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LAND FRAGMENTATION AND WATER UTILIZATION IN RELATION TO
THEIR SOCIAL MILIEU, PARAGONAH, UTAH

by

Robert G. Painter

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Sociology

UTAH STATE AGRICULTURAL COLLEGE
Logan, Utah

1956

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Robert G. Painter

TABLE OF CONTENTS

	Page
INTRODUCTION	1
Statement of problem	1
Objectives of study	3
Review of literature	4
Setting of study	9
Community setting	11
Settlement of Paragonah	13
METHOD OF PROCEDURE	17
The schedule	17
Administration of the schedule	18
Land holders not interviewed	19
Statistical technique	19
PRESENTATION AND ANALYSIS OF DATA	20
Land in Paragonah	20
Acreage of Paragonah farms	20
Irrigable acreage of Paragonah farms	20
How farms were acquired	24
Fragmentation caused by buying additional land	25
Fragmentation caused by renting additional land	26
Farm problems caused by land fragmentation	27
Discussion of fragmentation	29
Recognition of need for consolidation of land holdings	30
Willingness to trade land	32
Consolidation of holdings through trading land	33
Obstacles to consolidation of holdings	34
Relation of present and previous farm owners	36
Generation of family farm ownership	37
Desire to continue family farm	39
Transfer of farms to heirs	41
Attitudes regarding division of farms	43
Irrigation in Paragonah	45
The Canal Company	46
The Reservoir Company	48
The Little Creek Irrigation Company	49
Pump wells	49
Drainage in Paragonah	49
Discussion of water utilization	50

Table of Contents (Cont'd)

	Page
Irrigation practices	51
Improving irrigation	54
Water rights	55
Water utilization and requirements	56
Borrowing and lending of water	57
Transfer of water rights	59
Irrigation policies	60
Consolidation of irrigation companies	62
Age and education of farmers	63
 SUMMARY AND CONCLUSIONS	 65
Recommendations for social action	68
 LITERATURE CITED	 71
 APPENDIX	 74

LIST OF TABLES

Table	Page
1. Acreage of land, owned and rented, Paragonah, Utah, 1954	21
2. Fragmentation and acreage of irrigable land, Paragonah, Utah, 1954	21
3. Present and preceding owners method of acquiring first land holding, Paragonah, Utah, 1954	24
4. Number of present and preceding owners acquiring fragmented land holdings through purchase, Paragonah, Utah, 1954	26
5. Renting and desire to purchase land separate from or adjacent to holdings, Paragonah, Utah, 1954	27
6. Land fragmentation problems reported by individual farmers, Paragonah, Utah, 1954	28
7. Discussion with neighbors, community meetings, and action taken through community meetings about fragmented holdings, Paragonah, Utah, 1954	29
8. Recognition of need for consolidation of land fragments, willingness to trade land on an equitable basis, and willingness to support group efforts to effect trades, Paragonah, Utah, 1954	31
9. Trade attempts by individual farmers to effect consolidation of fragmented holdings, Paragonah, Utah, 1954	34
10. Anticipated problems to be overcome in consolidating land holdings, Paragonah, Utah, 1954	35
11. Relation of present farmers to preceding owners and agreements for transfer of estates, Paragonah, Utah, 1954	37
12. Generation of family ownership and division of farm land among heirs of preceding owners, Paragonah, Utah, 1954	38

List of Tables (Cont'd)

Table	Page
13. Farmers' intentions of keeping the farm in the family and recognition of problems and plans for transfer to heirs, Paragonah, Utah, 1954	40
14. Transfer of farms to heirs, Paragonah, Utah	42
15. Number of children and age of farmers, Paragonah, Utah, 1954	43
16. Attitudes of farmers regarding the division of their estate among heirs, Paragonah, Utah, 1954	45
17. Water utilization discussion with neighbors, community meetings held, and action taken through community meetings, Paragonah, Utah, 1954	50
18. Irrigation practices, Paragonah, Utah, 1954	54
19. Source of irrigation water rights for Paragonah farms, Paragonah, Utah, 1954	56
20. Farmers' attitudes of irrigation water utilization and requirements, Paragonah, Utah, 1954	58
21. Borrowing and lending of irrigation water, Paragonah, Utah, 1954	59
22. Transfer of water rights; present and preceding farmers, Paragonah, Utah, 1954	60
23. Attitudes toward irrigation companies' policies, Paragonah, Utah, 1954	61
24. Attitudes toward consolidation of local irrigation companies, Paragonah, Utah, 1954	63
25. Age and education of farmers, Paragonah, Utah, 1954	64

INTRODUCTION

Statement of problem

Practices of land use in Utah show need for community action aimed at more adequate utilization of land and water resources. Use of land for crop production in Utah is limited by topography, soil type, elevation, climate, and moisture (26, p.3). Because of limitations imposed, only a small portion of the land area may be used for cultivated farming. As a rule, large land holdings in Utah are not regularly tilled but are used as range for raising livestock.

Farm cropland may be separated into two general classes: irrigated and dry-land. In general, the cropland of most farms is entirely one class; however, some farms are a mixture of the two. The majority of farms in Utah (87.5 percent in 1950 [29]) have some irrigated land. Dry-land crop production is limited to areas of the state where soil conditions and natural moisture are compatible with cultivation.

The predominance of small farms in Utah is well known. The U. S. Census of Agriculture reported that in 1945 the average farm harvested 47.4 acres (28). This includes dry-land as well as irrigated farms. According to the agricultural census of 1950, farms which had some irrigated land averaged 41.5 acres of cropland harvested; and 59.3 acres were harvested on the average dry-land farm in 1949 (29).

Many farms in Utah are composed of scattered segments of land often separated by a mile or more. This fragmentation of holdings, as it is called, contributes to the difficulty of making farms economically successful. It inhibits full use of such practices as land leveling,

crop rotation, and pest control. Machinery must be moved from piece to piece, and much time is lost in unproductive work. Water, so important to production, is lost through excessive conveyance as each farmer irrigates his fragmented holdings.

More is known about what constitutes proper practices in the utilization of physical resources than has been applied. Farmers are as interested in achieving success as other factions of society. They cultivate their land according to what they think are the best practices available to them. Often, however, farmers ignore problems that require mass approval and mass action. Lowering of group living standards is one result of ineffective management of physical and human resources. The future prosperity of farmers is dependent upon the realistic application of action in accordance with social and technological science.

Utah farmers may or may not be cognizant of the economic disadvantage of land fragmentation. If farmers of this area are aware of the economic disadvantage land fragmentation imposes and yet are doing nothing about it, social determinants of land and water utilization supercede the advantages of consolidating holdings.

Social and economic security is a goal for the entire society, the farm element included. This goal can be reached through organization and direction of productive forces (12, p. 815). Farmers, who are subject to cooperative action for economic success, cannot rely on laissez-faire methods to provide a satisfactory life (14). Social goals attainable through community action would contribute markedly to the future prosperity of individual farmers.

The presence or lack of community action is reflected in economic institutions as well as in the social and cultural life of a community.

Land fragmentation and water utilization present common problems which individuals are unable to satisfy by themselves. Group action is required.

This study was undertaken because it was recognized that land fragmentation and associated problems are common in Utah. Specifically, the Iron County Agricultural Agent recognized that in Paragonah the problem is extensive. He requested this study be made as an aid in attaining more effective utilization of land and water resources in that area.

Objectives of study

The objectives of this study were, in general, to describe the situation of land and water utilization in Paragonah, how it came about, how the people felt about it, and what action the community thought might be taken to improve the utilization of these resources.

The principal objective was to explore the social factors of land fragmentation and water utilization. Descriptions of the extent of land fragmentation and irrigation practices, which are necessary to provide a frame of reference for understanding the other factors considered, were to be included. Also to be considered were factors leading to fragmentation. These included settlement of the area, inheritance patterns, population, and buying and selling practices. Penetration of farmers' attitudes regarding fragmentation and their concern or lack of concern about the resulting inefficiency in farming was to be undertaken as was probing into attitudes concerning irrigation practices. An additional objective was to determine what action the community had taken for better utilization of the land and water resources, and what actions the community felt may and should be taken.

Review of literature

The concept of the family farm is generally thought to be the design of agriculture in the United States. Modern machinery and equipment combined with improved practices can increase production without destroying the family farm concept (7, p. 936). Certainly, farms may be too small or too divided for the most productive use of the existing resources. "The problem on these small farms is to find more days of productive work (25, p. 54)." For many farm people it becomes increasingly difficult as land is divided for inheritance and other purposes to maintain a standard of living comparable to the other factions of society.

It appears that large estates, also, do not provide adequate economic and social conditions for the people generally. According to Gray, the agricultural production of England has been significantly smaller than would have been possible if the large estates had been divided into family-sized farms (8, p. 116). Smith reports that:

If large-scale agriculture actually were efficient, the rural South would today be characterized by enlightenment and a high plane of living instead of ignorance and poverty. . . . one seeks in vain for a case in which the large-scale organization of agriculture has produced among the masses a prosperous, sturdy, independent, self-reliant, and well informed citizenry (21, p. 304).

Extremely small family farms, especially when composed of fragmented holdings, have distinct disadvantages in utilizing modern agricultural methods (10).

Ancient Hebrews, Russians, and others attempted to prevent the development of extreme fragmentation by legal provision for community ownership and periodic redistribution of holdings (21, p. 219).¹

1. C. F. Sorokin, P. A., et al., A Systematic Source Book in Rural Sociology, Minneapolis; The University of Minnesota Press. 1930.

With abandonment of feudal land tenure in Europe, the idea developed that the owner of land might deal with his property as he wished. The title of "fee simple" became a form of land tenure which allowed land to be used practically at the discretion of the holder.

The movement toward laissez-faire individualism reached its peak in Europe by the middle of the nineteenth century (8, p. 131). Social counter movements have changed the system of "fee simple" tenure with gradually increasing emphasis on the social responsibility of land as property.

Some restrictions upon landowners came as early as the 1880's. In 1889 the Danish government began a program of land settlement that included the provision that property must not be subdivided, consolidated, or combined with other land without the approval of the Secretary of Agriculture. Subdivision would be approved only if the planning of communities made it desirable to use the land for some purpose other than that for which it was originally granted (8, p. 132).

The German Homestead Act of 1920 provided that the homestead could not be subdivided or portions sold without the approval of the agency of land settlement. The Reichserbhofrecht of 1933 placed restrictions upon the landowner through regulation of ownership, succession, and inheritance. Usually, the Erbhofrecht applied up to 125 hectare² but could be extended to apply to larger holdings with permission from the Minister of Agriculture. Inheritance was regulated by limiting transfer of the undivided property to one child, generally the youngest son. Other children were entitled to support but had no claim to the capital

2. Ten hectare equal 24.7 acres.

value of the farm (31, p. 131). The Erbhofrecht involved about half of the land in Germany in 1938.

All recent land settlement laws of Germany, Scotland, England, the Scandinavian countries, and many other nations have included ability requirements of the owner to manage the land in an acceptable manner (8, p. 131). Evidences of inability could result in the loss of power to administer the family farm and even the possession of it.

The system of dividing the farm equally among the heirs of French farmers made the farms so small the "two child" family evolved to lessen excessive land fragmentation (4). Even so, the inheritance laws of France have resulted in excessive subdivision of land until many farms are far too small, resulting in a lowering of living standards for the farm people (2, p. 167).

Soviet Russia completely abandoned the operation of farms as family units. When farms were collectivized under state ownership in 1927, the possibility of operating independent family farms was abolished. Only in Russia has the movement away from laissez-faire individualism gone to such extreme (31, p. 135).

Canada was first settled by the French. Land fragmentation was introduced into Canada under the feudal system of Seigneurs, whereby all of the children of an owner, male and female, inherited equal shares of his land. In dividing the land of deceased owners each heir wanted a share in the river frontage because of transportation advantages. The demand for river frontage and equal division of holdings resulted in shredding the farms into ribbons of land with a frontage of only fifty or a hundred feet and a depth often exceeding a mile (13, p. 92). Under this pattern of land tenure the work of farming the land

necessitated a great deal of traveling back and forth. The situation prevented proper rotation of crops, and in several ways delayed progress. The system resulted in so important an obstacle to agricultural progress that in 1744 the governor drew it to the attention of authorities in France. Despite a decree by the king to control the excessive fragmentation of holdings, the practice of dividing the lands continued and by 1790 reached all the way from Quebec to Montreal (13, p. 94).

The Seigniorial tenure system in Canada was retained by the British for a time after they had gained control of the government. Finally, in 1854, the system was abandoned. Since that date free tenure is the only system which has remained in force in the province of Quebec. Cagne, however, relates that:

Our farms situated on the old seignories are, as a rule, much longer and narrower than those in the townships. On the Island of Orleans and on the Beupre coast, there are farms which are more than two miles long and less than 300 feet wide. In the Townships conditions in this regard, while not excellent, are better. There the lots are, as a rule, twice as wide as those of the seignories and are seldom over one mile in length (5, p. 323).

Influence of the French land tenure system was also evident in the settlement of New Orleans in the United States where the situation was similar to that in Canada. In Brazil, desire for river frontage has also developed land ownership patterns that are reminiscent of the French system in Canada.

Many rural sociologists and agricultural economists, among others, have recognized the problem of an excess of small farms in Utah. Fewer, but substantial numbers, have voiced their concern about fragmented holdings. Probably the most prolific author concerning the historical development of fragmentation in the Utah area is Lowry Nelson. His The Mormon Village (18) contains references to his earlier studies

(15) (17) (19) and presents most of his important findings. Reuss and Blanch, who are agricultural economists, advocate inquiry into methods of improving the present pattern of land ownership and utilization. "This should include methods of consolidating scattered land holdings through sales, exchanges, or other methods. . . . (20)" Geddes presents briefly the historical development of land tenure among the Mormons and suggests modifications of the characteristic pattern which might be made for the social and economic advantage of the inhabitants (6).

The problem of passing the family farm on to heirs is not peculiar to Utah farm families; inheritance problems are present throughout the United States. Studies concerned with the inheritance of farm property are numerous. Gibson and Walrath point out that continuity of ownership and operation of farms in the United States is broken at least once each generation through natural life processes. They are especially concerned with the concept of equality in inheritance, that is, equal division of estates among heirs (7).

Much more is known about what constitutes proper irrigation practices than farmers have applied. Widtsoe devotes a small book toward understanding of successful irrigation projects (34). The importance of good management in the utilization of irrigated soils is pointed out by Thorne (27). The study of irrigation, its principles and practices, is a field in itself. Except for basic understanding the author did not attempt to make a thorough investigation into the literature concerned.

Insofar as can be determined, no studies have been made that are directly comparable to the present one. Many authors have recognized that land fragmentation presents a problematic situation. The historical initiation of fragmentation in Utah has not been neglected. Neither

has the inadequacy of extremely small farms. Irrigation problems resulting from fragmented holdings have been recognized but written about only indirectly.

Generally, the problems of land fragmentation have been recognized but have not been dealt with adequately by effective community planning.

Setting of study

Early Mormon settlers had an immediate "shortage" of land and water. This was due, in part, to their settling as communities rather than as isolated farmers. Fragmented land holdings began as a result of practices of land ownership and utilization that occurred during the settlement period. These practices were encouraged, in part, by the nature of the climate and physical features of the area. Much land was unsuitable for cultivation because of topography, soil conditions or absence of natural moisture. Water supply is a major factor limiting land utilization in Utah. Relatively light rainfall necessitates irrigation for agricultural production.

Mormon economic institutions were molded particularly by the doctrine of economic equality. As would be expected, individual ownership of large land holdings was exceptional under the Mormon system. When land was brought under irrigation it was divided equally among the family heads of the community. Each family was allowed only the amount of land that it could cultivate, usually less than 20 acres.

As other land was made available through irrigation it, too, was divided among the family heads. Because the land surrounding the original farm was already taken by others, the farmer, when able to expand his operations, had to utilize land separate from his first holding. This practice gave rise to farms composed of scattered fragments, each separate and distinct from the others.

Early land settlement and social policies have had definite effect upon agriculture in Utah. The basic patterns of land ownership, control, and utilization established during settlement have remained to the present. But during recent years farms have been reducing in number but growing in acreage. Mechanization has increased the capability of farm families to operate large farms. Partly as a result of increased capabilities, a large amount of land is now operated on a part owner, part tenant basis. The increasing size of farms probably has reduced the amount of fragmentation in some instances, but increased it in others. Fragmented holdings continue as a source of inconvenience and consternation to farmers.

Early settlers of Utah divided the land into small holdings in order that all of the families might have irrigation water and till the land as methods then available permitted. Land for which water was the most readily accessible was brought under cultivation first. Later, when water was provided through more extensive and higher canal systems, bench lands, which were frequently superior for crop production, could be cultivated (24, p. 35). "But the weakness of the system developed with the refusal of the earliest settlers to coordinate their efforts . . . with much resulting duplication of effort and uneconomic use of water (9, p. 13)." Irrigation systems developed in this manner resulted in many ditches having no dependence upon one another, and in some instances running rather close together and parallel to each other for some distance. Long irrigation runs of small streams in coarse-textured soils result in excessive losses in the supply ditches.

Water in its various uses is a limiting factor in the development of this area, but approximately one-third of all the water diverted for

irrigation is lost in conveyance (1, p. 6). Fragmentation of land holdings greatly extends the requirements for conveyance of water as each farmer runs the water from land fragment to land fragment.

Community setting

Located in southwestern Utah, at the eastern part of Iron County, Paragonah was initially a fort village, the fort being for protection from Indians (6). With the decline in power of Indians, the fort disappeared and Paragonah took on the typical Mormon Village pattern described by Nelson (18). Since 1852, when the village was settled, the farmers have lived in town and have traveled to their farms which, in this case, generally lie west of town. A few farms are also to the north and northeast. The farming area is a gentle sloping alluvial fan. The soils are fertile but somewhat exhausted from lack of good management. Except for a few acres of grain, the cropland was used almost exclusively for hay production, usually alfalfa.

Although the farmers of Paragonah have farms of fragmented land holdings, none of the "West Fields" is as yet fenced into individually owned plots. The various land holdings are farmed individually but in the fall they are grazed cooperatively; that is, the livestock belonging to the various farmers are allowed to graze anywhere within the area.

There were four owners interviewed who did no work on their farm. All four stated, however, that they received some income from their land. Twenty farmers in Paragonah reported that they worked their land on a part-time basis. Five of this group stated that they put more into the farm than they received. There were 14 farmers who said they worked full time on their farms. One of this group said that investments provided him with some income; all of the others depended entirely on the farm.

Water in Paragonah is controlled by three irrigation companies: the Field and Canal Company, the Reservoir Company, and the Little Creek Irrigation Company. These are not official titles but are the names by which they are known locally. Two of the irrigation companies have a common source of water, Red Creek. The Field and Canal Company (hereafter referred to as the Canal Company) has the primary right to Red Creek water, the Reservoir Company a secondary right. Little Creek water is used to irrigate farms lying to the north and northeast of town and its water rights are controlled by the Little Creek Irrigation Company. The three irrigation companies are to some extent in competition with each other, yet are owned largely by the same people.

The business establishments consist of a service-station-grocery store combination, a small general store, and one service station. Except for the few small items and groceries carried by the local stores, most merchandise shopping is done at Parowan or Cedar City. Parowan lies 5 miles southwest of Paragonah, and Cedar City 19 miles farther in the same general direction.

A number of houses in Paragonah have been reconditioned, and three or four have been built during the past five or six years. Generally, however, the houses indicate a lack of prosperity; several are definitely inadequate. Except for the highway (US 91) that passes through the center of town, none of the streets are paved. There are no paved community sidewalks. The few private sidewalks that are not merely beaten paths end at the property line.

The population of Paragonah was officially 404 in 1950. The peak of population was reached in 1920 when there were 449 people living there. In 1930, 384 people lived in Paragonah, and by 1940 this number had dwindled to 365 (30).

A large proportion of the present male population works in industry or mining, particularly the iron mines and the railroad located in other parts of Iron County. Many farms are operated by part-time farmers who work their land before and after their regular jobs.

Particularly striking to the visitor of Paragonah is the absence of young adults in the community. The population is composed mostly of middle-aged to elderly adults or school-age children. It is evident that the youth of the community have had to migrate extensively to find employment.

The people of Paragonah, with few exceptions, are members of the Church of Jesus Christ of Latter-day Saints (commonly called Mormons). The village has one ward, which is part of Parowan Stake. The church is the only building on one block in the center of town. Except for a few trees around the perimeter, the ground surrounding the church is grown over with weeds. It was on this same ground that the old fort once stood.

Settlement of Paragonah

The earliest reference to the Paragonah area that could be found was located at the office of the L. D. S. Church Historian. It stated that Parley P. Pratt reported reaching Red Creek on the 23rd of January, 1850, while on a southern exploring mission (3).

Parowan was selected as the site of the original Mormon settlement in Iron County. Apparently it was not intended to build a community at Red Creek, because in 1851 Red Creek water was diverted into a ditch leading to Parowan. The project ended in failure because the water was lost in conveyance before reaching its intended destination. The Jensen Encyclopedic History of the Church (11), compiled by Elder

Andrew Jensen from original sources says, "The attempt to bring Red Creek water to Parowan in 1851 proved a failure as the flow of water in the creek was not large enough to reach Parowan before it evaporated."

Since the water could not be conveyed to the nearest community, it was necessary to use it for irrigating land near the stream, if at all.

Jensen says:

Land was claimed on Red Creek by some of the brethren in 1851, but the real settling of the place occurred in the spring of 1852 by Wm. H. Dame, Chas. Hall, Job P. Hall, Benj. Watts, Chas. Y. Webb, and a few others, most of whom had families with them.

Elder William H. Dame wrote the following to George A. Smith from Red Creek on June 23, 1852: ". . . we now number six families, seven men. We have moved the old corral and built a fort as Bro. Brigham (Young) told us to do (3)."

The first settlement at Red Creek did not follow the general Mormon village pattern. Instead, this early village was of a line type reminiscent of French settlements elsewhere.

The first settlers located on both sides of Red Creek below the present site of Paragonah, and built a sort of a string town with their log and adobe houses. Only a small crop of grain and vegetables was raised that year (11).

In the fall of 1852 a townsite after the usual Mormon pattern was surveyed on Red Creek and was named Paragoonah, this being the Piede sic Indian name for warm water (11). The survey was not immediately used because settlers found it necessary to enclose themselves in a fort for protection from the Indians. ". . . as early as December, 1852, there were 15 or 20 families living on Red Creek who had enclosed themselves in a fort (11)."

Jensen also reported that:

. . . in April, 1853, the settlement was temporarily broken up. . . . on account of Indian troubles, the so-called Walker war. Most of the houses in Paragoonah were torn down and all of the people moved to Parowan, from which place, however, some of the brethren went back to Red Creek to irrigate their lands and mature their crops. When the order came to move away there were about 15 families in Paragoonah.

The place was entirely vacated and nothing done in the shape of farming or otherwise in the settlement in 1854.

Paragoonah was resettled in the spring of 1855, when most of the men who had vacated the settlement in 1853, returned and put in crops, which, however, were all destroyed by the grasshoppers.

In the summer of 1855 a log and adobe fort, the plan for which was provided by Brigham Young, was erected in Paragonah (11). The fort enclosed a 105 feet square on the block where the community church now stands. When finished the outside wall was 3 feet thick and two stories tall. The gate, which was on the north side, was 12 feet high and 12 feet wide. Rooms inside the enclosure were built along the sides of the fort and were 16 feet square. On the second story the walls had windows which faced the outside.

The Blackhawk Indian War of 1855-1857 forced Paragonah residents to live inside the fort and required guards to be placed at the gate every night that the war was on.

Successful crops were grown in Paragonah in 1857 (3). On March 2, 1857, the Iron County Court granted O. B. Adams, on behalf of the citizens of Paragonah, the right of using Little Creek water for "irrigating and other purposes (3)." It was reported that prospects looked bright for the harvesting of between four and five thousand bushels of wheat that fall (11).

In 1859 the people, who had lived in the fort since 1855, began

to move out upon the surveyed townsite around the fort. The first survey was subsequently enlarged to form the present townsite. The limited amount of available water caused some concern, even then, about the size of the growing community.

It was at first thought there was only water here for two farms, but it has continued to increase in quantity until the present time though a constant opposition has been made to an increase to the settlement, we now understand that they are willing to accept an addition of ten families provided they would be satisfied with an addition of 100 acres to the field. Some of the farmers have only 10 acres though most of them have more. The soil is very productive when well cultivated (11).

That the pioneer period in Paragonah had ended was indicated by Silas S. Smith who wrote from Paragonah on November 5, 1868: "We have just torn down a portion of the fort wall, for fear it would fall down and hurt some person (3)."

METHOD OF PROCEDURE

The schedule

This study was undertaken at the request of Stephen L. Brower, Iron County Agricultural Agent. Before any actual research was done, he was contacted for clarification and basic understanding of the problem. In conference with Dr. William A. DeHart, Extension Rural Sociologist, and the writer, the county agent described the community of Paragonah, told something of its history, and talked of the various problem aspects presented by the fragmented land holdings.

Delimitation of the study was accomplished with considerable difficulty as there were many aspects of land fragmentation which, though interesting and important, were too broad in scope to be included in one master's study. Other aspects were beyond the limited experience of the author and could not be adequately treated.

With the assistance of Dr. DeHart, a tentative schedule was developed. Much of the schedule was derived from questions suggested by the county agent. His understanding of the problem through personal experience provided the writer with a frame of reference without actually visiting the locale. Before a schedule was constructed, however, reading was done to provide background information and insight. Representative selections from this reading are referred to in other parts of the study.

After being revised several times, the schedule was tested through administration to various farmers in Cache County. The first farmers interviewed were known personally by the writer. Their contributions to the construction of the schedule were chiefly re-wording of some

questions which allowed clearer interpretation of meaning. Essentially the schedule was retained in its original form.

Following interviews with farmers known personally by the writer, the schedule was revised and used during interviews with other Cache County farmers. It was attempted at this time to enact as nearly as possible the interview situation expected in Paragonah. Farmers unknown by the interviewer were contacted, and their responses recorded on the schedule just as would be done during the actual collection of research data. These interviews again resulted in changes being made as problems arose that had not been anticipated.

Following this testing of the schedule, it was again revised and then sent to the Iron County Agricultural Agent for his suggestions and ideas. Except for the changing of the names of the irrigation companies in Paragonah, the schedule was returned intact. This schedule was then presented to the advisory committee for approval and was administered to the farmers of Paragonah after minor alteration. The schedule used is included as an appendix.

Administration of the schedule. Owing to the limited number of potential respondents in Paragonah, it was planned to interview the head of every family who owned or operated irrigable land within the community. The possibility of overlooking any family was controlled by making a rough map which indicated the location of every occupied house. With one exception, every home in Paragonah was contacted. The one exception, a widower farmer, was not at home at any time while the interviews were being conducted.

To help establish rapport, prior to the administration of the schedule a brief orientation of its purpose and how the answers would

be used was explained to each respondent.

The limited number of interviews permitted the writer himself to gather and record the data during the early summer of 1954. No other interviewers were utilized during this study.

Land holders not interviewed. There were four irrigable land owners in Paragonah who were not included in the data of this study. Two of these owners were not available for interviewing during the field work in Paragonah. A wife stated that her husband had taken up residence in another community and although they owned some land, she knew nothing about it. A farmer whose primary concern was sheep rather than irrigated land could not be located during the field work. His neighbors reported that he was rarely at home during the summer months.

The other two land holders refused to take time to talk about their farms. Both were elderly men. One of these men owned 7 acres of irrigated land and the other 30 acres. Both refused to give further information to the interviewer.

Statistical technique

Because every available land holder in Paragonah was contacted and interviewed, this study represents, for practical purposes, the entire universe under consideration. For this reason, relatively simple, but easily understood, percentage distributions are used as the major method of statistical evaluation. It was felt that this method of presentation would allow adequate evaluation of the variables under consideration. In most cases the percentage figures will represent percent of the total (38) number of individuals responding to the schedule. In some cases these figures will represent only a segment of the respondents. cursory attention to a table may lead to misinterpretation of the variables if this fact is not considered.

PRESENTATION AND ANALYSIS OF DATA

Land in Paragonah

Acreage of Paragonah farms. When dry arable and grazing land as well as irrigated land holdings were considered together, there were several farmers in Paragonah who had farms of over 100 acres. Nineteen farmers reported having farms of 100 or more acres of both dry and irrigated land, together. Nine farmers claimed ownership of over 200 acres of land; four reported having 300 to 500 acres.

Another 19 farmers reported that they owned less than 70 acres. Of this number, 10 owned from 40 to 70 acres, four owned from 20 to 40 acres, and five reported owning less than 20 acres. One farmer owned no land whatsoever, but rented all of the land that composed his farm.

Four farmers added to their holdings by renting between 10 and 13 acres of land. Two farmers rented 20 acres and one farmer rented approximately 70 acres. Another farmer was able to increase the size of his farm by renting nearly 90 acres. Of the sample, then, eight farmers rented land.

Most of the land rented by farmers was irrigated crop land. Some of the rented holdings were dry land used primarily for pasture. The total acreage of dry and irrigated land owned and rented by those Paragonah farmers included in the sample is shown in table 1.

Irrigable acreage of Paragonah farms. Table 2 shows the acreage of irrigable land farmed by the individual farmers who were interviewed and the number of fragments that composed the farms. When the number of irrigable acres held by each farmer was determined, it was found that -

Table 1. Acreage of land, owned and rented, Paragonah, Utah, 1954

Acres	Number owning	Percent of sample	Number renting	Percent of sample
0 - 19	4	13.15	4	10.53
20 - 39	4	10.53	2	5.26
40 - 69	10	26.32	1	2.63
70 - 99	0	0.00	1	2.63
100 - 199	10	26.32	0	0.00
200 - over	9	23.68	0	0.00
Total	37	100.0	8	21.05

Table 2. Fragmentation and acreage of irrigable land, Paragonah, Utah, 1954

Number of fragments	Number reporting	Percent	Irrigable acres	Number reporting	Percent
1	9	23.68	Under 10	6	15.78
2 - 3	15	39.47	10 - 29	11	28.95
4 - 6	5	13.16	30 - 59	11	28.95
7 - 8	6	15.79	60 - 100	7	18.42
9 - over	2	5.26	Over 100	2	5.26
Don't know	1	2.64	Don't know	1	2.64
Total	38	100.00	Total	38	100.00

only two reported having farms of over 100 acres. Seven farmers reported that their irrigable land holdings were between 60 and 100 acres. Eleven farmers had between 30 and 60 acres and a like number said their farm had over 10 but less than 30 acres of land that could be irrigated. Fewer than 10 acres of irrigable land composed the cropland of six farms.

The irrigable acres of nine farms were reported to be integrated holdings without fragmentation. Fifteen, or over one-third, of the farmers in Paragonah had their irrigated land divided into two or three separated fragments. Five irrigated farms consisted of five or six parcels each. Six farmers reported that their irrigable land holdings were divided into from seven to nine fragments. One landowner did not know how many separate fragments of land he held.

The number of fragments composing the various farms was not correlated with the acreage of the irrigable holdings. One farm of 10 acres was reported to be divided into seven pieces. If the division were equal this would mean that the owner would be farming areas of slightly more than 1 acre each. Several of the fragments of land under cultivation by Paragonah farmers were of less than 5 acres. Irrigable land holdings of 16 fragments were reported by one farmer having 100 acres. Some of these fragments were of less than 1 acre. The farmer having the largest number of irrigable acres (200) had his holdings divided into four pieces. The smallest holding, 5 acres, was in two fragments.

The inheritance laws of Utah have contributed to some undesirable trends in land fragmentation. Their defects are more apparent now that homesteading and free land grants have ended, and the transfer of land

through inheritance has an ever increasing effect upon state economy. The fact that transfer of land through inheritance is common in the United States and of even more importance in Europe implies that less land will come on the sales market in the future and that more land will be transferred to heirs.

How farms were acquired. Six of the present farmers bought their first land holdings in Paragonah by paying market price to the preceding owner. One of the present owners homesteaded his first land holding. Another farmer rented all of the land he farmed. The remaining 30 farmers who were interviewed inherited their land from a relative, usually their father.

The meanings of inheritance are varied. Land might be inherited as an outright gift, through purchase from a close relative, through a bond of maintenance, or through marriage. Eleven present owners inherited their land through purchase. Of this number 10 received their fathers' land and one received the land of a cousin. Inheritance through outright gift or bond of maintenance provided the first land holding for the other 19 farmers (table 3).

Table 3. Present and preceding owners method of acquiring first land holding, Paragonah, Utah, 1954

	Purchased	Inherited	Other	Total
Present owner	6	30	2	38
Preceding owner	7	22	9	38
Total	13	52	11	

Seven of the preceding land owners in Paragonah bought their first holdings from non-relatives and paid market price for the land. Four of the preceding owners' first land holdings were homesteads. How five predecessors acquired their first land was not known by the present owners.

Twenty-two of the preceding owners received their farm through some function of inheritance. Five of the preceding land owners inherited the land from their fathers but reportedly paid market price for it. Seventeen of the preceding land owners acquired their farm through outright gift inheritance.

It should be noted that the above information concerning the method of preceding owners acquiring their first land holdings was gathered from the present owners. That the present owners might be misinformed or not familiar with the facts is very possible. Therefore, this information may not be entirely accurate. It was felt that since most of the present farmers are sons of the preceding owners, the information should be reliable enough for the purpose of this study.

Fragmentation caused by buying additional land. Eighteen land owners in Paragonah had subsequently purchased land which was separated from their other holdings; a like number had not. One farmer who claimed that he bought any land available to him in order to increase the size of his farm had purchased 16 fragments of land, each of which was separated from the others. This was an extreme example. Five farmers purchased three to six pieces of land which were not attached to their other holdings. Eleven farmers had purchased one or two fragments of land which were separate from the rest of their farm. One land owner did not recall whether he had purchased any of his

fragmented holdings. The farmer who rented his land did not know about previous buying or selling of land by the owner (table 4).

Table 4. Number of present and preceding owners acquiring fragmented land holdings through purchase, Paragonah, Utah, 1954

Purchased separate land	Present owners	Percent	Preceding owners	Percent
Yes	18	47.36	15	39.47
No	18	47.36	9	23.68
Don't know	1	2.64	14	36.85
Not owner	1	2.64	--	--
Total	38	100.00	38	100.00

Those who had previously owned farms in Paragonah also bought land that was separate from their other holdings. Fifteen present owners stated that the previous owner had acquired land separate from his other holdings through purchase. Nine present owners thought that the previous owner had not purchased land separated from the rest of his land. Fourteen present owners did not know if the previous land owners had bought land separated from the rest of their farm.

Buying and selling practices of both the present and the past generation of land owners have contributed to land fragmentation in Paragonah. This practice has continued despite general economic disadvantage for the farmers as a group.

Fragmentation caused by renting additional land. Fragmented farms may result from land renting as well as actual ownership of the land. Nine farmers in Paragonah rented land to supplement that which

they owned. One of these farmers owned no land but had an integrated land holding because all of his rented land was in one piece. An additional seven farmers rented land which was separate from the rest of their farm. Six would have bought the rented land if it had been made available to them. Although they were renting land, two farmers said they did not intend to buy it. One did not intend to buy his rented land because he rented from his mother. He evidently expected to inherit this land later. The other had attempted, without success, to purchase the land he was renting from the owner.

Only one farmer in Paragonah rented land that was adjacent to part of his own holdings (table 5). This farmer desired to purchase some, but not all, of his rented land.

Table 5. Renting and desire to purchase land separate from or adjacent to holdings, Paragonah, Utah, 1954

Responses	Rent separate land	%	Would purchase	%	Rent adjacent land	%	Would purchase	%
Yes	8	21.05	6	75	1	2.64	1	100
No	30	78.95	2	25	37	97.36	-	-
Total	38	100.00	8	100	38	100.00	1	100

Farm problems caused by land fragmentation. Table 6 shows that in addition to the nine farmers not affected by land fragmentation, 10 farmers thought that land fragmentation was not contributing to inefficiency in their farming.

Time lost through having to move from fragment to fragment was thought to be a problem by eight of the farmers interviewed. Water conveyance to fragmented holdings resulted in what was considered a problem by 15 farmers.

Table 6. Land fragmentation problems reported by individual farmers, Paragonah, Utah, 1954

	Number reporting	Percent of sample
No problem	10	26.31
Time losses	8	21.05
Water losses	15	39.47
Costs and effect on machinery	12	31.57
Increased labor	6	15.78
Integrated holdings	9	23.68

The costs of operating and maintaining machinery were increased by land fragmentation according to 12 farmers.

When interviewing the participants in the study, the interviewer did not suggest that land fragmentation made farming problems but only asked if the separated fields belonging to the individual made any problems for him. Some farmers mentioned several or all of the above listed problems, others mentioned only one.

It should be pointed out that in some instances, owning fragmented holdings might be advantageous. By selecting divided holdings some individuals might be able to gain control of the better land in an area. Obviously, with the "West Fields" not being fenced, none of the farmers could pasture their land there as they saw fit. The entire area could be open for pasture only when the community was finished with the harvest.

Discussion of fragmentation. Generally, because of their mutual interests, it can be expected that farmers talk about farm problems with their neighbors. The recognition of land fragmentation as a problem in farming is indicated by the number of farmers who recall talking about this with their neighbors. It was revealed earlier that of the 38 farmers included in the sample, 29 had farms composed of two or more fragments. Yet, only 18 farmers reported that they have discussed this situation with their neighbors (table 7). Three farmers didn't recall whether they

Table 7. Discussion with neighbors, community meetings held, and action taken through community meetings about fragmented holdings, Paragonah, Utah, 1954

	Discussed with neighbors	Percent	Meetings held	Percent	Community action	Percent
Yes	18	47.36	8	21.05	2	5.26
No	17	44.74	23	60.52	23	60.52
Don't know	3	7.90	7	18.43	13	34.22
Total	38	100.00	38	100.00	38	100.00

had talked about fragmentation or not. Land fragmentation had not been discussed among neighbors according to 17 of the participants. If land fragmentation were recognized as a serious problem, it would be expected that discussion would be more widespread.

There had been no community meetings held for the exclusive purpose of eliminating land fragmentation. In conjunction with the regular meetings about irrigation held by the Canal Company, some meetings had been devoted primarily to solution of fragmentation. Thirty-three of the farmers interviewed had water rights through the Canal Company.

Eight farmers reported that meetings had been held to discuss land fragmentation. Seven said that they didn't know whether meetings had been held or not, and 23 farmers indicated that no meeting devoted to land fragmentation had been held.

Three farmers were aware that some action had resulted from the meetings which were held to consider land fragmentation. These three constituted a committee formed at one of the meetings to study the situation and to present some possible solution. One committee member stated that he could find no one really interested in doing anything about the situation. The other two members said that the committee suggested in a follow-up meeting that the farmers draw for the number of acres owned by each individual and that the farmers then trade lands accordingly to effect consolidation.

Had this plan been carried out, the land owned by the several farmers would have been consolidated, but there were several reasons why this plan of land consolidation was not undertaken. For example, because the plan called for an acre per acre trade, there was no evaluation made of differing land values or water advantages. Not all members of the community affected with land fragmentation were Canal Company stockholders and therefore were not included in the plan.

Twenty-three of the farmers interviewed stated that there had been no community action taken to eliminate land fragmentation. Thirteen individuals did not know whether or not there had been community action. They had not participated in any such efforts.

Recognition of need for consolidation of land holdings. Twenty-five farmers suggested several reasons why they thought there was a need for consolidation of land holdings in Paragonah (table 8). Representative

Table 8. Recognition of need for consolidation of land fragments, willingness to trade land on an equitable basis, and willingness to support group efforts to effect trades, Paragonah, Utah, 1954

Response	Need for consoli- dation	Percent	Willing to trade	Percent	Support group efforts	Percent
Yes	25	65.78	23	60.52	19	50.00
No	3	7.90	5	13.16	7	18.42
Don't know	1	2.64	1	2.64	3	7.89
Integrated holdings	9	23.68	9	23.68	9	23.68
Total	38	100.00	38	100.00	38	100.00

of this group was one farmer who thought if his land were in one piece it might support him and his family. Several individuals said that the fragments of land were too small and should be combined to allow farmers to operate their land to better advantage. A few farmers thought that fewer irrigation ditches would be required if all of the land belonging to various individuals was joined to other land owned by the same person.

The three farmers who said there was no need for consolidation of land holdings each gave a different reason for his attitude. One said that nothing could be done about the problem and that he did not care whether anything was done or not. Another farmer said that the land holdings had to be small to irrigate with what water there was available. The third farmer liked his divided fields because there was less danger of all of his land being flooded during high water time in the spring.

One farmer said he did not know whether there was or was not a need

for bringing divided land holdings together. Nine farmers did not comment on the need for consolidation of holdings because their farms were integrated fields. The fact that their land was in one piece suggests that these farmers considered it important to have all of their land together.

Willingness to trade land. Of the farmers interviewed, 23 said that they would be willing to trade land on an equitable basis to effect consolidation of their holdings. Five, including two who thought consolidation was desirable, would not be willing to trade their land to assist in consolidating the farms of Paragonah. Of the two who thought consolidation of holdings would be desirable but were not willing to trade land, one said he had "given up" and the other said "nothing could be done." Again, one farmer didn't know if he would be willing to trade land. Nine farmers did not comment on their willingness to trade land to help other farmers consolidate their farms.

It was previously stated that 25 farmers felt that there was a need for consolidation, and that 23 of these stated that they would be willing to trade land on an equitable basis (table 8.) Only 19 farmers said that they would support any group effort to trade land so that each farm would be in one location. This group of farmers thought that group efforts could be successful in promoting trades among individuals, but indicated that they didn't know just what a group could do. Some farmers thought that group pressures to trade might prevail upon farmers who would not otherwise be willing to do so. Others thought that group action could reduce the number of trades and sales resulting in further fragmentation.

Feelings that group efforts could not effect land fragmentation because it was an individual problem prevailed in a group of seven farmers who would not support group efforts to effect trades. Some said that they did not think anything effective could be done by groups or individuals. Three farmers were undecided about supporting group efforts to trade land.

Consolidation of holdings through trading land. Thirteen land owners in Paragonah had been able to trade at least some land in an effort to get their land together. These owners had not been able to complete the integration of their fields. What farmers considered "an even trade" was the most common basis for land exchange. Two farmers said the land they received through exchange had less market value than the land they gave. They felt that consolidating their holdings was compensation enough for the difference in land value. Equal value trades did not always mean equal trades on the basis of acreage. In several instances the relative productivity of the land was considered, sometimes with monetary compensation being involved in the trade.

Attempts to trade land without success were reported by seven farmers (table 9). One person found others who were willing to trade but who were unable to do so because of mortgages on their land. Two farmers reported that other farmers would not trade except on an unequal basis. The remaining land owners who desired to exchange land but had been unable to complete a trade stated that their attempts had not gone beyond preliminary talking. Eight individuals had made no attempt to exchange land to consolidate their holdings.

Of nine farmers who said their land was one integrated holding, five

reported that exchanges had been necessary to consolidate their land. A trade with a brother was all that was necessary for one farmer, while others have had to make several exchanges in achieving consolidation.

Table 9. Trade attempts by individual farmers to effect consolidation of fragmented holdings, Paragonah, Utah, 1954

	Number reporting	Percent
Completing some trades	13	34.21
Attempting some trades	7	18.42
No trade attempts	8	21.05
Integrated holdings	9	23.68
Don't know	1	2.64
Total	38	100.00

The one farmer who rented his land did not know if the owner had exchanged land as the land was in one piece when he began to rent it.

Obstacles to consolidation of holdings. Sentimental attachment to land was anticipated by nine farmers as one factor that contributed to the prevention of consolidation of holdings. This attachment was expressed by one individual who said, "My father gave me this land. He must have wanted me to have it." Some of the land in Paragonah has been in the same family name for over a hundred years. There is a certain amount of felt prestige attached to owning land that has traditionally been in the family since settlement of the community. Without strong motivation farmers having traditional holdings are not likely to be willing to release this land to gain some other (table 10).

Table 10. Anticipated problems to be overcome in consolidating land holdings, Paragonah, Utah, 1954

	Number reporting	Percent of sample
Sentimental attachment to land	9	23.68
Problems associated with irrigation	11	28.94
Differential land value	13	34.21
Too many trades necessary	9	23.68
Don't know	8	21.05

Eleven farmers thought that problems associated with irrigation would have to be overcome if land holdings were to be consolidated. The accessibility of water was the major problem in this instance. It was recognized by most of the farmers that the land near the head of the ditch was worth more than that at the bottom because proportionally more water was available. This, of course, was owing to differences in conveyance losses.

Topographically, some land in the Paragonah area is better suited to irrigation than is other. Nearly all of the land in the "West Fields" needs leveling. Some land has a gravelly texture which absorbs a great deal of water and is difficult to irrigate.

Closely related to problems associated with irrigation was differential land value, recognized by 13 farmers as an obstacle to the consolidation of fragmented land holdings. The irrigation properties of land in the Paragonah area had a direct relation to the value of the land. In addition, some land was more highly valued than other land because of the crop that was being grown.

Generally, the quality of the soil in the Paragonah farming area was the same. There are, however, some areas which are not as good as the rest. Farmers were reluctant to trade for land with which they were not well acquainted. They felt that they were experienced with the land that they then held and understood how it should be farmed.

Another obstacle to consolidation of land holding in the area was that too many trades were then necessary for farmers to get their land together. They felt that what trades could be made would not contribute much toward solution of the situation.

Some farmers had increased the size of their holdings by gaining any land that was available. Several trades would be necessary if this land were to be integrated into one large area. Some trades had been accomplished but the factors stated above made trading on an equitable basis very difficult to achieve.

Relation of present and previous farm owners. Most of the present land owners in Paragonah were related to the previous owner. In most cases, where there was no relationship between succeeding farmers, the new owner was from some other family that lived within the community. Only in a few cases had outsiders moved into Paragonah to establish farms (table 11).

Twenty-nine, or over three-fourths, of the present owners were sons of the previous owner. One land holder was a daughter of the previous owner, and one was a cousin. Seven of the present farmers were not related to the previous owner. Three of these farmers were new comers to Paragonah but one of their wives was a community member since childhood.

There were only two farm families, then, in which neither spouse was formerly a member of some family in the community. In the other

Table 11. Relation of present farmers to preceding owners and agreements for transfer of estates, Paragonah, Utah, 1954

	Relation to previous owner	Percent	Estate transfer agreement	Percent
Son	29	76.31	4	10.52
Daughter	1	2.63	-	--
Cousin	1	2.63	-	--
None	7	18.43	-	--
Total	38	100.00	4	10.52

farm families, at least one and usually both spouses were longtime residents of Paragonah.

Most of the farmers in Paragonah thought that an agreement for transfer of the farm to heirs would be desirable. (See table 13). Such an agreement was made between four of the present farmers and their immediate predecessors. One agreement included the provision that the new owner would assume the farm mortgage and maintain his parents, the previous owners. A purchase agreement was made between a current owner and his father-in-law. Verbal agreements for transfer of the land to one heir were made between two other interviewed farmers and their fathers. Prior to the actual transfer of title through estate settlement or purchase, there were no plans made for the transfer of the other 34 farms.

Generation of family farm ownership. Eight farmers reported that they were the first of their family to own any of the land that they were then farming. Because they were yet holding the land there had been

no chance for the land to be divided among their heirs. This means that any fragmentation of their land would be the result of some practice other than inheritance. Three of these farms were integrated holdings. The other four of these farms included the most striking example of land fragmentation in Paragonah. A farmer in this group asserted his farm was composed of 16 separate fragments of land. The other three farms were composed of two, three, and seven fragments (table 12).

Table 12. Generation of family ownership and division of farm land among heirs of preceding owners, Paragonah, Utah, 1954

Land now held by the:	Number reporting	Land divided among heirs of first owner	Land divided among heirs of second owner
First generation of family ownership	8	-	-
Second generation of family ownership	11	10	-
Third generation of family ownership	18	17	15
Non-owner	1	-	-
Total	38	25	15

Eleven farmers reported that some of their land had been in the family one generation previously. Ten of the preceding generations' farms had been divided among the heirs. Six had had the land divided equally among all of the owner's heirs, male and female alike. The land of four farms had been divided equally among the male heirs only. Two of the divided farms were re-united as one heir purchased the others shares.

At least part of the land belonging to 18 farmers had been in the

family for two previous generations. Seventeen of the 18 family farms were divided among the heirs of the first generation of ownership. Thirteen of these farms were divided equally among all heirs of both sexes, but four were divided among the sons only.

Fifteen of the 18 family farms were divided among the heirs of the second generation of ownership. In three instances the land was divided among the male heirs only, the other 12 were divided equally among the heirs of both sexes.

Desire to continue family farm. Not all of the families operating farms in Paragonah wanted to continue operating the farm. The families of 15 farmers wanted to dispose of the farm. Four farmers expressed a desire to leave the farm as soon as possible. In many cases, the farmer, his wife, and family desired to keep the farm until the children grew up. They would then prefer that the children do something else.

The families of 13 farmers would have continued the family farm for various reasons. Sentimental attachment to the land accounted for some families' desire to retain the farm. Most of the families wanted to farm to provide them with a living and a way of life. There were a few families that thought keeping the farm would provide them with security if they should be no longer able to find other work.

Whether the family should retain the farm or try something else had not been discussed in eight families. In most of these cases the children were still too young to have definite ideas about their occupational desires. None of the farmers in this group expressed a personal desire to leave the farm.

Of the family heads, 30 said they intended to keep the farm throughout

their lives. Six intended to sell the farm and then either retire or go into other work. One owner said he had not decided to either retain or give up the farm (table 13). In Paragonah there was one farmer who owned no land but was anxious to acquire some. If he could get a farm of his own, he intended to retain it for his heirs.

Table 13. Farmers' intentions of keeping the farm in the family and recognition of problems and plans for transfer to heirs, Paragonah, Utah, 1954

	Intend to keep farm	Percent	Problems in transfer	Percent	Plans for transfer	Percent
Yes	30	78.94	20	52.63	2	5.26
No	6	15.78	13	34.21	1	2.63
Don't know	1	2.64	4	10.52	34	89.47
Not owner	1	2.64	1	2.64	1	2.64
Total	38	100.00	38	100.00	38	100.00

Division of the estate and other dealings associated with transfer of property to heirs were thought to constitute serious problems by 20 land owners. The settlement of a deceased owner's estate could be handled easily and would not be a serious problem to heirs according to 13 farmers. The problem of estate settlement was not thought to be important enough to warrant the immediate attention or planning of these farmers. Four farmers did not know just how important a problem settlement of an estate would be, but suggested that it would depend upon the parties involved. These farmers intended to set up plans for transferring their property prior to the settlement of their estate.

Two farmers who thought inheritance problems were important had made

oral agreements with their heirs concerning the division of their estates. One farmer said he did not intend to make any plans for the settlement of his estate but would leave it up to his heirs. Thirty-four farmers thought it would be desirable for owners to determine the settlement of their estates prior to death, but none had taken any action toward doing so.

Division of the farm into fragments so small that they become a liability rather than an asset was the problem of estate settlement most often mentioned by those interviewed. Feelings of inequality in sharing the estate was the second most often mentioned problem. Costs of probating the estate and children not wanting the farm were other problems in the area of estate settlement which were mentioned by the present land owners in Paragonah.

Transfer of farms to heirs. Of the 10 farms that were transferred intact between present and previous owners, only three were inherited without payment to the previous owner. Twenty-six farms were divided when transferred from previous owners. One farmer did not know whether he had received the entire farm belonging to the previous land holder (table 14).

In 23 instances of transfer of holdings through inheritance, more than one heir wanted at least part of the previous owner's farm. Of the 23 instances two farms were transferred to only one heir without division of the land. One farm was transferred to only one son without his compensating his father. The other was inherited through purchase.

There were eight cases of farm transfer in which only one heir desired to have the family farm. In four of these cases, the farm was divided among all eligible heirs, whether they wanted the land or not.

In the other four cases, the farm was transferred without division of the land.

Table 14. Transfer of farms to heirs, Paragonah, Utah

	Present owner got all of previous owner's farm	Percent	Other heirs wanted the farm	Percent
Yes	10	26.31	23	60.52
No	26	68.42	8	21.06
Don't know	1	2.64	0	.00
N/A	1	2.64	7	18.42
Total	38	100.00	38	100.00

Six farms were purchased from a non-relative previous owner. Of the six farms purchased, two were divided among more than one new owner. One farm was composed entirely of land purchased from Iron County. The remaining three farms were transferred intact.

Unfortunately, the number of persons sharing in the division of the farms was not obtained. It may be assumed that the number was rather large as big families have been traditional among Mormons, especially in the rural areas of Utah.

Further fragmentation of Paragonah farms through division among heirs will, if past practices continue, be determined in part by the number of children in the present farm families. At the time interviews were conducted, the farmers had a combined total of 146 children of both sexes. The male children were in majority by four. There were 75 male children and 71 female. The average number of children in the families interviewed was 3.84.

Eighty-six or 58.90 percent of the children were heirs to farmers 50 years of age or over. This group would increase only slightly, if at all, because most of their parents were past the reproductive age. The average number of children in each family of this group was 3.90.

Sixty or 42.10 percent of the children had fathers under 50 years of age. The average number of children in each family of this group was 3.33. The number of children in this group could be expected to increase because their parents were still in their reproductive years.

The number of children in each family compared to the age of the parent interviewed is shown in table 15.

Table 15. Number of children and age of farmers, Paragonah, Utah, 1954

Number of children	Age					Total
	20-29	30-39	40-49	50-59	60-79	
0 - 1	-	-	1	-	1	2
2 - 3	1	5	4	3	5	18
4 - 5	-	1	3	6	4	14
6 - 7	-	1	1	-	1	3
8	-	-	-	2	-	2
Total	1	7	8	11	11	38

Attitudes regarding division of farms. When asked if he had any suggestions as to how to keep farms from being divided upon death of the owner, one resident of Paragonah replied that the situation would automatically take care of itself as the farms got too small to operate. This casual attitude was not found among other farmers. Most parent farmers thought they should give all of their children an equitable

start in life, but should plan for the undivided farm to go to one heir alone. The method which farmers would use for transferring the farm intact varied in terms of attitudes of individual farmers. Some farmers thought they should sell the farm to one heir. Others thought one heir should pay the others for their share of the farm. Probably, the most acceptable method would be to make arrangements for one heir to secure the farm from the preceding owner and for the preceding owner to assist any other heirs along other lines.

Thirty farmers thought that one heir should inherit the undivided farm but should pay others for their share. Five farmers said that one heir should get the farm but should not be obligated to any other heirs. Two farmers had fewer than two heirs and did not comment about division of their estates.

Nearly three-fourths of the farmers thought their daughters and sons had an equal right to the farm inheritance. Six farmers thought only their sons should be considered in the farm inheritance. They felt that their daughters could rely on their husbands for maintenance. Four farmers had either sons or daughters only and did not comment on rights to the farm on the basis of sex.

Slightly less than half of the farmers interviewed thought heirs still on the farm at the time of settlement of their estates should be favored over those who had left the farm for other employment. Over one-third of the farmers thought that some basis other than living on the farm should determine how the estate should be settled.

On four farms the heirs either were still on the farm or had left for other employment. These four farmers did not comment on favoritism being shown to heirs on the farm. If farmers said they would rather not

comment upon division of their estate among heirs, no interpretation of their failure to respond was attempted. Those failing to respond are indicated in table 16.

Table 16. Attitudes of farmers regarding the division of their estate among heirs, Paragonah, Utah, 1954

	Yes	No	Not applicable	No response	Total
			<u>Number</u>		
Should one heir pay others for their share	30	5	2	1	38
Should daughters and sons share equally	27	6	4	1	38
Should heirs on the farm be favored over those who have left	18	13	4	3	38
			<u>Percent</u>		
Should one heir pay others for their share	78.95	13.16	5.26	2.63	100
Should daughters and sons share equally	71.05	15.79	10.53	2.63	100
Should heirs on the farm be favored over those who have left	47.37	34.21	10.53	7.89	100

Irrigation in Paragonah

Irrigation has been necessary for crop production in Paragonah since the community was settled. The three sources of water, Red Creek, Little Creek, and pump wells, do not provide enough water to irrigate all land in the area suitable for cultivation. The ineffective use of irrigation water, caused in part by fragmented land holdings, is a problem that requires group effort for solution.

The Canal Company. The major source of irrigation water for farms in Paragonah is Red Creek. The primary rights to this source are controlled by the Canal Company. The major system of canals and ditches and the distribution of water to individual farmers in Paragonah are responsibilities delegated to this company by the farmer stockholders.

As a result of Canal Company's policies Red Creek is divided into three streams at the mouth of Paragonah Canyon. Two of the streams run parallel to each other from the canyon through part of the village and are separated only by a bank inbetween. The other stream is separated farther to allow its water to run on higher ground. The water rights for each individual stream are distinct from rights to the other two. The north stream was intended to irrigate the northern area of the farm land, the middle stream, the middle farm land; and the south stream, the southern area of the farm land. The water is further divided to provide what is called a garden stream which is used to irrigate the family vegetable gardens and lawns within the village.

It was planned that irrigation water would be used in sequence from the head of the ditch, to the next piece lower, and so on until the land was progressively irrigated with any overflow of water being utilized to help irrigate the next piece of land. This plan was not practical, however; and in practice when it is their turn to irrigate, farmers take the water to the land which they feel needs watering most. The water may be used at the head of the ditch, the extreme end of the ditch, and then carried to another separate area according to the individual farmer's needs.

Division of water rights by stream means that if a farmer has rights to one stream but wants to irrigate land in another stream area, he must convey the water to land not intended to be watered by that stream.

Often this involves crossing of or mixing with another stream, causing measurement difficulties and sometimes "feelings" between community members.

According to company policy the water should be at the planned location when turned over to another farmer for his use. The next farmer may then repeat the process of conveying the water from place to place, sometimes using the ditches which have been soaked by the previous user, sometimes soaking dry ditches. The county agent said the pattern of water utilization results in about one-third of the water being used to irrigate the land. The rest is lost in conveyance.

Because Red Creek is divided into three streams, the water head is not very large when received by the individual farmer. The practice of moving the water from fragment to fragment causes the water head to be reduced further as water is lost in the ditches. Often by the time water reaches the land to be irrigated the head is too small to force the water over the land. As the farmer spends his time and labor trying to get water across the land, the land close to the source of water is over irrigated and the land farther away left dry.

Irrigation in Paragonah is carried on day and night. The water is turned over to the next farmer according to a prearranged time schedule. Sometimes the next user is unable to take care of the water, particularly in the case of part-time farmers. In this situation the water is often turned on to the land and allowed to take its own course until time for the next farmer to take the water. Turns using water are rotated until each farmer has had access to the water according to his water right. The process is then repeated throughout the growing season.

The Reservoir Company. Red Creek water is used by both the Canal and the Reservoir companies. Primary rights are owned by the Canal Company. This means that the sum of the rights belonging to this company is equal to the ordinary low-water flow of the stream (23). The Reservoir Company acquired rights to Red Creek water left over after the low-water flow of the stream. In times of water scarcity the Reservoir Company as the holder of secondary rights receives no water; what water the stream does provide is divided among the holders of the primary water rights.

This means, in effect, that the reservoir can be used to store water not required by the Canal Company farmers. During the winter some water could be put into storage, but most of the water is diverted to normally dry land for consumption by livestock. The spring runoff provides most of the water that is placed in the reservoir for later use. During early summer months the stream may sometimes provide enough water that some of it can be stored. Usually, when the stream is adequate to provide storage water during the early summer, the reservoir is already so full that the water must either be used or be allowed to waste. Water impounded for storage during the winter and spring months is available during the growing season to those farmers having rights through the Reservoir Company.

Because the two companies use the same canals and ditches, the Reservoir Company can release water only when the system is not being used by the other company. In reality, the Reservoir Company is controlled by the Canal Company because the Canal Company determines when water may be diverted for storage or released for use. It is evident that the two companies should be combined for the best use of available water from Red Creek. This was attempted once and is discussed in another section

of this study.

The Little Creek Irrigation Company. The Little Creek Irrigation Company is not in direct competition with the other two companies. This company's water comes from another small canyon which lies north of town. It is used primarily to irrigate land which lies north and northeast of the big "West Fields". Usually, this water is not used to irrigate any of the area served by the other two companies. Little Creek water could probably be used to better advantage if all water in the area were controlled by one governing body and the planned control of water was actually applied.

Pump wells. Some of the farmers of Paragonah have wells from which they pump water to supplement that gained from other sources. Not all pumping ventures have been successful, however. One farmer broke over two hundred acres of brush land intending to irrigate it with well water. The land has never been used to produce a crop because the water coming from the well contained too much alkali to be useful. In an attempt to acquire more water, the Canal Company had drilled four unsuccessful wells.

Many wells have been developed in Iron County but the static head was not high enough to produce artesian water. The water from these wells was measured and correlated with the water table, which dropped almost at a constant rate from the time pumping began until the end of the irrigation period (32, p. 87).

Drainage in Paragonah. In Paragonah it appeared that the natural drainage of the land was sufficient for crop production. If the necessity of drainage should develop it would take group effort to prevent impairment of crop producing land.

Discussion of water utilization. With irrigation water being so important to the economic success of farms in Paragonah, it was expected that all farmers would say they had talked with their neighbors about water problems. Because all of the farmers interviewed owned stock in at least one of the three local irrigation companies, it was anticipated that all of the farmers would be aware of meetings devoted to irrigation problems.

It was not expected that only 25 of those interviewed would say that they had discussed irrigation problems with their neighbors. One individual stated that he didn't know whether he had talked about irrigation with his neighbors. Twelve, or nearly one-third, of the farmers stated that they had not discussed irrigation with their neighbors (table 17).

Table 17. Water utilization discussion with neighbors, community meetings held, and action taken through community meetings, Paragonah, Utah, 1954

	Discussed with neighbors	Percent	Meetings held	Percent	Community action	Percent
Yes	25	65.78	25	65.78	19	76.00
No	12	31.58	10	26.32	4	16.00
Don't know	1	2.64	3	7.90	2	8.00
Total	38	100.00	38	100.00	25	100.00

Meetings devoted to irrigation were known to 25 farmers. These meetings were held by one or more of the local irrigation companies. Generally, the meetings were held by one company alone. Ten farmers, stockholders in at least one irrigation company, reported that they were

unaware of any meetings being held which were concerned with irrigation. Three individuals reported meetings might have been held.

The general feeling among neighbors who discussed irrigation was that additional water was necessary. Satisfaction with the present situation or attempting to make the best of the water shortage was voiced by several neighbors, according to those interviewed. Three farmers said their older neighbors did not want changes to be made in the irrigation system. Some farmers suggested that their neighbors had a "don't care" attitude concerning all aspects of farming, irrigation included.

Community action taken as a result of the meetings about irrigation included the unsuccessful drilling of four wells by the Canal Company. Reservoir sites for water from both Little Creek and Red Creek were surveyed and the costs of construction estimated. Individual overnight storage ponds were considered and the site for a large community overnight storage pond was surveyed and evaluated. The high cost of developing these projects was reported to be the reason why they had not been carried further.

Nineteen of the 25 farmers aware of irrigation meetings told of one or more of the above listed projects. Four persons said the meetings had resulted in no action being taken. Two individuals said that action may have been taken as a result of the meetings but that they were unaware of any.

Irrigation practices. Twenty-nine of the 34 active farmers were not able to irrigate all of their irrigable land during one regular turn. Some farmers said they were able to irrigate all of their land only once a year, requiring an entire season. Four farmers, who had wells, irrigated

as often as they thought was necessary. One farmer reported that water was pumped from his well night and day through the entire growing season. These farmers also made use of the water they obtained through the various irrigation companies. One farmer occasionally was able to cover all of his land during his regular irrigation turn if moisture content of the soil had not depleted too much. Usually, it was necessary for him to use two or more turns to irrigate all of his land.

The water was almost always near the field requiring irrigation when 10 farmers began their irrigation turn. Occasionally it was near one farmer's fields when he got the water. Twenty-nine farmers seldom got the water when it was near the field they desired to irrigate. In these instances the water was conveyed either through ditches which were already wet or through dry dtiches. Even those who received the water when it was near one of their fields often had to run the water for considerable distances to irrigate their fragmented holdings. The water took from 1 to 2 1/2 hours to get to some of the land belonging to one farmer. Other farmers reported that the water often ran up to three-quarters of a mile before it reached their land.

Farmers in Paragonah did not regularly trade irrigation turns. On occasion, such as when a farmer's hay had been cut but was not yet off the ground he may have asked some other farmer to trade turns with him. In these situations some farmer who was willing to trade turns could usually be found.

Part-time farmers did not regularly ask for trades of irrigation turns because there were not enough opportunities to trade for a more convenient time. These farmers often attempted to set the water at the beginning of their turn and then did nothing more until it was time for

another person to take the water. Sometimes farmers' children were expected to irrigate the fields.

It will be recalled that the water from Red Creek is divided into three streams at the mouth of the canyon. When some irrigation turns coincided there was mixing of the north and middle streams after they arrived at the fields. Because the water was not measured again two or more farmers would share turns with each other. This sharing of turns occurred nearly every irrigation turn for three farmers, and frequently during turns of two additional individuals. Eight farmers reported that they occasionally shared irrigation turns with their neighbors (table 18).

Sharing of irrigation turns was made necessary through the system of having water rights divided according to specific stream. This meant a farmer could have rights to one stream of water but have some land in an area not intended to be irrigated by that stream. When the water was taken to this land it sometimes mixed with another farmer's stream.

Of course, sharing of irrigation turns could be on a voluntary basis. For example, in the spring when there was an excess of water, farmers were often happy to share their turn just to get rid of the excess.

Sharing of irrigation turns sometimes contributed to ill feelings between neighbors because of measurement difficulties. In Paragonah irrigation water division was a very serious matter. Farmers did not generally feel that they should attempt to get more than their share of the available water, but they felt that no one else should get more than his share either. Because of disadvantages in sharing water,

Table 18. Irrigation practices, Paragonah, Utah, 1954

	Frequently	Occasionally	Seldom	Total
	<u>Number</u>			
Irrigates all fields during regular turn	4	1	29	34
Irrigates field when water is near	19	3	12	34
Trades turns with neighbors	0	19	15	34
Shares turns with neighbors	5	8	21	34
	<u>Percent</u>			
Irrigates all fields during regular turn	11.76	2.94	85.30	100.00
Irrigates field when water is near	55.88	8.82	35.30	100.00
Trades turns with neighbors	.00	55.88	44.12	100.00
Shares turns with neighbors	14.70	23.53	61.77	100.00

farmers avoided mixing water as much as possible even though some mixing might have provided means for better use of the water.

Improving irrigation. There was no shortage of ideas among the farmers as to what could be done to make better use of available water. Most of the ideas expressed would require cooperative action for implementation. Clean and better ditches were suggested by several persons. This included consolidating ditches to eliminate duplication and lining of ditches to lessen conveyance loss. In connection with ditch improvement it was suggested that the water source springs in the canyons be cleaned. This had not been done since 1934. Overnight storage to

eliminate night irrigation and to provide a greater water head was suggested time after time. Reservoirs built to hold winter water and the spring run-off could retain the water until it was needed. These were also suggested.

Leveling of the land to be irrigated as suggested by several farmers would require cooperative action to be effective. Leveling of individual farms would not be effective because of the large number of small fragments. That consolidating the land holdings would allow use of better irrigation practices was expressed by some.

It was evident that the majority of farmers in Paragonah felt their irrigation practices could be improved. In some instances the management of the various irrigation companies was blamed for the ineffective use of water. Most of the improvements which were suggested required more than approval of irrigation companies' management for implementation. Cooperative effort by all concerned would be necessary.

Water rights. Thirty-three farmers claimed water rights through the Canal Company. Water rights for nine farmers were exclusively with the Canal Company but 24 combined their Canal Company rights with rights from one or more of the other sources of irrigation water. There were no claims to water through the Reservoir Company alone. This would be expected because the reservoir had never provided enough water to assure crop production for any farmer. The Little Creek Company provided the only water right, from a community source, for five farms.

Water rights with both the Canal and the Reservoir companies were held by 22 farmers. Two farmers listed all three companies as sources for their irrigation water. The Little Creek Company and the Reservoir Company were cited as the sources of water for farms belonging to two owners.

Pump wells were used by six farmers in Paragonah to supplement their water rights with one or more of the three organized companies.

There were 26 farmers interviewed who claimed to have water rights with the Reservoir Company, 33 with the Canal Company, and nine with the Little Creek Company. Except for 14 farmers who held water rights from only one company, the owners in one company were also owners in one or both of the other two (table 19).

Table 19. Source of irrigation water rights for Paragonah farms, Paragonah, Utah, 1954

	Number reporting	Percent of sample
Canal Company only	9	23.68
Reservoir Company only	0	.00
Little Creek Company only	5	13.15
Canal Company and Reservoir Company	22	57.89
Little Creek Company and Reservoir Company	2	5.26
Canal Company, Reservoir Company, and Little Creek Company	2	5.26

Water utilization and requirements. With two exceptions, farmers irrigating land in the Paragonah area reported that they used all water available when they irrigated. Farm neighbors agreed that most of the farmers used what water they could get. The neighbors thought that three farmers had water available which was not used.

One farmer thought that he could frequently irrigate as well with less water than that which was available. Three thought that on occasion

they, too, could irrigate adequately with less water. Thirty farmers, however, felt that they could seldom irrigate as well with less water. In fact, they felt that more water was desirable, even necessary. No farmer suggested that his neighbors might irrigate their land as well with less water.

Thirty farmers reported more water would be usually required to irrigate their land adequately. One farmer stated that he frequently needed more water to irrigate his land, and one said that on occasion he also needed more water than that which was available. Two farmers reported that they had adequate water supply and seldom required more water. Farm neighbors felt that 33 farms usually needed more water for adequate irrigation, that one farm frequently required more water than was available, and that all of the farms had some requirement for more irrigation water.

The farmers' self report and the reports by neighbors were nearly identical (table 20). Neighbors thought the farmers had a slightly greater requirement for additional water than the farmers themselves did. There was no evidence of farmers thinking that their neighbors were using more than their share of the irrigation water.

Borrowing and lending of water. Nearly two-thirds of the farmers in Paragonah seldom borrowed or loaned water for irrigation purposes. Borrowing or lending of irrigation water did not happen frequently among any of the farmers interviewed. There were five persons who reported borrowing water occasionally, and seven who said they borrowed water under rare circumstances. An almost identical number said they had infrequently loaned water for irrigation purposes (table 21).

Table 20. Farmers' attitudes of irrigation water utilization and requirements, Paragonah, Utah, 1954

	Frequently	Occasionally	Seldom	Total
	<u>Number</u>			
Farmer uses all available water	32	0	2	34
Neighbors use all available water	31	0	3	34
Farmer could do as well with less water	1	3	30	34
Neighbors could do as well with less water	0	0	34	34
Farmer needs more water	32	1	2	34
Neighbors need more water	34	0	0	34
	<u>Percent</u>			
Farmer uses all available water	94.12	.00	5.88	100
Neighbors use all available water	91.18	.00	8.82	100
Farmer could do as well with less water	2.94	8.82	88.24	100
Neighbors could do as well with less water	.00	.00	100.00	100
Farmer needs more water	91.18	2.94	5.88	100
Neighbors need more water	100.00	.00	.00	100

Table 21. Borrowing and lending of irrigation water, Paragonah, Utah, 1954

	Frequently	Occasionally	Seldom	Total
		<u>Number</u>		
Borrows water	0	5	29	34
Lends water	0	6	28	34
		<u>Percent</u>		
Borrows water	0	14.71	85.29	100
Lends water	0	17.65	82.35	100

Borrowing of water was not an acceptable practice in Paragonah as there was an inadequate supply. Every farmer required all of the water allotted to him. Also, there was usually little opportunity to return a like amount of water when it would be useful for crop production. Generally, irrigation water in Paragonah was only given to others when the expected consumer was unable to take advantage of the water. In this case the water could be "loaned" but not expected to be returned.

Transfer of water rights. Water rights in Paragonah were not often released except as a part of land sales. That is, water rights were transferred in conjunction with land sales because of the necessity of irrigation water for crop production. Only four present land owners had gained water rights other than at the time they had acquired their farms. One person did not remember whether he had acquired additional water rights without buying land (table 22).

Three of the present owners had released water rights. One had water rights to a stream which could not reach his land in an area served by another stream. Two farmers have sold part of their stock

Table 22. Transfer of water rights; present and preceding farmers, Paragonah, Utah, 1954

	Yes	No	Don't know	Total
	<u>Number</u>			
Present owner gained water rights	4	33	1	38
Present owner released water rights	4	33	1	38
Previous owner gained water rights	5	20	13	38
	<u>Percent</u>			
Present owner gained water rights	10.52	86.84	2.64	100
Present owner released water rights	10.52	86.84	2.64	100
Previous owner gained water rights	13.15	52.63	34.22	100

in the Reservoir Company. A return of five to one on his investment induced one farmer to sell his stock.

Another stockholder in the Reservoir Company sold part of his stock to a brother. Again, one farmer didn't recall whether he had released any water rights without the transfer of land being involved.

The previous holders of five farms were able to gain water rights without gaining land according to the present owners. Twenty of the present owners were quite sure that their immediate predecessors had not gained water rights. Thirteen of the present land holders did not know about the transfer of water rights by the previous owner.

Irrigation policies. Over half of the farmers were dissatisfied

with policies of the irrigation companies. Without considering the company involved, because the dissatisfaction was similar in all three companies, 21 farmers thought that alteration of policies would be useful (table 23). Suggested changes included elimination of duplicated ditches, better division of the water, and overnight storage of water. Some farmers suggested that the streams could be combined in one lined canal which would reach from the canyon to the fields. Another suggestion was that water losses in ditches could be reduced by regular cleaning and maintenance.

Table 23. Attitudes toward irrigation companies' policies, Paragonah, Utah, 1954

	Number reporting	Percent
Require alteration	21	55.26
Are adequate now	13	34.21
Don't know	4	10.53
Total	38	100.00

All of the suggestions implied that too much water was being wasted through mismanagement. Recognition of losses through ditches prompted suggestions of combining ditches and better maintenance of those required. Overnight storage ponds were desired for two basic reasons. The first being the elimination of night irrigation and the second being to provide more water during a shorter period of time. A larger stream of shorter duration would provide a greater water head which could be used more efficiently in the irrigation of land.

If the economic feasibility of overnight storage ponds had been

thoroughly investigated, the farmers were not aware of it. Some farmers were doubtful of overnight storage while others enthusiastically referred to the possibility.

Enforcement of the policies then in effect, rather than changing of the policies was advocated by 13 farmers. These farmers thought policies already in effect were adequate without change. In six instances the farmers said that the present policies of irrigation were adequate because they did not know how they could be changed beneficially. One farmer said, "Each man has a regular turn." implying that a regular turn was all that was necessary for the most effective use of available irrigation water. Another individual said that the farmers were using the best water practices known that would fit their local situation.

Four farmers reported that they didn't know whether the irrigation companies' policies required alteration. One of these farmers said that changes to better the situation were not being made.

Consolidation of irrigation companies. Consolidation of the Canal Company and the Reservoir Company would enable the farmers in Paragonah to make better use of the irrigation water available to them (10). Mainly through efforts of people outside the community the two companies were once combined in name under one management. This consolidation lasted approximately a year. At that time the Reservoir Company was returned to its original owners for one dollar, according to the president of the Canal Company.

Consolidation of the companies would still provide opportunity for more effective use of irrigation water in Paragonah, but only six farmers said they thought consolidation of the two companies would be

desirable (table 24). According to these farmers a workable consolidation would provide better service and less friction between community members.

Table 24. Attitude toward consolidation of local irrigation companies, Paragonah, Utah, 1954

	Number reporting	Percent
Consolidation desirable	6	15.78
Consolidation not desirable	24	63.16
Don't know	5	13.16
No response	3	7.90
Total	38	100.00

Twenty-four farmers said consolidation of the companies was not desirable. The reason most often mentioned was that the reservoir is so small that the water it holds could not be divided among all of the farmers in Paragonah and still be of any value. Of the farmers not in favor of consolidation of the companies, 16 said consolidation was not desirable because it had been unsuccessfully tried once before with resulting ill feelings among community members.

Five farmers said they did not know whether the companies should be combined; three refused to comment on this problem.

Age and education of farmers. Of the 38 farmers interviewed, 22 had not graduated from high school, 10 had graduated from high school but had gone no further, and six had as much as two years of college (table 25).

Ten farmers in Paragonah had completed less than nine years of

Table 25. Age and education of farmers, Paragonah, Utah, 1954

School years completed	20-29	30-39	40-49	50-59	60-79	Total
8	-	-	3	4	3	10
9 - 11	-	3	2	4	3	12
12	1	1	2	1	4	9
13 - 15	-	3	1	2	1	7
Total	1	7	8	11	11	38

formal education, but no farmer interviewed said that he had completed less than the seventh grade. Eight said they had gone no further than the eighth grade. All farmers who had completed only eight grades were in age categories of under 40 years. At least one individual who had graduated from high school was included in each of the established age categories. The greatest number of high school graduates were over 60 years of age. Of the six college students, four had completed two years, and two had completed one year. The youngest farmer interviewed had had no education beyond high school.

One farmer said that he had received formal training in Diesel Engineering through the United States Armed Forces Institute. He was the only person who reported receiving any education outside the state school system.

SUMMARY AND CONCLUSIONS

Inefficient farming has implications beyond uneconomical use of resources. One result is depressed living conditions and attending social problems. Conservation of resources has come to be recognized as a social responsibility, but inefficient practices and inadequate social organization which inhibit community development persist in many Utah communities such as Paragonah.

The objectives of this study were to describe land and water utilization in Paragonah; more specifically, to present their historic development, current problems associated with these conditions, how people felt about them, and what community action had been or might be taken to improve the use of these resources. It is an accumulation of facts upon which organizations concerned with community improvement could cooperate with local people for more effective social planning and action.

Paragonah is located in southwestern Utah. The population was 404 in 1950. Although Paragonah farms are often composed of fragmented land holdings, none of the "West Fields" is as yet fenced into individually owned plots. Several of the farms are operated on a part-time basis. The three irrigation companies in Paragonah are in competition with each other, yet are owned largely by the same people.

Fragmented land holdings began in Paragonah as a result of land ownership and utilization practices that occurred during the period of settlement. The basic patterns of land ownership, control, and utilization

have remained to the present. The early settlers divided the land into small holdings so that all of the families might have irrigation water and till the land as methods then available permitted. Land fragmentation greatly extends the requirements for and losses through water conveyance. Water is a major factor limiting cropland development in Paragonah.

Some groups in Paragonah, especially the irrigation companies, are concerned about fragmentation and water utilization and have attempted to improve the situation. Many farmers recognize the need for improving the use of land and water resources. Others accept the present situation and seem to have no desire for making changes through individual or group efforts.

The traditional pattern of estate settlement has been to divide the land equally among the heirs. Most of the farmers inherited their first land holding from their father. The majority of the preceding owners also acquired their farm through inheritance. Most of the farms were divided when transferred from the previous owners. When farms were transferred intact, monetary compensation to the previous owner was usually involved.

Some farmers, in improving their situation, have bought or rented land to secure a farm which was capable of meeting their needs. This study indicates that buying and renting practices have increased fragmentation in Paragonah.

There had been some public meetings which were devoted to land fragmentation but most farmers were unaware of them. Most of the farmers said there had been no community action to better the situation. The obstacles to consolidation mentioned most often by the farmers were

sentimental attachment to the land, irrigation problems, and differing land values.

Irrigation has been necessary for crop production in Paragonah since the community was settled. The sources of water do not provide enough water to irrigate all land in the area which is suitable for cultivation. All of the farmers were stockholders in at least one irrigation company but not all were aware of public meetings devoted to irrigation.

There was no shortage of ideas as to what could be done to make better use of irrigation water. It was evident that the majority of farmers thought local irrigation practices could be improved. Over half of the farmers were dissatisfied with the policies of the irrigation companies. Changes suggested most frequently were elimination of duplicated ditches, better division of the water, and overnight storage.

This study suggests there is need for an effective educational program aimed at improving utilization of land and water resources in Paragonah. This program could assist farmers to realize that land consolidation and water use improvements are essential. A tradition of consolidated farms large enough to maintain the operator and his family needs to be developed and the tradition of equal land division among heirs reconsidered. Too many farmers think dividing the farm land is an acceptable method of estate settlement. Instead of dividing there is need for building and retaining economic farm units. Since water is a major factor limiting crop production, it is important to use this resource efficiently.

More is known about what constitutes proper practices of land and

water utilization than has been applied. If satisfactory adjustment in the utilization of these resources is to be achieved, effective social planning and action is needed to overcome apathy and to change existing attitudes and practices. Thus, the human element must be considered if future prosperity for farmers is to be attained.

Recommendations for social action

Land tenure practices have a profound effect on community welfare. In Utah, current tenure practices do not provide adequate provision for social and economic development. To solve problems such as land fragmentation and water control, effective social planning is necessary. Land-use planning has been developed for recent federal irrigation projects and some states have passed zoning laws to regulate land use. Conservation, irrigation, and flood control are accepted forms of land regulation. In a limited sense, then, public regulation of land use has been accepted in the United States.

Even though changes in resource utilization may be desirable, complex problems are encountered when changes are suggested. The privileges and rights of resource utilization have become tightly connected with the social and cultural factors of society. These practices cannot be altered effectively without consideration of social factors fundamental to public response. Organizations must be concerned with development of the community for lasting modification of practices having social implications. In most instances these problems are so complex that expert help is necessary for understanding their nature and interrelations.

Community pride and feelings of civic responsibility must be better developed if Paragonah is to become progressive in approach and in

goals regarding resource utilization. The people concerned must be drawn into both defining problems and seeking their solutions. Here is opportunity for organizations such as the Agricultural Extension Service to act as catalytic agents accelerating community reactions to inefficient utilization of resources.

Before an effective program of land consolidation could be undertaken in Paragonah, additional information would be necessary. Information about soils, irrigation, economic, and legal factors would be required before holdings could be consolidated through community action. This does not mean that the community must remain in its present situation until this information is gathered, evaluated, and made available. Individual citizens and groups could move to improve the situation without further delay. The church, for example, as the most inclusive organization in the community, could do much to develop progressive community attitudes. Church meetings could be used for discussion of local problems and to induce community action. Schools could develop curriculums aimed at improving the use of techniques of community improvement. Irrigation companies could serve by developing progressive thinking regarding irrigation and related problems.

There is need for integration of programs concerned with isolated problems affecting the community. Coordinating committees composed of members from the various community organizations could function in this regard.

There is need for local leaders to make better use of available resources such as the county agent and libraries to improve their leadership. The leaders need assistance in learning and implementation of the techniques, processes, and methods of community organization.

The solution of many community problems is dependent upon developing understanding of how people can best utilize the resources available in government agencies, civic groups, religious institutions, and educational facilities. There is no specific agency, plan, or method which provides a simple remedial program.

LITERATURE CITED

- (1) Anonymous. Biennial Report of the Utah Agricultural Experiment Station. 1952-1954. Utah Agricultural Experiment Station Bulletin 375. 1954.
- (2) "France's Backward Farms." The Economist. 169:166-167. October 17, 1953.
- (3) Journal History of the Church of Jesus Christ of Latter-day Saints. Salt Lake City, Utah: Church of Jesus Christ of Latter-day Saints. n.d.
- (4) Ely, Richard T. and Wehrwein, Goerge S. Land Economics. New York: The Macmillan Co. 1940.
- (5) Gagne, C. "Seignorial Tenure in Canada." Proceedings of the Fifth International Conference of Agricultural Economists. 1938: 316-334. London: Oxford University Press. 1939.
- (6) Geddes, Joseph A. "Modification of the Early Utah Farm Village." (reprint) Yearbook of the Association of Pacific Coast Geographers. 1942.
- (7) Gibson, Jr., W. L. and Walbrath, A. J. "Inheritance of Farm Property." Journal of Farm Economics. 29:938-951. November 1947.
- (8) Gray, L. C., et al. "The Causes: Traditional Attitudes and Institutions." Soils and Men. United States Department of Agriculture Yearbook. 1938.
- (9) Hutchins, Wells A. Mutual Irrigation Companies in Utah. Utah Agricultural Experiment Station Bulletin 199. 1927.
- (10) Israelsen, O. W. "Consolidation of Irrigation Companies Aids Water Conservation." Farm and Home Science. 4(2):5,10-11.
- (11) Jensen, Andrew. Encyclopedic History of the Church of Jesus Christ of Latter-day Saints. (unpublished manuscript) Salt Lake City, Utah: Church of Jesus Christ of Latter-day Saints. n.d.
- (12) Johnston, P. E. "Improving Labor Efficiency Through Improving Farm Organization." Journal of Farm Economics. 33(2):808-817. November 1951.
- (13) Munro, William Bennett. The Seigneurs of Old Canada. Toronto: Glasgow, Brook, and Company. 1922.

- (14) Nelson, Lowry. "Outlines of a Rural Research Program for Utah." (reprint) Proceedings of the Utah Academy of Sciences. 1936.
- (15) Social Survey of Escalante, Utah. Provo, Utah: Brigham Young University. 1926.
- (16) "Some Early Land Holding Practices in Utah and Problems Arising From Them." Proceedings of Utah Academy of Sciences. 4:4-5. 1927.
- (17) Some Social and Economic Features of American Fork, Utah. Provo, Utah: Brigham Young University. 1933.
- (18) The Mormon Village. Salt Lake City: University of Utah Press. 1952.
- (19) The Utah Farm Village of Ephraim. Provo, Utah: Brigham Young University. 1928.
- (20) Reuss, Lawrence A. and Blanch, George T. Utah's Land Resources. Utah Agricultural Experiment Station Special Report No. 4. 1951.
- (21) Smith, T. Lynn. The Sociology of Rural Life. New York: Harper and Brothers. 1947.
- (22) Sorokin, P. A., Zimmerman, C. C. and Galpin, C. J. A Systematic Source Book in Rural Sociology. Minneapolis: The University of Minnesota Press. 1930.
- (23) Teele, R. P. "General Discussion of Irrigation in Utah." Report of Irrigation Investigations in Utah. United States Department of Agriculture Office of Experiment Stations. Bulletin 124: 19-37. 1903.
- (24) Thomas, George. The Development of Institutions Under Irrigation. New York: The Macmillan Company. 1920.
- (25) Thomas, W. Preston, et al. A Study of Farm Organization by Type of Farm in Sanpete and Sevier Counties. Utah Agricultural Experiment Station Bulletin 300. 1944.
- (26) Trends in Agricultural Production, Costs, and Returns in Utah. Utah Agricultural Experiment Station Special Report No. 3. 1950.
- (27) Thorne, D. W. "Irrigated Soils Need Good Management." What's New in Crops and Soils. 2:9-11. June 1950.
- (28) U. S. Bureau of the Census. U. S. Census of Agriculture: 1945. U. S. Government Printing Office. 1947.
- (29) U. S. Bureau of the Census. U. S. Census of Agriculture: 1950. U. S. Government Printing Office, 1952.

- (30) U. S. Bureau of the Census. Number of Inhabitants of Utah, U. S. Census of Population; 1950. U. S. Government Printing Office. 1952.
- (31) Von Dietz, C. "Land Tenure and the Social Control of the Use of Land." Proceedings of the Fifth International Conference of Agricultural Economists. 1938:118-139. London; Oxford University Press. 1939.
- (32) Walker, R. H. Pioneering in Western Agriculture. Utah Agricultural Experiment Station Bulletin 282. 1938.
- (33) Wehrwein, George S. "The Problem of Inheritance in American Land Tenure." Journal of Farm Economics. 9(2):163-175. April 1927.
- (34) Widtsoe, John A. Success on Irrigation Projects. New York: John Wiley and Sons, Inc. 1928.

A P P E N D I X

Social and Economic Factors Affecting Land and Water Utilization
in Paragonah, Utah

Schedule No. _____

Name _____ (Your name will be held in strict confidence.)

Address _____

A. Land Fragmentation

1. How much land do you own? _____ operate? _____
2. How much irrigated crop land do you have? _____ acres.
3. How much of your land, other than crop land, is irrigated?
_____ acres.
4. How many of your irrigated fields are separated from the others? _____
5. Do your separated fields make any problems in your farming?
Yes _____ No _____
If yes, what are these problems? _____
6. Have there been any meetings held to discuss the matter of separated fields? Yes _____ No _____ If yes, who sponsored the meetings?
What ideas were discussed? _____
7. Did you come to any conclusions as a result of these meetings?
Yes _____ No _____. If yes, what conclusions did you arrive at? _____
8. Have you talked this problem over with any of your friends or neighbors? Yes _____ No _____. If yes, what was the general feeling about this matter? _____
9. Do you think there is need for doing anything about having separated fields? Yes _____ What do you think should be done?
No _____ Why do you think nothing should be done? _____
10. Would you be willing to trade your land for land of equal value in order to have all of your farm in one place?
Yes _____ No _____
11. Have you tried to trade land in order to have your fields connected? Yes _____ No _____ If yes, what have you done? _____
12. What problems do you think farmers would meet if they tried to bring their fields together? _____

13. Would you support any group effort to trade land so that each farm would be in one place?
Yes ___ Do you have any suggestions as to what should or could be done?
- No ___ Why?
14. 14. Do you think the county agent and the college could help in this matter? Yes ___ How?
- No ___ Why?
15. What percentage of farmers in Paragonah, would you estimate, have fields separated from their other fields? _____
16. After getting his farm, did the previous owner of your farm acquire additional land separated from the rest of his original farm? Yes ___ No ___ Don't know ___
17. Have you gained additional land separated from the rest of your original farm?
Yes ___ How many pieces? _____
No ___
18. Do you rent land separated from your farm?
No ___
Yes ___ Do you intend to buy the land? Yes ___ No ___
19. Do you rent land next to your farm?
No ___
Yes ___ Do you intend to buy the land? Yes ___ No ___

B. Water Utilization

20. Would you be better able to use the crop land you now have if you had more water? Yes ___ No ___ How?
21. Do you use all of the water available when you irrigate?
Almost always ___ frequently ___ occasionally ___ almost never ___
22. Could you irrigate just as well with less water?
Almost always ___ frequently ___ occasionally ___ almost never ___
23. Do you need more water?
Almost always ___ frequently ___ occasionally ___ almost never ___
24. Do your neighbors use all the water available when they irrigate?
Almost always ___ frequently ___ occasionally ___ almost never ___
25. Could your neighbors irrigate just as well with less water?
Almost always ___ frequently ___ occasionally ___ almost never ___

26. Do your neighbors need more water?
Almost always ___ frequently ___ occasionally ___ almost never ___
27. Have your farm leaders called any meetings to discuss the matter of water use? Yes ___ No ___ If yes, what was their idea about this matter?
28. Was any action taken as a result of these meetings? Yes ___ No ___ What action?
29. What do you think should be done to get the best use of water?
30. Are there any other problems in the use of water that you can mention?
31. Have you talked this problem over with any of your friends or neighbors? Yes ___ No ___ If yes, what was the general feeling about this matter?
32. From which irrigation companies do you have water rights?
The Field or Canal Co. _____
The Reservoir Co. _____
The Little Creek Irrigation Co. _____
Other _____
33. Should the irrigation companies be combined? Yes ___ No ___
Why?
34. Do you think the irrigation companies' policies could be changed to provide better use of water? Yes ___ No ___ Why?
35. Do you irrigate all of your fields during your regular turn?
Almost always ___ frequently ___ occasionally ___ rarely ___
almost never ___
36. If not, do you irrigate when the water is near your different fields? Almost always ___ frequently ___ occasionally ___
rarely ___ almost never ___
37. Do you trade turns with your neighbors when using the water?
Almost always ___ frequently ___ occasionally ___ rarely ___
almost never ___
38. Do you share turns with your neighbors when using the water?
Almost always ___ frequently ___ occasionally ___ rarely ___
almost never ___
39. Do you borrow water from your neighbors?
Frequently ___ occasionally ___ rarely ___ almost never ___

40. Do your neighbors borrow water from you?
Frequently___ occasionally___ rarely___ almost never___
41. Have you gained water rights from any irrigation companies other than at the time the farm was acquired? Yes___ No___.
Why?
42. Did the previous owner get water rights from any other irrigation company(s) other than at the time he got his farm?
Yes___ No___ Don't know___
43. Have you released any water rights since you got your farm?
Yes___ No___ If so, why?

C. Family Farm

44. What does your family think about keeping the farm in the family?
45. Do you intend to keep the farm in the family? Yes___ No___
N/A___ . If yes, why? If no, what do you intend to do with the farm?
46. Do you think there are any problems in passing on the family farm to children? Yes___ No___ If yes, what are they?
47. What arrangements have been made about passing the farm on? If none, what arrangements do you plan to make?
48. Do you have any suggestions as to how to keep the farm from being divided upon the death of the owner?
- a) If one child gets the farm should he pay the other survivors for their share?
 - b) Should sons and daughter share the farm inheritance equally?
 - c) Should children living on the farm be favored over those who have moved?

D. General Information

49. In what year did you get your farm?_____ At what age?_____
50. How did you get your farm? Purchased___ Inherited___ Other___
51. Did you pay market price for the land? Yes___ No___
52. Is your farm owned by both your wife and yourself? Yes___
No___ N/A___
53. Did any of your brothers or sisters want to get the farm?
Yes___ No___ N/A___

54. Did you get all of the previous owners' farm?
 Yes _____ How many acres? _____
 No _____ How many acres? _____ Who else got part? _____
55. Were your forebearers pioneers of Paragonah? Yes _____ No _____
 One side of family _____
56. How many generations has this farm been in your family? _____
57. What have the inheritance practices been?
 a) to divide the land between the heirs?
 b) to pass on the farm as a unit?
58. What relation are you to the previous owner? _____
59. Did the previous owner get the farm through inheritance?
 Yes _____ No _____
 Purchase? Yes _____ No _____ Other _____
60. Was there an agreement between the previous owner and you as to the eventual transfer of the farm to you? Yes _____ No _____ NA _____
61. How much time do you work on the farm? None _____ Part-time _____
 Full-time _____
62. What percent of your income comes from your farm? _____
63. What is your age? _____
64. How many years of education have you completed?
 Grade 1 2 3 4 5 6 7 8 College 1 2 3 4 5
 High school 1 2 3 4 Trade or other 1 2 3
65. How many of your brothers or sisters have more education than you? _____ Less _____