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Family Operated Farms in
Colusa County, California:
A Preliminary Research Report

by

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WRDC Discussion Paper No. 5

April, 1975

A Regional Center for Applied Social Science Research
and Community Resource Development Cooperating with
Land Grant Universities in:

***Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana
Nevada, New Mexico, Oregon, Utah, Washington and Wyoming;***

and located at
Oregon State University
Corvallis, Oregon

A C K N O W L E D G E M E N T S

Research reported upon in this paper was supported by the California Agricultural Experimental Station, Project H-3110, the Western Rural Development Center (CSRS Grant Nos. 216-15-98 and 316-15-95) and Rockefeller Foundation Grant No. GA SS 7404.

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We would like to thank Paul Barkley and John A. Young for their comments on an earlier version of this paper presented at the Annual Meeting of the American Anthropological Association, Mexico City, Mexico, November 1974.

These papers are preliminary draft documents containing tentative results, thoughts, concepts, etc. They are intended for circulation among administrators and working scientists in the region to keep them informed of the Center's work and to stimulate discussion and meaningful exchange, one purpose of which is to assist the authors in developing a more finished manuscript for formal publication in an appropriate journal at some future date.

Responsibility for the views and the editing in this paper is that of the authors only.

FAMILY OPERATED FARMS IN
COLUSA COUNTY, CALIFORNIA

A PRELIMINARY RESEARCH REPORT

With changes in farm technology, greater demands for capital resources, changes in opportunities in the industrial labor force outside of farming, and a growing need to develop sophisticated management skills, the average size of farms within the United States has continued to increase over the past several decades. Despite California's history of large farms beginning with the Mexican latifundias of the past century (Goldschmidt, 1947) the trend is similar to the national pattern (see Figures 1 and 2). Madden and Partenheimer (1972:102) have noted that rapid farm enlargement occurs more frequently in areas where resources are uniform and production conditions are homogeneous and predictable. These circumstances are found in the Sacramento and San Joaquin Valleys of central California. As farm size increases the number of smaller family farm operators decreases. The small farm operator, with low liquid and fixed assets, attempts to remain solvent in the face of economic fluctuation, changes in market demand, limited availability of credit and viable offers to buy out his business. Some people have adjusted to the changing conditions of contemporary agriculture by remaining on the farm while others have chosen to leave the farm and search for economic opportunities elsewhere. This research report describes the adjustments made by some small family farm operators in the Sacramento Valley of northern California.

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Figure 1. AVERAGE FARM SIZES IN THE UNITED STATES, CALIFORNIA AND COLUSA COUNTY

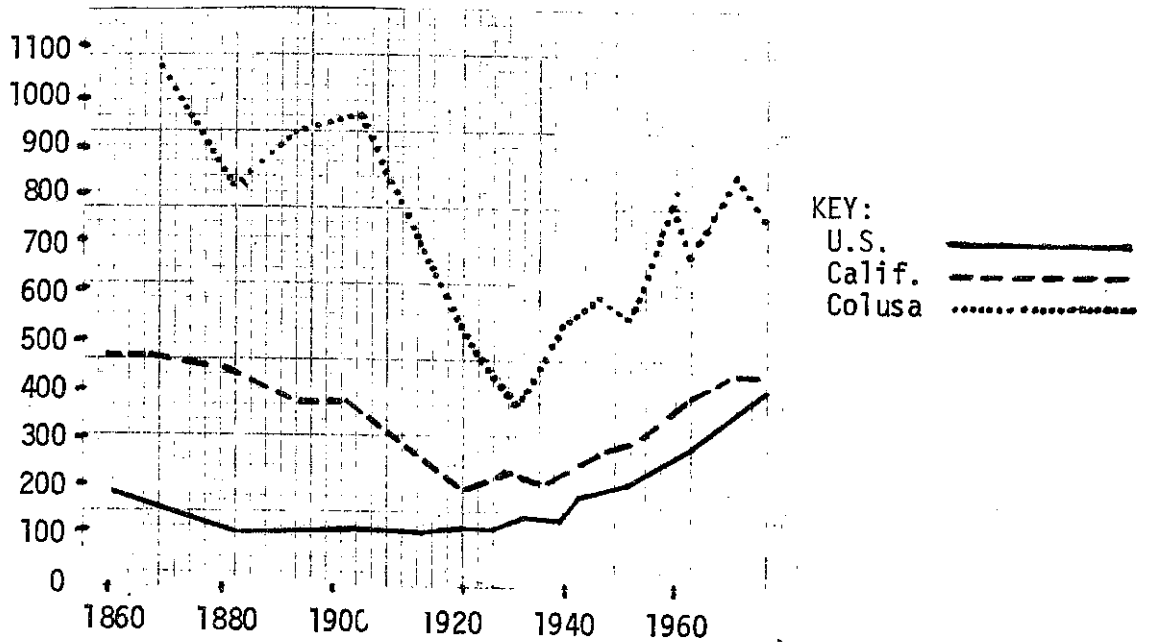
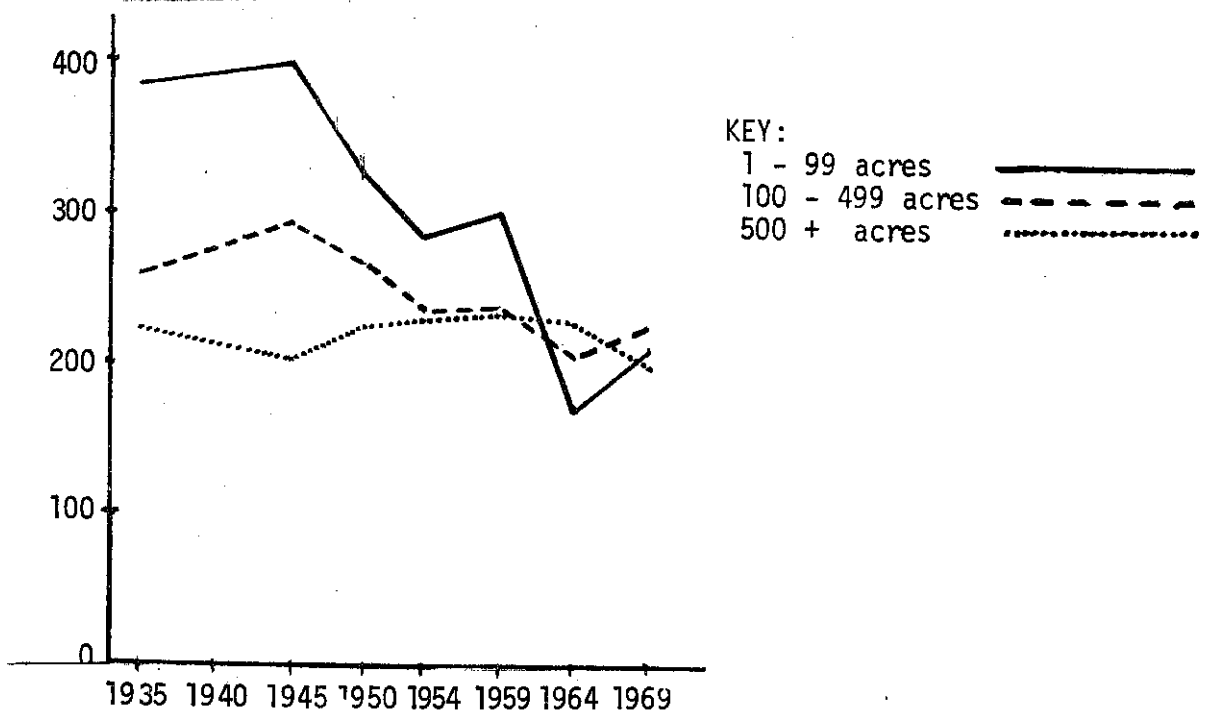


Figure 2. NUMBER OF FARMS BY SIZE CLASS



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Farm Size and the Economies of Scale

Issues relating to farm size have been discussed at length by social scientists, businessmen, legislators, representatives of various national and state governmental agencies, farmers and others. Agricultural economists have been especially active in this discussion. They have explored problems dealing with factors of production, rationality of decision behavior, efficiency of farm operation, minimization of consumer food costs, maximization of farm income, efficient use of natural resources, role of the food processor and changing market structures, all in relationship to the relative sizes of farm enterprises. There is some consensus that small farms, those with a gross income of less than \$20,000 per year and/or involving one or less man-years of labor, are not as efficient in their utilization of resources as larger operations. Furthermore, it is believed that the smaller farm is less profitable than its larger counterpart. However, from the smaller enterprise to larger farms with gross incomes of over \$40,000 per year and/or utilizing a number of man-years in the operation, the evidence is not clear regarding the relationships among efficiency, profitability and farm size. The number of variables involved in such relationships is quite large. Soil types, capitalization, management skills, location, transportation, mechanization, crop type, labor resources, specialization, costs of inputs, market structure, and a host of other factors must be considered in any study of the relationship of efficiency and/or profitability to enterprise size and scale.

The literature on economies of scale in agriculture isolates several problems that relate directly to the operations of small farms. With recent technological developments, the need for capital beyond that available from equity sources has increased rapidly (Brake, 1972). Many farmers do not have the liquid and fixed assets to guarantee or secure loans for purposes of expanding and mechanizing their operations. As a result there has been a noticeable change in tenure patterns in recent years. There is a trend toward larger family owned operations, partnerships and family and non-family corporations. Despite these changes in land tenure and technology many small and part-time farms have continued to exist. Brake (1972:141) has noted that many such units are operated by older farmers who have been unable to keep up to date with changes in agricultural technology and to expand the size of their operations. Many only expect to live out the remainder of their lives on the farm. Small farmers often receive a low rate of return on the present value of their investment and often have difficulty obtaining credit.

It is difficult to consider the smaller family farm until we have a working definition of the concept. Nikolitch (1969) noted that the family farm should not be defined in terms of the value of sales, acreage or capital investment but rather by the degree to which the productive efforts and resulting rewards are vested in the family unit. The family farm is primarily an agricultural enterprise with the operator acting as a risk-taking entrepreneur who, along with his family, provides most of the managerial services and labor invested in the business. Since there are some very large farms that fit into this category in California we decided to set an upper limit on the size of operation considered in our study.

We encountered a methodological difficulty in isolating criteria that differentiated small from large family farms. From reviewing the literature on economies of scale in agriculture and discussing the problem with specialists dealing with factors of production, we initially decided to look at the number of acres farmed, gross income and/or number of full-time employees. However, we encountered problems in attaining the needed information prior to interviewing the farm families. The tax records of the county government only record the farmers who own land and not those who lease. Gross income could have been used to identify small family farms. However, we did not have access to this information until after several visits to each of the families and even then the accuracy of the farmers' financial records was sometimes open to question.¹ Our inability to identify small farms made drawing a representative sample impossible. At last resort we located the families to be interviewed by talking to the farm advisor (county agent), representatives of governmental agencies and other farmers. Thus, it is not known if the sample we drew was representative of the small family farm population. We are reporting preliminary results and will not attempt to generalize until we know more about patterns of land tenure and farm operations within the county.²

The Field Site

The research was conducted in Colusa County which is situated in the western portion of the middle Sacramento Valley in northern California. The western half of the county consists of a parallel series of rugged ranges. The highest ridges on the extreme western edge (2,100 meters) are covered with a pine forest. Lower ridges are covered with a digger pine, oak and chaparral complex which is suitable primarily for grazing.

The eastern half of the county contains the best agricultural areas. Alluvial fans slope away from the mountains of the west toward a central region of relatively poor soils underlaid by hardpan. This hardpan area was created by the gradual accumulation of minerals from evaporating winter flood waters. As a result this area is very marshy and supports vast numbers of wintering geese and ducks. The Sacramento River roughly forms the eastern boundary of the county. Extending two miles from either side of the river are some of the best soils in the county. These soils are a result of millenia of sediment deposition.

The climate is Mediterranean with cool wet winters and hot dry summers. Precipitation averages 40 to 50 centimeters (16 to 20 inches) per year. Average temperatures are 7.2 degrees centigrade (45 degrees fahrenheit) in January and 25.5 degrees centigrade (78 degrees fahrenheit) in July, with extremes of -6.6 degrees centigrade (20 degrees fahrenheit) in January and 43 degrees centigrade (110 degrees fahrenheit) in July.

Agricultural History

The first settlers arriving in Colusa County in the late 1840's established large ranches, where they raised livestock, grains and garden crops for local consumption. The Gold Rush created an instant demand for foodstuffs and hides in the late 1840's. However, as mining declined in the mid-1850's men left the mines and joined the swell of people moving into the area to farm. The several large land grants made under Mexican rule were divided and sold. A series of drought years in the 1860's virtually wiped out the Spanish longhorns reducing the importance of ranching in the area. Larger holdings were broken up as migrants acquired ranch lands through purchase and squatting. The population continued to

grow as steamboats pushed their way up the Sacramento River in the 1860's and the railroad entered the county in the 1870's. The improved transportation gave access to both domestic and international markets as far away as Liverpool, England. Until the turn of the century wheat and barley were the dominant crops and sheep dominated the livestock industry.

The number of acres under cultivation continued to expand until about 1885. Since then increases in total agricultural production have come about chiefly through capital and labor intensification. This process has involved increased irrigation, use of synthetic fertilizers, mechanization, growth of the migrant labor force, changes in processing technology, and the development of high-yield crops. Sugar beet production increased in the 1930's and is today a major crop. Advances in irrigation allowed for the introduction of rice, currently the most important agricultural commodity produced in the county. The recent development of the mechanized tomato harvester has increased tomato production. The grazing of sheep and cattle has continued at approximately the same level for many years. In addition, wheat production has increased greatly in the last few years due to irrigation of lower quality acreage and the development of hybrid seeds.

Table 1. LEADING FARM COMMODITIES IN COLUSA COUNTY: TOTAL SALES, 1972 (Disney, 1972) AND ACREAGE, 1969 (Bureau of the Census, 1969)

<u>Commodity</u>	<u>Acreage (or Number), 1969</u>	<u>Total Sales, 1972</u>
Rice	87,399	\$29,573,000
Cattle and Calves	(14,731)	5,426,000
Sugar Beets	11,303	5,375,000
Wheat	28,630	4,336,000
Almonds	14,942	3,484,000
Tomatoes	3,711	3,382,000
Walnuts	3,539	2,112,000
Prunes	6,282	1,674,000
Safflower	16,956	1,544,000
Barley	21,383	1,450,000
Grain Sorghums	8,923	1,166,000
Sheep and Lambs	(58,367)	1,072,000

An Agricultural County

Colusa County is predominantly rural and agricultural. In 1970 the county had a total population of roughly 12,000. The largest town (Colusa) had a population of only 3,842 (Bureau of the Census, 1970). Out of a labor force of 3,476, 1,813 (52%) were involved in farming activities. An additional 1,219 members of the work force (35%) were involved in wholesale and retail sales, finance and service occupations.

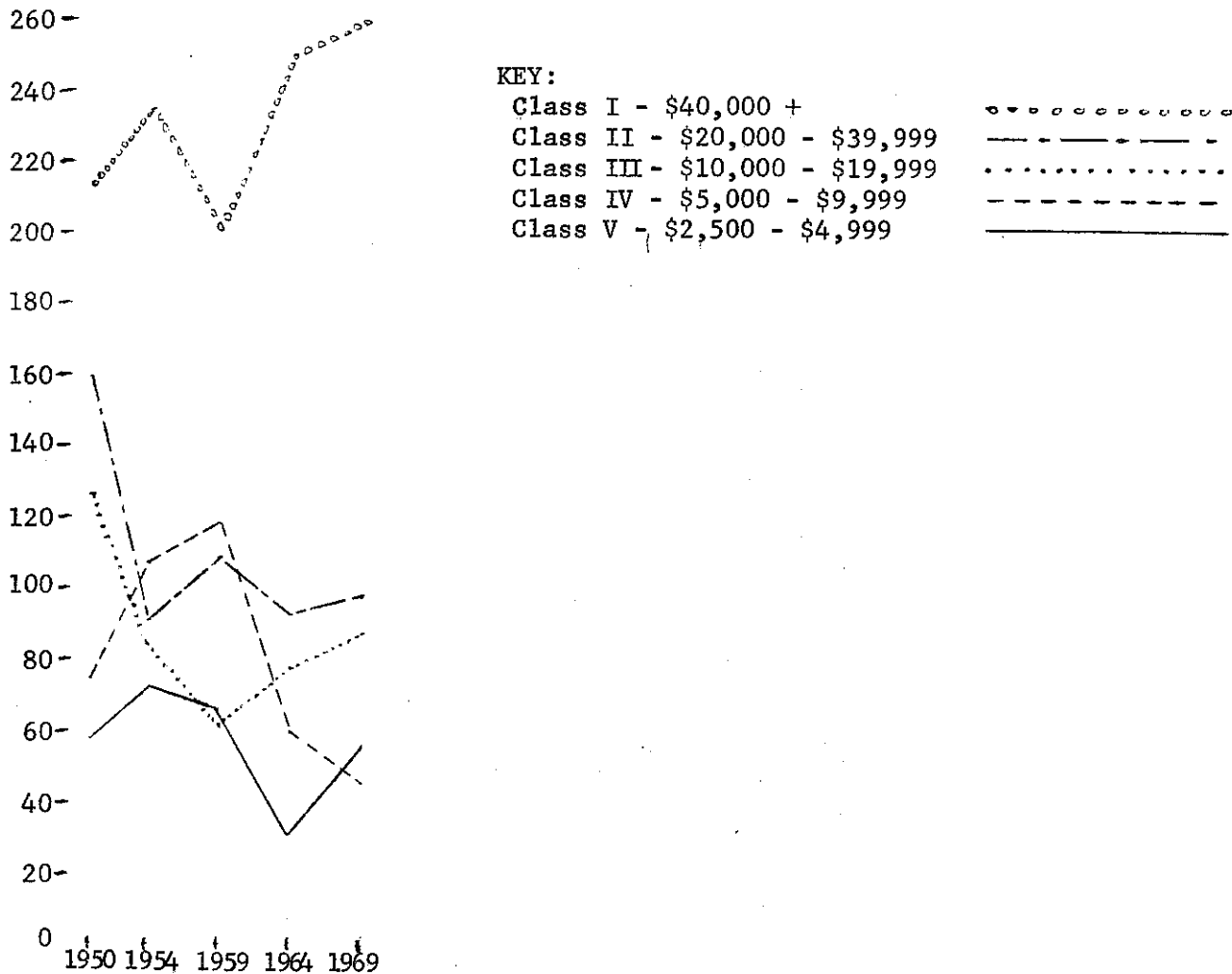
Colusa County has a broad range of farm sizes. About one third of the farms have less than 100 acres, one third between 100 and 499 acres, and the remaining one third greater than 500 acres. As Figure 2 shows, however, the number of farms with less than 100 acres has declined since World War II. The number of farms between 100 and 499 acres has decreased slightly since 1945. The number of farms with 500 or more acres has remained roughly the same. Figure 3 shows that the number of farms in lower income brackets (measured by value of annual sales) has declined since 1950, while the number of farms in the highest income bracket has increased.

Despite the county's history of large farms (see Figure 1), these data indicate that average farm size continues to increase while the number of farm units decreases. This decrease is especially noticeable among the smaller farm units. Thus Colusa County trends in agriculture follow those of the rest of the nation. Despite the advantages of increased mechanization and expansion in the size of operations, a number of smaller farms continue to exist within the county.

Characteristics of the Research Population

Interviews with thirty farmers were completed: eleven are full-time farmers, eleven are involved in farming plus other income-producing

Figure 3. NUMBER OF FARMS BY INCOME CLASS



activities (mixed strategy), seven are retired, and one has sold out and entered another business.

For contrastive purposes, we collected information on people currently in farming and those who recently left farming. However we found it difficult to locate former farmers. Of those we were able to locate who had left farming the majority had simply retired. Thus our sample of former farmers has limited usefulness.

Because of the previously-mentioned difficulties with using income as an indicator of size of operation, we used number of acres farmed and number of full-time laborers hired to select our sample.

We interviewed orchardists with less than 300 acres and rice or mixed-crop farmers with less than 1100 acres. Farmers who hired more than one full-time laborer were generally excluded. Of the eleven full-time farmers, six had one full-time employee while the remaining five had no full-time help. Three of the eleven farmers with mixed strategies had full-time help, while eight had no full-time employees.

A questionnaire was used to gather information and was supplemented by open-ended questions focusing on farmers' opinions and perceptions about their participation in agriculture. Two to four visits of several hours each were required to complete each interview.

The average age of the farmers interviewed was 54 years. Their spouses had an average age of 49.9 years. This is quite similar to the average age of all California farmers, 50.9 years, and to all United States farmers, 49.4 years (Nikolitch, 1967). Nikolitch (1967:6) has commented that on expanding farms in the United States the operators are relatively younger than on small scale farms. This seems to be the case in Colusa County. The farmers interviewed completed an average of 12.4 years of

school. Their spouses completed an average of 12.5 years of school. The average size of the farming families was 5.2 persons with 3.3 persons currently living in the households. The average length of time in farming for the operators was 23.4 years and the average length of time in farming in Colusa County was 21.8 years. Three spouses held down full-time jobs while six were employed part-time.

Supplementary Income Sources Available to Farm Families

One of the chief alternative or supplementary income sources open to a small farmer is custom work. This refers to services performed for other farmers on a contract, hourly or acreage basis. Such services involve the use of heavy and expensive machinery such as tree shakers, backhoes, nut sweepers, sprayers, fertilizer spreaders, harvesters, tractors, earth movers, and heavy trucks. Material as well as machine labor and repairs may be included as a part of the service provided. In addition, labor for pruning and other manual tasks is occasionally done on a contract basis by one farmer's hired hands for another operator.

Custom work is one way for farmers to receive larger returns on their investment in heavy and expensive capital equipment. Furthermore, the practice allows the farmer to more fully utilize his own labor, the labor of his family and of his hired hands in income-producing activities. Much of modern farm machinery was not designed for the small farm and has greater productive capacities than is needed on small acreage units. Dean and Carter (1963) found that operators of small peach orchards in Northern California frequently have a large excess capacity in machinery. They found farms averaging about 14 acres had sufficient equipment for about 50 acres and those of 30 acres had a machinery capacity for 79 acres

while larger farms were apparently operating machinery at almost maximum capacity.

The availability of custom services also aids the small farmer who does not own all the machinery necessary to produce his crops. Madden and Partenheimer (1972) note that hiring these services allows operators to use investment capital for things other than machinery, to expand their enterprises and to cope with peak work loads in critical stages of production. Thus, custom work serves both the small farmer with excess machinery capacity and the small farmer who does not have capital to invest in machinery or who chooses to invest in other things.

The small farmer often develops a network of relationships with other small farmers to sell and/or purchase custom services. Schedules are set for peak work-load periods, plans are made to coordinate the use of machinery owned with that provided by custom operators, and financial agreements are reached. Because of the high costs of purchasing and maintaining modern machines, custom services seem to be slowly replacing the practice of sharing farm equipment on a loan or exchange basis. While the earlier labor and machine exchange practices allowed smaller farmers to continue operation without large investments, fewer and fewer farmers are willing to risk loaning their machines to inexperienced crews or assume the responsibility for possible large repair costs if they borrow an expensive piece of equipment.

While selling custom services increases the cash flow into the small farm, the practice frequently places heavy labor demands on the operator. Timing is often critical in agricultural production. A number of farmers may need the same service at the same time requiring the custom operator to work long hours and develop a schedule which will provide an acceptable

return on his investment in machinery. One custom operator in our sample spent up to 120 hours per week spraying orchards and fields and maintaining his equipment during peak demand periods. However, after peak periods of activity, demand drops drastically and custom operators have the time to carry out general repairs and upkeep activities and pursue other interests. The custom operator must frequently be prepared to obtain most of his income from short periods of intense activity.

Another alternative that provides additional income to the small operator is employment off the farm. In a sense the farmer is selling a portion of his own labor, one of his under-utilized fixed resources. In addition other family members may also have employment outside of agriculture which increases the cash flow to family coffers. However, because Colusa County is sparsely populated and almost entirely agricultural, employment opportunities outside of farming are limited. In fact, the total number of non-farm employment opportunities may be declining for a number of reasons including mechanization, improved transportation and consolidation and centralization of retail marketing centers outside the county. 3

Both custom work and non-farm employment can be viewed as alternatives to leaving the farm in search of employment. After 20 or more years of entrepreneurial farm activity it may be difficult to find a position in the non-farm labor force. Madden and Partenheimer (1972) have suggested that farmers faced with limited alternatives may devalue their own and their family's labor, to near zero "salvage value" or opportunity cost and continue to operate as long as revenue meets variable costs. These authors believe such an explanation helps in the understanding of why farmers continue to operate despite evidence that average total costs,

calculated with labor charged at market rates, over a long period may exceed average revenue. If the farmer reclassifies his labor as a variable resource rather than as a fixed resource, he may find that variable costs are greater than revenue and that he can minimize loss by seeking alternative employment or entering into custom work. Older farmers may decide that the costs are too great to continue operations if they believe the sale value of their enterprise will support them, even at a minimal level, for the rest of their lives. Other older farmers may decide that the return on their labor and investment in equipment is lower than the revenue that can be received through leasing their land. As a result they retire and live on the rent money paid by another operator who farms their land.

Strategies of Small Farmers in Colusa County

For the purposes of this presentation we decided to classify farmers who use mixed strategies (some combination of farming, custom work and outside employment) as a distinct group and compare them with farmers who are engaged in full-time farming. The retired farmers and persons who sold out will not be considered in this comparison. In Table 3 characteristics relating to scale of operation and income-producing activities are presented.⁴

One difference between full-time and mixed strategy farmers is the number of acres farmed. The former till an average of 496 acres while the latter till an average 134 acres. Full-time farmers own an average of 228 acres compared to 43 acres owned by mixed strategy farmers. Land ownership is a factor involved in the choice of strategies. However, there are many intervening variables complicating this relationship. Important among these are the amount of land purchased and the amount of money still owed, the amount of land inherited and the inheritance tax

owed, the amount and type of machinery owned and the machinery indebtedness. At this time we are unable to interpret precisely the nature of the relationship between land ownership and choice of strategies. It does appear that debt free land ownership provides security and the ability to continue as a full-time farmer.

The availability of household members as a labor resource is important to the small farm operator. There is little difference between the two groups in the number of spouses working off the farm. In many cases women play an important role in the operation of the farm serving as bookkeepers, machine operators, supervisors of work crews and skilled laborers. There is a trade-off between working outside to increase cash flows into the enterprise and investing labor in the operation of the farm. With the limited opportunities for employment in Colusa County, shortage of skilled agricultural laborers and the important contributions of women to farming, we are not surprised that a majority of the wives are not employed outside of farming.

Table 3. CHARACTERISTICS OF THE OPERATIONS OF FULL-TIME AND MIXED-STRATEGY FARMERS

	<u>Full-Time Farmers</u>	<u>Mixed Strategy Farmers</u>
Number of Spouses Employed	1 (full-time) 3 (part-time)	2 (full-time) 3 (part-time)
Other Household Members Employed	0	4
Average Acres Farmed*	497	134
Average Acres Owned	228	43
Average Acres Leased from Others	262	150
Average Years in Farming	19.4	23.6

*Acres owned plus acres leased does not equal acres farmed because some farmers lease land out to other persons.

Opportunities in Farming for the Children of Small Farmers

With the decreasing number of small farms, the increasing utilization of machinery, and the unavailability of land and capital needed for expansion of smaller farms, opportunities for the children of small farmers to remain on the farm are decreasing. This situation, along with the availability of nonfarm income sources outside the county, has encouraged children of small farmers to seek employment off the farm.

From our interviews we isolated the children, eighteen years and older, of each of the small farmers in our sample. Out of a total of sixty-nine children we found that fifteen are students, fourteen are now employed in farming, thirty-four are employed outside of farming, and six are involved in part-time farming plus either outside employment or college. Thus, less than one third or twenty out of the sixty-nine of the children of the small farmers in our sample are currently involved in farming activities (see Table 4).

Table 4. EMPLOYMENT STATUS OF CHILDREN 18 YEARS AND OVER

	Male	Female
Student	6	9
In Farming	9	1 4*
Outside Farming	11	13 10*
Part-time Farming + Outside Employment	4	0
Part-time farming + Student	2	0

N = 69

* Females Employed as Housewives

Conceptual Framework and Future Directions in Research

The results reported upon here are preliminary. We are now completing our data collection and beginning our analysis. These activities and future research will address the issues raised in this report. However, it is important to do more than relate research results to a set of diverse issues. A general conceptual framework is required to guide in the analysis of the data now in hand and provide direction for future investigation. The concept of adaptation can offer such a general framework. For our purposes adaptation refers to the process by which individuals and groups relate to their environment. One aspect of the adaptive process includes the gathering and evaluating of information, isolating potential outcomes, and deciding upon alternatives which offer the possibility of achieving these outcomes. Another aspect of the process involves the behavioral manifestations of the alternative courses of action selected. In order to interpret the behavior of farmers it is necessary to investigate both aspects of the process of adaptation.

Our data gathering activities have primarily focused upon the behavioral manifestations of the decisions made by farmers. At present we have information which describes the socio-economic situation of the smaller farm families at one point in time. The concept of adaptation implies that time is an important variable and must be related to the behavior observed. Therefore, we plan to add some time depth to our study. We will be gathering information on the life histories of the farm families, constructing geneologies for the farm families interviewed, establishing land tenure patterns for the county, and investigating patterns of recruitment into farming. Our aim in so doing is to gain understanding of how farm operators acquire their

land and how land is handed down from generation to generation. This should also contribute to our knowledge of factors that restrict entrance into farming for both the children of farmers and persons presently outside of farming.

Farmers obviously do not act alone or in isolation. Their behavior must be related to the community and regional setting to better interpret their actions. We are working on developing techniques for conducting a network analysis of the flow of information, goods, and services that relate to the farming operation. We are particularly interested in the farm operators' access to credit. We want to determine if there is differential access to goods, services and information which could contribute to the current position of smaller family farms. In addition, we will look more closely at the institutional structure of the county to determine how the various farm related organizations and agencies impinge upon the farm operator.

We have begun to isolate the alternative courses of action used by the individual operators. With the aid of agricultural economists and specialists in farm management we will isolate other alternatives open to these farmers. Later we will compare and contrast these two sets of alternatives to determine where there are discrepancies.

All the information we have thus far proposed to collect is related only to the behavioral manifestations of farmers' decisions and not to how these decisions are made. We have not yet discussed one aspect of the adaptive process, that of the farmer as an actor gathering and evaluating information, isolating potential outcomes, and deciding upon alternatives which will permit him to achieve these outcomes. In our future research we will attempt to isolate the dimensions on which farmers base their decisions and the reasons why they select some alternatives over others.

We believe that the research plan outlined above will make important contributions to the farming community. Specifically our research can serve the following people and interests: (1) Policy makers may use the information to evaluate the responses of farmers to current programs and changing social and economic conditions. This could facilitate the assessment of the effectiveness of programs and assist in planning new programs. (2) Personnel from governmental and business organizations who provide information to farmers can use the research results to evaluate the management practices of farmers and isolate new types of information that might be useful to farm operators. (3) The data hopefully will contribute to our understanding of small scale, family operated farms. (4) Finally, the methodology developed in this research might be successfully utilized in other settings to investigate the socio-economic aspects of agricultural production. We hope that the research thus far completed and our ongoing research efforts will add to our understanding of the problems faced by smaller farmers in California. We trust this information will be found useful by other scholars, policy makers, and the farmers who have so willingly contributed their time to our study.

NOTES

¹There were several sensitive questions that related to income in the research instrument. We therefore arranged the questions so that the more sensitive questions were asked near the end of the interviews (the number of interviews ranged from two to six). It is interesting to note that several farmers stated that they would not give income figures when we first contacted them, however, when we reached the income section of the instrument nearly all of the farmers cooperated. Even if willing, it was difficult for many of the farmers interviewed to state their exact incomes. Although their bookkeeping procedures varied greatly, from receipts and records in cigar boxes to hired bookkeepers, in most cases their records were inadequate by farm management standards. If the farmer was willing to look up his tax return, he could indicate the amount of money he paid taxes on but any finer breakdown of expenses relative to income by crop or income producing activity was difficult. The farmers interviewed responded in various ways to the questions relating to income. Unfortunately there was no standard response we considered acceptable and we are now confronting the problem of standardization of responses for comparison.

²This research is part of a larger project coordinated by the Western Rural Development Center headquartered in Corvallis, Oregon. There are five states participating in the regional project. In the initial planning phases of the regional project it became apparent that the specific variables to be investigated were different for the California and Washington research populations. While the other states were dealing with workers in the industrial and agricultural labor force, the California and Washington projects were investigating small scale entrepreneurs. Despite the differences in the research populations in each of the state projects, an attempt was made to construct a research instrument which could be applied to all of the field sites. We found that some of the questions being asked were not particularly useful in aiding our understanding of the adaptive strategies of farm operators in Colusa County. We also found that the responses to questions we were not asking in a systematic way would have been useful in our analysis. We are now in the process of identifying a smaller set of variables that appear to bear on our understanding of the socio-economic adaptive strategies of small farm operators. We plan to administer this new set of questions to a larger sample of farmers with the aim of gaining a better understanding of the process of socio-economic adaptation. Thus, the initial instrument did prove quite useful in isolating the differences and similarities between the various research populations in the various states and in guiding the development of the research approaches discussed in this report.

³Colusa County was selected for study largely because there were few alternative employment opportunities outside of farming. It was hypothesized that adaptation to socio-economic change could more easily be observed in the absence of a large variety of supplementary income success.

⁴The following types of adaptive strategies were isolated from our initial sample of 30 farm families: full-time farmers (11), mainly farming with limited custom work (4), custom work with non-farm employment (1), only custom work (1), mainly custom work with limited farming (1), custom work, farming, and non-farm employment (1), farming with non-farm employ-

ment (3), retired farmers (7), and persons out of farming altogether (1). One of the major difficulties we have had in analysis is the large number of different mixed adaptive strategies. As the sample size increases we hope to discover patterns in these strategies, but this may not be possible given the variety we have thus far encountered.

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