestock.

#### The Schedule

Information secured in the survey covered the following five general areas (intermingled in the schedule for convenience in interviewing): (1) General information including identification and description of farm and farm enterprises immediately preceding contract; (2) Adjustments made as a result of contracting; (3) Factors, pro and con, that led to the decision to contract, including terms of contract; (4) Plans for adjustments after termination; and (5) Subjective

appraisal of the Program. The discussion that follows will enlarge on the information required in each of these areas. For additional information concerning the schedule see Appendix A.

The first area of the schedule provided for identification with the specific contracts listed in the county Agricultural Stabilization and Conservation Service 31/ offices. It also identified the respondent including name and address, indicated whether the permanent residence was on or off the farm, ascertained residence before contracting, and established his age. In addition, it enclosed the listing of land use before contracting such as the wheat allotment, acreage of wheat and other crops, summer fallow, types of pasture, and farmstead and waste with a matching column showing the use at the time of enumeration. Sizes and kinds of livestock enterprises before contracting and at the time of contract were also recorded.

Major adjustments have taken place under the contracts, especially under full participation. The present land-use was recorded and special attention was given to the soil cover, establishing costs and the maintenance provided. Since some of the study area was declared a disaster area in 1961, use of the Soil Bank land during that emergency was noted. Special attention was given to use being made of

---

31/ Hereafter the Agricultural Stabilization and Conservation Service will be abbreviated as ASCS.

non-eligible land with emphasis on any change in livestock operations.

Adjustments were expected to have been made in capital use and allocation since operating capital was released from the crop production process. The schedule also attempted to provide answers to the questions: Has machinery been disposed of? How is the farmer using capital released from the farm operation?

As with capital, labor and management have also been released by putting land into the Soil Bank. To determine the extent, questions were asked concerning labor sources and utilization before and during the contract period such as: Who did the work? What are these people doing now? Also asked were questions concerning the amount of time released, with emphasis on the operator--whether he was fully employed before, on and/or off the farm, and his present employment:

The income levels from all sources before and during contract were also compared. During the contract period the participant's farm income was stable, he received the same amount of payment every year throughout the life of his contract. Prior to participating, his farm income level would fluctuate. The main cause of this fluctuation was the variability of crop yields. Because stability of income is sometimes as important as its level, attempts were made to obtain the respondent's opinion concerning the importance of income stability.

The decision to contract was assumed to be based on careful consideration of a number of factors both pro and con. An attempt was

made to induce the respondent to express these factors freely and without guidance, in an effort to find out what seemed foremost in his mind. Attempts were made to rank them in the order of importance, especially the top two or three. Whether the decision to participate was close or decisive should be significant. The actual terms of his contract are important here because of its direct influence on his decision.

As the terminal date of the contract approached, the land owner was expected to be considering his land-use alternatives. Attempts were made to find out what he thought these alternatives were and how he evaluated them. It was expected that he would face a very real problem of trying to at least equal the net return the land had been yielding under the contract, and some specific questions were asked to investigate this problem.

Respondents were asked hypothetical questions as to whether or not they would recontract in a program similar to the Conservation Reserve Program. This was part of the attempt to determine their attitudes toward their present contract, whether they were satisfied with their rental rates, and whether they had other conflicting interests or motives that would influence their decisions to recontract.

An opportunity was provided for the respondents to express their opinions about several aspects of the Program. These included such questions as: Should the Program be changed? Should the length of contracts be extended? Should the Program be expanded? Is the Program

effective in reducing production? Does it produce desirable shifts such as from grain to livestock production? Does the Program damage the community?

The first part of the analysis is a compilation and classification of descriptive material from the survey. These are arranged in relation to the first three specific objectives of the study. Cross classification and testing of relationships were expected to contribute important explanatory material.

The paired comparisons were processed to yield scale separations of the bulk ranking of reasons for putting farms in the Soil Bank with comparisons of scales based on major sub-groups. The attitudinal statements relative to the Program were examined by the Scalagram method. 32/

#### The Sample

A 50 per cent sample of whole-farm participants with contracts expiring in 1963 was taken in the counties of Dawson, McCone, and Richland, a 33 per cent sample in Sheridan, and from five to ten

---

32/ The Scalagram method is a means of measuring the attitude of the respondents. The objective is to assign individuals in a serial position along an undimensional continuum. The ones or ones having the greatest number of positive responses would rank higher on the continuum than those having a lower number of positive responses. A respondent's ranking on the continuum indicates his attitude toward the issue (the Conservation Reserve Program) relative to the other respondents.

schedules in Roosevelt. Fewer schedules were taken in Roosevelt County because it was believed that many of the contracts in this county would include some irrigated land and the main interest of this study was in dry cropland. This, however, was not the case, but since Roosevelt was one of the last counties surveyed, the original plan was adhered to.

A list of the whole-farm participants was obtained for each of the sample counties from the respective county ASCS offices. From these lists a sample of owners was randomly selected for each county. After the initial sample was drawn, an alternative was selected for each of the initial samples. By this method, 67 farmers were selected, plus 67 alternates.

## CHAPTER III

### CHANGES IN RESOURCE USE DUE TO PARTICIPATION IN THE CONSERVATION RESERVE PROGRAM

Whole-farm participation in the Conservation Reserve Program substantially changed resource uses. Since the cropland was placed in an idle state for a number of years, the amount of labor and management required to care for the land was greatly reduced and much of the farm machinery and equipment was not needed. In many cases these idled resources were put to other uses. For instance, some participants had an opportunity to find other types of employment and a portion of the capital released as a result of not producing crops was put to different uses. This chapter describes these farm firms prior to participation, the adjustments made during participation, and the tentative plans of the respondents after their contracts expired.

#### Description of the Respondents Prior to Participation

Of the 67 people interviewed, six were women. The average age of all respondents was 51.4 years, of women 60.8 years, and men 50.5.

Four women and six men indicated that they were not actively farming prior to signing the Conservation Reserve contract. Seven of these were renting their land to other farmers for a share of the crop, one had the land leased, one hired his farm work, and the other purchased the land in 1959 and put it directly in the Conservation Reserve Program. All the women were either retired or semi-retired.

One of the men had rented out his farm so that all his time could be spent as a cattle trader. The remaining men not actively farming were at least 65 years of age and retired. For additional information on number of respondents actively farming prior to contracting, by age groups, see Appendix B, Table I.

Length of farm ownership ranged from three to 53 years with the average being about 20. There appeared to be a close correlation between age and length of ownership indicating that many had purchased land while they were relatively young. A distribution of the respondents by length of ownership is presented in Appendix B, Table II.

#### Description of Farms and Resource Use Prior to Participation

Wheat and barley were the most common crops raised by the respondents with spring wheat being much more prevalent than winter wheat. Approximately 91 per cent produced wheat, 67 per cent produced barley, 40 per cent produced oats, and 53 per cent had summer fallow during the year prior to contracting. Expectations were that all the respondents would have produced wheat and summer fallowed part of their crop acreage, but because the land was going to be put in the Program they did not follow the normal crop-use pattern. Many indicated that they seeded their entire crop acreage with hopes that weather conditions would be favorable for producing profitable second crops. For additional information on the number of respondents raising various crops see

## Appendix B, Table III.

Over half the respondents had extensive livestock enterprises with beef cattle being by far the most prevalent kind. A few had a small number of milk cows, one had a herd of 150 ewes, and one had 90 sows.

To determine the differences in land uses between those that had a livestock enterprise and those that did not, farm schedules having at least nine animal units were separated from the rest. Tabulations indicated that the grain-livestock farms had on the average over 100 acres more cropland than the cash-grain farms, Table II. On both types of farms the wheat allotment was about 38 per cent of the cropland acreage and the operators seeded wheat up to about 98 per cent of their allotment. Barley was produced on about 14 per cent of the cropland and oats ranged from three per cent on the cash-grain farms to about six per cent on the grain-livestock. The largest difference in cropland use was the amount of summer fallow acreage. The cash-grain farms had an average of 43 per cent of the cropland in fallow and the grain-livestock 32 per cent. One of the probable reasons why the proportion of fallow is lower on the grain-livestock farms is because of the tame hay acreage which normally remains in this crop for a number of years. Another probable reason is that the grain-livestock operators more frequently practice a crop-crop-fallow operation on part of their cropland such as a wheat-corn-fallow rotation. In addition to the cropland the grain-livestock farms had, on the average,

555 acres of native pasture and 40 animal units per farm.

The figures presented in Table II include both the owned and rented acreages. Sixteen of the respondents rented additional land prior to contracting. None of them rented more than 640 acres of cropland and two rented pasture acreage.

Thirteen of the respondents, other than those who rented or leased their land to others, hired part of their farm labor prior to contracting. Of these, nine had at least nine animal units. Two of the laborers were hired for the entire year. Seven of the part-time laborers were hired for general farm work, two for haying, and one during harvest. Part-time labor was hired for an average of about four months. In addition 23 of the respondents hired custom work and seven did some exchange work. Most of the custom work was combining since many of the farmers did not have combines. Exchange work was mostly limited to the adjoining neighbors or relatives, and the amount of work exchanged was small.

After viewing the size of the farms in the sample it was not surprising that 41 respondents indicated that their farms required less than 50 per cent of their time. Fourteen of those that indicated that their farm operation was a full-time job had a substantial livestock enterprise.

The small amount of labor required on many of the sampled farms was the main reason that many of the 37 respondents had off-farm employ-

TABLE II. AVERAGE LAND USES OF CROPLAND ON ALL GRAIN-LIVESTOCK AND CASH-GRAIN SAMPLE FARMS BEFORE CONTRACTING.

Land Use	Type of Farm	
	Grain-livestock (Acres)	Cash-grain (Acres)
Wheat	136	87
Barley	51	33
Oats	22	8
Corn	21	--
Tame hay	11	--
Miscellaneous	4	14
Summerfallow	<u>117</u>	<u>106</u>
Total Cropland	362	248

ment. Of these, 24 had full-time jobs and 13 had part-time.

Approximately ten of those having full-time, off-farm employment, had jobs of the professional type. For these people it was evident that their farm income was supplemental to their income from off-farm employment. For others having full- or part-time, off-farm employment the income obtained appeared to be necessary to supplement their farm income. Most of the part-time work was seasonal such as general farm and construction work.

## Adjustment in Resource Use During Participation

As a result of participation, the respondents placed approximately 18,600 cropland acres in the Conservation Reserve Program. Prior to the survey, it was hypothesized that a large proportion of this contracted acreage would have a lower productivity index as compared to land that did not enter the Program. This, however, was not the case as evidenced by the ASCS productivity index records and by information received from the respondents. Fifty of the respondents indicated that their land, before participation, was equal to the average productivity of the land in their community. Nine indicated that their land was above the average productivity level and eight indicated that it was below. Because of the non-use period, 60 of the respondents believed that the productivity level of their cropland would increase, while seven did not believe the productivity level would be affected.

As specified by the Program, all the respondents put their land to a conserving use. All but four seeded the entire acreage to a vegetative cover; a small part of the contracted acreage was planted to trees. In addition to these four, during the period of participation, eight others planted shelterbelts. Four of these were for farmstead protection and four were planted in fields to prevent soil erosion.

Sixteen of the respondents indicated that they were farming rented or leased land prior to contracting. These acreages ranged from 160 to 1,800 acres per farm with one to two quarter sections being the most

common. All of these operators were actively farming at the time of contracting, but during the period of enumeration only 11 were actively farming.

During the contract period, 28 of the respondents continued to be actively farming as compared to 56 actively farming before contracting, a decrease of 50 per cent. Of these 28 operators, six had cash-grain enterprises, 13 had livestock enterprises, and nine had a combination of grain and livestock. All cropland acreage farmed by these 28 operators during this period was either rented or leased.

Fifteen of the respondents indicated that they had either bought or rented other land since placing their land in the Soil Bank. Eleven obtained cropland, three pasture land, one both crop and pasture, and one hayland. The major reason for obtaining additional land was to expand their existing farm unit. In contrast, only two rented out land since contracting and in both cases it was native pasture.

During the period from just before contracting until 1962, 51 of the respondents changed their pasture use, three made more use of their pasture, and 13 made less use of it. Those that made more use indicated that it was done by increasing their stocking rate. Ten of the 29 respondents that had at least nine animal units prior to contracting decreased their livestock operation. Five of these reduced their herd size and the other sold their livestock just before or after contracting. A common reason for reducing or eliminating

livestock was that additional fencing would be required to keep the livestock off the Conservation Reserve acreage.

In 1962, 40 of the respondents had no livestock as compared to 32 prior to contracting. Of the 27 that had livestock enterprises during the contract period, 11 had decreased their herds and nine had increased their herds. Before contracting there were about 1,590 animal units on these farms, a decrease of 240 animal units or 15 per cent.

The non-use restriction of the Conservation Reserve land was lifted in 1961 to help relieve the shortage of livestock feed caused by drought conditions. Because of this lifted restriction, more than 3,580 tons of hay were harvested from 20 of the sampled farms and 17 sampled farms provided for more than 1,250 animal unit months of grazing. The amount of hay harvested on any one farm ranged from six to 1,200 tons, with the average being 210 tons and the number of animal unit months of grazing ranged from six to 240 with the average being about 73.

To protect the vegetative cover on Conservation Reserve land from livestock, 26 of the respondents had to build fences. The amount of fence built per farm ranged from a half mile to ten miles, at an average cost of about \$325 per mile. Only one indicated that it was a cost-share agreement with the United States Department of Agriculture under the Agricultural Conservation Program. Three of the respondents removed part of their fence to build roads, or because of the poor

condition.

As a result of participation, nine of the respondents sold farm machinery. Of these, four disposed of their complete line with the values ranging from \$500 to \$1,200 per farm. Prices received for the machinery were rather low but since the machinery was old, averaging about 15 years per item, the operators were satisfied with the prices received. Machinery purchased by respondents during participation included a mower to cut hay on the Conservation Reserve acreage, a combine for custom harvesting, and three tillage implements.

All but seven of the respondents reduced their operating cost by participating in the Conservation Reserve Program. Those that indicated no reduction in operating costs had their cropland either rented or leased prior to contracting. Reduction in operating costs ranged from \$200 to \$7,500 per farm with the average being about \$1,400 for 27 of the respondents. Sixteen of the respondents gave a percentage figure indicating the decrease in their operating costs and it ranged from ten to 100 with an average of about 74 per cent.

Operating funds released as a result of Conservation Reserve participation were put to many uses by the respondents. The most common use was for new investments. Six of them put money into stocks or savings, four purchased livestock, seven bought land, and four built new houses and/or other farm buildings. Twenty indicated that part of these funds were used to help retire debts, and 17 specified that these

funds were used for general living expenses and in some cases to increase their standard of living. Two of the respondents used the funds to send their children to college.

Eight of the respondents changed their residence while their land was in the Program. Six of those that moved to a town indicated that the move was permanent, and three of these moved to be closer to schools. Only one of the eight indicated that he was moving back to the farm after contract expiration.

As was expected, the amount of labor expended on the majority of these farms during participation was small. Thirty-three indicated that their farms required no labor and 12 indicated that their farms required from one to ten per cent of their time. Others that expended more than ten per cent of their time were either farming additional cropland or had a livestock enterprise. Of the 67 sampled farms, 56 required less labor than before contracting, eight required about the same amount of labor, and three required more labor.

The amount of farm labor and custom work hired was also greatly reduced in 1962 as compared to the year before contracting. Only eight of the respondents hired farm labor and one hired combining in 1962 as compared to about 19 hiring farm labor and 23 custom work the year before contracting. In all these cases, those hiring help in 1962 were either farming additional cropland or had a livestock enterprise.

In comparison to before contracting, nine more people had off-farm

employment in 1962. During the contract period, 23 respondents retained their full-time jobs, six retained their part-time jobs; five changed from part-time to full-time, seven obtained part-time jobs, five found full-time jobs, one quit a full-time job, and two gave up part-time jobs. As shown by Table III, the increase in off-farm employment occurred in the number having full-time employment while the numbers of those having part-time employment remained the same. Of those having full-time employment, seven were self-employed. None of the respondents indicated that a job was not available if they wanted to work.

TABLE III. NUMBER OF RESPONDENTS THAT HAD FULL-TIME OR PART-TIME EMPLOYMENT THE YEAR BEFORE THE CONTRACTING AND IN 1962.

Employment	Before Contracting (Number)	1962 (Number)
Full-Time	24	33
Part-Time	<u>13</u>	<u>13</u>
Total	37	46

The 46 respondents having off-farm jobs were engaged in 29 different types of employment as shown in Appendix B, Table IV. The most common type was farm laborer, followed by employment with the Agricultural Stabilization and Conservation Service, mail carriers, and school teachers. Practically all had employment within the immediate area of their farm.

In addition, seven of the respondents indicated that members of their families took off-farm employment during participation. Six of these were sons and three were wives. All except one son was employed within the immediate vicinity of his home. The sons took jobs as radio and television repairman, parts man, electrician, store clerk, or heavy equipment operator. The wives found employment as a nurse, housekeeper, or cook. The ages of the sons ranged from 20 to 24 years.

Whether or not participation in the Conservation Reserve motivated members of the family, especially the sons, to find off-farm employment is not known. But since none of the sons came from farm units that could be considered economic, it would appear very unlikely that they would go back to the farm.

#### Plans After Contract Termination

Since the Conservation Reserve contracts of the respondents terminated December 31, 1963, the respondents were confronted with what they should do with their cropland. If the land was to be cropped in 1964, it was expected that some would be breaking up the sod during the summer of 1963 and preparing it for seeding during the spring of 1964. To determine what their plans were, the respondents were asked to indicate what land-use alternatives they were considering and which ones they thought they would select. The responses to these questions are shown in Table IV. The tabulated results indicated

that approximately 78 per cent of the respondents were going to crop all or part of their cropland after contract termination and about 30 per cent decided to leave all or part of the land in vegetative cover for livestock use. Nine respondents indicated that only their least productive land would remain in grass and the rest would be put back into crop production. Of the total Conservation Reserve acreage in the sample, about a third was to remain in grass after contract termination.

TABLE IV. NUMBER OF RESPONDENTS CONSIDERING AND SELECTING VARIOUS LAND-USE ALTERNATIVES FOR 1964.

Land-Use Alternatives	a/ Considered (Number)	b/ Selected (Number)
1. Plow up cover and farm land as before contracting	42	41
2. Leave cover and use land for livestock	29	17
3. Plow up the cover and rent the land	15	10
4. Leave cover and rent for livestock use	9	3
5. Sell the farm	9	2
6. Leave cover and rent the land for cropping	6	1
7. Leave cover and produce hay	4	2

a/ Many of the respondents considered more than one alternative.

b/ Some of the respondents selected more than one alternative, and 10 of the respondents had not made a selection.

In preparation for the 1964 crop year, 41 respondents planned to start plowing their land during the summer or fall of 1963. Eleven of them planned to plow all their contracted acreage, 30 only part of their acreage and ten did not plan to start until the spring of 1964.

The kind of crops planned to be raised by the respondents in 1964 are shown in Table V. The most common was wheat followed by barley and oats. Many indicated that they were at least going to seed their wheat allotment in fear that if they did not they would either lose their allotment or have it reduced. Attempts were made to obtain the acreages of the crops planned for 1964, but because many of the respondents were in doubt as to these acreages the responses could not be tabulated.

TABLE V. NUMBER OF RESPONDENTS PLANNING TO RAISE VARIOUS KINDS OF CROPS IN 1964.

Crops	Number of Respondents
Spring Wheat	36
Winter Wheat	10
Barley	26
Oats	13
Corn	4
Flax	2
Safflower	1

Within two years after contract expiration, 20 of the respondents planned to increase their livestock numbers and 19 planned to add a livestock enterprise to utilize their grass on the Conservation Reserve acreage. Indications were that total livestock numbers would be larger on the sample farms two years after contract expiration than they were prior to contracting.

After contract termination, 14 of the respondents hopefully anticipated obtaining additional land. Seven of these desired to buy or rent cropland and seven would buy or rent either cropland or pasture. Most of them qualified their desire to obtain land by indicating that they would do so if it was available and at a reasonable price.

Most of the respondents who intended to farm actively after contract expiration planned to make capital investments on their farms. The numbers planning to invest in various kinds of equipment, livestock, and improvements are shown in Table VI. The greatest number planned to invest in livestock followed by equipment and improvements. Also the largest amount of expected investment was for livestock followed by equipment. The expected investments for livestock ranged from \$1,000 to \$16,000 as indicated by 13 respondents, for equipment the expected investments ranged from \$500 to \$6,500 by seven respondents, and improvements ranged from \$500 to \$4,000 by seven respondents. Average expected investments were \$4,420 for livestock, \$2,530 for equipment, and \$1,160 for improvements. The average amount of operating capital

that was expected necessary for farming after contract expiration ranged from \$500 to \$8,000 with an average of about \$2,100 as indicated by the 22 respondents who were going to actively farm.

TABLE VI. NUMBER OF RESPONDENTS PLANNING TO INVEST IN VARIOUS KINDS OF EQUIPMENT, LIVESTOCK, AND IMPROVEMENTS AFTER CONTRACT EXPIRATION.

Item	Number of Respondents
Equipment	
Tractor	6
Tillage Implements	7
Haying Machinery	3
Livestock	
Cows or Heifers	20
Feeders	1
Sheep	1
Sows	1
Improvements	
Farm Buildings	4
Fence	4
Water Well	1

## CHAPTER IV

### FACTORS THAT INFLUENCED PARTICIPATION IN THE CONSERVATION RESERVE PROGRAM

After the U. S. Department of Agriculture made public the regulations for participation in the Conservation Reserve Program many state and federal agencies published information which explained the advantages of participation and distributed this information to farmers. Much of this information showed the differences in incomes between farming the land and placing it in the Program and the most marked difference was in that of the low income farms.

To illustrate the income advantage gained from participation, farm budgets were selected from a Montana Agricultural Experiment Station report which showed the difference between the expected returns from a crop-fallow operation and from full farm participation in the Program for a 400-acre cash-grain farm in northeastern Montana, Table VII. <sup>33/</sup> The budget coefficients in Table VII are the same as in the report except the payment rate at which the cropland was placed in the Program. The rate used in the table was the average rate received by the respondents.

Land use characteristics, yields, prices, and costs shown in

---

<sup>33/</sup> LeRoy C. Rude, Land-Use Alternatives for Dryland Cash-Grain Operators, Northeastern Montana, Montana Agricultural Research Report No. 8, (Bozeman, Montana: Montana Agricultural Experiment Station, Montana State University, August, 1959).

Table VII are typical of those actually experienced by farmers on this size of a farm unit during the beginning of the Program. The example shows that the net farm income obtained through participation is about three times greater than that obtained by farming the land. If interest on investment is subtracted from net farm income, the return to labor and management from farming is negative and that from participation is slightly over \$2,000.

The common practice among landlords in this study was to rent their land for a portion of the crop. Those that rented their land for a fourth of the crop usually did not pay any of the production expenses. And those that rented their land for a third to half of the crop usually shared the seed and harvest costs with the tenant. Many of these landlords who rented their land to others also found participation in the Conservation Reserve Program profitable. For example, assume that the farm presented in Table VII was under a landlord-tenant operation prior to contracting and that the owner received a third of the crop and paid a third of the seed and harvest costs, and as an alternative he could place the cropland in the Program. The budget results indicate that it would be about \$250 more profitable for the owner to participate.

Of those in the sample who were involved in a landlord-tenant relationship prior to contracting, 60 per cent indicated that the tenant received no part of the Conservation Reserve payment and the other 40

TABLE VII. BUDGETS FOR TWO LAND-USE ALTERNATIVES FOR A 400-ACRE,  
CASH-GRAIN FARM IN NORTHEASTERN MONTANA.

Budget Items	Land-Use Alternatives	
	Wheat and Barley (Acres)	Conservation Reserve (Acres)
Land Use:		
Spring wheat	134	
Barley	58	
Summerfallow	192	
Conservation Reserve		384
Farmstead and waste	<u>16</u>	<u>16</u>
Total	400	400
	(Dollars)	(Dollars)
Income:		
Spring wheat	2,778	
Barley	742	
Conservation Reserve		<u>3,483</u>
Total	<u>3,520</u>	<u>3,483</u>
Cash Expenses:		
Fuel, oil repairs	466	
Grain storage	96	
Seed treatment	17	
Weed spraying	240	
Motor vehicles	441	73
Insurance	123	63
Taxes	149	118
Miscellaneous	<u>50</u>	<u>50</u>
Total	<u>1,582</u>	<u>304</u>
Net Cash Income	1,938	3,179
Depreciation	883	91
Net Farm Income	1,055	3,088
Interest on Investment	1,222	967
Labor and Management Income	-167	2,121

per cent indicated that the payments were divided somewhat on the basis of the crop-share agreement with the owner getting a little larger portion than under the crop-share agreement. In this latter case, the average ratio of the payment was 40 per cent to the owner and 60 per cent to the tenant.

#### Selecting the Major Factors for Participation

Although it was hypothesized that an increased in farm income would be one of the important factors that would be considered by farmers in determining whether or not to participate, it was believed that other factors would also be influential. To isolate the more important factors, state and county ASCS officials, county agents and other acquainted with the Program were asked what reasons they thought were important to farmers in arriving at a decision. Through these discussions it appeared that two sets of reasons were necessary, one set for those who were actively farming prior to participation and a second for those who were not actively farming. The reasons selected for each set are as follows:

##### Set One (actively farming)

1. Poor health of operator
2. Approaching retirement
3. Expected increase in farm income
4. Drought at the time

5. Conservation and farm improvement
6. Farm not adequate
7. Change in occupation
8. Conversion to livestock operation

Set Two (not actively farming)

1. Drought at the time
2. Difficult to find a good tenant
3. Reduce management
4. Dissatisfied with rental agreement
5. Best income opportunity
6. Conservation and farm improvement
7. Farm not adequate
8. Conversion to livestock operation

Method Used to Rank the Reasons for Participation

Rather than use the conventional technique of having the respondents view the reasons and then rank them in the order of their preference, a relatively new method of paired comparisons was used. The use of this method involves pairing each reason once with every other reason and arranging the pairs so that each reason approximately appears as the top reason in the pairs as often as it appears in the bottom. Since each reason was paired once with each of the other

reasons in a set, there were 28 pairs of reasons in each set. <sup>34/</sup> The pairs of reasons were then randomly selected in the order which they would be presented to the respondents. Each pair was then placed on a three by five inch card and the cards were fastened together by ring binders. At the approximate time during the interview, the enumerator explained the process to the respondent and then gave him the set of cards. The respondent looked at each card and selected from the pair the most appropriate reason for his participation and the enumerator indicated that choice on the schedule. After a respondent had completed the paired comparison section, he was asked if there were any other reasons that influenced his decision to participate, and if he had other reasons he was asked to rank them as compared to the others in the set. None of the respondents indicated other reasons than the ones already listed. The use of cards worked very well in collecting this information. The respondent had no trouble in understanding the intent of the paired comparisons, and most of them completed this section in less than 15 minutes.

#### Advantages of Using the Paired Comparison Technique

One advantage of this technique is that it allows the respondent

---

<sup>34/</sup> For more information concerning the order of the pairs of reasons, see Appendix A, pages

to select a choice from a pair of factors rather than having him attempt to array all the factors at the same time. Another is that it permits the factors to be ranked according to their relative importance and allows for scale separations which shows the degree of importance between factors. The theory behind this technique rests on the following six assumptions. 35/

1. For all responses of individuals there will be a model response.
2. The responses are normally distributed.
3. The series of factors can be ranked.
4. The rank can be tested for statistical validity.
5. The factors are non-random.
6. The errors are distributed approximately according to chi-square.

Ranking of Reasons Why the Respondents Participated  
in the Conservation Reserve Program

Of the 67 people interviewed in the survey, 55 of those actively farming completed set one of the paired comparison section, ten of those not farming completed set two and two failed to respond.

---

35/ Allan L. Edwards, Techniques of Attitude Scale Construction, (New York: Appleton-Century-Crofts, Inc., 1957), pp. 20-81.

The first section of the paired comparison analysis ranks the reasons for participation of 55 respondents who were actively farming prior to participation. The second section is a sub-group of the first group consisting of 34 respondents who were less than 55 years of age. The third section ranks the reasons of nine respondents who were not actively farming prior to participation and who completed set two of the paired comparisons. Analysis of other sub-groups were attempted, such as for those who were at least 55 years of age and actively farming prior to participation, but because of the small number of respondents in each sub-group and because of the high proportion of no responses and inconsistencies in answers in these sub-groups the reasons were not scalable.

Ranking of Reasons Why 55 Respondents, Who Were Actively Farming Prior to Participation, Participated in the Conservation Reserve Program

The first step in the analysis was to determine the frequency which one reason was preferred over another. A weight of one was given to each reason that was selected in a pair, and the reason not selected was given a weight of zero. If a pair had a no response answer, a weight of a half was given to each reason. It was assumed that a no response answer indicated that the respondent considered the reasons equally important or unimportant. Table VIII shows the frequency which the column reasons were chosen over the row reasons by the respondents. For example "poor health of operator" was selected over

"approaching retirement" 29.5 times and "approaching retirement" was selected over "poor health of operator" 25.5 times. The sum of these weights is equal to 55, the number of respondents. The reasons are arrayed in the matrix in ascending order of importance in terms of weight by columns. Thus, "poor health of operator" in column one has a rank of eight and "farm not adequate" in column eight has a rank of one. As a check of accuracy the sum of the row and column totals should (and does) equal 1,540 which equals the number of respondents times the number of pairs.

Next a proportion matrix was constructed from the  $f_{ij}$  values in the frequency matrix, Table IX. The formula used was  $p_{ij} = f_{ij}/n$ , where  $n$  equals the number of respondents. Since each cell plus its reciprocal in the proportion matrix is equal to one, the sum of the columns of rows should (and does) equal 32.

To obtain the scale values of the reasons, the  $p_{ij}$  values in the proportion matrix were transformed into  $Z_{ij}$  values, Table X. The  $Z_{ij}$  values were found through the use of a "Table of Normal Deviates Z, Corresponding to Proportions P of a Dichotomized Unit Normal Distribution." As a check for error the sum of the  $Z_{ij}$  totals should equal zero. And as a check as to whether the rankings are tenable, the scale distances between the rankings should be additive. <sup>36/</sup>

---

<sup>36/</sup> Hereafter the rank of a reason will be designated by  $\bar{S}_j$  where the subscript indicates the relative rank.

TABLE VIII. F MATRIX: FREQUENCY WITH WHICH ONE REASON WAS CHOSEN OVER ANOTHER BY 55 RESPONDENTS.

Reasons	1	2	3	4	5	6	7	8	Totals
1. Poor health of operator	---	29.5	31.5	32.0	40.5	40.0	43.0	45.5	262.0
2. Approaching retirement	25.5	---	31.5	33.0	39.0	40.0	45.5	43.5	258.0
3. Change occupations	23.5	23.5	---	27.5	42.5	41.5	45.5	44.5	248.5
4. Conversion to livestock enterprise	23.0	22.0	27.5	---	40.5	41.5	45.5	40.0	240.0
5. Drought at the time	14.5	16.0	12.5	14.5	---	29.5	33.0	32.5	152.5
6. Expected increase in income	15.0	15.0	13.5	13.5	25.5	---	24.5	30.5	137.5
7. Conservation and farm improvement	12.0	9.5	9.5	9.5	22.0	30.5	---	32.5	125.5
8. Farm not adequate	9.5	11.5	10.5	15.0	22.5	24.5	22.5	---	116.0
Totals	123.0	127.0	136.5	145.0	232.5	247.5	259.5	269.0	1,540.0

TABLE IX. P MATRIX: PROPORTION OF TIMES WHICH ONE REASON WAS CHOSEN OVER ANOTHER BY 55 RESPONDENTS.

Reasons	1	2	3	4	5	6	7	8	Totals
1. Poor health of operator	.500	.536	.573	.582	.736	.727	.782	.827	5.263
2. Approaching retirement	.464	.500	.573	.600	.709	.727	.827	.791	5.191
3. Change occupations	.427	.427	.500	.500	.773	.755	.827	.809	5.018
4. Conversion to livestock enterprise	.418	.400	.500	.500	.736	.755	.827	.727	4.863
5. Drought at the time	.264	.291	.227	.264	.500	.536	.600	.591	3.273
6. Expected increase in income	.273	.273	.245	.245	.464	.500	.445	.555	3.000
7. Conservation and farm improvement	.218	.173	.173	.173	.400	.555	.500	.591	2.783
8. Farm not adequate	.173	.209	.191	.273	.409	.445	.409	.500	2.609
Totals	2.737	2.809	2.982	3.137	4.727	5.000	5.217	5.391	32.000

TABLE X. Z MATRIX:  $P_{ij}$  VALUES OF THE PROPORTION MATRIX TRANSFORMED INTO  $Z_{ij}$  VALUES USING A TABLE OF NORMAL DEVIATES "Z" CORRESPONDING TO PROPORTIONS "P" OF A DICHOTOMIZED UNIT NORMAL DISTRIBUTIONS, 55 RESPONDENTS.

Reasons	1	2	3	4	5	6	7	8
1. Poor health of operator	.000	.090	.184	.207	.631	.604	.779	.942
2. Approaching retirement	-.090	.000	.184	.253	.550	.604	.942	.810
3. Change occupations	-.184	-.184	.000	.000	.749	.690	.942	.874
4. Conversion to livestock operation	-.207	-.253	.000	.000	.631	.690	.942	.604
5. Drought at the time	-.631	-.550	-.749	-.631	.000	.090	.253	.230
6. Expected increase in income	-.604	-.604	-.690	-.690	-.090	.000	-.138	.138
7. Conservation and farm improvement	-.779	-.942	-.942	-.942	-.253	.138	.000	.230
8. Farm not adequate	-.942	-.810	-.874	-.604	-.230	-.138	-.230	.000
Sum of $Z_{ij}$	-3.437	-3.253	-2.887	-2.407	1.988	2.678	3.490	3.828
Mean of $Z_{ij}$	-.430	-.407	-.361	-.301	.249	.335	.436	.479
Scale Values	.000	.023	.069	.129	.679	.765	.866	.909

For example:  $(\bar{S}_2 - \bar{S}_1) + (\bar{S}_3 - \bar{S}_2) + \dots + (\bar{S}_n - \bar{S}_{n-1}) = S_n - S_1$

Figure 1 shows the scale values of the eight reasons. As indicated there is a large separation between the four high ranking reasons and the low ranking four. The probable reason for this large separation is that the first four reasons would pertain to practically all farmers and the last four would only pertain to those having had an opportunity to experience these situations. For example, the reason "conversion to a livestock operation" 37/ would probably apply only to those that had available grazing land. The reason "change occupations" may have been important only to those that had an opportunity to obtain other employment. And "approaching retirement" and "poor health of operator" would primarily be important to the elderly.

"Farm not adequate" was the most important reasons why these 55 respondents participated in the Conservation Reserve Program. It was expected that this reason would rank high after observing the small size of farms under contract. One reason that was expected to rank higher than it did in Figure 1 was "expected increase in income." In many of the interviews, enumerators believed that this was the main reason for participating, but the respondents would not commit

---

37/ Practically all the respondents reacted positively to the reason "conversion to a livestock operation" if they intended to expand their existing herd, add a livestock enterprise to their cash-grain operation, or convert their entire farm to a livestock operation.

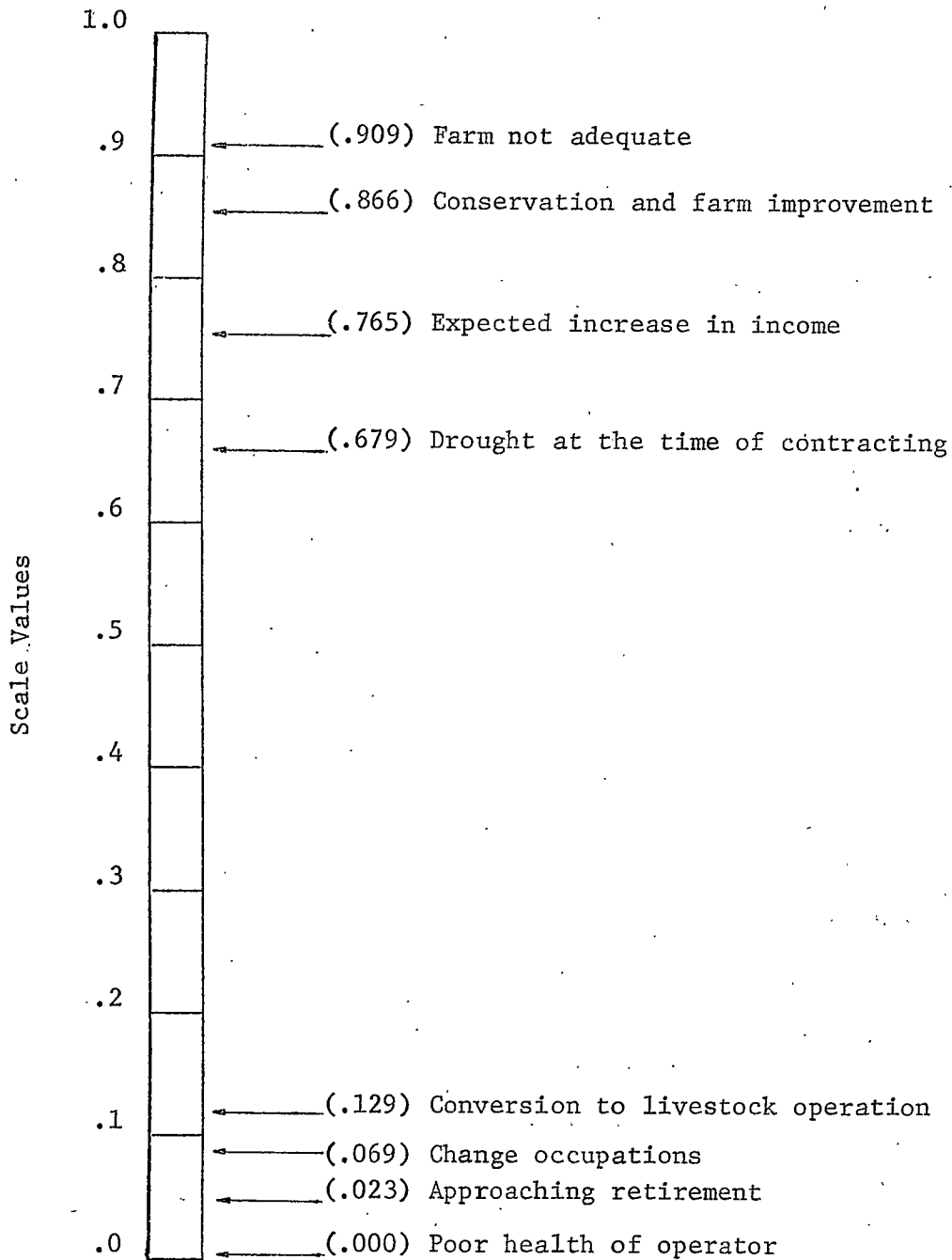


Figure 1. Relative Ranking of Reasons, by the Paired Comparison Method, Why 55 Land Owners, Actively Farming Prior to Contracting, Participated in the Conservation Reserve Program.

themselves. The reason for this may have been the feeling that if they did not indicate that this was their primary motive, it might influence the amount of payment they were currently receiving.

Statistical tests were made to determine whether the assumptions involved in finding the scale values were tenable, the amount of agreement among the respondents, and the consistency of the answers of the responses. The first presented is a check as to the internal consistency of the respondents. <sup>38/</sup> This test involves determining how well the observed proportion  $p_{ij}$  agree with those to be expected in terms of the derived scale values. The first step was to determine the theoretical  $Z_{ij}$  values. This was accomplished by subtracting the row scale values from the column scale values for those entries below the main diagonal, Table XI. For Example, the derivations of values for two cells in the  $Z_{ij}$  matrix are as follows:

$$Z_{21}' = \bar{S}_1 - \bar{S}_2 = .000 - .023 = -.023$$

$$Z_{31}' = \bar{S}_1 - \bar{S}_3 = .000 - .069 = -.069$$

These  $Z_{ij}'$  values were then transformed into theoretical  $P_{ij}'$  values by again using the "Table of Normal Deviates Z, Corresponding to Proportions P, of a Dichotomized Unit Normal Distribution" but by using the reverse procedure to that used for finding  $Z_{ij}$  values. The obtained

---

<sup>38/</sup> Edwards, op. cit., p. 40.

TABLE XI.  $Z_{ij}$ ' MATRIX: THEORETICAL NORMAL DEVIATES  $Z_{ij}$ ' CORRESPONDING TO THE SCALE DISTANCES BETWEEN THE REASONS OF TABLE X.

Reasons	Scale Values	1 (.000)	2 (.023)	3 (.069)	4 (.129)	5 (.679)	6 (.765)	7 (.866)	8 (.909)
1. Poor health of operator	.000								
2. Approaching retirement	.023	-.023							
3. Change occupations	.069	-.069	-.046						
4. Conversion to livestock enterprise	.129	-.129	-.106	-.060					
5. Drought at the time	.679	-.679	-.656	-.610	-.550				
6. Expected increase in income	.765	-.765	-.742	-.696	-.636	-.086			
7. Conservation and farm improvement	.866	-.866	-.843	-.797	-.737	-.187	-.101		
8. Farm not adequate	.909	-.909	-.866	-.840	-.780	-.230	-.144	-.043	

values are shown in Table XII.

The average discrepancy between the observed and theoretical proportions was obtained by subtracting the  $P_{ij}'$  values in Table XII from the  $P_{ij}$  values in Table II with the differences shown in Table XIII. The average discrepancy (AD) was obtained by the following formula:

$$AD = \frac{\sum |P_{ij} - P_{ij}'|}{\frac{n(n-1)}{2}}$$

where:  $n$  = number of reasons

Transferring the data from Table IX into this formula,

$$AD = \frac{.922}{28} = .033$$

The absolute average discrepancy of .033 for these eight reasons is slightly larger than those reported in other studies, but appears to be in the area of general acceptance if the other statistical tests validate the use of this method.

Next, a chi-square ( $\chi^2$ ) test was used to determine whether the assumptions involved in finding the scale values of the eight reasons were tenable. <sup>39/</sup> This involved transforming the observed and theoretical  $P_{ij}$  values into angles in terms of degrees from a "Table of Angular

---

<sup>39/</sup> Edwards, op. cit., pp. 55-57.

TABLE XII.  $P_{ij}$ ' MATRIX: THEORETICAL PROPORTIONS  $P_{ij}$ ' CORRESPONDING TO THE THEORETICAL DEVIATES  $Z_{ij}$ ' IN TABLE XI.

Reasons	1	2	3	4	5	6	7	8
1. Poor health of operator	---							
2. Approaching retirement	.491	---						
3. Change occupations	.473	.482	---					
4. Conversion to livestock enterprise	.449	.458	.476	---				
5. Drought at the time	.249	.256	.271	.291	---			
6. Expected increase in income	.222	.229	.243	.262	.466	---		
7. Conservation and farm improvement	.193	.200	.213	.231	.426	.460	---	
8. Farm not adequate	.182	.188	.200	.218	.409	.443	.483	---

TABLE XIII. DISCREPANCIES BETWEEN THE THEORETICAL 'PROPORTIONS  $P_{ij}$ ' OF TABLE XII AND THE OBSERVED  $P_{ij}$  VALUES OF TABLE IX.

Reasons	1	2	3	4	5	6	7	8
1. Poor health of operator	---							
2. Approaching retirement	-.027	---						
3. Change occupations	-.046	-.055	---					
4. Conversion to livestock enterprise	-.031	-.058	.024	---				
5. Drought at the time	.015	.035	-.044	-.027	---			
6. Expected increase in income	.051	.044	.002	-.017	-.002	---		
7. Conservation and farm improvement	.025	-.027	-.040	-.058	-.026	.095	---	
8. Farm not adequate	-.009	.021	-.009	.055	.000	.002	.077	---
Absolute Totals	.204	.240	.119	.157	.028	.097	.077	---

Transformation of Percentages to Degrees," which are shown in Table XIV.

To obtain the chi-square value the following formula was used:

$$\chi^2 = \frac{\Sigma(\theta - \theta')^2}{821/N}$$

where:  $\theta$  = observed angles in degrees

$\theta'$  = theoretical angles in degrees

N = number of respondents

This chi-square value was then evaluated by the degrees of freedom (df) obtained from the formula:

$$df = \frac{(n-1)(n-2)}{2}$$

where: n = number of reasons

Transferring the data into these formulas the chi-square value is:

$$\chi^2 = \frac{174.20}{821/55} = 11.67$$

and the degrees of freedom are:

$$df = \frac{(8-1)(8-2)}{2} = \frac{42}{2} = 21$$

The null hypothesis of this chi-square test is that the assumptions involved in this model are tenable. 40/ Comparing the derived chi-square

---

40/ These assumptions are presented on page 62.

TABLE XIV. VALUES OF THE OBSERVED PROPORTIONS  $P_{ij}$  OF TABLE IX AND THE THEORETICAL PROPORTIONS  $P'_{ij}$  OF TABLE XII CONVERTED INTO ANGLES IN TERMS OF DEGREES,  $\theta$  AND  $\theta'$ .

Reasons	1	2	3	4	5	6	7	8
<u><math>\theta</math> value of:</u>								
1.	---							
2.	42.94	---						
3.	40.80	40.80	---					
4.	40.28	39.23	45.00	---				
5.	30.92	32.65	28.45	30.92	---			
6.	31.50	31.50	29.67	29.67	42.94	---		
7.	27.83	24.58	24.58	24.58	39.23	48.16	---	
8.	24.58	27.20	25.92	31.50	39.76	41.84	39.76	---
<u><math>\theta'</math> value of:</u>								
1.	---							
2.	44.48	---						
3.	43.45	43.97	---					
4.	42.07	42.59	43.62	---				
5.	29.93	30.40	31.37	32.65	---			
6.	28.11	28.59	29.53	30.79	43.05	---		
7.	26.06	26.56	27.49	28.73	40.74	42.71	---	
8.	25.25	25.70	26.56	27.83	39.76	41.73	44.03	---

value (with 21 degrees of freedom) with a chi-square table, the probability of obtaining a value of  $\chi^2 \geq 11.67$  is between .95 and .90. If a five per cent probability or less is assumed to be significant the chi-square value would have to be at least 32.67. Thus the null hypothesis is accepted which indicates that the assumptions involved in finding scale values for the eight reasons are tenable.

To determine whether there was any agreement among the 55 farmers in their comparative judgments, the Kendall coefficient of agreement was calculated. Edwards indicated that when this coefficient of agreement is one the farmers would be in perfect agreement in their judgment and perfect disagreement among them would be equal to  $-1/m$  where  $m$  equals the number of respondents in the sample. <sup>41/</sup> In this case, the coefficient of perfect disagreement would be equal to  $-.018$ . The formula used to determine this statistic is:

$$U = \frac{2\phi}{\binom{m}{2} \binom{n}{2}} - 1$$

$$\text{where: } \phi = \left( \sum f_{ij}^2 - m \sum f_{ij} \right) + \binom{m}{2} \binom{n}{2}$$

$\sum f_{ij}^2$  = the sum of the squared entries below the diagonal of the frequency matrix (9,821), Table VIII.

---

<sup>41/</sup> Edwards, op. cit., p. 57.

$\Sigma f_{ij}$  = the sum of the entries below the diagonal of the frequency matrix (494), Table VIII.

m = number of respondents (55).

n = number of reasons (8).

Substituting the data into the formulas:

$$\phi = \{9,821 - (55)(494)\} + \left[ \frac{55(55-1)}{2} \frac{8(8-1)}{2} \right]$$

$$= -17,349 + (1,485)(28)$$

$$= -17,349 + 41,580$$

$$\phi = 24,231$$

$$\text{and } U = \frac{2(24,231)}{(1,485)(28)} - 1$$

$$= \frac{48,462}{41,580} - 1$$

$$= 1.166 - 1$$

$$U = .166$$

As indicated by Edwards, a positive coefficient of agreement implies that there is a certain amount of agreement in the responses, and the closer this coefficient approaches one, the greater the degree of agreement. The derived coefficient of agreement is equal to .166,

indicating that there is some agreement among these 55 farmers. A chi-square test was made to determine whether this agreement is larger than the agreement expected if the responses of the 55 farmers had been made at random. The following formulas were used to calculate the chi-square coefficient and the appropriate degrees of freedom:

$$\chi^2 = \left[ \frac{4}{m-2} \right] \left[ \phi - \frac{1}{2} \left( \frac{n}{2} \right) \left( \frac{m}{2} \right) \left( \frac{m-3}{m-2} \right) \right]$$

$$\text{and } df = \left( \frac{n}{2} \right) \frac{m(m-1)}{(m-2)^2}$$

Substituting the data into the above formulas:

$$\begin{aligned} \chi^2 &= \left[ \frac{4}{55-2} \right] \left[ 24,231 - \frac{1}{2} \frac{8(8-1)}{2} \frac{55(55-1)}{2} \frac{55-3}{55-2} \right] \\ &= \left[ .075 \right] \left[ 24,231 - (.5)(28)(1,485)(.981) \right] \\ &= (.075)(3,836) \end{aligned}$$

$$\chi^2 = 287.7$$

$$\begin{aligned} \text{and } df &= \left[ \frac{8(8-1)}{2} \right] \left[ \frac{55(55-1)}{(55-2)^2} \right] \\ &= (28)(1.057) \end{aligned}$$

df = 29.6 (which rounded to a whole number is 30).

Evaluating the chi-square values of 287.7 with 30 degrees of freedom using a chi-square table indicates that the probability of obtaining a coefficient of agreement as large as .166 is much less than .01 if the responses of the 55 farmers were made at random. Thus, it is concluded that the farmers showed significant agreement in their responses. This does not mean that there are no inconsistencies in the responses but it does imply that if there are inconsistencies in the responses, the farmers are strongly in agreement in their inconsistencies as well as in their consistencies.

Next, the standard deviations or discriminial dispersions were estimated to determine the amount of agreement the 55 respondents had on each reason. Table XV shows some of the coefficients used in the derivations of the discriminial dispersions and the discriminial dispersions as indicated by  $\sigma_j$ .

The discriminial dispersions were determined by the following calculations. First, the standard deviations were estimated for each reason using the data from the Z matrix, Table X, by the following formula:

$$V_{zj} = \sqrt{\frac{\sum_{j=1}^n Z_{ij}^2 - \left( \frac{\sum_{j=1}^n Z_{ij}}{n} \right)^2}{n}}$$

TABLE XV. CALCULATIONS OF THE DISCRIMINAL DISPERSIONS " $\sigma_i$ " OF THE RESPONSES TO THE REASONS BY THE 55 RESPONDENTS.

Reasons	$V_{zj}$	$1/V_{zj}$	$\sigma_i$
1. Poor health of operator	.328	3.049	1.336
2. Approaching retirement	.352	2.841	1.176
3. Change occupations	.463	2.160	.655
4. Conversion to livestock operation	.435	2.299	.761
5. Drought at the time	.401	2.494	.910
6. Expected increase in income	.323	3.096	1.372
7. Conservation and farm improvement	.485	2.062	.579
8. Farm not adequate	.348	2.874	1.201

where:  $n$  = the number of reasons

$\sum_{j=1}^n Z_{ij}^2$  = the sum of the squared entries of the  $j^{\text{th}}$  column in Table X.

$\left( \sum_{j=1}^n Z_{ij} \right)^2$  = the sum of the entries of the  $j^{\text{th}}$  column squared in Table X.

The discriminial dispersions can be estimated by: 42/

$$\sigma_i = a \left( \frac{1}{V_i} \right) - 1$$

$$\text{where: } a = \frac{2n}{n \cdot \left( \frac{1}{V_i} \right) \sum_{i=1}^n}$$

As indicated by the discriminial dispersions in Table XV, there seems to be the greatest amount of agreement among these 55 respondents as to the scale positions of conservation and farm improvement, drought at the time, conversion to livestock operation, and change in occupations. The scale positions of farm not adequate, expected increase in income, approaching retirement, and poor health of operator would be low in agreement since the reasons are somewhat synonymous and

---

42/ Edwards, op. cit., p. 61.

would most likely apply to the elderly. On the other hand, farms not adequate and expected increase in income were expected to be high in the amount of agreement among the respondents. It was hypothesized that these two were high ranking because, again, these two terms are somewhat synonymous in farmers' thinking in that a low farm income is frequently associated with inadequate size of farm.

It was also anticipated that most of the disagreement would occur in the cent of the continuum; and the least, at the extremities. This, however, was not the case as shown by the discriminial dispersions of the reasons in Table XV. Most agreement was shown for those reasons in the central region of the continuum, with the exception of "expected increase in farm income."

Ranking of Reasons Why 34 Respondents, Who were Actively Farming Prior to Participation and were Less Than 55 Years of Age, Participated in the Conservation Reserve Program

The only sub-group of the paired comparison section that could be analyzed was for the 34 respondents who were less than 55 years of age and were actively farming at the time of contracting. In this analysis one reason "conservation and farm improvement" did not scale because it did not conform to the assumption that the scale values had to be additive, therefore, it was left out of the analysis. In this particular case, the reason "drought at the time" ( $\bar{S}_4$ ) had a scale value of .423, "conservation and farm improvement" ( $\bar{S}_3$ ) had a scale

value of .601, and expected increase in income ( $\bar{S}_2$ ) had a scale value of .581. If these reasons were scalable then  $(\bar{S}_3 - \bar{S}_2) + (\bar{S}_4 - \bar{S}_3) = \bar{S}_4 - \bar{S}_2$  which in this situation they did not.

This sub-group was analyzed to determine whether there would be any difference in the scale positions and in the relative scale values between all respondents and those that were under 55 years of age. The relative ranking and the scale of the reasons by the 34 respondents are shown in Figure 2. Again "farm not adequate," "expected increase in income," and "drought at the time" were three of the most important reasons for participation, and "poor health" and "approaching retirement" were the least important. The ranking of the reasons in Figure 2 are the same as in Figure 1, with the exception of the reason "conservation and farm improvement," but the relative scale values are different. In comparison, Figure 2 shows that the scale distance between the highest and lowest ranking reasons is considerably larger than that shown in Figure 1. This indicates that the 34 respondents placed greater emphasis on the higher ranking reasons than when the reasons were ranked for all 55 respondents shown in Figure 1.

The same statistical tests were made for this analysis as for those with the 55 respondents. <sup>43/</sup> The average discrepancy of .028 for

---

<sup>43/</sup> The data used in making this analysis are shown in Appendix C, Tables I through VII.

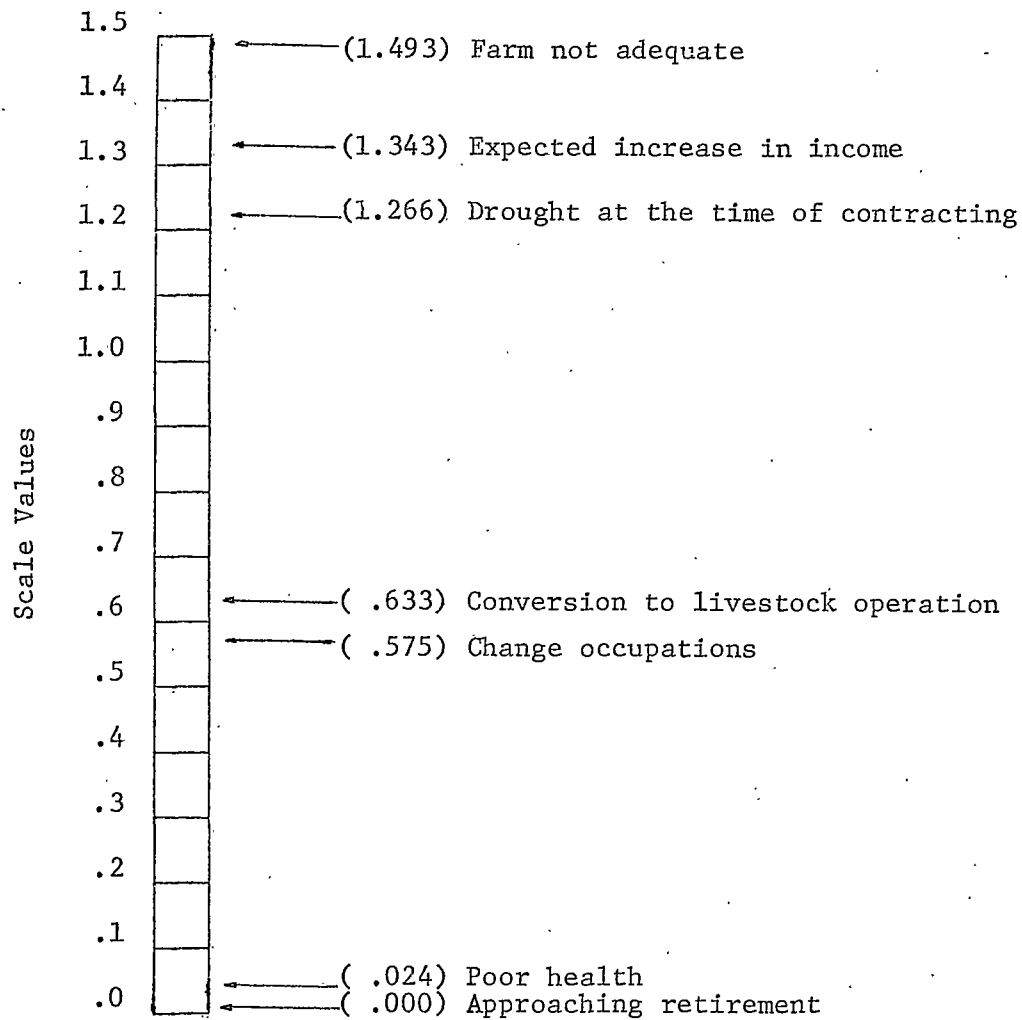


Figure 2. Relative Ranking of Reasons, by the Paired Comparison Method, Why 34 Respondents, Actively Farming Prior to Contracting and Less Than 55 Years of Age, Participated in the Conservation Reserve Program.

these seven reasons was well within the range of acceptability as compared to other studies, and .005 lower than the average discrepancy of the eight reasons of the 55 respondents.

The chi-square value used to determine whether the assumptions involved in finding the scale values of the seven reasons were tenable was equal to 5.26. This value was then evaluated with 15 degrees of freedom. The null hypothesis of this test is that the assumptions involved in this model are tenable. The evaluation indicated that the probability of obtaining a chi-square value of 5.28 is between 98 and 99 per cent. If a five per cent probability or less is assumed to be significant, the chi-square value would have to be at least 25.0. Since the null hypothesis is accepted, indications are that the assumptions involved in finding the scale values for the seven reasons are tenable.

The coefficient of agreement was computed to determine whether there was any agreement among the 34 respondents in their comparative judgments. According to Edwards, when this coefficient has a value of one there is perfect agreement; when its value is equal to  $-1/m$  (where  $m$  equals the number of respondents) there is perfect disagreement; and when the value is positive, there is a certain amount of agreement. In this analysis the coefficient of agreement was equal to .294 which indicates that there was some agreement among the respondents in their responses. A chi-square test was used to determine whether the amount

of agreement shown by the respondents was greater than if the responses had been made at random. The computed chi-square value was 263.3 and this value was evaluated with 23 degrees of freedom. The chi-square table indicated that with 23 degrees of freedom a chi-square value of 263.3 is highly significant, and the probability of obtaining a coefficient of agreement as large as .294 is much less than one per cent if the comparative reasons of the 34 respondents had been made at random. Thus it is concluded that the 34 respondents showed significant agreement in their answers.

The discriminial dispersions for each reason, shown in Table XVI were estimated to determine the amount of agreement the 34 respondents had on each reason in their comparative answers. Unlike the discriminial dispersions of reasons in the continuum (as shown in Table XV), most disagreement on reasons in Table XVI are more toward the center. As in Table XV, the greatest amount of disagreement by the respondents was shown for the location of "expected increase in income." The greatest differences between the discriminial dispersions in the two tables were for the reasons "farm not adequate," "conversion to livestock operation," and "poor health of operator." For the reason "farm not adequate" the disagreement as shown by the 55 respondents was close to twice as high as that shown by the sub-group of 34 respondents, which indicates that the 21 respondents had considerable disagreement in the relative location of this reason in the continuum. As expected, the 34

TABLE XVI. DISCRIMINAL DISPERSIONS OF THE RESPONSES TO THE REASONS BY 34 RESPONDENTS.

Reasons	σ <sub>i</sub>
1. Farm not adequate	.619
2. Expected increase in income	1.355
3. Drought at the time	1.064
4. Conversion to livestock operation	1.223
5. Change occupations	.915
6. Poor health of operator	.985
7. Approaching retirement	.840

respondents showed considerably more agreement on the location of "poor health of operator." The average age of the respondents in the sub-group was considerably less than for the entire group and it was anticipated that the reason of age would largely apply to the elderly.

Ranking of Reasons Why Nine Respondents, Who Were Not Actively Farming Prior to Participation, Participated in the Conservation Reserve Program

The limited number of respondents was the major reason why nine land owners, not actively farming at the time of contracting, participated in the Conservation Reserve Program could not be scaled by the method of paired comparisons. Therefore, a different technique was used, called the "composite-standard" method. <sup>44/</sup> This method involved constructing the frequency and proportion matrices such as those in the paired comparison analysis. The coefficient used in the derivation of the scale values, designated by  $S_i$ , are shown in Table XVII, where:

$\Sigma p_i$  = the sum of proportions of the  $j^{\text{th}}$  reason from the proportion matrix.

$M_{P_i} = \frac{\Sigma p_j}{n}$  where  $n$  = the number of reasons

$Z_i = M_{P_i}$  transformed into  $Z_i$  value using a "Table of Normal Deviates  $Z$ , Corresponding to Proportions  $P$ , of a

---

<sup>44/</sup> J. P. Guilford, Psychometric Methods, second edition, (New York: McGraw-Hill Book Company, Inc., 1954), p. 170.

TABLE XVII. CALCULATIONS OF THE RELATIVE RANKING ( $\bar{S}_i$ ) OF REASONS BY THE COMPOSITE-STANDARD METHOD, NINE RESPONDENTS.

Reasons	$\Sigma p_i$	$Mp_i$	$Z_i$	$\bar{S}_i$
1. Best income opportunity	5.723	.818	.908	1.673
2. Conservation and farm improvement	4.279	.611	.282	1.047
3. Farm not adequate	3.833	.548	.121	.886
4. Drought at the time	3.778	.540	.100	.865
5. Reduce management	2.832	.405	-.240	.525
6. Dissatisfied with rental agreement	2.500	.357	-.366	.399
7. Difficult to find a good tenant	2.500	.357	-.366	.399
8. Conversion to livestock operation	1.555	.222	-.765	.000

Dichotomized Unit Normal Distribution."

Figure 3 shows that the reason "best income opportunity," with a scale value of 1.673, was by far the most prevalent reason for participating among these nine respondents. This in turn was followed by "conservation and farm improvement" and "farm not adequate." The reasons "dissatisfied with rental agreement" and "difficult to find a good tenant" were relatively unimportant as compared to the others. None of the respondents indicated that these reasons were of primary importance in making their decisions to participate.

Evaluation of the Paired Comparison Reasons and Other Factors as to Why the 65 Respondents Participated in the Conservation Reserve Program

In all three analyses, the respondents showed considerable agreement in the reasons why they participated in the Conservation Reserve Program. Probably the top ranking reason for all three of the analyses was "farm not adequate," which indicates that many of the respondents probably realized that their farms were not economical farm units. Closely associated with this reason was the motive to increase their incomes from the farm. Many, especially the younger respondents, believed that by participating and increasing their farm incomes, would give them an opportunity to increase their farm holdings. The northeastern part of Montana experienced drought conditions for several years before the advent of the Conservation Reserve Program. Yields

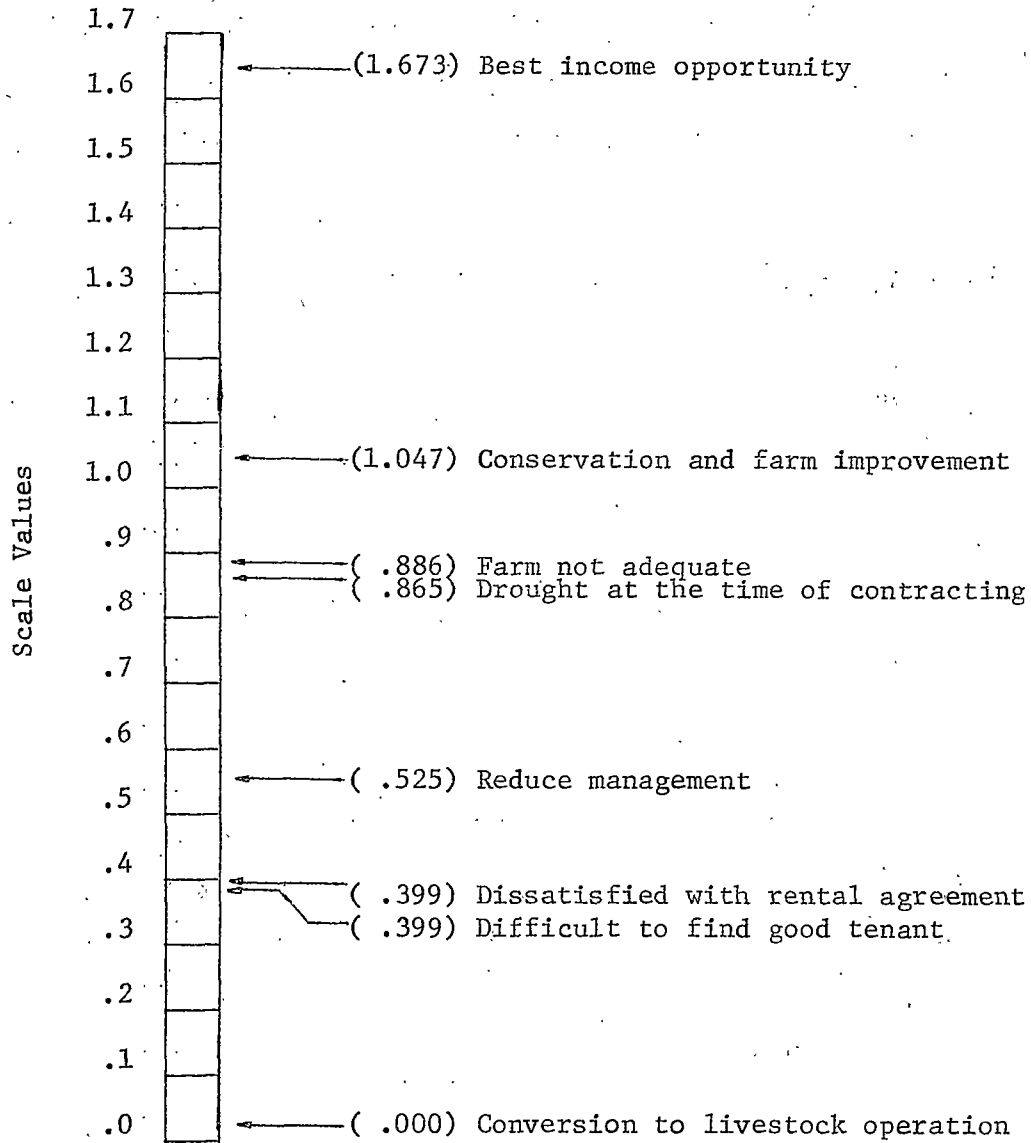


Figure 3. Relative Ranking of Reasons, by the Composite-Standard Method, Why Nine Land Owners, not Actively Farming Prior to Contracting, Participated in the Conservation Reserve Program.

were below average and hence farm incomes were also below average, making participation in the Program appear favorable (as evidenced by the rank of the reason "drought at the time"). Again, the selection of this reason for a top ranking position indicated that the respondents were hoping for larger farm returns by participating.

Those reasons that ranked at the bottom of the continuum appeared only applicable to small segments of the population. For example, "conversion to a livestock operation" would probably be only applicable to those that had available grazing land and "poor health"; and "approaching retirement" would largely apply to the elderly.

After the respondents had completed the paired comparison section they were asked to list the reasons which stimulated them to participate in the program and to rank them in order of importance. The three that occurred most frequently are shown in Table XVIII. The "other" category includes all other reasons. The factor "general publicity on the program" was listed more frequently than any of the others. Twenty-five of the respondents indicated that this was the primary factor influencing their decision. This in turn was followed by the factors "discussion with other farmers" and "what they know that neighbors in similar situations did." The category "other" contained a multitude of other factors. The most frequent mentioned was more stable or greater income. Some of the other factors included in this category were discussion with USDA personnel, conservation, health or retirement,

TABLE XVIII. FACTORS THAT INFLUENCED THE RESPONDENT'S DECISION TO PARTICIPATE IN THE CONSERVATION RESERVE PROGRAM, RANKED IN ORDER OF IMPORTANCE.

Factors	: Number of Respondents :				Totals
	: Rank :				
	: 1	: 2	: 3	: 4 :	
General publicity on the program	25	9	15	7	56
Discussion with other farmers	10	28	9	2	49
What they knew that neighbors in similar situations did	7	12	21	7	47
Other factors	24	3	1	0	28

decreased management, and interfered with another occupation or business. In addition to these factors, approximately 72 per cent of the respondents were influenced by members of their family to participate.

Prior to contracting, participation in the Conservation Reserve Program was only one of the alternatives the respondents were considering. To get an idea as to what the other possible alternatives were, they were asked to list them. The most common response to this question was that they would have continued farming without making any major adjustments in their operation. This in turn was followed by renting or selling the land. Other alternatives mentioned were acquiring more land, making major investments in machinery, and seeding their cropland to grass. Those that were going to seed their cropland to grass to increase their livestock operation thought participation in the Program was an excellent way to make the transition.

After the respondents had indicated the other alternatives, they were asked why they selected the Conservation Reserve Program. About 46 per cent indicated that they believed participation in the Conservation Reserve Program would be the most profitable, and practically all made some comparisons as to the expected returns from the Program. Next in order of importance (as indicated by 12 per cent of the respondents) were greater income stability and an excellent opportunity to seed grass so that they could increase livestock

operation. Less frequent reasons included land conservation, drought condition, health and age, and inadequate farm size. Compared to the paired comparison section in this part of the schedule the respondents placed much more emphasis on greater returns, and much less emphasis on inadequate farm size. Thus it was believed that those two reasons, and to some degree stability of income, were used interchangeably.

Those respondents who were renting their land to others prior to participation were asked how they and the tenant arrived at a basis for dividing the payment. Half of these respondents said that the tenant received no payment because either the land was only leased from year to year or else the tenants lease was up. Only six of the tenants received a payment and the amount ranged from a half to two-thirds. The pattern of dividing the payments was approximately the same as their crop-share agreements.

#### Respondents Reactions to a Continuation of the Conservation Reserve Program and a Similar Program

In comparing their 1963 Soil Bank payment incomes with the expected returns from farming in 1965, 48 per cent of the respondents believed that the Program would be more profitable, 34 per cent believed the incomes derived from each would be about equal and 18 per cent thought that the returns from farming would exceed the contract payment. Some of those believed the returns from farming would be about equal to their

contract payment qualified their answer by indicating it would depend on the weather.

The respondents payment rates ranged from \$6.65 to \$11.50 per acre, averaging about \$9.50 per acre. Thirty-five of them obtained their contracts through competitive bidding and the other who contracted earlier did not have to compete for acceptance. Most of those who entered the Program early received the maximum or close to the maximum payment rate allowed by the Program because applicants were so few in number.

To continue the investigation as to the attractiveness of the Program the respondents were asked if they would recontract at the end of their contract, and if they would, what would be the lowest payment rate they would accept. Fifty-three answered yes to the first part of this question, 12 answered no, and two were uncertain. Of those who gave an affirmative reply, 40 indicated that the rental rate would have to remain the same, eight would accept lower rates (an average of about \$1.00 per acre less) and five were uncertain. Of those who replied no, eight would have recontracted if their payment rates were increased. The average increase desired was \$1.75 per acre. Of the 12 who replied no, nine believed their rates were too low as compared to what they could make farming or as compared to others in the Program. Two wanted to use their land for livestock and they would recontract only if they could graze the land and one was absolutely opposed to

the Program.

At the time of the survey, there was some speculation as to the initiation of a Conservation Reserve Program where the participants would receive payment for establishing a vegetative cover but still would be allowed to utilize the grass. To determine how acceptable this type of a program would be, the respondents were asked "if a new program were developed permitting grazing, would you recontract at the end of this contract and graze the land at a reduced payment rate?" To this question, 28 of the respondents replied yes. The average reduction in payment rate was about a third of their current rate. Most of the respondents who were interested in this type of program had livestock and were interested in expanding their livestock operation.

## CHAPTER V

### ATTITUDE OF THE RESPONDENTS TOWARD THE CONSERVATION RESERVE PROGRAM

The original intention of this section was to formulate attitudinal scales as developed by Guttman in the late 1940's. <sup>45/</sup> The object was to determine whether one respondent was higher or lower, more favorable or less favorable than the other respondents along an undimensional continuum with regard to the issue "the Conservation Reserve Program". Although the author appreciates this method of analysis, it did not appear to be satisfactory for this particular study. During the first stages of the attitudinal statement analysis, scalograms were constructed. <sup>46/</sup> The results of these scalograms seemed to indicate that there was no advantage of using this technique over a simple summing of the favorable, unfavorable and no responses, and attempting to obtain some pattern of the respondents' thought through the use of their qualifying remarks and by the analysis of statement sub-groups. Also, the constructed scalograms did not meet some of the specifications that were required for acceptance. One was that the responses to the

---

<sup>45/</sup> Guilford, op. ct., p. 456, defined attitude as "a personal disposition common to individuals, but possessed to difference degrees, which impels them to react to objects, situations, or propositions in ways that can be called favorable or unfavorable."

<sup>46/</sup> The method used to construct the scalograms is explained in Appendix D.

statements should range from about an 80 per cent favorable response to the easiest statement down to about a 20 per cent favorable response to the hardest statement. <sup>47/</sup> In this analysis, the responses ranged from about 87 per cent favorable response to the easiest statement to about 52 per cent favorable response to the hardest.

Another problem encountered was that it was very difficult, if not impossible in some instances, to meet the three criteria which determine the acceptance of a completed scale. Attempts were made to omit those statements and/or respondents which caused the greatest amount of error, but due to the limited size of the sample it was determined that a reduction in sample size would not be feasible because of the criterion of size of sample required for statistical testing. Due to these encountered problems, together with the belief that there was no advantage in using this method, the more conventional technique previously mentioned was used to analyze the statements.

Statements used in this study were designed in an attempt to explore all facets of the respondents' attitudes toward the Conservation

---

<sup>47/</sup> The statement which the greatest number of respondents accepted as favorable to the issue is considered the "easiest" and the one the greatest number accepted as unfavorable is considered the most difficult or "hardest".

Reserve Program. 48/ The subject matter and the design of the statements were influenced by consultations with people knowledgeable about the subject. 49/

A pretest survey was made using the first draft of the attitudinal statements. Information gained through the pretest caused some statements to be omitted and others to be reworded so that those used in the final set were believed to be thoroughly understandable and concise.

For analysis, the statements were placed in one of the three following subject groups: (1) statements that pertained to the effect the Program had on production, (2) those that were related to the expansion, continuation, and contraction of the Program, and (3) those that pertained to the personal welfare of the respondents and to the community. The statements, by subject group, are presented in the following three tables. Each table contains the number of favorable, unfavorable, and no responses to each statement and the number of qualifications to the responses. To make the tables easier to read, those statements that required a negative reaction from the respondent to indicate a favorable response to the issue were reworded from those

---

48/ Statements are shown in Appendix A.

49/ These people included Agricultural Stabilization and Conservation Service officials, staff in the Department of Agricultural Economics at Montana State University, and personnel in the Farm Production Economics Division, Economic Research Service, United States Department of Agriculture.

shown in Appendix A so that the composition of all statements in the tables requires positive responses if the respondent was to react favorably.

#### Effect the Program had on Production

Table XIX shows the statements used to evaluate the respondents' attitudes as to the effect the Program had on production and closely associated elements. As indicated, 66 per cent of the respondents reacted favorably to the six statements, 25 per cent unfavorably, and nine per cent did not respond. Approximately 84 per cent of the respondents agreed with the first statement in this table and only one respondent did not respond. The majority of those who agreed with this statement qualified their position by indicating that it was very important in a livestock area and especially during a time of drought. Some also indicated that permission to use the grass should be given earlier than it was during the drought in 1961 so that more efficient use could be made of the feed. Those who indicated that it was not important were probably not approached by others for permission to use the feed and therefore not aware of the critical shortage.

About 75 per cent of the respondents agreed with the second statement in Table XIX and about 19 per cent disagreed. Approximately half of those who disagreed, qualified their position by indicating that because of the limited number of acres that could enter the Program, due

TABLE XIX. ATTITUDE OF THE RESPONDENTS TOWARD THE EFFECT OF THE CONSERVATION RESERVE PROGRAM ON PRODUCTION, AND NUMBER OF QUALIFICATIONS.

Statement	Attitude			Number of Qualifications
	Favorable Number of Responses	Unfavorable Number of Responses	No Response Number of Responses	
1. The emergency supply of feed available from the CR land is important	56	10	1	20
2. The Conservation Reserve Program is accomplishing its objectives	50	13	4	19
3. The program provides an incentive to shift from grain production to livestock production	45	19	3	20
4. The CR program is more effective in controlling production than the acreage allotment program	39	19	9	20
5. The CR program is the best method of controlling production	39	22	6	17
6. The gain by the government from the CR program outweighs its cost	<u>35</u>	<u>17</u>	<u>15</u>	<u>10</u>
Total	264	100	38	106
Percent of total possible responses and qualifications	66	25	9	26

to the lack of sufficient funds, and because of the improved technology which has been increasing yields, the Program has not significantly reduced production. It was the general belief of these people that an expansion of the Conservation Reserve Program was necessary to meet this objective. Since some of their qualifying remarks were not entirely relevant to the statement it is possible that some of those who made these qualifying remarks actually agreed with this statement.

The majority of the respondents agreed with statement three (that the Program provides an incentive to shift from grain to livestock production). Many of those who qualified their answer indicated that undoubtedly some shift would occur but only to a limited degree since in most cases returns from grain production were much greater than from livestock. Some examples given by the respondents when shifts would occur included relatively unproductive cropland, small size of cropland operation relative to the livestock operation, and small tracts of cropland isolated from the major crop acreage and surrounded by pasture acreage.

Some respondents had difficulty in deciding whether the Acreage Allotment or Conservation Reserve Program was the most effective method of controlling production. According to their qualifying remarks many were uncertain in comparing the effectiveness of these two programs and some indicated that both programs were necessary. This is probably

why statements four and five have about the same position in Table XIX. The response difference between these two statements is that statement four has three more no responses and five has three more unfavorable responses, which appears to indicate that there was greater certainty among the respondents to statement five. Four of those who disagreed with statement five indicated that it would be better if the Program were expanded and three others indicated a bushel-control program would be preferable. One of the most common responses of those who agreed with statement five indicated that it was the best because it took cropland completely out of production.

Statement six in Table XIX appeared to be the most difficult for the respondents to evaluate as evidenced by the relatively large number of no responses. Even the number of qualifying remarks to the responses were substantially reduced as compared to the other statements. Of those who qualified their decision, about half indicated that the cost of the Conservation Reserve Program was probably no greater than the cost of storing surplus grain.

Attitude Toward the Expansion, Continuation, and  
Contraction of the Program

Table XX shows the respondents' attitudes towards the expansion and/or continuation of the Conservation Reserve Program. Of the total possible responses, 72 per cent reacted favorably to this issue, 26 per

TABLE XX. ATTITUDE OF THE RESPONDENTS TOWARD THE EXPANSION, CONTINUATION, AND CONTRACTION OF THE CONSERVATION RESERVE PROGRAM, AND NUMBER OF QUALIFICATION.

Statement	Attitude			Number of Qualifications
	Favorable Number of Responses	Unfavorable Number of Responses	No Response	
1. The CR program should be resumed on a voluntary basis for those presently participating	56	11	0	11
2. The program should not be discontinued after present contracts have expired	54	10	3	13
3. The CR program should be expanded	46	18	3	21
4. The CR program does not need provisions for change while it is in effect	<u>37</u>	<u>29</u>	<u>1</u>	<u>24</u>
Total	193	68	7	69
Per cent of total possible responses	72	25	2	25

cent unfavorably, and two per cent were non-responsive.

About 84 per cent of the respondents agreed with the first statement in Table XX and 16 per cent disagreed. Five of those who disagreed with this statement indicated that in addition it should be expanded to include all who want to participate within the maximum payment restriction. Thus there actually is a higher percentage of the respondents who agreed with this statement than is indicated in the table.

Eighty per cent of the respondents believed that they should have an option of renewing their Conservation Reserve contracts after the expiration date, Table XX. Sixteen per cent disagreed with statement two but four of these qualified their position by indicating that only whole-farm contracts should be continued. Those that did not respond were not certain as to whether this was the best method to control production.

Sixty-eight per cent of the respondents believed that the Conservation Reserve Program should be expanded and 26 per cent did not agree with statement three (Table XX). Four of those who agreed indicated that it was the best way to control production, three believed that participation should only be available to the small or non-economic units, and one indicated it should be available on a voluntary basis to everyone with a maximum payment level which he thought was better than a mandatory acreage cut because a farmer could have a choice and adapt

his farm accordingly. Four who disagreed with this statement indicated that it should be continued for only those who were currently participating.

About 55 per cent of the respondents agreed that the Conservation Reserve Program did not need provisions for change and 43 per cent disagreed. Of those who disagreed, 14 indicated that the controls on reserve acreage should be more flexible so that it would be easier to graze or cut hay from this acreage in times of drought. This particular qualification did not appear to indicate that they were dissatisfied with the Program in its entirety, only with the particular restriction limiting the use of the acreage during drought emergencies.

#### Effect the Program Had on the Respondents' Welfare and On the Local Community

Table XXI shows the attitude of the respondents toward the effects the Conservation Reserve Program had on their personal income and on their community. Of the total number of possible responses to the four statements, 77 per cent reacted favorably, 19 per cent unfavorably, and four per cent were non-responsive.

About 88 per cent of the participants believed that farmers were satisfied with their Conservation Reserve contracts and five per cent believed they were not satisfied (Table XXI). The majority of the qualifying remarks consisted of "they were satisfied" and "they had not

TABLE XXI. ATTITUDE OF THE RESPONDENTS TOWARD THE INFLUENCE THE CONSERVATION RESERVE PROGRAM HAD ON THE COMMUNITY AND ON THEIR PERSONAL WELFARE.

Statement	Attitude			Number of Qualifications
	Favorable	Unfavorable	No Response	
	Number of Responses			
1. Farmers are satisfied with their CR contracts	59	4	4	21
2. People who have CR contracts are not left without productive employment	54	9	4	24
3. The program does not damage the community	52	15	0	15
4. Farmers who participate in the program significantly increase their incomes	<u>42</u>	<u>23</u>	<u>2</u>	<u>26</u>
Total	207	51	10	86
Per cent of total possible responses	77	19	4	32

heard of many (if any) complaints."

The majority of the respondents did not believe that those who participated in the reserve program were left without employment (Table XXI). Many of these qualified their response by indicating that in some cases it depended upon health, age, and ambition of the individual. Also, those who had off-farm employment prior to participating believed that if they could find off-farm jobs others could do likewise.

Fifty-two of the respondents did not believe the Conservation Reserve Program hurt the community in terms of the amount of money spent in the community and 15 disagreed with this statement (Table XXI). Some of the most common reasons given why they disagreed included; "the Program puts more money into the community as compared to the returns from farming" and "the annual payments have an income stabilizing effect on the community."

About 62 per cent of the participants thought that farmers significantly increased their incomes by placing their land in the Conservation Reserve Program as compared to farming (Table XXI). Three of those who agreed indicated that their incomes increased because of the drought condition that prevailed at that time. Eight of those who disagreed believed their net incomes remained about the same and a few mentioned the advantage of income stability.

In summarizing the reaction of the respondents to the 14

attitudinal statements, it appeared that they were highly favorable to the Conservation Reserve Program. In total, about 71 per cent of the responses were favorable to the Program, 23 per cent were unfavorable, and about six per cent were non-responses. The area that seemed the most attractive was the continuation of the Program which in many cases implied a greater and/or more stable income. The areas that appeared to be the least attractive were the effectiveness of the Conservation Reserve Program to control production in comparison to the Acreage Allotment Program and in comparing the costs of these two programs. Undoubtedly there was some lack of knowledge in these two areas as evidenced by some of the qualifications and by the relatively larger incidence of non-responses as compared to the other statements.

Other similar areas of concern, during the period when the Conservation Reserve Program was in effect and especially during its inception, were whether the Program would damage the rural communities by decreasing the income of local businesses and whether it would create a weed and/or insect problem. Most of the respondents believed that the distributors of farm supplies would have a decrease of business but all other business activity would increase. Many of their comments indicated that they had more money to spend on cars, food, appliances, and other household goods and, because of the more stable income, it was easier for them to retire debts. This does not mean to imply that every small town was better off in total business activity

because there were some movement of participants and hence a change in spending to the nearby larger towns.

About a fourth of the respondents believed that the Conservation Reserve acreage created a weed or insect problem. However, many of them thought that this was true for only the first or second year and if proper management was applied, such as clipping weeds and applying pesticides, many of these problems would have been reduced.

## CHAPTER VI

### SUMMARY

Historically, major emphasis in designing farm programs has been given to increasing farm incomes and to decreasing production of surplus crops at the least possible public cost. Undoubtedly one of the surest methods of reducing production is to make cropland unavailable for production which was accomplished through the Conservation Reserve Program. This particular Program was rather unique in that an operator could retire cropland from production for a maximum of ten years and that operators with small acreages were at an advantage to participate as compared to those who had large acreages because of the \$5,000 payment limitation that could be paid to a farm owner and because a bonus was paid for whole farm participation.

Because the Conservation Reserve Program was somewhat unique, questions arose concerning the effects the Program had on farm firms, what prompted the firms to participate, what adjustments were made because of participation, and what the participants' plans were after contract termination. Such expressed concerns regarding the Program were largely instrumental in initiating this study. In general, the objective of the study was to survey and analyze the individual and aggregate problems involved in adjusting to participation in the Conservation Reserve Program and those encountered upon termination of contracts.

The area selected for study was five counties in northeastern Montana. This area was selected because it had a relatively high rate of participation as compared to other areas within the State providing for economy for the survey. An intensive survey including a few counties appeared to be more meaningful than covering a larger but less homogenous area. Within this area, 67 farm owners were interviewed to obtain information pertinent to the objectives.

The survey indicated that the average size of the contracted farms was small. The cash-grain farms had an average of 248 cropland acres and the grain-livestock 362 cropland acres. Other than those participants who rented additional land and/or had a substantial enterprise, the majority of those who were actively farming prior to participation were not fully occupied on their farms as evidenced by the 37 respondents who had off-farm employment. In many instances their off-farm income appeared necessary to supplement their farm income.

The paired comparison method was used to analyze the reasons why land owners participated in the Conservation Reserve Program. In the analyses, the respondents showed considerable agreement in their responses. Probably the top ranking reason was that their farm was not adequate in size to have an economic farm unit. The second most important reason, and closely associated to the first, was that they expected, through participation, to increase their farm incomes.

Drought prior to participation was also mentioned frequently. This area of the State had experience drought conditions for several years before the beginning of the Program causing below average yields hence abnormally low incomes. Reasons for participation mentioned less frequently appeared applicable only to small segments of the population. For example, "conversion to a livestock operation" probably applied only to those who had available grazing land and "poor health" and "approaching retirement" to the elderly.

Historically farmers have been slow to adopt farm programs that differed from what they were accustomed to, and the initiation of the Conservation Reserve Program was no exception. During the first few years of its inception farmers were hesitant to participate. But through the efforts of the United States Department of Agriculture and other interested groups in disseminating information about the Program, the rate of participation accelerated to the point where the number of applications exceeded that which could be accepted due to the limited budget appropriated for the Program. Although the rate of participation indicated that the Program was rather well received by land owners during its inception, questions arose as to what the attitudes of the participants were toward the Program upon contract termination. A phase of this study explored this area of concern by posing attitudinal questions to the respondents that pertained to the effect the Program had on production, those that related to the expansion, continuation,

and contraction of the Program, and those that pertained to the personal welfare of the respondents and to the community. According to the responses the respondents gave these questions, indications were that they were highly favorable toward the Program. Of all possible responses, about 71 per cent favored the Program; 23 per cent were unfavorable, and about six per cent were non-responses. The area that seemed the most attractive was the continuation of the Program which in many instances implied a greater and/or more stable income. The areas that appeared to be the least attractive were the effectiveness of the Program to control production in comparison with the Acreage Allotment Program and in comparing the costs of these two Programs. Undoubtedly some respondents lack knowledge in these two areas as evidenced by some of the qualifications and by the relatively larger incidence of non-responses as compared to statements in the first area.

The respondents' Conservation Reserve payment rates ranged from \$6.65 to \$11.50 per acre and averaged about \$9.50 per acre. In view of this, the respondents were asked that if the Program was to continue would they recontract at the end of their contract. To this proposal about 81 per cent reacted favorably. Of those who replied negatively, nine indicated that their payment rates would have to be somewhat higher than what they were currently receiving before they would recontract.

Participation in the Conservation Reserve Program caused changes in resource uses. The amount of labor, management and capital required

to care for the land was greatly reduced and much of the farm machinery and equipment was not needed. As a result, nine of the respondents sold farm machinery and much of the capital released was used for new investments and to retire old debts. Among the respondents, the number having off-farm employment increased from 37 to 46. All of the increase was full-time positions in contrast to part-time and none indicated a job was not available in the immediate area if they wanted to work.

One of the desired latent effects of the Program was that after the contracts had terminated much of the contracted acreage would remain in grass. In this particular study, the respondents estimated that about a third of their 18,600 contracted acreage would remain in vegetative cover for livestock use. In cases where only part of the farm was to remain in grass, it was usually on the least productive land.

In general, the study indicated that the Conservation Reserve Program was well received among the small farm owners in northeastern Montana. Maximum funded participation occurred and the majority of the participants were satisfied with their payments and in some instances increased their farm incomes. A few respondents indicated that they did not plan to actively farm after their contracts had terminated due to retirement and having employment in another occupation. It is assumed that most of the farmland of these owners would be absorbed by other operators. There was very little evidence that the respondents

moved or planned to move away from their immediate rural areas and the payments they received appeared to be spent within their areas.

However their pattern of spending did change. Money spent on machinery, equipment and other items to produce crops was substantially reduced during the period of participation and expenditures for food, clothing, education, and debt retirement increased.

Surplus production is one of the most serious problems facing agriculture today. This problem, either directly or indirectly, effects the welfare of all farmers in terms of depressing prices and thus reducing net farm income. The most rapid increases in grain production came during times of emergencies when the product prices were high relative to the inputs. After the emergencies had subsided the demand for some of the farm grain products fell but the level of production remained at about the same level. Probably the major factor contributing to the surpluses of wheat and feed grains is the rapid advancement of technology. Through the use of more efficient machinery and equipment, improved varieties, fertilizer, and improved farming methods, the production of grain has increased rapidly.

Farm programs to control the production of various cereal crops have been in effect for many years. The most common type of control has been to restrict the acreages of the surplus crops. To attract farmers to participate in these programs monetary incentives were provided. The most common incentives have consisted of providing

price supports for the participant's grain, domestic and export certificates (which were redeemable for cash) for the portions of their wheat production that were to be exported and to be used for human consumption, and per acre payments for that cropland taken entirely out of production. Undoubtedly these production control programs have helped to suppress the production of surplus crops but the end results, in terms of program costs and the effectiveness of programs to control production, have not been entirely satisfactory as partially evidenced by changes in farm programs. Part of this dissatisfaction occurs because, especially at the beginning of new programs, it is not known how farmers would react to the programs. For instance, a program that may not be particularly well designed for an area may significantly affect the expected participation rate. Also, in some cases, by restricting the acreage of a particular crop such as wheat, may force diverted acres to other crops, especially feed grains, which may be in competition with feed grains produced by other farmers. This indicates that there is a need for intelligence concerning the past farm programs to evaluate the effect programs had on farm income, the acceptance of programs by farmers, and whether land use adjustments caused by programs are for the best interest of farmers and society. Information of this type is useful in designing new farm programs, and making appropriate changes in existing ones.

This study is expected to contribute to the fund of knowledge

necessary for the planning, developing, and determining the effects of other possible long-run land retirement programs. Part of the methodology used in this study was to examine the reasons why land-owners participated in the Conservation Reserve Program and their attitudes concerning the effects of existing programs at the time of the survey. Information gained through these efforts would have provided insight into the amount and type of participation that could have been expected if the Program had continued or had continued with some modifications and the reasons why operators would participate. It is anticipated that similar studies of this nature would be beneficial in evaluating existing farm programs in various farming areas where there appear to be justifiable dissatisfactions on the part of farmers so that possible concessions or changes could be made in the programs to bring about greater harmony between farmers and programs.

Although long-term land retirement programs have not been as extensive as other types of farm programs there still appears to be an interest in these types, to decrease production of surplus crops and to build up soil, water, forest, and wildlife resources that have sometimes been misused in the past, as evidenced by the Agriculture Act of 1970 which included an appropriation of up to ten million dollars for long-term cropland retirement. Although this amount of money is not large as compared to that allocated for other farm programs it does provide sufficient funds to initiate pilot programs in various parts of

the Nation.

APPENDICES

APPENDIX A

## Questionnaire Used for the Study

"Appraisal of the Conservation Reserve Program in  
Northeast Montana--Contracts Expiring in 1963."\*

County \_\_\_\_\_ Contract no. \_\_\_\_\_ Farm no. \_\_\_\_\_

Productivity index \_\_\_\_\_ Date(s) contract signed \_\_\_\_\_

Owner \_\_\_\_\_ Age \_\_\_\_\_ Length of contract \_\_\_\_\_

(ALL QUESTIONS IN THIS SCHEDULE REFER TO THE FARM UNDER THE WHOLE FARM  
CONSERVATION RESERVE CONTRACT IDENTIFIED ABOVE.)

1. Location of farm \_\_\_\_\_

2. How long have you owned this farm? \_\_\_\_\_ years

3. How long have you operated this farm? Beginning year \_\_\_\_\_  
Ending year \_\_\_\_\_

4. Were you actively farming this farm yourself when put in the  
Conservation Reserve? Yes \_\_\_\_\_ No \_\_\_\_\_

If NO, how was it farmed? \_\_\_\_\_

5. Did you farm other land during the crop year before contracting?

Yes \_\_\_\_\_ No \_\_\_\_\_

If YES, explain \_\_\_\_\_

---

\* Space required for explanatory information has been reduced in this  
version of the questionnaire.

1. Description of farm and land in reserve

	<u>Land use</u>	<u>Acres</u>
A. <u>Before contract</u>		
Cropland (eligible).....		_____
Winter wheat.....		_____
Spring wheat.....		_____
Total wheat allotment.....		_____
Barley.....		_____
Oats.....		_____
Flax.....		_____
Other small grain (specify)		
_____.....		_____
Corn.....		_____
Tame hay.....		_____
Fallow.....		_____
Idle.....		_____
B. <u>Presently</u>		
Grass (Conservation Reserve plantings).....		_____
Trees (Conservation Reserve plantings).....		_____
Other (Conservation Reserve plantings).....		_____
Total acreage in Conservation Reserve.....		_____
Non-cropland (not eligible).....		_____
Pasture.....		_____

<u>Land use</u>	<u>Acres</u>
Shelterbelts and trees.....	_____
Idle and waste.....	_____
Farmstead.....	_____
Total farm acreage.....	_____

II. A. Did you consider the productivity of this farm equal to \_\_, less than \_\_, or above \_\_ the productivity level of average farms in this community before contracting?

B. Do you think the non-use period has affected the productivity of the land? No \_\_\_ Increased \_\_\_ Decreased \_\_\_ Comment \_\_\_\_\_

III. Livestock enterprises (basic stock)

<u>Type of livestock</u>	<u>During the year before contract</u>	<u>During 1962</u>
	<u>Number</u>	<u>Number</u>
Beef cows.....	_____	_____
Yearlings.....	_____	_____
Bulls.....	_____	_____
Milk cows.....	_____	_____
Other dairy stock.....	_____	_____
Feedlot feeding.....	_____	_____
Feeders (raised).....	_____	_____
Feeders (bought).....	_____	_____
Ewes.....	_____	_____

	<u>Number</u>	<u>Number</u>
Rams.....	_____	_____
Sows.....	_____	_____
Boars.....	_____	_____
Turkeys raised.....	_____	_____
Laying hens.....	_____	_____
Broilers or fryers raised.....	_____	_____

IV. Adjustments occasioned by participation

A. Family

1) Have you moved your residence since you placed the farm in the Conservation Reserve? Yes \_\_\_ No \_\_\_ If YES, Explain \_\_\_\_\_

2) During the year before contracting did the operation of this farm require less than full time work by you? Yes \_\_\_ No \_\_\_ If YES, to what extent (percent of time)? \_\_\_\_\_

3) Did you have off farm employment during the year before contracting? Yes \_\_\_ No \_\_\_ If YES, what kind? \_\_\_\_\_

4) To what extent were you employed on this farm during 1962? \_\_\_\_\_ percent.

5) Did you have other employment during 1962? Yes \_\_\_ No \_\_\_

If YES, what kind? \_\_\_\_\_

- 6) Have other members of your family moved into other employment since your Conservation Reserve participation? Yes \_\_\_  
No \_\_\_.

If YES:

<u>Member of family</u>	<u>Age</u>	<u>Kind of work</u>	<u>Location of work</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

B. Other labor during the year prior to contracting.

- 1) Did you hire any farm labor during the year before contracting? Yes \_\_\_ No \_\_\_.

<u>Kind of work</u>	<u>Length of jobs</u>
_____	_____
_____	_____

- 2) Did you hire any custom work? Yes \_\_\_ No \_\_\_ If YES, what kind? \_\_\_\_\_

- 3) Did you hire any farm labor or custom work on the farm during 1962? Yes \_\_\_ No \_\_\_ What kind? \_\_\_\_\_

C. Land and improvements

- 1) Did you make more \_\_\_ less \_\_\_ or the same use \_\_\_ of (non-eligible) pasture land during 1962 than in the year before contracting? \_\_\_\_\_

If changed, explain \_\_\_\_\_

- 2) Have you bought or rented in other land since you placed the farm in the Conservation Reserve? Yes \_\_\_ No \_\_\_. If YES:

<u>Type of land</u>	<u>Reason for purchasing or renting</u>	<u>Type of operation</u>
---------------------	---	--------------------------

_____	_____	_____
_____	_____	_____

- 3) Have you sold or rented out land on this farm since contracting? Yes \_\_\_ No \_\_\_. If YES, Describe \_\_\_\_\_

\_\_\_\_\_

- 4) Have you built or removed fences on this farm since contracting? Yes \_\_\_ No \_\_\_. If YES, Explain (reason, amount, cost, and cost-sharing) \_\_\_\_\_

\_\_\_\_\_

- 5) Have you planted trees (either solid planting or shelter belt)? Yes \_\_\_ No \_\_\_. If YES, Explain (kind, amount, cost, and cost-sharing) \_\_\_\_\_

\_\_\_\_\_

- 6) Have you made any major changes in buildings (removal, additions, alterations)? Yes \_\_\_ No \_\_\_

If YES:

<u>Kind of building</u>	<u>Reason for change</u>	<u>Type of change</u>
-------------------------	--------------------------	-----------------------

_____	_____	_____
-------	-------	-------

7) In the drought emergency, was the land used for hay?  
 Yes\_\_\_ No\_\_\_ or for pasture Yes\_\_\_ No\_\_\_. If YES,  
 Year\_\_\_\_\_ tons of hay cut\_\_\_\_\_ AUM grazing\_\_\_\_\_.

D. Equipment

1) Have you disposed of any farming equipment as a result  
 of participation? Yes\_\_\_ No\_\_\_

If YES, list and describe major items.

Item	: Make and : model or size	: Age when : sold	: Year : sold	: Price : received
	:	:	:	:
	:	:	:	:
	:	:	:	:

2) In your opinion, were these sales prices generally  
 satisfactory\_\_\_unsatisfactory\_\_\_.

Explain\_\_\_\_\_

3) Have you bought any equipment as a result of partici-  
 pation? Yes\_\_\_ No\_\_\_ If YES, list and describe

major items.

Item	: Size	: Year	: Purpose
	:	:	:
	:	:	:
	:	:	:

E. Capital

(Note to enumerator) Placing land in the Soil Bank probably released capital from production--(1) equipment, etc., as described above, and (2) from production costs such as tractor fuel, labor, seed and other direct investment in the crop production process.

- 1) Did putting land in the Conservation Reserve reduce your operating expenses? Yes \_\_\_ No \_\_\_ If YES, how much? \$ \_\_\_\_\_.
- 2) Since funds were released as a result of Conservation Reserve participation, have you retired debts \_\_\_\_, made new investments \_\_\_\_, (In what \_\_\_\_\_ rate of return \_\_\_\_\_ %), increased personal or household expenditures \_\_\_\_, or made other expenditures \_\_\_\_\_.

Explain \_\_\_\_\_

---

- V. A. Why in reserve? (Enumerator--ask set 1 of the paired comparisons if he was actively operating this farm prior to contracting. Ask set 2 if he wasn't actively farming it. See page 1. Use N.A. if neither factor entered into consideration.)

First, I have here a set of cards, each of which has on it two of the major reasons why land owners such as yourself may have chosen to participate in the Soil Bank. Each is

paired once with each of the others and there are no duplicate cards. Please look at each card and tell me which of the pair was most important in the decision you made. These items are:

Set 1

- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| 1. Poor health of operator          | 5. Conservation and farm improvement |
| 2. Approaching retirement           | 6. Farm not adequate                 |
| 3. Expected increase in farm income | 7. Change occupations                |
| 4. Drought at the time              | 8. Conversion to livestock operation |

1.  Poor health of operator  
 Conversion to livestock operation
2.  Approaching retirement  
 Change occupations
3.  Farm not adequate  
 Expected increase in income
4.  Change occupations  
 Poor health of operator
5.  Approaching retirement  
 Drought at the time
6.  Poor health of operator  
 Conservation and farm improvement
7.  Conversion to livestock operation  
 Drought at the time
8.  Farm not adequate  
 Conservation and farm improvement
9.  Expected increase in income  
 Change occupations

10.  Approaching retirement  
 Poor health of operator
11.  Conservation and farm improvement  
 Change occupations
12.  Conversion to livestock operation  
 Farm not adequate
13.  Poor health of operator  
 Drought at the time
14.  Approaching retirement  
 Farm not adequate
15.  Change occupations  
 Conversion to livestock operation
16.  Expected increase in income  
 Approaching retirement
17.  Change occupations  
 Drought at the time
18.  Conservation and farm improvement  
 Approaching retirement
19.  Expected increase in income  
 Drought at the time
20.  Change occupations  
 Farm not adequate
21.  Conversion to livestock operation  
 Expected increase in income
22.  Conservation and farm improvement  
 Drought at the time
23.  Poor health of operator  
 Expected increase in income
24.  Conversion to livestock operation  
 Conservation and farm improvement

- 25.  Farm not adequate  
 Poor health of operator
- 26.  Drought at the time  
 Farm not adequate.
- 27.  Approaching retirement  
 Conversion to livestock operation
- 28.  Conservation and farm improvement  
 Expected increase in income

Set 2

- 1. Drought at the time
- 2. Difficult to find good tenant
- 3. Reduce management
- 4. Dissatisfied with rental agreement
- 5. Best income opportunity
- 6. Conservation and farm improvement
- 7. Farm not adequate
- 8. Conversion to livestock operation

- 1.  Conservation and farm management  
 Farm not adequate
- 2.  Conversion to livestock operation  
 Conservation and farm improvement
- 3.  Difficult to find good tenant  
 Best income opportunity
- 4.  Reduce management  
 Farm not adequate
- 5.  Dissatisfied with rental agreement  
 Best income opportunity
- 6.  Difficult to find good tenant  
 Conservation and farm improvement
- 7.  Dissatisfied with rental agreement  
 Drought at the time

8.  Conservation and farm improvement  
 Reduce management
9.  Farm not adequate  
 Drought at the time
10.  Best income opportunity  
 Conversion to livestock operation
11.  Farm not adequate  
 Best income opportunity
12.  Difficult to find good tenant  
 Dissatisfied with rental agreement
13.  Dissatisfied with rental agreement  
 Farm not adequate
14.  Drought at the time  
 Conservation and farm management.
15.  Drought at the time  
 Conversion to livestock operation
16.  Conservation and farm improvement  
 Best income opportunity
17.  Best income opportunity  
 Drought at the time
18.  Dissatisfied with rental agreement  
 Reduce management
19.  Conversion to livestock operation  
 Difficult to find good tenant
20.  Conversion to livestock operation  
 Dissatisfied with rental agreement
21.  Conversion to livestock operation  
 Reduce management
22.  Conservation and farm improvement  
 Dissatisfied with rental agreement

23.  Reduce management  
 Best income opportunity
24.  Reduce management  
 Drought at the time
25.  Drought at the time  
 Difficult to find good tenant
26.  Farm not adequate  
 Conversion to livestock operation
27.  Difficult to find good tenant  
 Reduce management
28.  Difficult to find good tenant  
 Farm not adequate

B. What reasons, if any, that are important to you were not included?

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_

C. Indicate how you would rank them compared to others. \_\_\_\_\_

\_\_\_\_\_

D. Did this farm have a critical soil erosion problem or other conservation problems that influenced your decision to participate?

Yes  No  Explain \_\_\_\_\_

E. These comparisons tell us your reasons for placing the farm in the Conservation Reserve. Now I would like to explore the process of arriving at your decision.

- 1) Was your interest stimulated more by--(rank in order of importance)

1. General publicity on the Program \_\_\_\_\_

2. Discussion with other farmers \_\_\_\_\_
  3. What you knew that neighbors in similar situations did \_\_\_\_\_
  4. Other (describe) \_\_\_\_\_
- 2) Did you figure the probable net income under the Conservation Reserve compared to continued farming, or did the comparison seem obvious? Compared \_\_\_\_\_ Obvious \_\_\_\_\_
  - 3) Did any members of your family influence your decision to participate? Yes \_\_\_\_\_ No \_\_\_\_\_
  - 4) (If landlord-tenant relationships involved ask:) How did you and the tenant arrive at a basis for dividing payment?  
\_\_\_\_\_

- F. 1) What other acceptable alternative to signing a Conservation Reserve contract did you have at the time? (Check-list only)
- Continued farming, without major adjustment \_\_\_\_\_
- Make some major investment, such as in machinery or improvements \_\_\_\_\_

Acquire more land \_\_\_\_\_

Retire \_\_\_\_\_ Sell \_\_\_\_\_ or rent \_\_\_\_\_ farm.

Other (describe) \_\_\_\_\_

- 2) Why did you reject the other alternatives and choose the Soil Bank? \_\_\_\_\_

VI. What Plans?

A. You have a whole-farm Conservation Reserve contract expiring December 31, 1963, and will be deciding what you will do with the farm afterwards, if no new contracts are offered:

	: 1. What alter-	: 2. Which of these
Checklist	: natives do you	: do you think you
(DO NOT SUGGEST)	: have?	: will select?

- |   |  |  |
|---|--|--|
| a. Plow up cover, farm as before                |  |  |
| b. Plow up cover, rent out for cropping         |  |  |
| c. Leave grass cover, rent out for cropping     |  |  |
| d. Leave grass cover, operate as livestock farm |  |  |
| e. Leave grass cover, rent for livestock        |  |  |
| f. Sell the farm (buyer then decides on use)    |  |  |
| g. Other (describe)                             |  |  |

3) Why do you choose this (these) alternative(s)? \_\_\_\_\_

4) What changes do you plan to make in your livestock program within 2 years following contract expiration?

Explain \_\_\_\_\_

5) As a result of the alternatives indicated above for the land being released from contract, what adjustment will be required in:

- a. Family living and occupation? \_\_\_\_\_
- b. Labor utilization? \_\_\_\_\_

6) If some of the land is to be cropped:

a. What acreages of what crops are planned for 1964?

Winter wheat \_\_\_\_\_ acres    Barley \_\_\_\_\_ acres

Spring wheat \_\_\_\_\_ acres    Oats \_\_\_\_\_ acres

Other (SPECIFY) \_\_\_\_\_ acres

b. Do you plan to begin land preparation (fallow) in 1963?    Yes \_\_\_\_\_    No \_\_\_\_\_

If YES, how much? \_\_\_\_\_. Will you do it yourself, or hire it done? \_\_\_\_\_.

7) Will you change or add to the improvements (house, other buildings, water supply, fences) following contract expiration in 1963?    Yes \_\_\_\_\_    No \_\_\_\_\_

If YES, explain \_\_\_\_\_.

8) Do you plan to acquire more land within the 2 years following expiration of contract?    Yes \_\_\_\_\_    No \_\_\_\_\_

If YES, will you:

<u>Buy</u>	<u>Rent</u>	<u>Probable use</u>
(Acres)	(Acres)	
_____	_____	_____

- 
- 9) If a new program were developed, would you recontract for the same rental rate at the end of this contract? Yes \_\_\_ No \_\_\_  
If YES, what would be the lowest rate you would accept? \_\_\_\_\_.  
If NO, how high would the rental rate have to be? \_\_\_\_\_.  
Explain \_\_\_\_\_
- 
- 10) If a new program were developed permitting grazing, would you recontract at the end of this contract and graze the land at a reduced payment rate? Yes \_\_\_ No \_\_\_. If YES, what would be the lowest rate you would accept with grazing permitted? \_\_\_\_\_. If NO, how high would the rental rate have to be? \_\_\_\_\_.
- 11) What adjustments in capital do you plan to make within 2 years after contract expiration? (Note to enumerator: If owner to farm, either crop or livestock, capital may be required to improve, equip, stock, and operate--determine amount and sources. If renting, probably no change except to extend his shares in operating costs or investment in stock--determine this. If selling, will acquire capital--determine amount and probable use.)

Equipment	Cost	Source
_____	_____	_____
_____	_____	_____
Stock		
_____	_____	_____
_____	_____	_____
Improvements		
_____	_____	_____
_____	_____	_____

Necessary amount of operating capital? \_\_\_\_\_

- 12) With a continuation of the 1963 program would you expect your farm income by 1965 to equal \_\_\_\_\_, exceed \_\_\_\_\_, or be less than under contract? \_\_\_\_\_

Why? \_\_\_\_\_

VII. Evaluation of the Conservation Reserve Program

- A. We would like your ideas about how well the Conservation Reserve Program has worked.

- 1) Do you think that the Conservation Reserve Program has affected certain kinds of local business:

a. unfavorably? Yes \_\_\_\_\_ No \_\_\_\_\_. If YES, which kinds and how? \_\_\_\_\_

b. favorable? Yes \_\_\_\_\_ No \_\_\_\_\_. If YES, which kinds and how? \_\_\_\_\_

2) Are there more safeguards that should be built into the program to avoid disadvantages to the community? \_\_\_\_\_  
\_\_\_\_\_

3) In your opinion has the Conservation Reserve Program created a weed and/or insect problem? \_\_\_\_\_  
\_\_\_\_\_

VIII. Appraisal of the Conservation Reserve Program

A. 1) What is your annual Conservation Reserve payment?

Per acre \$ \_\_\_\_\_ or per farm \$ \_\_\_\_\_.

2) Did you obtain this contract through competitive bidding?

Yes \_\_\_\_\_ No \_\_\_\_\_

B. I wish to read some comments that have been made about the Conservation Reserve Program. Please indicate whether you agree or disagree with each.

1) The Conservation Reserve contract should provide more provisions for change while it is in effect. Agree \_\_\_\_\_

Disagree \_\_\_\_\_ Qualified \_\_\_\_\_ Qualification \_\_\_\_\_  
\_\_\_\_\_

2) The Conservation Reserve Program is accomplishing its objectives. Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Qualified \_\_\_\_\_

Qualification \_\_\_\_\_  
\_\_\_\_\_

3) The Program should be resumed on a voluntary basis for those presently participating. Agree \_\_\_\_\_ Disagree \_\_\_\_\_

Qualified \_\_\_\_\_ Qualification \_\_\_\_\_

---

- 4) The Acreage Allotment Program is more effective in controlling production than the Conservation Reserve Program. Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Qualified \_\_\_\_\_ Qualification \_\_\_\_\_
- 5) People who have Conservation Reserve contracts are left without productive employment. Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Qualified \_\_\_\_\_ Qualification \_\_\_\_\_
- 6) The emergency supply of feed available from Conservation Reserve land is not important. Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Qualified \_\_\_\_\_ Qualification \_\_\_\_\_
- 7) The Conservation Reserve Program should be expanded. Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Qualified \_\_\_\_\_ Qualification \_\_\_\_\_
- 8) Farmers who participate in the Program significantly increase their incomes. Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Qualified \_\_\_\_\_ Qualification \_\_\_\_\_
- 9) The Program damages the community. Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Qualified \_\_\_\_\_ Qualification \_\_\_\_\_

---

10) The gain by the Government from the Program outweighs its cost. Agree \_\_\_ Disagree \_\_\_ Qualified \_\_\_ Qualification \_\_\_

---

11) Farmers are not satisfied with their contracts. Agree \_\_\_ Disagree \_\_\_ Qualified \_\_\_ Qualification \_\_\_

---

12) The Program provides an incentive to shift from grain production to livestock production. Agree \_\_\_ Disagree \_\_\_ Qualified \_\_\_ Qualification \_\_\_

---

13) The Program is the best method of controlling production. Agree \_\_\_ Disagree \_\_\_ Qualified \_\_\_ Qualification \_\_\_

---

14) The Program should be discontinued after present contracts have expired. Agree \_\_\_ Disagree \_\_\_ Qualified \_\_\_ Qualification \_\_\_

---

APPENDIX B

TABLE I. DISTRIBUTION OF THE RESPONDENTS BY AGE GROUPS AND THOSE THAT WERE ACTIVELY FARMING AT THE TIME OF CONTRACTING.

Age Group (Years)	All Respondents (Number)	Actively Farming (Number)
Less than 30	2	2
30-39	13	12
40-49	19	19
50-59	16	14
60-69	10	7
70-79	4	2
80-89	<u>3</u>	<u>1</u>
Total	67	57

TABLE II. DISTRIBUTION OF THE RESPONDENTS BY LENGTH OF FARM OWNERSHIP. 1/

Length of Ownership (Years)	Respondents (Number)
Less than 5	1
5-14	16
15-24	34
25-34	10
35-44	3
Over 44	<u>2</u>
Total	66

TABLE III. NUMBER OF RESPONDENTS RAISING VARIOUS CROPS BEFORE CONTRACTING.

Crop	Number of Respondents
Spring wheat	60
Winter wheat	5
Barley	45
Oats	27
Flax	3
Corn	11
Tame Hay	14
Summer fallow	53

TABLE IV. NUMBER OF RESPONDENTS HAVING VARIOUS TYPES OF EMPLOYMENT  
IN 1962.

Type of Employment	Number of Respondents
Farm work	7
Agricultural Stabilization and Conservation Service	3
Mail carrier	3
School teacher	3
Coal miner	2
Construction worker	2
Grain elevator	2
Implement dealer	2
Janitor	2
Banker	1
Bartender	1
Cattle trader	1
Carpenter	1
Chemist	1
Cook	1
Credit manager	1
Crop insurance adjustor	1
Electrician	1
Grocer	1
Implement dealer employee	1
Insurance and securities salesman	1
Odd jobs	1
Railroad	1
Road maintenance	1
Sales ring employee	1
Service and bulk station gas operator	1
Service station employee	1
Sugar beet factory	1
Tavern owner	<u>1</u>
Total	46

APPENDIX C

TABLE I. F MATRIX: FREQUENCY WITH WHICH ONE REASON WAS CHOSEN OVER ANOTHER BY 34 RESPONDENTS.

Reasons	1	2	3	4	5	6	7	Totals
1. Approaching retirement	---	16.0	24.5	24.5	30.5	30.5	32.5	158.5
2. Poor health of operator	18.0	---	24.5	23.5	29.5	30.5	32.5	158.0
3. Change in occupations	9.5	9.5	---	17.5	25.5	26.0	29.0	117.0
4. Conversion to livestock enterprise	9.5	10.5	16.5	---	26.5	25.5	24.5	113.0
5. Drought at the time	3.5	4.5	8.5	7.5	---	20.0	18.0	62.0
6. Expected increase in income	3.5	4.0	8.0	8.5	14.0	---	17.0	55.0
7. Farm not adequate	1.5	1.5	5.0	9.5	16.0	17.0	---	50.5
Totals	45.5	46.0	87.0	91.0	142.0	149.0	153.5	714.0

TABLE II. P MATRIX: PROPORTION OF TIMES WHICH ONE REASON WAS CHOSEN OVER ANOTHER BY 34 RESPONDENTS.

Reasons	1	2	3	4	5	6	7	Totals
1. Approaching retirement	.500	.471	.721	.721	.897	.897	.956	5.163
2. Poor health of operator	.529	.500	.721	.691	.868	.882	.956	5.147
3. Change in occupations	.279	.279	.500	.515	.750	.765	.853	3.941
4. Conversion to livestock enterprise	.279	.309	.485	.500	.779	.750	.721	3.823
5. Drought at the time	.103	.132	.250	.221	.500	.588	.529	2.323
6. Expected increase in income	.103	.118	.235	.250	.412	.500	.500	2.118
7. Farm not adequate	.044	.044	.147	.279	.471	.500	.500	1.985
Totals	1.837	1.853	3.059	3.177	4.677	4.882	5.015	24.5

TABLE III. Z MATRIX:  $P_{ij}$  VALUES OF THE PROPORTION MATRIX TRANSFORMED INTO  $Z_{ij}$  VALUES USING A TABLE OF NORMAL DEVIATES Z CORRESPONDING TO PROPORTIONS P OF A DICHOTOMIZED UNIT NORMAL DISTRIBUTION, 34 RESPONDENTS.

Reasons	1	2	3	4	5	6	7
1. Approaching retirement	.000	-.073	.586	.586	1.265	1.265	1.706
2. Poor health of operator	.073	.000	.586	.499	1.117	1.185	1.706
3. Change in occupations	-.586	-.586	.000	.038	.674	.722	1.049
4. Conversion to livestock enterprise	-.586	-.499	.038	.000	.769	.674	.586
5. Drought at the time	-1.265	-1.117	-.674	-.769	.000	.222	.073
6. Expected increase in income	-1.265	-1.185	-.722	-.674	-.222	.000	.000
7. Farm not adequate	-1.706	-1.706	-1.049	-.586	-.073	.000	.000
Sum of $Z_{ij}$	-5.335	-5.116	-1.311	-.906	3.530	4.068	5.120
Mean of $Z_{ij}$	-.762	-.738	-.187	-.129	.504	.581	.731
Scale Values	.000	.024	.575	.633	1.266	1.343	1.493

TABLE IV.  $Z_{ij}$ ' MATRIX: THEORETICAL NORMAL DEVIATES  $Z_{ij}$ ' CORRESPONDING TO THE SCALE DISTANCES BETWEEN THE REASONS OF TABLE III.

Reasons	Scale Values	1 (.000)	2 (.024)	3 (.575)	4 (.633)	5 (1.266)	6 (1.343)	7 (1.493)
1. Approaching retirement	.000	---						
2. Poor health of operator	.024	-.024	---					
3. Change in occupations	.575	-.575	-.551	---				
4. Conversion to livestock enterprise	.633	-.633	-.609	-.058	---			
5. Drought at the time	1.266	-1.266	-1.242	-.691	-.633	---		
6. Expected increase in income	1.343	-1.343	-1.319	-.768	-.710	-.077	---	
7. Farm not adequate	1.493	-1.493	-1.469	-.918	-.860	-.227	-.150	---

TABLE V.  $P_{ij}$ ' MATRIX: THEORETICAL PROPORTIONS  $P_{ij}$ ' CORRESPONDING TO THE THEORETICAL DEVIATES  $Z_{ij}$  OF TABLE IV.

Reasons	1	2	3	4	5	6	7
1. Approaching retirement	---						
2. Poor health of operator	.491	---					
3. Change in occupations	.283	.291	---				
4. Conversion to livestock enterprise	.263	.271	.477	---			
5. Drought at the time	.102	.107	.245	.263	---		
6. Expected increase in income	.090	.094	.221	.239	.469	---	
7. Farm not adequate	.068	.071	.179	.195	.410	.440	---

TABLE VI. DISCREPANCIES BETWEEN THE THEORETICAL PROPORTIONS  $P_{ij}$  OF TABLE V AND THE OBSERVED  $P_{ij}$  VALUES OF TABLE II.

Reasons	1	2	3	4	5	6	7
1. Approaching retirement	---						
2. Poor health of operator	.038	---					
3. Change in occupations	-.004	-.012	---				
4. Conversion to livestock enterprise	.016	.038	.008	---			
5. Drought at the time	.000	.025	.005	-.042	---		
6. Expected increase in income	.013	.024	.014	.011	.057	---	
7. Farm not adequate	-.024	-.027	-.032	.084	.061	.060	---
Absolute Totals	.095	.126	.059	.137	.118	.060	

TABLE VII. VALUES OF OBSERVED PROPORTIONS  $P_{ij}$ ' OF TABLE II AND THEORETICAL PROPORTIONS  $P_{ij}$ ' OF TABLE V CONVERTED INTO ANGLES IN TERMS OF DEGREES,  $\theta$  AND  $\theta'$ .

Reasons	1	2	3	4	5	6	7
$\theta$ value							
1	---						
2	46.66	---					
3	31.88	31.88	---				
4	31.88	33.77	44.14	---			
5	18.72	21.30	30.00	28.04	---		
6	18.72	20.09	29.00	30.00	39.93	---	
7	12.11	12.11	22.55	31.88	43.34	45.00	---
$\theta'$ value							
1	---						
2	44.48	---					
3	32.14	32.65	---				
4	30.85	31.37	43.68	---			
5	18.72	19.09	29.67	30.85	---		
6	17.46	17.85	28.04	29.27	43.22	---	
7	15.12	15.45	25.03	26.21	39.82	41.55	---

APPENDIX D

## METHOD USED TO CONSTRUCT ATTITUDINAL SCALES

Chapter V attempts to evaluate the respondents' subjective appraisals of the Conservation Reserve Program through the use of dichotomous attitudinal statements. The original intention was to formulate an attitudinal scale as developed by Guttman in the late 1940's. The object was to determine whether one respondent was higher or lower, more favorable or less favorable than the other respondents along an undimensional continuum.

The first step was to construct attitudinal statements with the central thought of designing them so that each would be an attempt to evaluate the issue "the Conservation Reserve Program." In designing these statements care was taken to avoid statements that:

1. could be endorsed by persons on opposite sides of indifference points
2. were factual or could be taken as such
3. could be endorsed by everyone or no one
4. are merely correlates and are not true measures of the central attitude

Fourteen dichotomous attitudinal statements were used in this study. 1/ Theoretically, a respondent would either agree or disagree

---

1/ Statements are shown in Appendix A, pp.

with each statement. He also had an option of qualifying his decision if he so desired. Of course he could also refuse to respond to statements, which in some instances happened during this survey.

The statements were so worded that if a respondent was completely favorable to the issue he would have to agree to half the statements and disagreed with the other half. Then the statements were randomly selected and the array of the selection was the order in which they were asked.

After the statements were edited and tabulated they were ranked according to the number of favorable responses each received. For example, the one having the greatest number of favorable responses was considered the easiest statement and given the rank of one while the one having the greatest number of unfavorable responses was considered the most difficulty and given the lowest rank. 2/ For example, Table I shows a hypothetical set of responses of five respondents to five statements. The statements are arrayed from the easiest, number one, to the hardest, number five.

---

2/ The statement which the greatest number of respondents accepted as favorable to the issue is considered the easiest and the one the greatest number accepted as unfavorable is considered the most difficult or hardest.

Next, each set of statements was scored based on the number of favorable and unfavorable responses. 3/ Continuing with the hypothetical example, the order of the respondents in Table I is a continuum. Respondent A had one of the highest scale scores, a total of four favorable responses to the issue and no errors and would therefore be considered more favorable to the issue than E. On the other hand, respondents D and E are the lowest on the continuum since they both have scale scores of one. In this example, D ranked higher than E since D's error occurred for statement four which is considered the more difficult statement and therefore less of an error than missing statement five.

TABLE I. PATTERN OF RESPONSES BY STATEMENT AND RESPONDENT.

Respondent	Statements					Scale Score
	1	2	3	4	5	
	(Response to Statements <u>a/</u> )					
A	+	+	+	+	-	4
B	-	+	+	-	+	4
C	+	+	-	+	-	3
D	+	-	-	+	-	1
E	+	-	-	-	+	1

3/ A "set" in this context refers to all statements answered by one respondent.

a/ Pluses indicate favorable responses and negative unfavorable.

Table II shows the pattern of errors by statement and respondent. As indicated, respondent A has no errors, B has two errors, and C, D, and E each have one. Either a positive or negative response is considered an error if the responses are not consistent with the pattern. For example, respondent B has an error on the first statement since this easiest statement was marked negative and the following two more difficult statements were marked positive. The same respondent marked statements four and five negative and positive, respectively. This could have been taken as one error for either four or five but since it is uncertain as to which statement should receive the error, the error is divided between the two with each receiving a half.

TABLE II. PATTERN OF ERRORS BY STATEMENT AND RESPONDENT.

Respondent	Statements					Number of Errors
	1	2	3	4	5	
	(Statement Errors)					
A						0
B	-1			$-\frac{1}{2}$	$-\frac{1}{2}$	2
C			$-\frac{1}{2}$	$+\frac{1}{2}$		1
D				+1		1
E					+1	1
Positive Errors	0	0	0	$1\frac{1}{2}$	$1\frac{1}{2}$	3
Negative Errors	1	0	$\frac{1}{2}$	$\frac{1}{2}$	0	2
Total Errors	1	0	$\frac{1}{2}$	2	$1\frac{1}{2}$	5

The order of the statements in Table I is considered a scalogram, ranging from statement one, the easiest, to statement five, the most difficult. To construct a valid scalogram it is necessary to meet the three criteria as set forth by the early developers of this method, which determines the acceptance of a completed scale. These criteria are:

1. The coefficient of reproducibility must be at least 90 per cent and can have a range from zero to one. This coefficient is determined by the formula

$$\text{coefficient of reproducibility} = 1 - \frac{\text{total number of errors}}{\text{number of respondents} \times \text{number of statements}}$$

In the example the total number of errors is equal to five and the number of respondents times the number of items is equal to 25. Thus, the coefficient of reproducibility is equal to  $1 - 5/25$  or 80 per cent which does not meet this criterion.

2. Statements on the scale can not have total positive or negative errors that add to more than 50 per cent of the positive or negative responses. In the example, statements one and five do not meet this criterion because statement one has one negative response and one negative error which is 100 per cent and statement five has two positive responses and 1.5 positive errors which is 75

per cent.

3. The total number of errors for any statement can not be more than 15 per cent of the total number of responses for that statement. Therefore, any statement in the example that has over three-fourths of an error would not be acceptable. Thus statements one, four and five would be eliminated. This example was designed to illustrate some of the problems encountered in developing scalograms. In an actual research problem it is sometimes possible to meet these criteria by eliminating those respondents who make too many errors or omitting those statements that do not appear to fit into the scalogram.

- Agricultural Research Service, The Conservation Reserve Program of the Soil Bank, Effect in Selected Areas, 1957, Agricultural Information Bulletin No. 185, (Washington, D.C.: United States Government Printing Office, March, 1958).
- Agricultural Stabilization and Conservation Service, The Food and Agricultural Act of 1965, (Washington, D.C.: United States Department of Agriculture, October, 1965).
- Aines, Ronald O., Release of Land from Conservation Reserve Contracts, Agricultural Economics Report No. 34, (Washington, D.C.: United States Government Printing Office, May, 1963).
- Bailey, Warren R. and Aines, Ronald O., How Wheat Farmers Would Adjust to Different Programs, Production Research Report No. 52, (Washington, D.C.: United States Government Printing Office, May, 1961).
- Climate and Man, Yearbook of Agriculture, (Washington, D.C.: United States Government Printing Office, 1941).
- Commodity Stabilization Service, The 1960 Conservation Reserve, (Washington, D.C.: United States Government Printing Office, July, 1959).
- Economic Research, Statistical Reporting, Agricultural Research, and Foreign Agricultural Services, Handbook of Agricultural Charts, 1964, Agricultural Handbook No. 275, (Washington, D.C.: United States Government Printing Office, September, 1964).
- Economic Research Service, Wheat Situation, WS-182, (Washington, D.C.: United States Government Printing Office, 1963).
- Economic Research Service, Wheat Situation, WS-202, (Washington, D.C.: United States Government Printing Office, 1967).
- Edwards, Allan L., Techniques of Attitude Scale Construction, (New York: Appleton-Century-Crofts, Inc., 1954).
- Guilford, J.P., Psychometric Methods, second edition, (New York: McGraw-Hill Book Company, Inc., 1954).
- Johnson, Ralph D., The Conservation Reserve Program in Nebraska, SB 470, (Lincoln, Nebraska: Nebraska Agricultural Experiment Station, University of Nebraska, February, 1962).

McArthur, W.C., The Conservation Reserve Program in Georgia, Its Effects in the Piedmont and Coastal Plain, ERS-31, (Washington, D.C.: Economic Research Service, United States Department of Agriculture, December, 1961).

Population Estimates, No. 377, (Washington, D.C.: United States Government Printing Office, October 20, 1967).

Rude, LeRoy C., Land Use Alternatives for Dryland Cash-Grain Operators, Northeastern Montana, Montana Agricultural Experiment Station Report No. 8, (Bozeman, Montana: Montana Agricultural Experiment Station, Montana State University, August, 1959).

Rude, LeRoy C., Projection of Farm Numbers in Montana, 1975-2000, Bulletin 608, (Bozeman, Montana: Montana Agricultural Experiment Station, Montana State University, October, 1966).

Rude, LeRoy C., Unpublished Data for W-54 Regional Wheat Adjustment Study, (Bozeman, Montana: Department of Agricultural Economics, Montana State University, 1966).

Supplemental Report of the Secretary of Agriculture on the 1960 Soil Bank Conservation Reserve Program, Enlarging on the Preliminary Report of January 13, 1961, (Washington, D.C.: United States Department of Agriculture, March, 1961).

Taylor, Fred R., Loftsgard, Laural D., and Schaffner, LeRoy W., Effects of the Soil Bank Program on a North Dakota Community, Agricultural Economics Report 19, (Fargo, North Dakota: Department of Agricultural Economics, Agricultural Experiment Station, North Dakota State University, May, 1961).

Taylor, Marlow M., The Conservation Reserve Program in New Mexico, Research Report 54, (Albuquerque, New Mexico: Agricultural Experiment Station, New Mexico State University, May, 1961).

MONTANA STATE UNIVERSITY LIBRARIES



3 1762 10018156 7

~~1~~  
D378

A833

Page 2