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# Investigation of the Social and Economic Aspects of a Tenure and Production Program in El Salvador



**INVESTIGATION OF THE SOCIAL AND ECONOMIC  
ASPECTS OF A TENURE AND PRODUCTION  
PROGRAM IN EL SALVADOR**

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INVESTIGATION OF THE SOCIAL AND ECONOMIC  
ASPECTS OF A LAND TENURE AND PRODUCTION  
PROGRAM IN EL SALVADOR

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## CHAPTER I

### SUMMARY

Section A: Statistical Highlights of a ₡25,000,000  
Land Purchase/Tenure Program Based on  
the Average Experience of Dr. Burgos'  
Farm Survey

Section B: Results and Conclusions

Chapter III: Results of Sociocultural Field  
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Chapter IV: Numbers and Living Standards of  
Target Group(s)

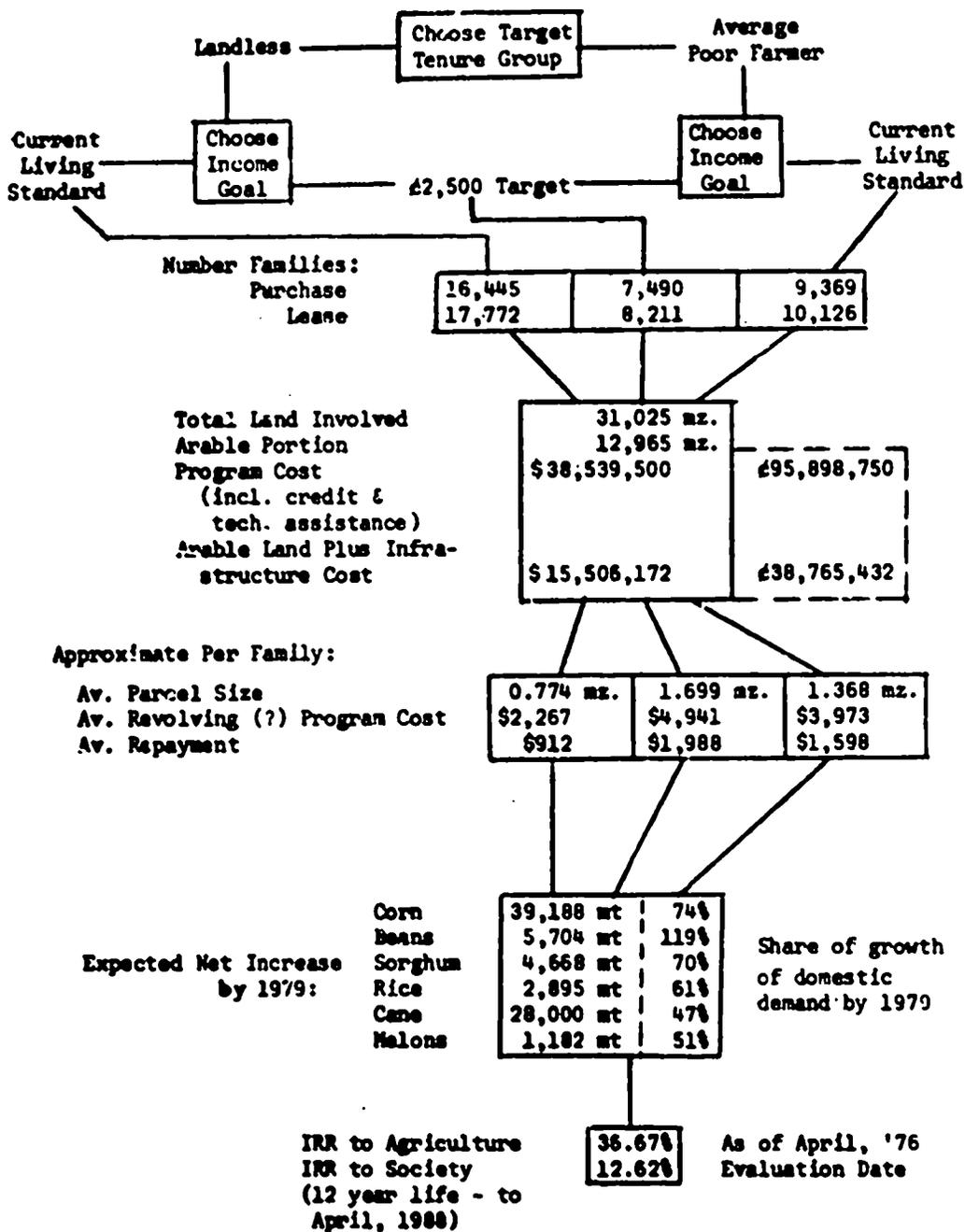
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Observations on a Land Purchase/Tenure Program

Section I-A:  
Statistical Highlights of a \$25,000,000 Land  
Purchase/Tenure Program Based on the Average  
Experience of Dr. Burgos' Farm Survey<sup>1</sup>



Section I-B:  
Results and Conclusions

Chapter III: Results of Sociocultural Field Survey

1. In El Salvador, compared to other countries of Latin America, even the landless peasant, poor as he is, is not bound by tradition; he is open to change; he is mobile or potentially mobile; he is ego-centered, industrious and enterprising. But he is extremely insecure and anxious about subsistence and, in some cases, hunger. Without social security institutions like those found in other peasant societies (extended kinship and community reciprocal relationships), he is destitute. This is frequently critical, as it is this year, toward the end of the long dry season. While no evidence was obtained in this study (nor was it sought) of open political unrest or peasant movements, this economic condition with its potential political implications, is acute in some areas.

2. Only minor aspects of any current development programs have any real impact on the rural very poor. Nothing works in their favor. Given the current tenure situation in El Salvador, it is impossible for even the most perfectly "tailored" small farmer program (credit?), linked to the best of all "delivery system", to do anything for the large number of families which do not have access to land!

It seems to be critical that every family have at least one or two manzanas to insure subsistence, eliminate hunger, and reduce the actual or latent anxiety and hostility of the poor campesino. Beyond this, the farmer can, and most frequently does, rent or buy more land, when he can,

to become enterprising and more productive. Land, in small parcels, should be made available to the ever-increasing landless in El Salvador. The landless farmer will respond to this incentive.

3. Improvement in the lot of the tenureless and *colonos* cannot be expected given current economic and social forces; the opposite will be the case. Some families, technically property owners, are really little better off than any agricultural day-laborers. Instead of improving, the tenure picture is deteriorating and the peasants' rights to the fruits of the land are becoming more insecure. The operational effect of the law governing agricultural land rental agreements is to replace whatever historical security families had to work land with greater and greater insecurity. It will turn greater and greater numbers of family heads into mainly day-laborers (*jornaleros*) and throw rural families ever more onto their own resources. The rise in rents and land prices is relentless, how can the poor compete?

4. *Jornaleros* have no subsistence security but, even worse, the meaningful work they do is related almost wholly to commercial crop operations; success of these operations in turn depends not only on domestic weather conditions, but also upon the whims of international markets and prices.

5. Rural poor families have considerable knowledge of the benefits of simple, modern cultivation techniques but can seldom employ such inputs as fertilizers due to lack of operating capital or loan collateral. Any land parcellization can take immediate advantage of such knowledge. The poorest *jornalero-colono* families have little experience with cooperation but, in connection with a tenure program, they would be willing to form

such groups if they could trust the leadership. In turn, if such groups loan inputs or can guarantee production loans the established credit sources may prove adequate with minimum adjustments for program purposes.

#### Chapter IV: Numbers and Living Standards of Target Group(s)

1. We estimate the current number of tenureless, rural, agricultural dependent families to be about 100,000 or 25% of all rural families. These families make up a clearly defined target group. However, it must be borne in mind that a tremendous additional number of families are also quite insecure in tenure and access to fruits of the land so that a much broader definition of target group could easily be constructed. For example, there are over 40,000 *colono* families.

2. Among the very poor, family savings are minimal or nil. Value of the annual living standard for the landless, for example, varies somewhat according to family size, but averages about ₡900. This estimate makes some allowance for small amounts of food grown on garden plots (*huerta familiar*). Actual cash income ranges from ₡600 to ₡1,200. Poor families that have more land to work, such as some *colonos* or some small renters, have living standards valued from ₡1,800 to ₡2,600 per year. Families that have access to 3 or more manzanas do not have to be classified as poor, they have living standards ranging up to ₡5,000 or more. These latter families often must hire labor, they cannot handle their operations within their families.

4. Assuming that the proposed program will provide access to modern farm inputs, any tenureless families will have to receive about 0.8 mzs.

each in order to obtain at least their current average income plus some incentive increment. Other poor tenure groups would require 1.5 mz. or more. Thus, in general, for the same unit outlay for lands, twice as many *jornalero* families can be absorbed as compared to any other tenure groups.

#### Chapter V: Results of Inspection of Lands Offered for Sale and Program Size

1. An agronomic/engineering survey of lands offered for sale (May, 1975) revealed: a) all the properties are currently underutilized; b) some have irrigation potential; c) substantial portions of some parcels are not arable. For the purposes of this study, the average experience of the property survey is expected to hold for other potential land purchases. This is the most critical assumption of the study.

2. A ₡25,000,000 land purchase program would therefore involve about 31,000 mz. of land (13,000 mz. arable). If the participant families bear the costs of only the arable portion, they would have to amortize land and infrastructure costs of about ₡38,800,000. The general public would have to bear about ₡6,000,000 of the land cost.

3. Suitable cropping patterns were established by the farm survey team -- commercial crops were almost totally ignored since the whole parcellization concept must stand or fall on what can be done with basic grains. Allowing for the chosen crops the 13,000,000 mz. of arable land purchases could provide a living standard equal or better than at present to 16,400 *jornalero* families, 9,300 "average" families of other tenure groups or provide "target" incomes of ₡2,500 for 7,500 families (of whatever current tenure background). Therefore a land resettlement program

about six times the size analyzed here could be required to settle all current jornalero families. Somewhat larger numbers could be accommodated under a leasing (rather than sales) program.

4. For any land purchase program to reach a big percentage of *jornalero* families, some or all of the land tracts expected to be made available, must be "empty" of *colonos*, *arrendatarios*, or other non-*jornalero* family types.

#### Chapter VI: Program Impacts on Domestic Demand

1. We assume that a \$25,000,000 land purchase program is executed in stages such that the full impact of additional agricultural output is not felt until the 1979 crop year. At that point in time, 60% or more of 1975-79 growth in basic grain demand could be covered by output from the program, 74% of corn demand growth, 119% of beans, 70% of rice, and 61% of sorghum.

2. Since average yields from all existing farms may rise through time, there is some chance of creating exportable grain surpluses, but only a chance. If a program of the size studied peaks later than 1979, the likelihood of surpluses rapidly drops off. In addition, our demand forecasts are quite conservative so that we are probably underestimating the potential growth in the real market for basic grains.

3. The present crop output from the survey farms is relatively small. Large increases in production are possible. For the farms of the quality sampled, society will receive a substantial agricultural boost and the benefits can be used to repay land and development costs. This means that the lands must be selected with emphasis on currently underutilized parcels.

If well-managed, productive lands are parcelled, there will be much less economic benefit to the nation.

4. Given the survey team's cropping recommendations, the overall net annual increases in agricultural output that can be obtained from a ₦25,000,000 purchase lands similar to those surveyed are:

Corn	39,188 mt.
Beans	5,704 mt.
Sorghum	4,668 mt.
Rice	2,895 mt.
Cane	28,000 mt.
Melons	1,182 mt.

#### Chapter VII: Financial Feasibility

1. Two general benefit streams are considered. The first is based on the value of net change in agricultural productivity that has been estimated. The second data arrangement includes as a cost an allowance for the present value of participant families' economic activity; it attempts to measure the net change in social productivity.

2. From the overall social point of view, the rate of return from a ₦25,000,000 land parcellization program would be about 12.62% allowing 12 years for full investment recovery. Additional social benefit (and some cost) would be realized from third parties able to take over harvest-time employment vacated by program participants.

3. The average internal rate of return, considering only net increases in value of agricultural production would be 36.67%. This would be the return on the land and development without allowance for family labor, small tools, or any fees or taxes associated with small farm enterprises.

4. Our results are based upon readily achievable yields from the parcelled lands. This means that any "pool" of properties falling within the range of the characteristics observed during the farm survey stands a good chance of being economically viable. Better yields and better control over infrastructure costs would have a big influence on the rates of return that might be generated. But the biggest improvement would be brought about by excluding the expensive and hard to develop lands. These calculations take into account the level of infrastructure development suggested by the farm survey team. This amount is considerably less than the estimates made by ICR technicians nevertheless, even at this lower level, total infrastructure costs would just about equal land costs.

#### Observations on a Land Purchase/Tenure Program

1. The most important thing that can be done for the landless, poorest 25% of rural families in El Salvador is to give them access to land. Of course, there are many other rural poor, and it might be nice to have programs to increase their incomes -- but they at least have some current subsistence security.

2. In order for a tenure program to have maximum impact, the best thing is to forget target incomes and aim instead only for provision of at least current living standards. An absolute upper limit of 1 mz. per family (regardless of the situation) or no more land than 1 nuclear family can handle by itself ought to be given serious consideration. To reach target incomes of \$3,000-\$3,500-\$4,000 implies parcel sizes large enough to require additional, nonfamily labor, labor that must come from families with inadequate land resources. All such targets simply block

off the income and social mobility of those supposed to be the basic target group.

3. Money resources available to the Government of El Salvador would have more potential economic and social payoff if ploughed into land purchases rather than into almost any other investment. Some thought might be given to eliminating virtually any infrastructure development on purchased parcels. The purchased lands should be divided and allocated, not studied. Division of lands already in the hands of ICR (ISTA) could provide the impetus for a large acquisition and sales program. Various land tracts are currently on the market. Most of them are underutilized. What is available may not always be the best, but basic grains can be raised on a great range of land, if some fertilizer is available, and peasants would rather have bad land than no land.

4. Infrastructure, credit and other programs can come later. Very poor farmers get along without some of these items now -- they can continue to do so especially if utilization of their own lands is involved.

5. Underemployed farmers should be given the opportunity to participate in local, labor-intensive public works programs that will clearly benefit themselves -- small scale irrigation systems for example. Such participation, coupled with pride and security of land ownership will integrate a tremendous member of people into the overall development process -- it will make them real and effective citizens of the country.

6. There is no reason why a land distribution program cannot be self-supporting. All that is needed is availability of some modern inputs, and farmers can have a minimum amount of food security for their families. Let the farmers pay for land and inputs in kind if necessary, they are used to this system.

7. Prevent subdivision of original allocations. Families with large numbers of children must work out some system whereby only one family works the land after the deaths of parents. Do not let land be sold while the original recipients are alive. Prohibit subleasing by original recipients for more than 2-3 years out of any 10.

8. In the initial years of a purchase/sales program there is no need to compete for land now in commercial crops. By the same token there is no current need to buy and divide any well-utilized land -- such action might actually reduce agricultural output.

9. The basic products needed inside El Salvador are food crops of all kinds. Production and yields of such crops are not particularly more responsive to large scale operations. Therefore, small plot allocations to rural poor should not be resisted on the basis of some kind of general anti-*minifundia* argument. There is no good way to farm hillsides in a capital-intensive manner, in any case, so small plots are certainly not an issue on such sites. There also are no grounds for an efficiency argument based on relative capital/labor costs, where basic grains and vegetables are concerned.

Parcellization and land sales will increase, not reduce, agriculture output:

- a. Lands to be parcelled are underutilized at present (and there is no reason to expect that introduction of machinery rather than people would lead to better results);
- b. More families will be working for themselves;
- c. There is much room for further actual use of modern inputs that significantly increase yields even on small plots. We have no firm data on this point but our guess is that there is room for a minimum of a 40% increase in basic grains output based on the

already existing land and moisture patterns. There is also some irrigation potential and therefore more double cropping potential.

- d. All kinds of successful *minifundia* situations can be cited: Taiwan, Japan, China, and the Po Valley. What is necessary is to separate out those regions, soils and climate where subsistence agriculture (crops and annual fuel replacement) is possible from those sites or areas where a commercial approach is required before a single family can survive. Subsistence agriculture is possible in El Salvador -- it requires little fossil energy input -- the sun is enough.

However, population must be controlled or, inevitably, there will come a time when the *minifundistas* will be called upon to jack yields up another notch to create marketable surplus from small plots. This is the point where the system begins to fall apart. The challenge to the leadership in the agricultural sector is to do preparatory needed research: introduction of new basic food crops that can deliver more protein and other nutrients per unit area of land.

10. None of these observations constitute a threat to the pool of harvest-time labor so vital to commercial crop growers. Indeed, to the degree possible, all families who receive subsistence size land plots will undoubtedly continue to work the commercial harvests. If there is any "shortage" it will be temporary for the ranks of the general rural population grow fast enough to replenish the labor supply.

11. The real test of the will of government leaders to improve the lot of the rural poor in El Salvador cannot be measured by enactment of additional tenure laws; an amount of land nearly twice the size analyzed in this report is already in the hands of ICR (ISTA). These agencies could be strongly encouraged to get this land divided and sold. Even now, at one of these sites (Bola Monte), some parcels which will return

as much as \$5,000 gross income and which require families to hire labor are being distributed. Or, consider the second national irrigation district, Atiocoyo, which is scheduled to allocate parcels up to 50 mz. and emphasize cattle production!

**CHAPTER II**  
**INTRODUCTION AND ASSUMPTIONS**

### Introduction and Assumptions

This study has its genesis in some of the unanswered questions suggested by USAID/El Salvador intensive review documents: *Small Farmer Tenure and Production Program* and *Interim Report on the Proposed Small Farmer Tenure and Production Program* [19, 20]. The initial proposal was to focus a land parcellization, technical assistance and credit program on 10 to 11 thousand poor rural families. The key features of the planned financial arrangements were a \$25,000,000 Government of El Salvador bond issue to be used for land purchases, a dollar loan from the Government of the United States to various farmer credit agencies, plus a mix of United States/El Salvador financing for support and improvement of technical assistance activities.<sup>1</sup> One of the initial goals of the Government of El Salvador, as stated by middle level technicians in the *Instituto de Colonización Rural (ICR)*<sup>2</sup> was to purchase an additional 25,000 manzanas of private lands currently offered for sale.

The \$25,000,000 may or may not be adequate to purchase 25,000 mz.; the 25,000 mz. may or may not be adequate for 10-11,000 families. Thus, the overall aim of the research by Allen LeBaron Associates is to investigate the degree to which the twin goals stated can be simultaneously achieved.

It is not obvious that all the 25,000 mz. planned for purchase will be equally productive; this would have an effect upon the number of families

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<sup>1</sup>\$1 = \$2.5.

<sup>2</sup>Superseded on 8 July, 1975, by the creation of ISTA (*Instituto Salvadoreño de Transformación Agraria*) and the *Comisión Nacional de Transformación Agraria*.

that the program would reach. The higher the infrastructure costs per given piece of land, the greater the hectareage needed per family; this has the effect of lowering the number of participants. On the other hand, while no research is required for the assumption that far more than 10,000 families would like to receive secure claim to new land or improve on their current tenure status, we do not know if all families will fare equally well under conditions that might require a special sort of entrepreneurial drive or special forms of cooperation. And, finally, more resources will be necessary to shift an already relatively better off family relative to one that is poorer.

What we need is some classification of the poor according to current land tenure status and current levels of productivity before it is possible to estimate the numbers and kinds of families that may be accomodated within the resource constraints that will be inherent in any particular property that ICR might be expected to purchase (or be able to purchase).

Secondary data sources are not adequate to satisfy the above and other information needs. For example: what are the social and cultural characteristics of the rural poor? Will they respond to a tenure program? What services and training will they need? Is tenure really a big issue? Will they work together in cooperative ventures? Should some modifications be introduced into the program before too many nonreversible decisions are made?

In addition, we need agronomic and engineering estimates of the resource capabilities (and associated development costs) of any lands currently available for ICR purchase. With this information it will be possible to make some judgment of the program size and its potential impact upon agricultural production levels in El Salvador.

Our analysis rests on the primary information developed through two field surveys conducted in May, 1975. The first was a sociocultural study of the rural poor in all parts of El Salvador.<sup>1</sup> The second was a technical survey of a group of large properties which had been offered for sale to ICR.<sup>2</sup> The results, as presented below, are up-to-date, and may be adapted to larger or smaller programs than the one envisaged.

Primary assumptions which set the terms of reference for what follows are: a) the amount of money available for land purchases is \$25,000,000; b) if this amount is more than enough to purchase all the surveyed lands offered for sale to ICR, any residual is expected to be expended on more properties that have the same average characteristics as those surveyed; c) as a corollary, the pattern of recommended crops for the surveyed properties is carried over to any "extended" purchases.

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<sup>1</sup>This study was conducted entirely by Allen LeBaron Associates.

<sup>2</sup>This study was directed by Dr. Carlos Burgos, USAID/RDD/El Salvador, in consultation with Allen LeBaron Associates.

**CHAPTER III**  
**RURAL EL SALVADOR TODAY:**  
**FINDINGS OF FIELD SURVEY**

- Section A: Sociocultural and Social Psychological Analysis of Salvadorian Peasant Culture**
- Section B: Dynamics of Current Agriculture Sector Adjustments**
- Section C: Brief Notes on Rural Programs**
- Appendix A: Land and Water**
- Appendix B: Tabulation of Field Survey Results**

Section III-A:  
Sociocultural and Social Psychological Analysis of  
Salvadorian Peasant Culture

Dr. Gordon Keller

Methodology

The reliability of any study depends on several factors, but one of the most basic is the method of data gathering used in the research. Conventional anthropological field techniques were used in this study. These included intimate and intensive interviews of selected families (male or female members) conducted in their homes or in their fields. An interview schedule of 77 questions was used and specific answers recorded and tabulated. However, considerable amplifications and answers to open-ended questions were also obtained. Each interview lasted from one and one-half to two hours. In some cases, interviews included tours of the farm and lunch with the family.

A stratified sample of 58 families was selected from 14 major agricultural and livestock areas of El Salvador.<sup>1</sup> Three to six interviews were conducted in each area. From 5 to 30 kilometers separated the interview locations within each area. In each area, the interviewers chose families from the following categories:

1. *Propietarios* (land owners);
2. *Arrendatarios* (renters);

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<sup>1</sup>These areas were centered around: Ahuachapán, Chalchuapa, Sonsonate, Aguilares, Chalatenango, Cojutepeque, San Vicente, Zacatecoluco, Usulután, Moncagua, San Francisco Gotera, Santa Rosa de Lima, Tamanique and Atiocoyo.

3. *Colonos* (hacienda laborers);
4. *Arrimados* (persons or families attached to other families);
5. *Jornaleros* (day-laborers).

In addition to these family interviews, considerable information was also gained from informal discussions with extension agents, home demonstration agents, clergymen, large *finca* owners, medical personnel, and random inhabitants of several small pueblos. The total period of time utilized for preparation and conduct of the field research was one month (25 April - 23 May, 1975). The average age of the respondents was 44.2.

#### Salvadorian Rural Culture

Anthropology recognizes three basic types of culture: tribal, peasant, and urban. Some theorists would construct a paradigm of sociocultural change from these types and understand peasant culture as a transitional type, between tribal and urban. Thus, the peasant culture is a combination of the simple, traditional, tribal institutions and technology plus something of the urban culture or state society upon which it depends, to which it is appended, and by which it is controlled. While both tribal culture and modern urban societies are self-sufficient, peasant culture is not. However, before the invention of modern mechanized agriculture, ancient state societies were always dependent upon the peasant culture for its agricultural base and for much of its labor. Today, peasant societies are represented by many different combinations (and transitional levels) of the indigenous tribal culture and the modern urban culture of Asia, Africa, or Latin American countries.

Contemporary Salvadorian rural culture is a peasant culture, but it is strikingly unique. Compared to most other peasantries, the culture is

advanced in that there are essentially none of the elements of traditional tribal culture remaining unto the peasant, except its basic technology.<sup>2</sup> This study has found that the Salvadorian farmer in most of his personality characteristics and his social institutions is a very modern type of person. But paradoxically, he may be farming his land in about the same way his Maya ancestors did many years ago, he may live in the same type of home and he may be eating the same kind of foods. This is an important point for this particular study and will be developed later. This disparity in the development of the Salvadorian peasant is quite unique and produces some social and psychological consequences that should be fully appreciated.

Most peasantries contain aspects of their total culture which are more or less traditional (in Latin America, both Indian and Spanish) in all of their institutions, family, religion, values, and social integration, in addition to their techno-economic domain. In El Salvador, this is not true. For various historical reasons the campesino culture here is essentially de-traditionalized and, as mentioned above, advanced. Elements of this culture will now be discussed in terms of their socio-cultural characteristics, ignoring for the moment, this sphere of technology and economy.

### Kinship

As nearly as can be generalized from the limited sample of the study, it can be said that the rural family is a bilateral nuclear unit. There are no lineage characteristics or vestiges, if such ever existed in the past.<sup>3</sup> The family, however, is extended somewhat to include single daughters

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<sup>2</sup>It was found that all campesinos know of modern fertilizer, tools and machinery. Only the lack of capital restricts their use.

<sup>3</sup>Some isolated examples of wider extensive patrilineality were found in some remote areas, for example, Nahuizalco, near Sonsonate.

who have children or who are pregnant. In many cases in the rural area, a man may live with the daughter and attach himself more or less permanently, to his father-in-law's household. This man is called an *arrimado*. Thus, the household unit in many instances can easily become a "house of mothers" and have many features of a matricentric family.

While there are certainly legitimized, legal and religious marriages in the rural areas, marriage is somewhat rare [4, pp. 8]. People say they respect matrimony in the traditional sense, but they do not practice it. Therefore, the relationship between man and woman is a companionship. The resulting family structure, when and if it becomes more or less stabilized, we will call *familia acompañada*. In a great number of cases, sexual relationships are fleeting and numerous. The *machismo* complex certainly promotes this condition. However, most male respondents very frankly and openly say they do not want to get married because "they don't want to be bound" or "it is too expensive". (The latter reason has some economic logic to it, for conventional wedding ceremonies and parties are too expensive for most of these people.)

When and if a man becomes more prosperous as a renter or as an owner of property, he may have more than one *compañera* (multiple household). While many of these arrangements are probably temporary, some develop a degree of stability and, then a man may have, in effect, plural "wives" and plural households, sometimes even legitimizing his "other" children.

It can be readily seen that the problem of defining the family, the household, and family size may be difficult. This is also compounded by the fact that many households also contain secondary relatives, i.e., aged grandparents or grandchildren. Therefore, to know how many children a

person has, for example, does not give us a very precise knowledge of the size of his household. (For consumption data this could be important.)

To an observer from another social class or from another culture, it might seem that the campesino family is chaotic or loosely structured. This is not so. Certainly there are many failures, but in time the family unit which stabilizes becomes a strong unit: economic and psychic security make it so. There is little else in the contemporary rural society and culture for the very poor. Thus, regardless of the sexual syndrome so characteristic of this stratum of society, the rural family unit serves important economic and psychic functions. It is a tightly structured economic organization. Male-female division of labor is well-defined and complimentary. Every child, every member (young or old) has specific tasks and responsibilities. Everyday work activity seems to proceed in an orderly and effective way, in fact, everything appears to be handled willingly and pleasantly by family members.

This nuclear family, sometimes extended as previously described, is a closed system, quite autonomous and independent. Family relationships in the form of mutual assistance and social interaction rarely extend beyond this social group.

Within the household unit, on the other hand, social relationships are very close--sharing, aid, and respect are the rule. The mother especially seems to be the anchor point of the family; she is responsible, hard working, and a symbol of stability and security. Among the poorest of the poor, this is even more typical. The father, while hard working and fond of his children, seems to feel less responsible and often has sexual affairs and children with other women. Even after several years

of this close family life and after having had several children, he will express reluctance to legal matrimony when questioned.

#### Religion and world outlook

This study found that religion is of minor significance in the culture of the Salvadorian peasant. His attitudes and perspectives are highly secularized and pragmatic. While most informants answered that they attend church (or the "temple"), organized religion is of little relevance as an integrative institution either structurally or ideologically. Perhaps most remote farmers find it physically impossible to attend services. But more important than that is their lack of concern about religion and, on the other hand, the lack of involvement of religious denomination in the life and problems of the peasant.

It was found, however, that the peasant has a small body of folk beliefs highly relevant to agriculture, health, medicine, and foods. An example of this is his belief that one should plant only with a waxing moon and that one should store food only when the moon is waning.

Compared to most peasant societies, the Salvadorian is not constrained by traditional religious beliefs either Indian or Christian which often retard cultural change. One exception to this appears to be the reticence of Protestant members to accept birth control methods. At least this was frequently their expressed opinion. They opposed birth control on religious grounds.

In general, the peasant in El Salvador is about as secularized as corresponding levels of North American farmers, perhaps even more so. His world view is quite rational, utilitarian, nonmystical (naturalistic) and pragmatic--compared to most other peasant peoples.

As a corollary to the lack of a "web of social integration" both kin-based and community structured (to be discussed below) and a strong value for individualism, the average peasant sees the world as a very competitive, perhaps even hostile, environment. One indicator of this world-outlook is the widespread carrying of the machete--not as a work tool (for which it is mostly used) but at other times when it is carried symbolically as a weapon, or as a manifestation of self-reliance and *machismo*. Certainly the carrying of visible firearms, cannot be interpreted otherwise. Thus, it might be concluded that underneath the apparent disposition of sociability and harmony, of affability and courtesy, there is a latent hostility carried by the peasant towards his external, natural, and social world. Sometimes this surfaces in drunkenness, vicious machete fights and slayings. It is noteworthy also, that the military and national police commonly carry the machete as a symbolic weapon.

#### Social integration

Again comparing the Salvadorian peasant society with others in various parts of Latin America, it is quite unique in its lack of social integration. In the rural area, the only integrative structure is the autonomous family unit described previously. It is significant that family units are not linked by descent relationships which normally order mutual aid and reciprocal work or exchange relationships. Of course, in the lower strata, affinal ties (in-laws) are virtually nonexistent, or at least not patterned, due to the *acompañada* family system. This family unit is the economic and social unit. Beyond this there is relatively little social, economic, political, or religious structuring. Even soccer, so important throughout

Latin America in promoting community spirit, seems to lack the force to contribute much social solidarity within a locality.

Answers to questions probing the nature and extent of social integration indicated the lack of community orientation or integration of the individual as a social-psychological or a structural phenomena. Contrary to most peasantries, fiestas (religious or secular) are few and arouse only weak interest and involvement. Informants belonged to no social or recreational clubs. Only cooperatives (credit coöps or marketing coöps) captured many of the people interviewed. No evidence was found of any *sindicato* (labor) organization or any other kind of open peasant movements. (However, this topic was not specifically pursued as part of the questionnaire.) Rural people may have some degree of political involvement, however, for they generally answered "yes" to the question asking whether or not they voted in the last election. This, in the opinion of the writers, does not indicate very reliably strong political interest or involvement, however.<sup>4</sup>

In summary, Salvadorian rural culture has already made the social changes which usually precede or accompany modernization in peasant society. These involve a decline in local security systems, specifically widely-extended family relationships (reciprocal obligations) either on a consanguineal or affinal basis and the decline (or disappearance) of local community organizations which are essentially nonkinship. With the decline of these traditional integrative (social security systems) the individual is forced to rely more on his own abilities and resources and the nuclear family and on the wider national system (the market, the government, and

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<sup>4</sup>All the men who have completed their national service obviously recognize the name of the local "colonel" from among any list of local office seekers, or from among groups charged with organizing and conducting local elections.

other commercial enterprises). Moreover, he appears to be oriented towards these national institutions with a reasonable understanding of them and of the money economy.

Another important factor relevant to social integration, more or less unique to El Salvador rural culture, is the homogeneity of language. In contrast to so many other Latin American situations, there is no "Indian" language which has survived to identify a lower status social segment of the population. With only isolated exceptions, Spanish is the only language, and there are only minor social dialect differences. This unity of language is significant because language and dialect diversity could produce not only status differentiation but also barriers to communication and association. Diversity of language can also be a barrier to social mobility. In El Salvador social mobility and integration are enhanced by unity of language.

In a similar way, racial factors seem to be of little or no importance as status determinants in the rural culture. As a matter of fact, the racial composition of the entire population of El Salvador is remarkably homogeneous. The dominant physical type is universally the *Ladino* or *Mestizo* (White and Indian) with White features tending to be stronger in the higher socioeconomic levels of Salvadorian society (especially in the urban communities) and Indian traits being more typical of the lower strata, especially in the rural areas.

While Black genes are relatively scarce in the country of El Salvador, they are probably more common than most casual observers realize, especially in the eastern and southern areas. Again, *Zambos* (Black and Indian mixtures) and *Mulatos* (Black and White) tend to be concentrated in the lower strata, both rural and urban.

Thus, while some racial traits can be correlated with social classes, race per se, is certainly not a determinant of class or caste in El Salvador, as it is in several South and North American countries. Needless to say, racial factors, wherever they are sharply represented can be significant elements in social differentiation, segregation, and conflict. In El Salvador, this problem does not exist. Racial factors are of minor importance in the urban areas, and appear to lack significance entirely in the rural culture. They are not, then, socially disruptive in this country. Social integration and social mobility are thus promoted by this fact. Race, like language, will not operate as an element in the social structure of this country to inhibit either geographic or social mobility.

#### Value system and personality structure

It is possible to define some of the basic value and cognitive orientation of the rural people of El Salvador by means of direct questions and through spontaneous discussions in the interviews. Three dominant values emerged with total regularity: a value for land, a value for education, and (especially for the target group of this study, the landless), a critical value for subsistence security. It is therefore possible to construct a hierarchy of dominant values:

##### a. Land

Peasant people are people of the land; Salvadorian rural people are certainly consistent in this respect.

##### b. Rural life

Informants all expressed a strong value for rural life and a negative value for urbanism. It is a conclusion of the writers that most rural people who migrate to the city are "pushed" there, rather than "pulled". Converting more and more land to cotton.

sugar cane, and coffee has produced more and more tenureless people (along with higher land rents). Against their wishes and values these people are pushed from their rural way of life to the city.

c. Education

Not only are young people generally literate, but they and their parents express confidence and a positive value for education, both formal and technical. Many parents who can afford education for their children express the desire for their children to become professionals.

d. Subsistence security

For the landless, the small renter, and even the small owner, there is a serious concern for subsistence. For some, this is critical, because they have no land nor access to the land. Many of these are hungry people today. A minimum subsistence level is needed and asked by these people. Each would like, when questioned on this, one or two manzanas of land -- and this is for corn and beans -- not for commercial crops. The rural person seeks security in land.

e. Individualism

With a virtual disappearance of the traditional culture of the Salvadorian peasant, the individual in effect is emancipated.<sup>5</sup> However, this does not mean he is anomic (i.e., living in an acultural, asocial, more or less disorganized situation). With the exception of occasional drunken parties, life is peaceful, orderly,

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<sup>5</sup> Even the *compadrazo* system (god-parents) while still operant to a certain extent, is in effect nonfunctional.

and productive. This is due more to a high level of personal responsibility than to the controls of sacred and authoritative traditions or social institutions (which are nonexistent -- with the exception of the National Police). Structural social integration is weak.

Answers to specific questions indicate that the peasant is ego-centered, self-reliant, and nontraditional. There are no supporting institutions to help the person. He generally expresses the view that there is little cooperation in the community among neighbors, and, in fact, that they are competitive. He does not receive nor does he expect help from his secondary relatives or affinals. He is not collectivistic in his orientation.

f. Achievement-orientation

Economic and material goals appear to be far more important than other types of rewards or prestige (social, ceremonial, or altruistic). Wealth and ownership of land were readily expressed as things to be respected and valued. The first thing that the peasant wants is enough land for subsistence. When asked what else he wants, it is always more land -- for cash crops and thus self-improvement. All things point to this Salvadorian farmer as an enterpriser -- or a potential enterpriser. He is an entrepreneur. (Perhaps the *machismo* complex is a manifestation of this -- as well as an index of individualism.)

g. Mobility and adaptability

Without extended family ties, obligations, and sentiments, and without sacred or sentimental locality or community ties or ceremonial obligations, the rural person is actually or potentially mobile. In fact, due to good roads and cheap transportation, most

individuals have travelled in the country to some extent. Many travel as migrant workers to other parts of the country during periods of seasonal labor needs. In answer to specific questions about moving, most campesinos said they would move to other areas if land were available, that they would not find it difficult to adapt to other areas nor, in fact, find it undesirable to learn new agricultural techniques if this were necessary. It is worthy of note that almost without exception they do not want to migrate to the large cities.

h. Openness to change and modernism

While the peasant in this country is farming today using extremely primitive techniques and tools, he is aware of the modern technology. He uses bullocks and wooden plows, digging sticks for planting, and plants during a waxing moon. Yet, when he can afford it, he uses fertilizers, insecticides, and even tractors and airplane spraying. His agriculture and his way of life are essentially de-traditionalized and secular. He desires transistor radios, bicycles, and plastic gadgets. He has abandoned matrimony as a sacred institution, along with traditional quasi-religious fiestas and ceremonies, and now desires pumps for irrigating his crops. There are hardly any deterrents to change in this rural culture -- except the cash or credit needed to obtain the tools, artifacts, and houses of the modern culture. In the rural areas the miniskirt has been almost universally adopted by the young women and girls. Traditional dress has virtually disappeared in El Salvador with the exception of older adherents in some of the more remote villages or areas.

It can be safely generalized that the Salvadorian farmer has almost completed the transitional peasant phase of change toward modernism, socially, culturally, and psychologically. Only his limited resources, land and capital, are holding him back. He farms, by necessity, using the ancient technology. He lives in extremely poor, primitive, and dirty houses, by necessity. However, to the extent that he (she) is able, he will make improvements, dress well and be clean. This is another important sign not only of change, of modernism, but of personal pride, responsibility, and self-assertion.

#### Summary and Conclusions

The casual observer traveling through the countryside could very easily be incorrect in his assessment of the actual social, cultural, and psychological conditions of the Salvadorian peasant. Everywhere one sees the peasant working the fields with bullocks and plows, or in many cases without plowing, simply penetrating the ground with a digging stick and dropping seeds into the hole. One also sees the peasant family living in extremely primitive grass huts, lean-to's, or adobe houses, usually dirty and littered. And everywhere, even occasionally amidst the frenetic traffic of San Salvador, one sees the humble peasant leading his oxen pulling the traditional ox-cart. This is the typical picture of the Latin American peasant, a person who is usually highly tradition-bound, yet living by and dependent upon a modern urban culture. But this portrait of traditionalism and primitivism, so striking in its visible characteristics is not the true condition here. Compared to other peasantries, the

Salvadorian rural culture should be understood as an advanced peasantry, one with very few remaining traditional institutions and values, one on the brink of modernism.

The following are a series of short summary statements and conclusions resulting from this study of the social, cultural, and psychological factors of the Salvadorian peasant.

a. Advanced peasantry (de-traditionalized)

There are no significant traditional Indian institutional structures or values remaining in the peasant culture. Only some houses, tools, and agricultural technology (animal power and primitive tools) are traditional.

b. Modern orientation

The peasant has an understanding of modern culture and aspires to it. The smallness of the country, its good transportation, and radio communication have apparently caused a rapid replacement of old institutions and values and a relatively complete diffusion of technical knowledge.

c. Change orientation

The rural farmer is willing and eager to try or adapt new techniques and accept new ideas. Even women, elsewhere the most conservative, in El Salvador have abandoned traditional dress and are very modern. Men express a readiness to adapt to new farming methods, if need be. There are no apparent social or cultural barriers to change here.

d. Mobility

As noted above, these people travel and they are not encumbered by sentimental or sacred ties to a particular locality. They take

advantage of seasonal labor and move to other areas of the country temporarily as migrant workers. When asked if he would relocate in another area if land were offered to him, he always indicated that he was ready and willing to move -- even if he had to learn new ways of farming. One thing is certain, if offered land under any conditions, the landless peasant will move. And he would move even for one or two manzanas. The economic incentive, the value for land, and the critical anxiety level for subsistence security will be enough to induce the peasant to move to areas where land might be made available -- even a poor grade of land.

e. Competency and practicality

The campesino is a competent farmer. Travel and wage work have acquainted him with the benefits of advanced agricultural methods. He is not ignorant. He uses fertilizers, insecticides, and machinery when he can afford them. He understands the market and money economy.

f. Subsistence insecurity

The landless peasant (including the small renter and *colono*) is anxious about meeting the bare subsistence needs of his family. This means he needs (and desires more than anything else) land. He generally expresses the fact (when asked) that he would take one or two manzanas. On these he could support his family with corn and beans. In some places hunger was reported.

g. Unemployment and underemployment

This condition can only be roughly defined and quantified in this country. However, among the rural poor, during the late dry season perhaps 80% of the men are unemployed. This may be higher in some pockets. In one area studied, on the other hand, informants

said there was no unemployment (Tamanique). It should be noted that in this area almost everyone had property or adequate access to farm land.

#### h. Entrepreneurship and ambition

Most respondents reported that they would like to work more and that they would like more land. When asked what they would do if they had more money, almost all said they would work more land. One or two said they would become storekeepers. They are generally achievement-oriented and display initiative.

#### i. Autonomy

The campesino lives in a nuclear family and is highly independent. He has no external family ties, no functional *compadrazo* (godparent) obligations, and receives no help from friends or relatives. There is practically no cooperation nor reciprocal relations with friends or neighbors. So the individual has learned to be autonomous, self-reliant, and industrious. The wearing of the machete and the side-arm are interpreted here as symbolic of his personal autonomy. One might speculate that the strong *machiismo* complex here is also a manifestation of his personal autonomy, mastery, and desire for prestige.

This survey component was undertaken in order to empirically determine some of the values and sociocultural characteristics of the landless or tenureless peasants of El Salvador which might relate to a program of land redistribution and population relocation. Despite the fact that the work had to be accomplished in a very short time period and that the sample is small, we feel that the understanding gained and the conclusions offered in this report are quite sound. In anthropology, nothing is more reliable

than to obtain an intimate, first-hand knowledge of the subject matter, in this case, the peasant, his daily life, and his problems.

Section III-B:  
Dynamics of Current Agriculture Sector  
Adjustments

Percy Aitken, M.S.

El Salvador is the most industrialized of the Central American countries, but agriculture is still the largest component of the national accounts as well as the largest source of foreign exchange. At the same time, the agricultural sector is characterized by extensive seasonal unemployment. The only period during which practically all rural workers are occupied is during the peak harvest seasons for commercial (export) crops.

This country is typical of the double squeeze on agriculture in the developing areas: the rural sector in El Salvador has to make the effort to increase production of export crops to provide the country with badly needed foreign exchange and at the same time it must provide the food needed by a growing population. Production of the necessary volumes of *maiz*, *maicillo*, and *frijol*, basic for food consumption of the agricultural peasant and the lower social classes of urban residents, is becoming more difficult due to the large increases of population and the actual amount and productivity of the land dedicated to these basic food crops.

Participation of the Peasant in the  
Development Effort

We have visited with peasants in the rural areas and it is difficult to believe that they are aware of any development efforts. The largest

percentage of the rural population is poor and close to the level of subsistence. The rural peasant observes with incredulity and surprise changes in traditional patterns of land rent, increases in prices of farm inputs, increases in food prices, the greater scarcity of available permanent jobs, the growing number of people in need or unemployed during the off season of the commercial crop harvests, and the rising prices of land.

The average peasant caught in this turmoil of change would like to be part of it and is willing and has the capacity to be an active member of society but he is limited by meager income and few opportunities for improvement. The peasant in general wishes to improve his standard of living and hopes for a better future for his children but finds that he is not prepared to face the changing world that surrounds him. In most instances, although he is an excellent farmer, he is illiterate. His hopes for a better life for his children are in giving them a better education, and he will sacrifice to send his children to school.

Most campesinos have transistor radios and are up-to-date with the national news. He has strong nationalistic and patriotic sentiments, but development objectives are difficult for him to understand because he does not identify them with his own dominant value orientations, which are based on the ownership of a piece of land regardless of how small it may be. He sees an ever widening gap between his aspiration for land and security and the reality that he lives.

The number one problem in El Salvador relative to increased economic and social participation through increased production of the rural poor is not lack of entrepreneurial spirit but the frustration and insecurity created by lack of available land and consequent limits on income.

## Land Tenure Pattern

A minority of the population controls an unequal share of the land through property rights or other methods. This inequality creates not only differences among the types of farmers but also cultural differences and (value) differences between the landed and the landless. If there is no institutional arrangement by which the value orientations and life objectives of the two classes are brought together, a polarization can occur. If this polarization reaches extreme degrees, social stress and unrest must be expected.

The systems of land tenure define the interrelationships among persons in the use and occupancy of the land. These interrelationships are the central feature in the social organization and the economic system in nations that rely on agriculture as the base for their existence and survival. The different groups identified in El Salvador in regard to the use and occupancy of the land are the following:

Proprietarios: large, medium, and small

The proprietors are characterized solely by having property rights to the land. It would be inaccurate to assume that this group employs homogeneous technology or that it is a homogeneous group. The main difference among the three subgroups is that large proprietors either rent their lands or work them with a system of administrators or managers who utilize hired help (peons).<sup>6</sup> The medium proprietors work the land

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<sup>6</sup> Many large nonrented holdings are not farmed intensively. Indeed, probably few are. Large owners have no desire to work labor-intensive crops because, once on the land, it may be difficult to get the peons to leave. It is easier to rent to a bigger, single, commercial operator or to partially utilize the land (a few cattle feeding on wild brush) in a manner that will sidestep legal requirements for forced rental of under-used parcels.

along with hired help (peons) but this is under the owners' direct supervision. The small proprietors work the land themselves or with the help of their immediate family. Big landowners use machinery and very up-to-date technology to raise commercial crops; the small landowners use only fertilizer and insecticides combined with simple energy sources to produce traditional food crops.

Arrendatarios: commercial firms,  
medium size, and small size

Commercial renters are those who rent land for cane, cotton or other commercial crop production. Often they choose not to own land or be responsible for peon tenants (*colonos*). Cotton or cane growers are organized into producer organizations that control production to various degrees. Modern, energy-intensive techniques are employed where possible. Nevertheless a supply of human day labor is important, especially at harvest time.

Some rental arrangements are quite stable but, in general, the rental market is quite active, especially among the smaller operators. In extreme cases, such as exist in the Zapotitán Valley, a renter family will be on a different piece of land from year to year.<sup>7</sup> It may be taken for granted that the competitive nature of the rental market is such that renters, especially the smaller ones, cannot capture any windfalls for themselves. This is shown by the fact that the rent for the same parcel of land sometimes varies depending upon the use to which it is to be put.

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<sup>7</sup>This is one explanation for the apparent statistical contradictions in agricultural census data reported by Madsen [10]. Actually, on average, probably the shifting more or less balances out so that the census data are not especially unreliable.

Until recent times, medium and small renters seldom had a written contract [12, pp. 106]. This situation discouraged voluntary investment in the land or a rebate to renters of an allowance for any such expenses at the end of the contract. [The government has since enacted the *Ley de Arrendamiento de Tierras* which is supposed to legalize all aspects of the land rental system in order to increase production and improve land conservation practices.] The most attractive rentals are in larger blocks that can be farmed by well-capitalized commercial operators.

Among small renters and landowners, the system of rent payment in kind (% of crop) is called *aparcería* and the rent itself is called *censo*. This is the most common system of rent in use. The percentage of crops to be paid varies from place to place and it is difficult to assume or generalize a figure.

#### Colonos

This group of very small farmers is characterized by having a contractual (legal or verbal) arrangement with a landowner (patron). They differ from small renters in two aspects: 1) *colonos* are given a house or a space to build a house within the boundaries of the landowner's domain (a certain amount of land is also allocated); 2) it is compulsory for *colonos* to work if the landowners call for their services. In this way, the landowner receives a rent in cash or in kind for marginal lands and secures the availability of labor for his enterprise.

#### Others

Other types of arrangements cover additional families which work the land or participate in the fruits of it.

Jornalero.--These are day-laborers or farm hands who are paid cash for their work. Except for small areas around their houses, they do not work the land for their own benefit.

Arrimado.--These are persons who individually or, as a family, attach themselves to other farm families. They help with the chores and in payment receive some food, shelter, and economic protection.

Usurpario.--These are squatters who, without any formal or informal arrangement, exploit land to which they have no legal rights.

In our field survey, we encountered only a few true *arrimados*, so we include their answers with those of *jornaleros*. A separate classification is not important. Even less important is a classification for rural *usurparios* --there are none except on unguarded properties. Undoubtedly there is theft from either underutilized or well-utilized lands, but there is also a risk of being shot.

The key differences among the 4 groups described above are summarized in Table 3-1.

Table 3-1. Subsistence and Tenure in Rural El Salvador

Tenure Group	Landed	Right to Work the Land	Security of Some Or All Subsistence Income
<i>Propietario</i>	Yes*	Yes	Yes
<i>Arrendatario</i>	No	Yes	Yes
<i>Colono</i>	No	Yes	Yes
<i>Jornalero, etc.</i>	No	No	No

\*Due to miniscule sizes, clouded titles and other factors, many are pseudo-owners or *propietarios-jornaleros*.

Tenure, rents and competition  
for land

The tenure pattern in El Salvador is not static. Between 1950 and 1961, the number of *colonos* reportedly increased by 50,000 [12, pp. 112].<sup>8</sup> An even larger increase occurred among absentee owners who more and more began to rent their lands instead of working them directly [12, pp. 112-115]. Except for our prediction of a reversal of growth in the number of *colonos*, this trend persists. It is made possible by high land rents and the desire of landowners to avoid the risks that agricultural work involves.<sup>9</sup> This absenteeism of landowners becomes not only a physical absence but a cultural absence and destroys any traditional institutional arrangement that may have existed for social communication between peasant and patron.

The land renting business in the last decades became profitable due to better technology available to renters. This pushed rents to higher levels. The renters, on the other hand, preferred to rent land which was free of "*colonos*" and wanted no "social obligations" attached to the rented land. As a consequence, and as the demand for more extensive cultivations in certain crops (cane, cotton) increased, the proprietors started selling small plots of marginal lands (one half to one manzana) to the old *colonos* on the borders of the *haciendas*, thus liberating the main lands from social obligations (while reducing the number of families that technically could be classed as *colonos*). These economic trends

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<sup>8</sup>This appears to be a liberal estimate.

<sup>9</sup>Rents are so high in the one quite developed irrigation district, Zatotitan, that even owners of a single manzana are absentee [8].

have increased the number of very small proprietors, and has the effect of turning *colonos* into *propietarios-jornaleros* or wage earners who, despite their proprietorship, must face the insecurity of living off a wage and of not producing enough of their own food. This effect coupled with a growing population of "regular" *jornaleros* has created in the rural area of El Salvador a mass of migrant wage workers. The size of this group will continue to increase as more efficient technology is available to the land renters and as the demand to rent land for extensive cultivation increases, and land prices are driven higher. Since the advent of the rent law, more and more poorer lands are rented at prices which rise at more or less the same rate as for better land.<sup>10</sup>

The general increase in renting operations can be readily substantiated by figures presented in the second agricultural census and in various other economic studies of agriculture in El Salvador [12, pp. 112]. The most important rented lands are dedicated either to sugar cane cultivation, cotton or other types of extensive annual crops. Coffee lands are seldom or never rented. They provide the economic foundation of the country's aristocratic high income class. Some renters supplement basic grains with vegetables. Other rent pasture. Small proprietors and *colonos* dedicate their efforts almost solely to the production of *frijol*, *maíz*, and *arroz* (most of it for subsistence [80%] and some for the market [20%]).<sup>11</sup>

The *Ley de Arrendamiento de Tierras* is aimed at protecting the proprietor from misuse of soil resources by renters and also to protect

<sup>10</sup>As an example of rising values, land in Sonsonate worth about \$3,000 per manzana in 1971 is now worth \$5,000 [22].

<sup>11</sup>Among a sample of vegetable growers, the marketed portion of basic grains is 10% [11].

the renters' investments on land improvements. Although the aims are laudable, the person that is suffering the law's consequences is the very small renter, often illiterate, who does not understand the law. The extension agents who are supposed to execute and supervise the law, distrust it or its effects. The law is greatly antagonizing the small renter and will probably antagonize the proprietors. The area of land rented for small *explotaciones* will be diminished and this will have a direct effect on the supply of basic grains in the country and increase the potential for hunger.

The truth is that land is becoming increasingly difficult for the small operator to rent, since he is outbid for the "better" (suited for commercial crops) land, fertilizer and other input costs are very high and worse and worse land is being offered. If, in addition, the ranks of *propietario-jornaleros* are being swelled there is a definite threat to the supply of basic grains which is going to create conditions of social unrest in the country, especially among the landless.

It seems that the government has seen the possibility of unrest and has put some effort into organizing peasant leadership under the guided umbrella of government-sponsored "communal associations" which claim the leadership of the peasant population. Where these organizations exist, they have displaced any natural leadership and their presence has made the peasants more aware of the need of creating their own leadership. This may not be an open reaction but a marked distrust of the government-sponsored leadership can be sensed.

In some cases, we have heard the claim that *usurparios* are the potential organizers of peasant movements. We have not detected any evidence

of squatters in the areas visited. It is our understanding that, historically, most of the squatting was confined to the Salvadorian territory which was the object of the international boundary dispute. As far as we can determine, many of those squatters are still in the same area and have never really affected the established landowners in El Salvador.

#### Rural Underdevelopment

It is difficult to make estimates of underemployment for the whole rural sector because conditions vary a lot from one area to another. But it can be stated that all the small "*propietarios*", "*arrendatarios*", and "*colonos*", who have access to land work on the land approximately six months from April through September. Then they increase the numbers of job seekers or *jornaleros* during the months of October through April.

It is estimated that one-fourth of rural families of the peasant population of the country have no right to the land [Chapter IV]. These people are constantly looking for jobs. This group plus the number of seasonally unemployed *propietarios*, *arrendatarios* and *colonos*, form the supply of agricultural labor.

This very large supply of peasant migrant labor has fostered a multitude of wage levels. Although the government has fixed a minimum agricultural wage of ₡4.75 per day (allowing for meals) to be paid for a seven day week (including the nonworked Sunday), the only *explotaciones* that pay the legal wage (including an allowance for food) are the *haciendas* or large proprietors, and the commercial renters. All the other types of enterprise make agreements that exploit the scarcity of jobs. The lowest wage level found in the areas visited was ₡1.20. Other arrangements

encountered included no wage with only the right to live in a palm hut with the title of watchman (*quidador*).

It is estimated that there are close to 400,000 peasant families in El Salvador. Of this total, 255,000 are small owners and renters. There are around 40,000 *colono* families. A large share (say, 70%) of both of these groups have meaningful employment no more than 8 months per year. This would leave 100,000-105,000 day-worker families whose meaningful employment hinges on the harvesting seasons of export crops. This season lasts about four months. If wives and children, capable of working, are added to these figures there is about 1,250,000 potential migrants from the very poor families. To this must be added some children of the better off farmers and all the young people from the rural villages. Therefore, in total, there is about 1,800,000 migrant wage earners in peak periods.

The migrant population have definite patterns of movement and arrangements have been institutionalized by the peasants to ease problems related to temporary abandonment of their homes. Some areas specialize in supplying harvest labor for certain crops. For instance, the peasants of the following areas leave their homes to harvest the crops shown.

<u>Origin of Peasants</u>	<u>Crop Harvested</u>
Ahuachapán	Coffee
Chalchuapa	Cotton & cane
Aguilares	Cotton & cane
Chalatenango	Cotton & cane
Cojutepeque	Cane
San Vicente	Cotton & cane
Zacatecoluca	Coffee, cotton & cane
Usulután	Coffee, cotton & cane
Moncagua	Coffee, cotton & cane
San Francisco Gotera	Cotton & cane
Santa Rosa de Lima	Cane
Taminique	Coffee

As part of the effort to gauge the degree of rural underemployment, we have tried to establish exact flows or routes of seasonal migration but this will require a separate and more detailed study. We can suggest, nevertheless, that there are concentric migration patterns east and west of the Lempa River. Seldom will migrants cross this natural barrier. The concentric flows of migration will start in the north, increase greatly as they move southward. They are reinforced by small south to north flows. Then the flow turns north again, decreasing as the peak of the season passes, to end again in the north.<sup>12</sup>

Based on the reasoning above, plus answers to survey questions, we estimate rural unemployment in the semester of April to September at 50-60%.<sup>13</sup> During the months of October to February, there is full employment. 80% unemployment is the rule during the months of March and April.

In the months prior to the harvest season of the commercial crops, the peasants pushed by hunger will supplement farm products by gathering edible flowers, leaves, fruits and roots of different plants very much in the manner of their Maya ancestors. Some of these plants are:<sup>14</sup>

Motate or Pinico (*Bromelio Pinguin-Bromilacea*)  
 [April-May-June]  
 Hierva Mora (*Solanun Nigrum-Solanacea*)  
 [Year-round]  
 Chipilin (*Crotalaria Vitellina Kerber-Papilonacea*)  
 [Wet soils - year-round]

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<sup>12</sup>The season for the coffee harvest is the months of November, December, and January. The season for the cotton harvest is the months of October, November, and December. The season for the sugar cane harvest is the months of December, January, and February.

<sup>13</sup>About 2/3 *jornaleros*, the remainder are *propietarios-jornaleros* and *colonos*.

<sup>14</sup>The scientific names were provided by our most capable friend, Ing. Agr. Julio A. Hernandez [letter of May 26, 1975]. We are most grateful for his professional and patient assistance.

Flor de Izote (*Yuca Aloifolia* Kanst-Liliaceas)  
 [April-May-June]  
 Malanga (*Colocacea Sculentan-Aroidea*)  
 [Twice yearly]  
 Madre Cacao (*Gliricidia Maculata-Papilionacea*)  
 [October-November]  
 Pito Flower (*Erythrina Corallodendron-Papilionacea*)  
 [April-May-June]

Other flowers, leaves, roots, and fruits are gathered for their food and medicinal value. But the list would be too long and difficult to enumerate in a report of this type.

#### Standard of Living, Aspirations and Frustrations

The Salvadorian peasant knows what the market offers in clothing, housewares, etc. But he is unable to acquire those goods even if he wishes them because his income may not permit it. We have emphasized the Salvadorian peasant's knowledge of fertilizer and advantages of modern inputs, but he often (especially this year) is unable to afford them. The poor peasant does not have a margin of saving and if savings are made it is only at a real sacrifice of current consumption and sometimes hunger.

One of the dominant value orientations of the Salvadorian peasant is education. The peasant is willing to go to great lengths to educate children until they finish high school in the hope that the sacrifice will lead to a better standard of living for them. We observed in many areas (but especially in Sonsonate) that high school graduates are working as clerks in stores. They work without compensation, in order to eventually receive a "certification" or "reference" of capacity, character, honesty, etc., that will open up future work. We saw a case in which a girl was

working without a salary for three years. Managers of different businesses take advantage of this shortage of jobs and exploit the free labor of poor, young, and aspiring people.

These examples suggest two main ideas. Such practices are creating a class of frustrated people whose frustration will be proportional to the degree of original aspiration and the degree of actual achievement. This means there should be a reassessment of the real need of "12 year" literacy for economic development. The government has created a lot of expectation and aspiration for education which has been highly internalized by the peasant, but does nothing to guarantee or regulate a minimum salary or reasonable compensation for high school graduates. Under these conditions, people whose aspirations have been inflated and whose achievements are zero will be hard to deal with.

It is difficult enough for the peasant to accept his actual standard of living while he is bombarded by the mass communication media, but it is much harder to accept it if one has invested 12 years in getting an education with little payoff.<sup>15</sup>

The Salvadorian peasant classed as a "*propietario*" or a "*colono*" at least has a guaranteed subsistence regardless of the degree of frustration that he may bear. But the frustration of the *jornalero* is compounded by the fact that he must add to it the fear of not finding a job. Since the demand for *jornaleros* is mainly created by the *explotaciones* that raise export crops, the welfare of this landless group of peasants is tied to the conditions of the international market as well as to "good or bad" domestic harvests [Figure 1].

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<sup>15</sup>Peasants complain that rural school operation is inflexible and it is hard to return children to school after they have been withdrawn to help the family meet some peak labor need.

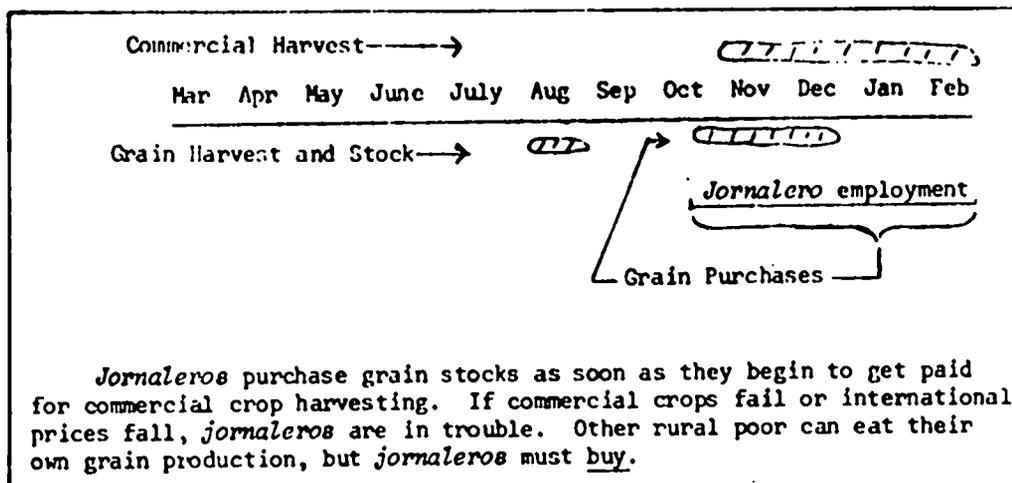


Figure III-1. International Crops and Tenureless Poor

Any scheme of agrarian reform should be aimed principally to *jornaleros* who will be the first affected by a crisis and the first to fight for the right to subsist. Current policies which tend to swell the ranks of the landless ought to be weighed very carefully for the problem of providing subsistence security to this class is being compounded.

#### Section III-C:

#### Brief Notes on Rural Programs

#### *Servicio Nacional de Extensión*

Our survey was conducted with the assistance of local agents of the *Servicio Nacional de Extensión*. Agents were requested to preselect families from the various tenure groups. We did not always rely upon their selections, preferring, in some cases, to choose our own. Nevertheless, there is no doubt that we tended to be brought into contact with the families the agents were working with. Thus, our observations may be biased by the procedure followed.

The agents nearly always seemed to know many people and to be respected and liked in return. They often knew *jornalero* and *colono* families. From this we formed the impression that the agents are working with the lower as well as the middle strata of the rural poor.

The agents are knowledgeable about local conditions, farming methods and have opinions about needed improvements in the lives of the poor. They appear to have passed on knowledge of improved methods in basic food crops because such knowledge is widely diffused. Several farmers stated that their yields were good (64-70 qq/mz maize) "because we follow the recommendations".

Agency offices appear quite well-organized. Each agent has an up-to-date work plan and advance schedules of activities.

Many agencies have home economists or nutritionists attached. We had no opportunity to judge the effectiveness of these technicians, but they represent an important resource for success of any rural program.

Communication links between most of the agents and the central headquarters are very good. The organization is well-disciplined and effective control of all operations appears to be the normal situation. There is some turnover of agents due to the low salary structure and operating budgets undoubtedly could stand some improvement. Some agents do not have mechanical transportation, but they can ride buses or walk throughout their area of assignment. Staffing does not appear to be a major problem.

Many agents have rural backgrounds although not all actually have grown up in farm families. Their schooling and desire to do a good job seems to offset most of any lack of childhood farming experience.

### Credit Institutions

Our survey revealed that most families understood the benefits that operating cash (capital) could provide in seasonal farming operations. Some families were happy that they did not have to rely upon credit, others complained that they could not get credit as long as they raised basic food crops. This is due to the fact that collateral is often asked and many, many families who are nominal owners of land do not have clear titles to pledge.

Undoubtedly all kinds of credit institutions play some kind of role. However, we did not hear as much about private credit from millers and wholesalers as we would have expected [cf. 8]. The most mentioned source of credit was "ABC" (*Banco de Fomento Agrícola*). Our survey did not go into credit given and received in kind or into questions of credit effectiveness, need for supervision or loan policies.

Some credit can be obtained by a few persons banding together (*Asociaciones Comurales*) and two members, having land or other security can sign for the rest. Everyone is responsible for everyone else's payment so the "friendship" bonds must be strong. Members of coöps can get credit, if the coöp is strong and organized. In some cases, this source is flexible enough to partially finance new land purchases or will support rent payments on additional land. Persons of more than one tenure class may be part of a coöp. Coöp managers and active members prefer to have especially enterprising and capable farmers as members. One coöp we know of mainly arranges production credit and its membership increased from a few to over 150 farmers in 4 years; membership is now closed. Ownership or production of livestock is often used to secure credit; some small farmers use livestock credit to support their basic grains operations.

We do not foresee, at present, any great requirement for changing the credit sources; the current ones should work. There may be some scope for reducing the costs of administering small farms credit -- most formal institutions cannot make money on such loans. Simple cooperative arrangements on the lands proposed for parcellization may provide adequate security and centers for small loan consolidation.

*Instituto de Colonización Rural (ICR)*

This agency or its predecessors has existed for some time. Evaluations of the effectiveness of ICR have been made by others and their findings are readily accessible [6, 8]. Our survey questionnaire contained a few questions about knowledge of ICR, its services and programs.<sup>16</sup>

In one case, a small renter was using his ICR land base to propell himself (in partnership with some others) to a better, stronger situation in rented sugar cane land. Persons near ICR-owned properties know something about the agency, otherwise no one knows anything. The agency will need a lot more public relations if it wants its work known by the peasants.

According to reports, over the years ICR has had to commit personnel and resources to problems of small rural communities and has not really parcelled much of the land it holds [12]. Obviously we are not privy to official ICR policy regarding land titling, but while any particular property is being developed, the land is mostly rented [4,18]. Now might be an opportune time to determine if the good features granting of land

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<sup>16</sup>We coordinated part of our questionnaire and a field test of it with Sra. Sara Miriam Torreo de Climaco, an ICR sociologist. She is utilizing a similar questionnaire solely on already owned ICR properties. We have not had the opportunity to compare results.

titles would not outweigh the bad and if a philosophy of rapid land dissemination might not be the best of all guides.

Somewhat the same argument may be justified with respect to infrastructure improvements on purchased properties. Some consideration might be given to distribution of land long before each and every programmed infrastructure item is in place. Maybe the planning effort and stages could be simplified, shortened, and more resources devoted to actual land purchases.

#### Other

The program for basic grain storage and price stabilization (IRA) was mentioned several times during the course of our interviews. However, most poor farmers, the main objects of our survey, stated that they "sold to whoever wanted their grain surplus".

Obviously, except for some aspects of the programs centered in extension agencies, no public agricultural programs in the rural area touch the lowest 25% of the rural poor. This is not due to failure of program design or execution, it is due to the fact that jornaleros have no land.

Appendix III-A:Land and Water

Percy Aitken

Peasants need land or a secure right to work land. That is obvious. What may be less obvious is their craving for water. Many of the peasant families surveyed stated that if the rainy season could be extended, and made more reliable through supplemental irrigation, production could be doubled or even tripled.

In many areas, we saw a few wells and the farmers stated that there was enough water to justify the use of pumps. Utilization of groundwater resources would have the advantage of not only increasing land productivity, food production and peasant's income but also of improving the standard of living at the peasant household by making culinary water available for home use.<sup>17</sup> When the farmers were asked why well digging was not more general and why they did not seek credit for the purchase of needed pumps, they answered that there was no credit available due either to the type of crops they produced or due to insufficient collateral value of their property. In addition, they felt they did not have the economic capacity to pay for the cost of such equipment. It might be quite worthwhile to consider the value of a credit program that would increase water availability. Probably some system of cooperative well digging and water distribution cooperation would have to accompany such credit. Rainwater or flood waters may also be conserved in some way.<sup>18</sup>

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<sup>17</sup> At present, most farmers are buying water in the cantons at 2 or 3 colones per 55 gallon drum. This water is transported by cart distances of two and three miles.

El Salvador does have some surface water development potential. And a number of irrigation schemes, projects and districts are planned. Possibly some of this development could be hastened. Except for necessary ecological, industrial and municipal demands, it seems to be a great waste to allow the rivers such as the Lempa to dump their volume of water into the Pacific during the dry season.

Maybe the current planned surface irrigation program could be augmented with small water works scattered along river paths to irrigate all the possible adjacent lands and still have enough return flows to support other nonagricultural needs. These small surface works could be coordinated with well digging in all possible sites to tap underground water resources.

During several months each year, idle rural laborers could be used with advantage in labor-intensive cadres to create water works to serve agriculture.<sup>19</sup> Such labor-intensive methods to create economic infrastructure for the augmentation of natural resources, have been tried in other countries of the world with success. Underemployed labor is absorbed and extra income flows to the peasant population during the period of construction. Afterwards, the poor benefit from the availability of a badly needed resource for food production in the country.

In order to be successful, a system or series of semiautonomous local water organizations would have to be created, and given technological direction. Special ways of paying wages and controlling the flow of work would have to be devised, along with a definite and inescapable

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<sup>18</sup>The *poza* system of summer rice production in the Guayas Basin, Ecuador, is based on stored rainfall.

<sup>19</sup>The irrigation potential for many crops has been demonstrated by the Utah State University team working in El Salvador.

program of exacting value received from the landowners who obtain irrigation benefits provided by the labor of others (i.e., at society's expense).

This is the type of development program poor farmers can identify with. To be successful, such a program would also require a commitment to the principal of permitting and fostering the growth and development of local leadership and social responsibility at the peasant level.

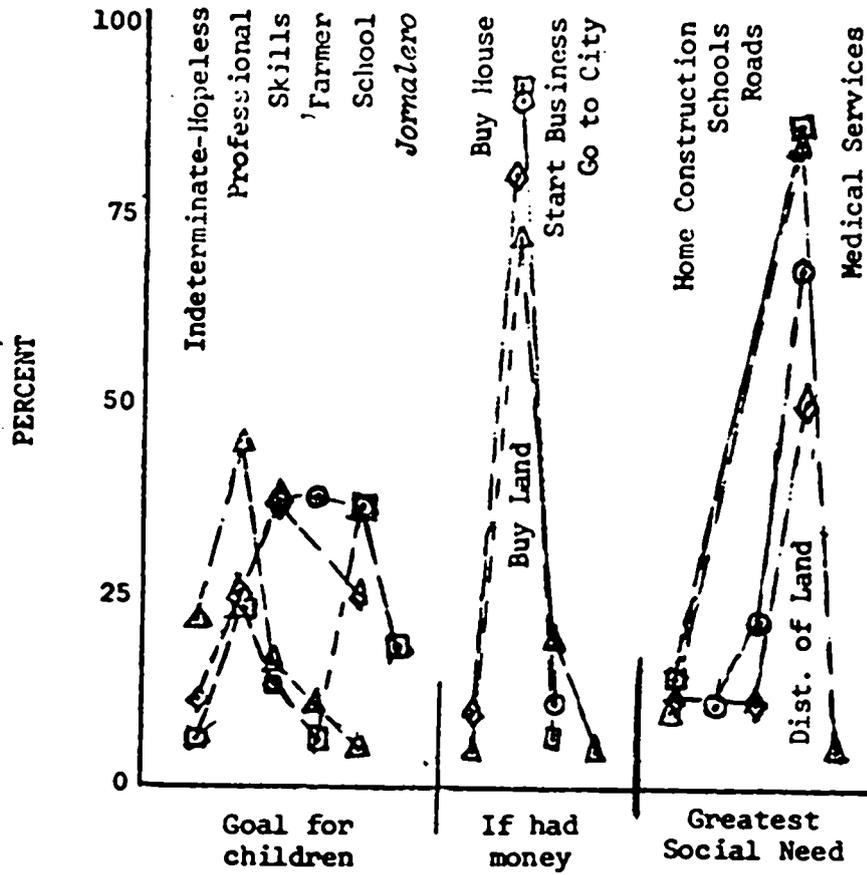
Appendix III-B:  
Tabulation of Field Survey Results

The opinions of respondents have been grouped by the ownership classes shown in each figure. These results give some visual impression of how closely the opinions were correlated, however, the sample was very limited in size and there are not very many responses included in any of the four groups.

There do seem to be certain topics where all groups agree or share about the same proportion of positive and negative responses. There are certain topics where opinions stand out -- for example, where the desire for land ownership is involved. There are instances where differences among groups seem to be significant, but this impression cannot be statistically confirmed.

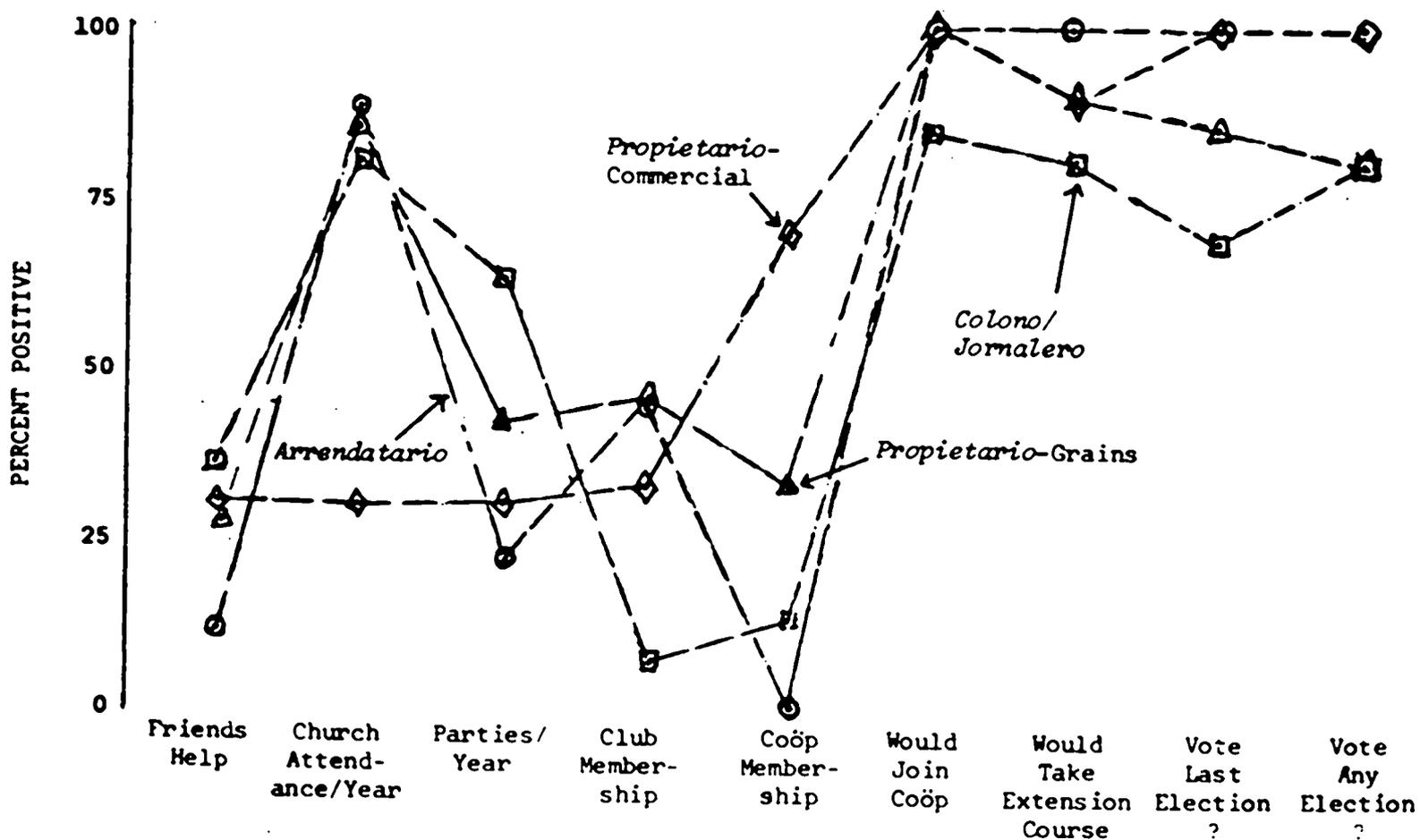
Some of the questions involved a choice between several possible answers. These possibilities are written in the figure. The yes/no questions are diagrammed as percent of yes answers.

VALUES



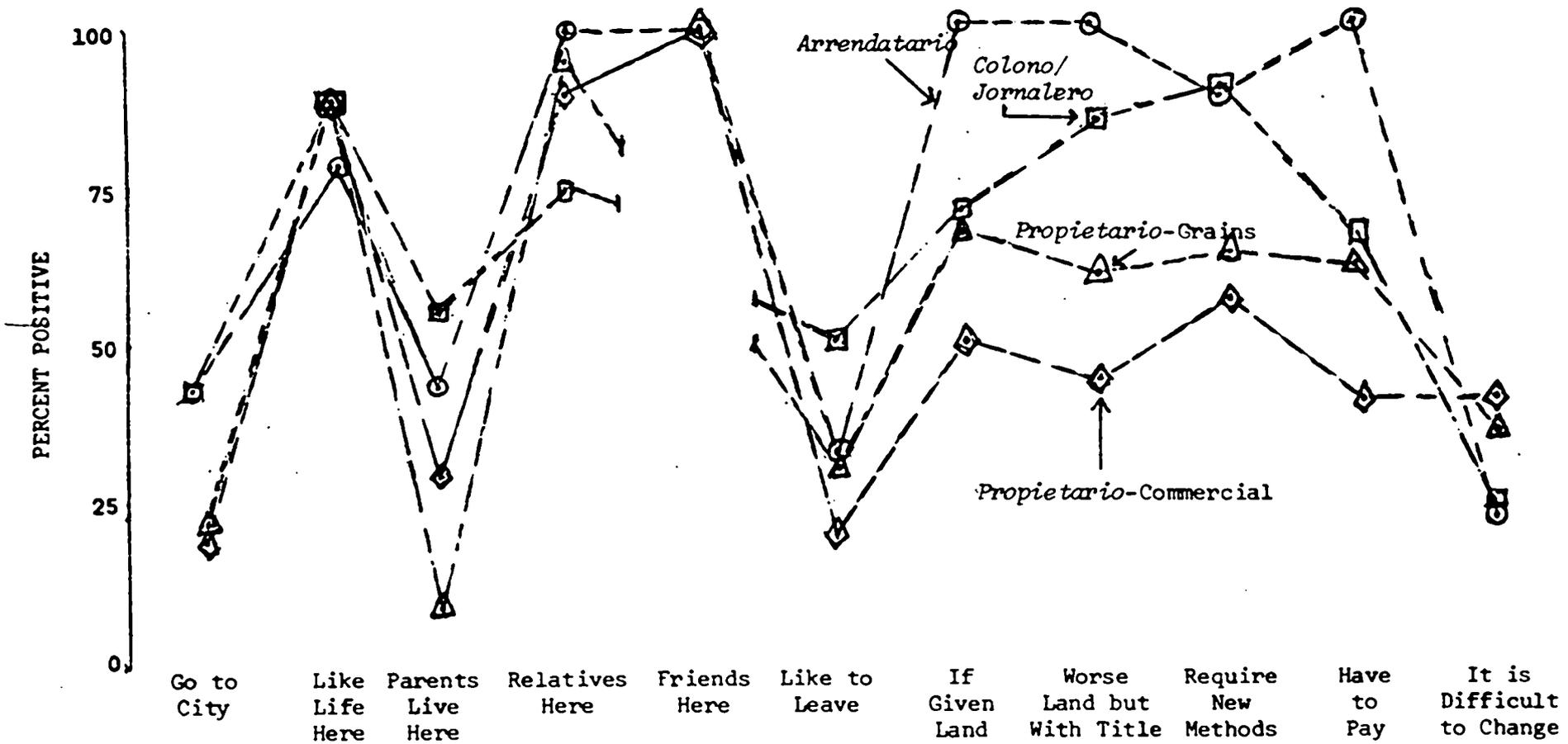
Source: May, 1975, field survey, A.L.A.

### SOCIAL INTEGRATION



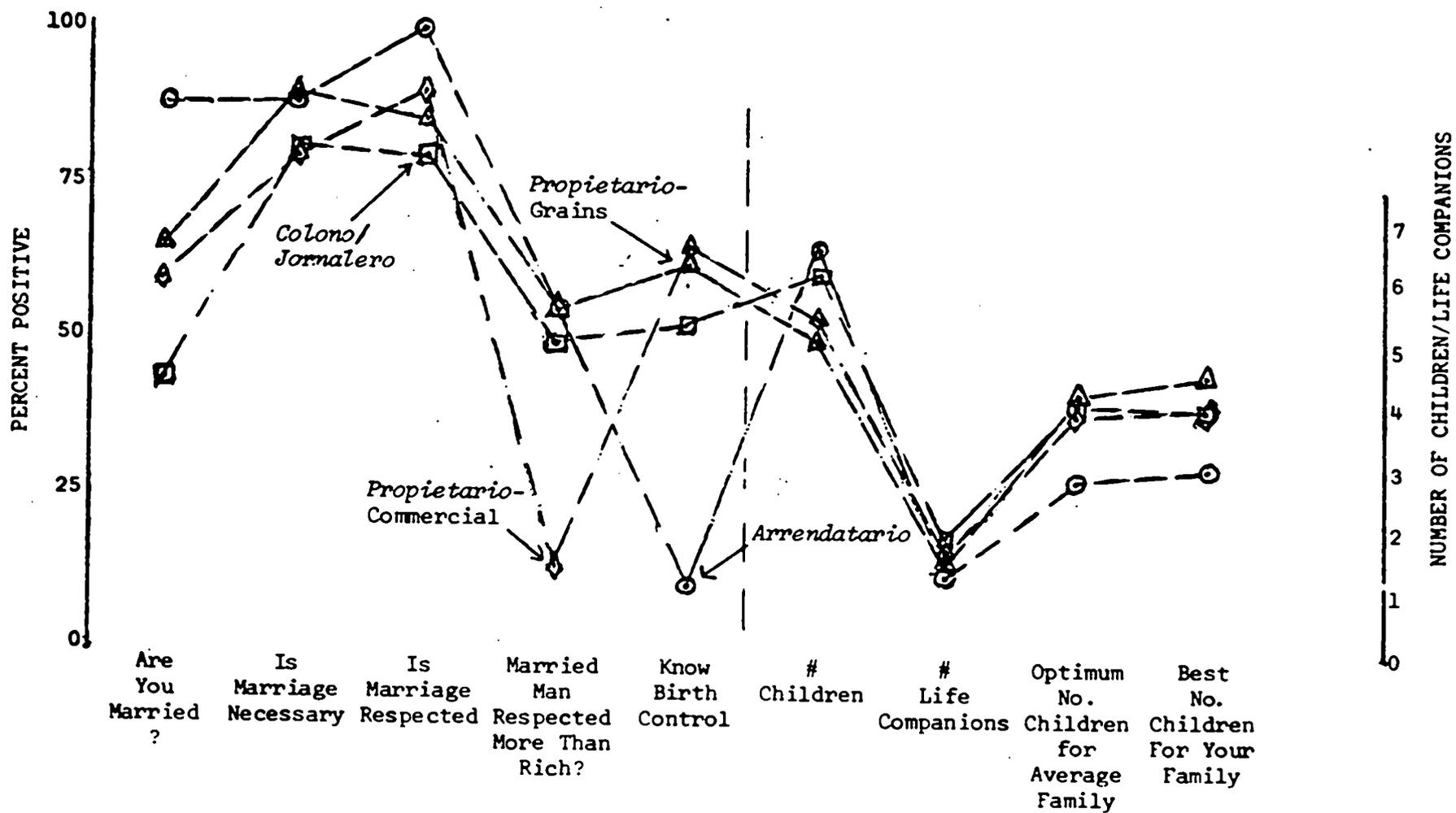
Source: May field survey, AL & Associates.

LOCATION VALUES



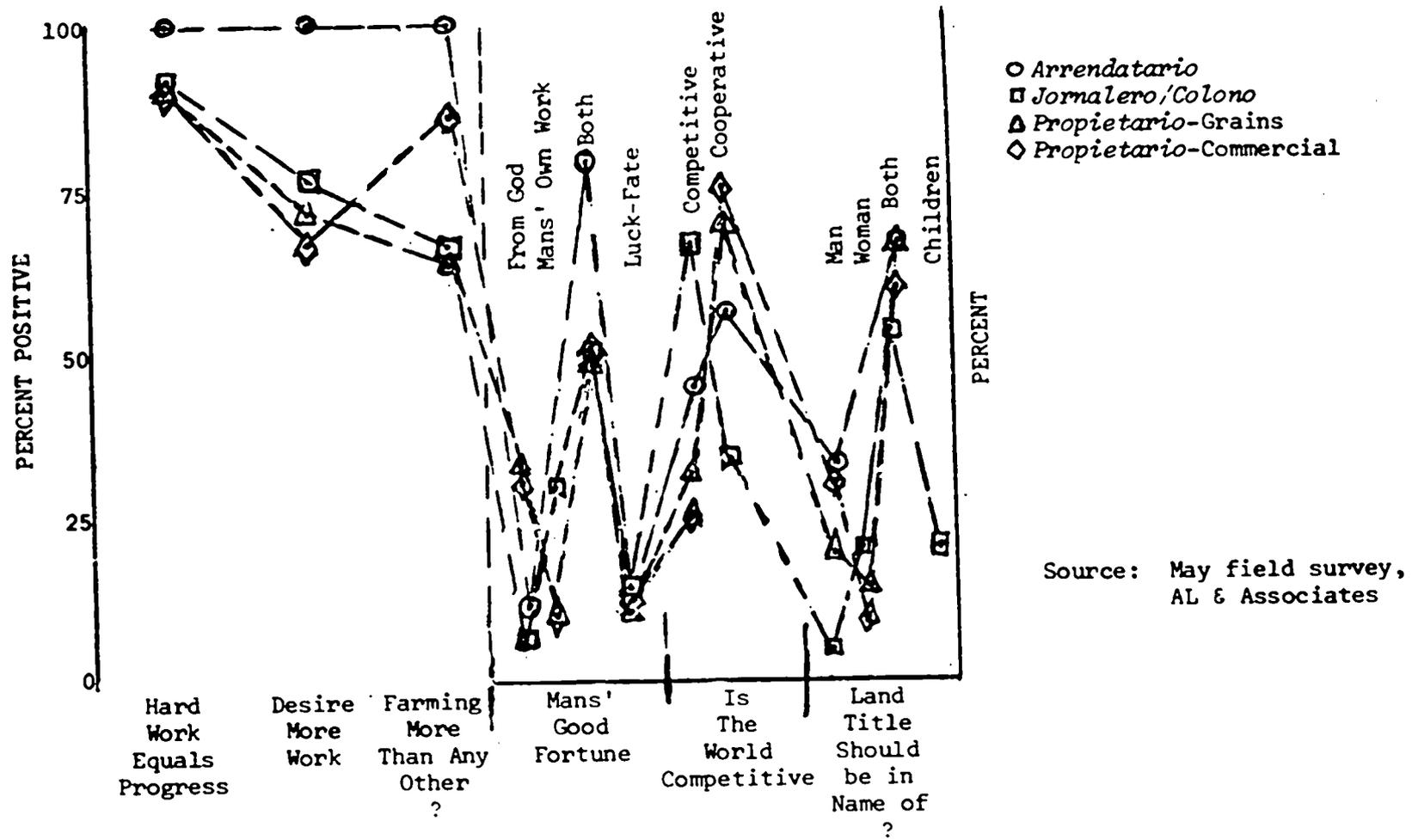
Source: May field survey, AL & Associates.

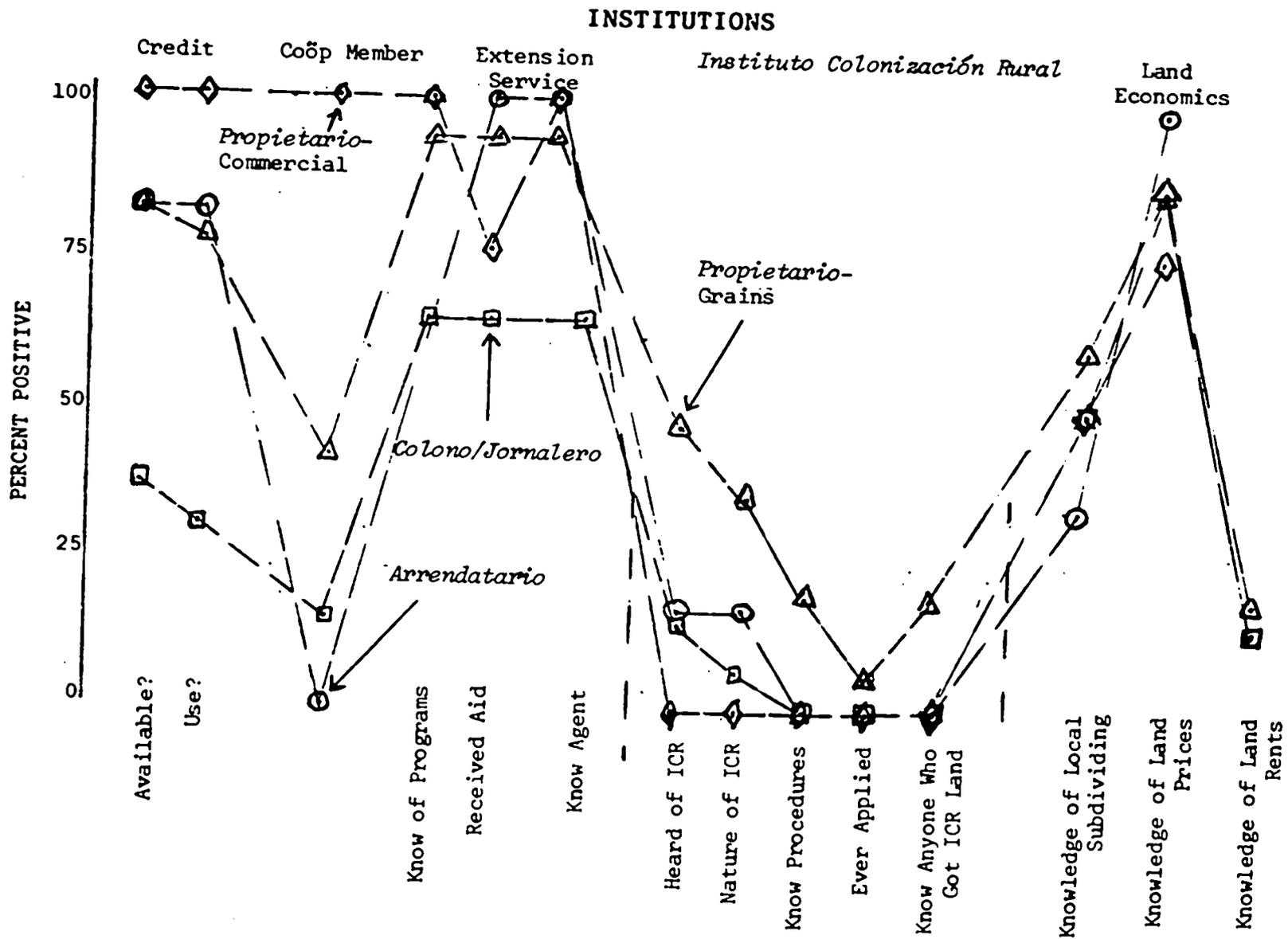
### FAMILY ORIENTATION



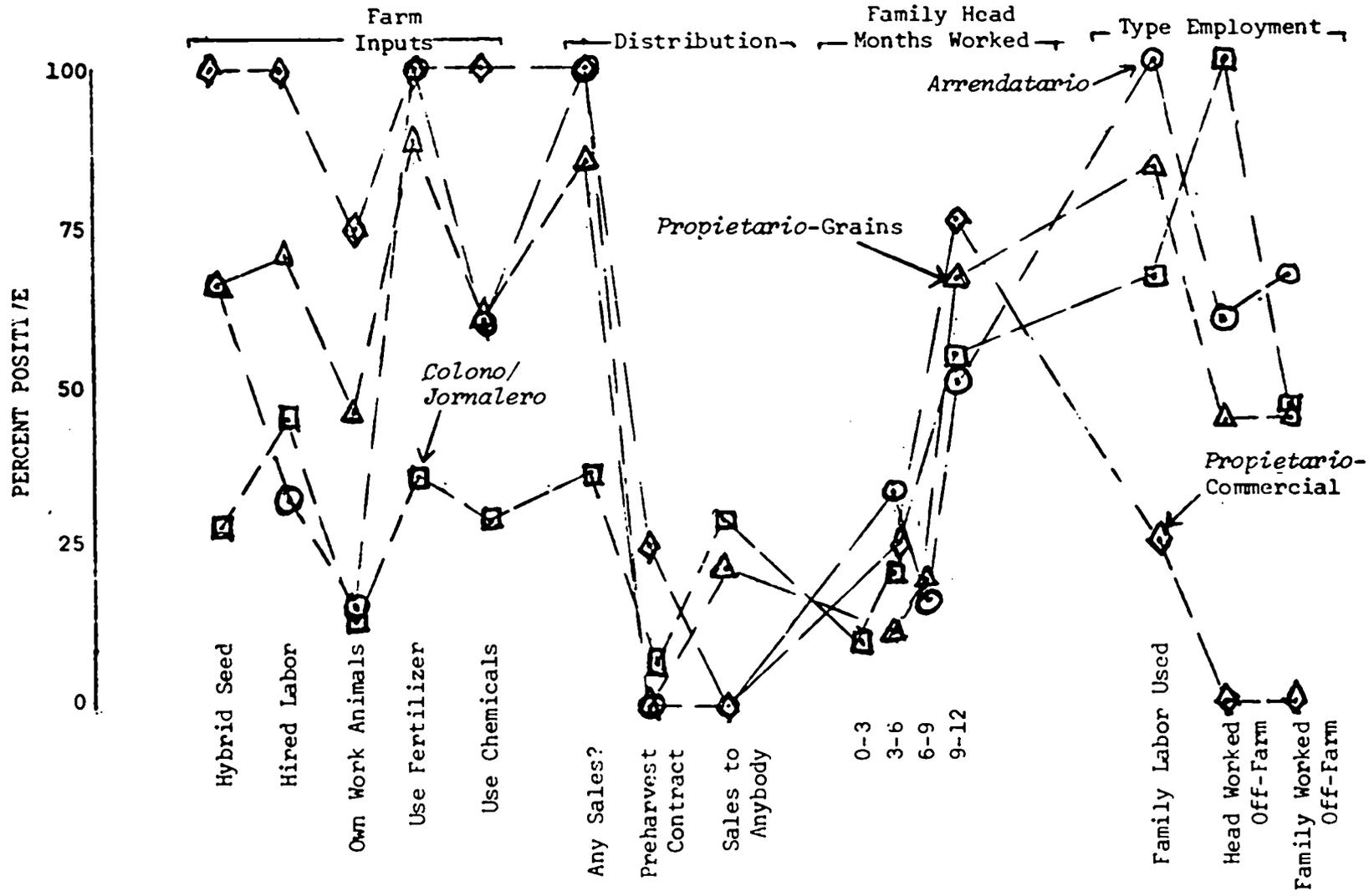
Source: May field survey, AL & Associates

### INDIVIDUALISM





# FARM MANAGEMENT



**CHAPTER IV**  
**SIZE AND LIVING STANDARD OF TARGET GROUP(S)**

- Section A: Target Group(s) Defined - Family Numbers**
- Section B: Current Levels of Social Productivity Within the Target Groups**
- Section C: Estimates of Minimum Incomes Required for Program Participants**
- Appendix A: Worksheets**

Section IV-A:  
Target Group(s) Defined - Family Numbers

For study purposes we assume that there is a special interest in those rural families that have no secure rights to any land or the fruits thereof. Therefore, in this report we provide a precise definition of a primary target group [1,7, pp. 3-4, ¶G], plus a more general definition of a secondary target group. The 1971 Census of Agriculture divides farmer-producers, according to tenure arrangements on the lands they manage or control, into four groups (Figure 2). The census, however, provides little direct information concerning tenureless families, which are the important focus of this report.<sup>1</sup> Thus, for present purposes, we separate those groups who have a somewhat assured access to arable land from those that do not.

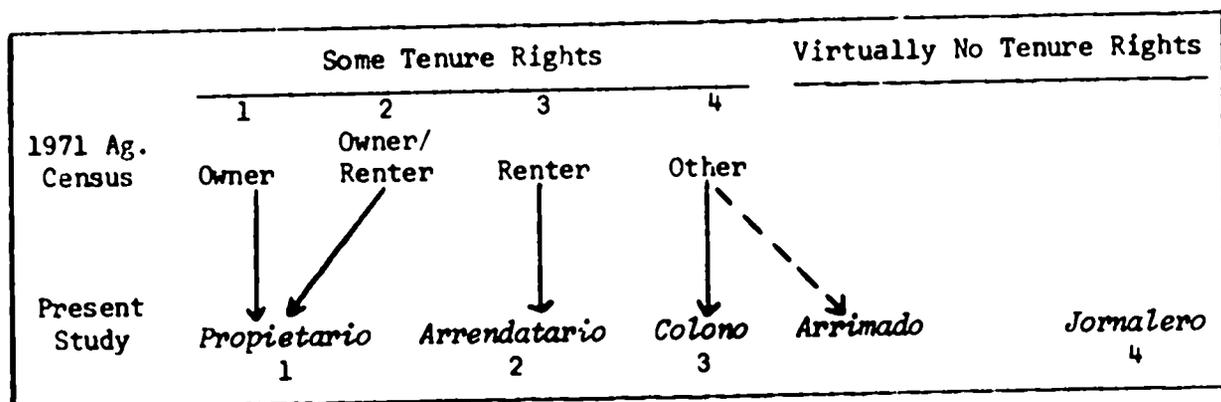


Figure IV-1. Classification of Family Types that Work Rural Land.

<sup>1</sup>The complete version of the Census of Agriculture became available after this section was written.

The classification shown is not hard and fast because many of the "tenureless" may have small garden patches; many *arrimado* families may have been included in the agricultural census; many so-called owners, have title or control of such small plots of land that ownership should not be equated with adequate family income. Thus, all of the family groupings shown include many poor, however, three groups do have tenure rights of some degree. Only the day laborers (*jornaleros*) and moochers (*arrimados*) have none or virtually none. Thus we define one tenureless target group as being composed of *jornaleros* (and possibly, *arrimados*) plus a big secondary target group composed of very small *propietarios* or *colonos* plus some *arrendatarios*.

How many families are in the target groups? Where are they located?

The published sample of the 1971 Census of Population contains a certain amount of information about the rural population. Since the only possible assumption that really can be entertained is that all persons were counted at the time of the census, any difference in the inferred number of rural families relative to the number that can be inferred from study of the published sample of the Census of Agriculture, may be taken to be an estimate of the number of tenureless families.

Briefly, there are at least four different ways to estimate rural family numbers by means of the sample of population census: 1) according to numbers of dwellings in the rural area that contain (for example) two rooms or less; 2) the number of dwellings in the rural area that are made of the most rustic materials; 3) the number of economically active persons

divided by the estimated number of active workers in an average family;  
 4) the number of persons classified as having agriculture as their field of activity can be compared to the number of persons who are classified as agricultural workers.

It is also possible to divide an estimated average number of families per farm into the number of farm enterprises reported in the sample of the Census of Agriculture. Table III-1 contains the results of applying these five estimating procedures to all 14 departments of the country. In general, the estimates all have a high degree of correlation. After simple inspection of the five estimates for each department, a "best estimate" has been made for 1971 (Table IV-1).<sup>2</sup>

The next assumption is that the reported growth in departmental population 1961-1971, will be reflected 1:1 in growth in family numbers. (This rate automatically captures population growth and net migration.) In addition, it is assumed that the rate of change will be the same for 1971-1975. The high rates of growth are in the department of San Salvador and in the "coastal" regions. The number of rural families actually working land in 1975 is estimated at about 405,000. An additional 40,000 families are classed as "rural, nonfarm".

The reported ratios of owners (owner/renter) to renters or to "other" (here identified as *colonos*) are then applied to the 1975 total rural family estimates by department. This creates estimated numbers of families in the groups mentioned. Any residuals, relative to total families

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<sup>2</sup> Our total estimate of 355,700 families actually working the land, when compared to the 1971 Census of Population report of 2,146,228 rural persons, implies an average family size of slightly over 6 persons. Since not all rural persons (families) actually work the land, the average family size of the group estimated is about 6.5 - 7.

Table IV-1. Estimates of Rural Families Working Land in El Salvador - 1975

Department	Rural Families					Best Estimate 1971	61-71 Compound Growth Rate	Estimated Number Rural 1975	Estimated Number of Families by Tenure Group				Tenureless Proportion
	Estimates From Census of Population		Census of Ag.		Proprietarios				Arrendatarios	Colonos	Jornaleros		
Abascochepán	25219	23200	21000	25904	23360	23300	.03559	26798	8050	9651	6178	2918	.11
Santa Ana	34934	31760	33300	37251	31942	32500	.02063	35266	12185	13456	4034	5591	.16
Sonsonate	26704	25440	24660	28411	24376	25500	.03344	29085	10942	8543	4490	5110	.18
Chalatenango	21696	20180	21920	25293	20242	21000	.02893	23537	11449	9364	1781	944	.04
La Libertad	32634	30140	27940	25319	28182	29600	.03458	33911	9043	9333	4896	10639	.31
San Salvador	20413	27213	26460	17658	16842	26500	.04162	31195	11942	4848	2445	11959	.38
Cuscatlán	19121	19060	19700	35148	16549	19000	.02544	21008	14238	2372	2011	2387	.11
La Paz	22286	21760	22280	14060	20115	21700	.03948	25083	10102	4423	1741	8819	.35
Cabanas	18183	17920	18100	17048	17519	17900	.03099	20224	9532	6059	1856	2777	.14
San Vicente	18384	16040	17540	9955	17538	17500	.03688	20228	8208	5329	1688	5073	.25
Usulután	38884	36360	36320	25587	33975	35000	.03619	40348	12665	10000	2630	15053	.37
San Miguel	37733	34280	36080	33403	33644	36000	.03249	40912	15852	14625	3071	7364	.18
Morazan	21818	21700	22380	21726	18753	22000	.03008	24769	15989	3552	1949	3279	.13
La Unión	28880	28140	29240	26623	26690	<u>28200</u>	.04301	<u>33373</u>	<u>14641</u>	<u>11405</u>	<u>3191</u>	<u>4136</u>	<u>.12</u>
TOTALS						355700		405737	158633	108062	40887	100470	.25

estimated, are taken to be the number of tenureless families as of 1975. In some departments, the tenureless families as a percentage of all rural families on the land is estimated to go above 30% (Table IV-1).

In absolute terms, the largest number of tenureless families are estimated to be in Usulután, San Salvador, and La Libertad. The total number of tenureless families (*jornaleros-arrimados* combined) is estimated at 100,470 in 1975. This constitutes the primary target group. The secondary target group is estimated to contain another 41,000 *colono* families plus possibly 160,000 owners or renters of extremely small or poor land holdings.<sup>3</sup>

In summary, if the tenure and production program as originally conceived in the USAID IRR Planning Documents [19, 20] really needed 10,000-11,000 tenureless families, the program would be broad enough to cover 10% of the rural landless poor of El Salvador.

Section IV-B:  
Current Levels of Social Productivity Within  
the Target Groups

In order to determine the minimum amount of land families from various tenure classes need to be allocated in a tenure program, it is necessary to estimate current living standards. Family living standard takes into account current on-farm consumption, farm sales and off-farm employment. For the purposes of this study, we treat all consumption plus any apparent saving as the social productivity of each family.

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<sup>3</sup>Some of the families in the *colono* group have very good tenure rights at present. In contrast, a great many of the total 108,000 families classed as *arrendatarios* have very insecure rights!

### Typical Farm Enterprises

The general characteristics of target group farm enterprises are fairly well-known. As far as production of basic grains is concerned, plots under 1 manzana are common and, while there are no technical limits to size, 10-20 manzanas is a practical upper limit. A few of the poor renter families do raise sugar cane but the lower limit on size for such an enterprise, (according to the 1971 Census of Agriculture) is about 2 hectares. None of the surveyed families classed as *colono* or *jornalero* were found to raise a commercial crop (although some produce large animals). The survey revealed that *colono* and *jornalero* families used significantly fewer modern inputs than other defined groups.

While these results are not definitive, they support our assumption that rural poor farm enterprises are all "traditional". We also assume that basic grains are the only major crops grown in any enterprise. However, there is some variation by department. The amount of land available to the primary target group (*jornaleros*) cannot be construed to be much more than garden plots, because, by definition, they have virtually no access to land. *Colonos* are assumed to have access to an amount of land more or less equal to the average departmental small farm sizes reported in the 1971 Census of Agriculture as modified by Extension Agents' estimates and results of our survey. (Tenureless families are assumed to have 1/6 of the land area of *colonos*.)<sup>4</sup> Family sizes are taken from *Agencia* tenure group profiles prepared by Extension Agents.

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<sup>4</sup>Worksheet Tables IV-A-1 and IV-A-2 contain estimates of enterprise returns, consumption, costs and sales for small basic grain farms in each department.

Each farm family is assumed to consume some meat, milk (cheese), eggs, vegetables and fruit, in addition to basic grains. Some proportion of these products is assumed to be purchased. This is in accord with the findings of a recent farm survey plus our own field research.<sup>5</sup>

The rural poor in some departments are assumed to cultivate *maíz-maioillo*, in others about 1/2 *maíz-maioillo* and 1/2 *maíz-frijol*, in others *maíz-frijol* or possibly *maíz-maíz*. The average enterprise estimates are shown in Tables IV-2 and IV-3. They are intended only as a first stage in reaching average family estimates. In Table IV-2, we set *colonos* at one end of the rural poor spectrum. *Jornaleros* are at the other (Table IV-3). Many small *propietarios* and *arrendatarios* are somewhere in between while others do better than *colonos*.

#### Estimates of living standards

Interpretation of Table IV-2: these are estimates for *colonos* who have and are able to work (mostly with family labor) the land allotments shown. In addition, they obtain almost year-round employment from the patron plus some additional income from off-farm work of other family members. This is the situation for the well-off *colonos*. In these relatively good circumstances, savings could be realized and family living standards could be above \$1,000 per year. If the average *colono* family no longer has a land allotment, or does not get called to work regularly, a drastic reduction in income occurs.

The values shown in Table IV-2 are also representative for other families, such as small *propietarios* and poor *arrendatarios*. They can easily

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<sup>5</sup>Worksheet Table IV-A-3 contains estimates of consumption expenditures. The values actually utilized are based primarily on the results of the AIA field survey.

Table IV-2. (Part A) Abbreviated Producer Enterprise Budgets for Traditional Methods - Preliminary  
(Secondary Target Group - *Colono* or *Propietario* - Fully Employed)

Department	Type Enterprise	% Target Group Devoted to Enterprise	Average Family Size Assumed	Average Farm Size (mz)	Value of Product ¢	Farm Consumption ¢	Farm Costs ¢	Net Farm Income ¢	Off-Farm Income ¢	Food Purch ¢	Nonfood Purch ¢	Apparent Savings ¢	Value of Standard of Living ¢
Ahuachapán	M-S	100	7.5	1.07	1540	700	750	90	1250	509	400	431	2040
Santa Ana	M-S	50	6.0	1.18	1757	700	845	212	1000	373	324	515	1912
	M-F	50			1928	700	846	382	1000	373	324	685	2082
Sonsonate	M-S	100	7.0	1.41	2002	800	930	222	1166	464	378	546	2188
Chalatenango	M-S	100	7.5	2.04	2959	1000	1449	550	1250	353	400	1046	2800
La Libertad	M-F	70	8.0	1.76	2899	900	1268	729	1333	414	432	1217	2962
	M-S	30			2620	900	1255	445	1333			934	2678
San Salvador	M-M	100	6.0	1.01	1608	700	711	197	1000	421	324	452	1897
Cuscatlán	M-S	100	7.0	1.71	1719	700	1175	-156	1166	476	378	156	1700
La Paz	M-S	100	9.0	1.31	2077	800	976	301	1500	522	486	792	2601
Cabañas	M-S	100	7.5	1.61	2414	650	1157	407	1250	488	400	768	2507
San Vicente	M-S	100	6.0	1.67	2414	800	1200	440	1000	332	324	790	2240
Usulután	M-S	100	10.0	1.83	2780	950	1219	611	1667	639	540	1098	3228
San Miguel	M-S	100	8.0	1.54	2404	800	1150	454	1333	579	432	775	2587
Morazán	M-S	100	8.0	1.61	2393	850	1152	391	1333	595	432	697	2574
La Unión	M-S	100	8.0	1.99	2976	900	1429	647	1333	547	432	918	2880

M-F = *maíz-frijol*    M-S = *maíz-maizillo*    M-M = *maíz-maíz*

Table IV-2. (Part B) Abbreviated Day-Worker Enterprise Budgets for Traditional Methods - Preliminary (Primary Target Group - *Jornalero* - Fully Employed)

Department	Type Farm Plot	% Target Group Devoted to Enterprise	Net Farm Plot Cash	Off-Farm Income	Family Size Assumed	Food Purchases	Farm Consumption	Nonfood Purchases	Adjusted Value of Living Standard
			₡	₡	₡	₡	₡	₡	₡
Ahuschapán	M-S	100	14.97	1250	7.5	1006.25	116.67	258.72	1381.67
Santa Ana	M-S	50	35.34	1000	6	870.50	116.67	164.84	1151.67
	M-F	50	63.73	1000		870.50	116.67	193.23	1180.67
Sonsonate	M-S	100	36.95	1166	7	1031.96	133.33	170.99	1336.33
Chaletenango	M-S	100	91.59	1250	7.5	1063	166.67	278.69	1508.67
La Libertad	M-F	70	121.54	1333	8	1052.76	150	401.78	1604
	M-S	30	74.33	1333		1052.76	354.57	1564	
San Salvador	M-M	100	-32.85	1000	6	917.90	116.67	114.95	1149.67
Cuscatlán	M-S	100	-26.02	1166	7	973.10	116.67	166.88	1256.67
La Paz	M-S	100	50.18	1500	9	1090.54	133.33	459.64	1683.33
Cabañas	M-S	100	67.78	1250	7.5	1091.60	141.67	226.18	1459.67
San Vicente	M-S	100	73.32	1000	6	900.04	133.33	173.28	1206.33
Usulután	M-S	100	101.76	1667	10	1313.70	158.33	455.06	1927.33
San Miguel	M-S	100	75.56	1333	8	1147.28	133.33	261.28	1542.33
Morazán	M-S	100	65.23	1333	8	1198.00	141.67	200.23	1539.67
La Unión	M-S	100	107.88	1333	8	1186.20	150	254.68	1591.00

M-S = *Maíz/Maízillo*

M-F = *Maíz/Frijol*

M-M = *Maíz/Maíz*

do as well as the better-situated *colonos*. Every family has its own situation (and some peons do quite well [8]), but there is a direct correlation of higher incomes and living standards with security in working land.

Interpretation of Table IV-3: if we suppose *jornalero* families have consumption patterns similar to *colono* families and obtain nearly full-time work for themselves plus some for family members, estimated apparent savings would be negative. Actually, even "well-situated" *jornalero* families cannot hope to reach the consumption levels of families that have access to a significant amount of land. Thus we assume somewhat lower total consumption expenditure by reducing on-farm food and arrive at the lower living standards shown in the last column.

Table IV-3 makes allowances for probable levels of unemployment. The estimated living standards for above average *colono* and *jornalero* families require adjustment for unemployment linked to seasonal migration and for the reason that (especially among *colonos*) common planting and cultivating tasks are rotated among the available laborers. In the case of *jornaleros*, we adjust the high values of Table IV-3 by factors between .3 and .45. This is equivalent to assuming work for about 4 harvest months plus the equivalent of 2 more. This gives a total of 6 months work for the family head plus some additional family member effort. The downward factor information in Table IV-2 averages 33%. This is equivalent to 8 months work for other rural poor tenure classes, all of which are assumed to be part of the seasonal migrant labor force.

Table IV-3. Estimates of Average Value of Cash and In-Kind Family Income for *Jornaleros* and *Colonos*<sup>a</sup>

Department	Enterprise	<i>Jornalero</i>		<i>Colono</i>	
		Factor <sup>b</sup>	Income Value	Factor	Income Value
Ahuachapán	M/S	.37	870	.37	1285
Santa Ana	1/2 M/S 1/2 M/F	.30	{ 772 791	.30	{ 1281 1395
Sonsonate	M/S	.30	895	.30	1463
Chalatenango	M/S	.40	905	.40	1680
La Libertad	2/3 M/F 1/3 M/S	.30	{ 1075 1048	.30	{ 1985 1794
San Salvador	M/S	.30	770	.30	1271
Cuscatlán	M/S	.30	842	.30	1139
La Paz	M/S	.40	1010	.40	1561
Cabañas	M/S	.30	978	.30	1679
San Vicente	M/S	.30	808	.30	1501
Usulután	M/S	.40	1156	.40	1936
San Miguel	M/S	.40	925	.40	1552
Morazán	M/S	.42	893	.42	1493
La Unión	M/S	.42	923	.42	1670

<sup>a</sup> Value of family income includes value of consumption out of own production and allowance for large variation in average family sizes, among departments.

<sup>b</sup> Adjustment factor based on estimated relative degree of unemployment among areas.

Section IV-C:  
Estimates of Minimum Incomes Required For  
Program Participants

Adjustment of Family Numbers in the Target  
Group According to Survey Findings

Initial planning of this research allowed for the possibility that estimates of numbers of target group families (Table IV-1) might require adjustment based on results of the sociocultural survey. For example, it might be expected that for a variety of reasons, some percentage of families would not be interested in a program of the type planned. Given the results of the survey, adjustments do not seem necessary. Virtually every poor family surveyed seemed very flexible and willing to adapt to new circumstances as long as the chance to improve situations is real. Besides, the number of families that conceivably could be included in any "target group" definition is very large. So even if some families are not suitable or are unwilling to participate, there are plenty of others in virtually every department.

Estimated Needed Income Incentives

Table IV-4 contains estimates of the income levels necessary for poor families to be brought into the proposed tenure and production program. These estimates are for all four poor family groups, *jornaleros*, *colonos*, *propietarios* and *arrendatarios*. The estimates in column 1 are from Table IV-3 in the case of *jornaleros*, *propietarios* and *colonos*. We assume the *arrendatarios* have slightly higher living standards than *colonos* and *propietarios*.

Table IV-4. Preliminary Estimate of Minimum Necessary Income from Land to Reach Current Living Standard or to Reach Target Income of \$1,000/Family

Department	Value of Current Living Standard	Required Investment Opportunity		Required Income <sup>a</sup>			Assumptions About Parcelled Land <sup>b</sup>		
		School Application	Cost of Land Lease	Overall	From Land		Net Cash and In-kind Per House	Preliminary Estimate of Necessary Land	
					Minimum	Additional to Reach \$1,000		Minimum	For Target
<b>Abascochapa</b>									
J	870	200	0	1070	870	1000	1072	0.99	1.29
pe	1285	200	150	1635	1235	865	"	1.10	0.86
C	1285	200	0	1485	985	1015	"	0.95	0.90
A	1400	200	250	2050	1050	81	"	1.00	0.85
<b>Santa Ana</b>									
J	780	200	0	980	680	800	1112	0.63	1.02
pe	1300	200	150	1650	1250	1200	"	1.03	1.21
C	1300	200	0	1500	1000	1000	"	0.90	1.25
A	1400	200	250	2050	1050	550	"	1.25	0.60
<b>Soconate</b>									
J	895	200	0	1095	595	1005	903	0.66	2.11
pe	1465	200	150	1715	1315	1100	"	1.05	1.32
C	1465	200	0	1665	1165	1200	"	1.29	1.40
A	1675	200	250	2125	2125	225	"	2.01	0.36
<b>Chalotenango</b>									
J	905	200	0	1105	605	1005	1058	0.70	1.61
pe	1680	200	150	2030	1530	970	"	1.55	0.77
C	1680	200	0	1880	1380	1100	"	1.01	0.91
A	1750	200	250	2200	2200	700	"	2.22	0.80
<b>La Libertad</b>									
J	1060	200	0	1260	760	1200	1078	0.63	2.00
pe	1820	200	150	2170	1670	830	"	1.15	1.41
C	1820	200	0	2020	1520	900	"	0.90	1.52
A	1950	200	250	2400	2400	0	"	1.95	0.62
<b>San Salvador</b>									
J	770	200	0	970	670	2020	975	0.52	1.00
pe	1270	200	150	1620	1120	1500	"	0.76	1.48
C	1270	200	0	1470	970	1200	"	0.81	1.61
A	1350	200	250	2000	1900	600	"	1.22	0.71
<b>Cucullén</b>									
J	840	200	0	1040	540	1040	1031	0.64	1.62
pe	1140	200	150	1490	990	1510	"	1.20	0.99
C	1140	200	0	1340	840	1660	"	1.20	1.12
A	1220	200	250	1670	1220	720	"	2.00	0.27
<b>La Paz</b>									
J	1010	200	0	1210	710	1200	1102	0.65	1.70
pe	1560	200	150	1910	1410	1000	"	1.42	0.92
C	1560	200	0	1760	1260	1200	"	1.22	1.02
A	1650	200	250	2100	2100	200	"	2.20	0.19
<b>Caballón</b>									
J	900	200	0	1100	600	1020	1044	0.69	1.91
pe	1610	200	150	2030	1530	970	"	1.20	1.11
C	1610	200	0	1810	1310	1120	"	1.15	1.25
A	1700	200	250	2150	2100	200	"	2.02	0.20
<b>San Vicente</b>									
J	810	200	0	1010	510	1000	1040	0.62	1.50
pe	1500	200	150	1850	1350	1150	"	1.22	0.69
C	1500	200	0	1700	1200	1200	"	1.22	0.82
A	1600	200	250	2150	2150	250	"	2.10	-0.05
<b>Amulien</b>									
J	1110	200	0	1310	610	1050	1040	0.62	1.50
pe	1925	200	150	2275	1775	715	"	1.22	0.69
C	1925	200	0	2125	1625	865	"	1.22	0.82
A	2000	200	250	2450	2450	-50	"	2.10	-0.05
<b>San Miguel</b>									
J	825	200	0	1025	525	1075	1024	0.69	1.70
pe	1330	200	150	1680	1180	1100	"	1.20	1.00
C	1330	200	0	1530	1030	1200	"	1.10	1.10
A	1620	200	250	2070	1770	300	"	2.00	0.21
<b>Morelia</b>									
J	870	200	0	1070	570	1010	1022	0.64	1.62
pe	1490	200	150	2040	1540	960	"	1.46	0.91
C	1490	200	0	1890	1390	1110	"	1.22	1.00
A	1900	200	250	2350	2350	200	"	2.00	0.20
<b>La Unión</b>									
J	970	200	0	1170	670	1000	1040	0.60	1.70
pe	1870	200	150	2220	1720	900	"	1.05	0.82
C	1870	200	0	2070	1570	1120	"	1.21	1.00
A	1750	200	250	2000	1900	900	"	2.10	0.19

<sup>a</sup> Assume each family earns \$100 in cash from off-farm employment.

<sup>b</sup> Assume net sales and income potential are from modern technology on average quality lands. Land since in possession to reach target of \$1,000 requires a minimum plus (+) the additional area shown.

Only applies to any families that might be allowed to sell land prior to program participation.

J = Jornalero P = Proprietario C = Colonos A = Arrendatario

Group A: J = 961 Av = 1632  
Group B: J = 1100 Av = 1837  
Group C: J = 912 Av = 1650

Two incentives are assumed. First, all families have aspirations about education and will respond to a program that makes the cost of education for one or two children no longer a sacrifice. Second, we assume that some consideration must be given to whatever values current links to land or its output may have. This consideration is expected to be a factor for the first five years of the proposed program and to have no effect thereafter.

Families who already own small plots will try to hold onto them by dividing family efforts while expanding onto new land. They will accept any piece of land at least big enough to cover the cost of multiple-plot management. Thus, the owner (*propietario*) estimates are only for those willing and able to give up (sell) their current holdings in order to participate. Even allowing for proceeds of a sale, they will still feel the need to offset some loss of security due to the transition. (These families would be able to pay for some portion of assigned lands more or less immediately.) Renters, on the other hand, have lost significant security if for some reason the program does not work out. Renters have already displayed a higher level of entrepreneurial drive, they are not as tied to the need for land ownership as the other tenure groups. We estimate an average incentive requirement per family of \$750 for 5 years. *Jornaleros* and many *colonos* have nothing to lose, they will take any land they can get. No allowance for incentive is necessary. Some *colonos* may have small plots they will wish to sell first which they feel they cannot leave.

The second half of Table IV-4 provides some preliminary indications of how a tenure program might pattern itself. If each family could continue

to earn \$500/year from off-farm employment, and the average manzana of parcelled land could return the overall values shown in column 7, then the amounts of required land per family would be as shown in columns 8 and 9. Column 8 shows the minimum requirement to achieve current living standards, while an additional amount (column 9) would be necessary to reach a target income of \$2,500 (\$1,000).

These particular estimates are not based on the actual types of land offered for purchase to ICR (which will be taken into account in Chapter V). Nevertheless, they indicate, in a general way, that *jornalero* families require, at a minimum, about one-half the land other tenure groups would need and that substantial additional amounts of land will be needed to reach target incomes of \$1,000 or \$1,500 rather than to provide merely subsistence incomes.

Given the large numbers of landless poor in El Salvador and their low current level of living standard, attempts to reach the target incomes suggested will simply cut the number of tenureless families that could participate in a given land purchase program in half.

Appendix IV-A:

Worksheets

Worksheet IV-A-1. Traditional Methods -  
Corn/Sorghum

Worksheet IV-A-2. Traditional Methods -  
Corn/Beans and Corn/Corn

Worksheet IV-A-3. Adapcation of Dr. Madsen's  
Results

Worksheet IV-A-1. Some Estimated Values of Production and Cost on Average Small Farm Enterprises - Traditional Technology for Corn and Sorghum

Department	Average Farm Size (ms)	Value Corn Produced	Value Sorghum Produced	Value Other Produced	Corn Materials	Sorghum Materials	Other Materials	Corn Energy	Sorghum Energy	Other Energy	Other Corn Expenses	Other Sorghum Expenses	Other Farm Expenses	Rent (Ave)
Abascochán	1.07	751.14	321	146.78	88.91	39.83	14.68	67.27	43.48	14.68	46.82	41.74	24.66	57
Santa Ana	1.18	828.36	354	220.50	97.31	43.55	27.06	73.30	45.52	22.06	51.33	44.53	22.06	49
Sonsonate	1.41	989.82	423	165.18	115.77	55.78	16.62	86.35	55.24	16.62	84.13	58.13	16.62	74
Chalatenango	2.04	1432.04	612	343.28	186.11	86.73	29.33	114.51	80.56	29.33	87.90	79.31	29.33	104
La Libertad	1.78	1235.52	528	308.24	159.29	74.53	25.82	106.44	70.64	25.82	78.22	73.23	25.82	65
San Salvador	1.01	709.02	303	67.20	85.88	38.07	6.72	63.25	42.64	6.72	44.17	39.44	5.72	52
Cuscatlán	1.71	932.40	360	157.22	155.93	75.57	15.72	111.43	69.44	15.72	87.35	67.64	15.72	91
La Paz	1.31	919.62	393	371.16	119.05	53.86	32.12	75.33	51.84	32.12	61.39	52.95	32.12	71
Cabañas	1.61	1130.22	483	317.78	149.21	70.64	26.78	105.40	68.04	26.78	79.61	70.47	26.78	91
San Vicente	1.67	1172.34	501	239.34	144.24	67.40	18.93	102.42	56.88	18.93	83.26	79.77	18.93	82
Usulután	1.83	1284.84	549	408.00	160.99	70.08	4.08	108.46	58.12	4.08	86.64	81.25	4.08	93
San Miguel	1.34	1081.08	462	449.28	139.50	65.04	39.93	100.39	64.56	39.93	77.20	68.43	39.93	88
Morazan	1.61	1130.22	483	296.56	139.21	52.64	24.66	103.40	63.04	24.66	74.61	65.47	24.66	84
La Unión	1.99	1396.98	597	384.88	177.75	82.77	33.49	119.50	77.36	33.49	87.03	82.72	33.49	104

Worksheet IV-A-2. Some Estimated Values of Production and Costs on Average Small Farm Enterprises - Traditional Technology for Corn-Beans and Corn-Corn

Department	Average Farm Size (mz)	Value Corn Produced	Value Beans Produced	Value Other Produced	Corn Materials	Bean Materials	Other Materials
Santa Ana	1.18	828.36	651.36	108.76	107.31	102.12	10.90
La Libertad	1.76	1235.52	971.52	183.20	164.29	151.47	18.32
San Salvador*	1.31	740.02	848.40	51.06	168.88	173.00	5.11

Department	Corn Energy	Bean Energy	Other Energy	Other Corn Expenses	Other Bean Expenses	Other Farm Expenses	Rent (Ave)
Santa Ana	73.30	16.52	10.90	63.33	52.86	10.90	58
La Libertad	105.44	24.64	18.32	94.22	79.89	18.32	86
San Salvador*	101.25	14.14	5.11	78.17	59.62	5.11	80

\*Corn-corn enterprise.

Worksheet IV-A-3. Consumption Estimates Based on Madsen-Karn Study

Source	Consumed %	Produced All %	Produced and Purchased	Purchased All %	Item	Lbs/Week Per Capita	Price ¢	Weekly Value				
								Produced	Both	Purchased		
M-K	100	66	20	14	Corn	8.86	0.18	1.05	0.32	0.22		
ALA						5.50						
M-K	93	26	10	64	Beans	1.23	0.55	0.18	0.07	0.44		
ALA						0.75						
M-K	99	10	03	87	Rice	0.80	0.35	0.03	0.01	0.23		
ALA						0.56						
M-K	37	14	02	84	Other Grains	0.75	0.15	0.02	0.002	0.092		
ALA						1.25						
M-K	85	22	23	55	Meat	0.57	1.25	0.176	0.184	0.44		
ALA						0.30						
M-K	61	60	03	37	Milk	2.56	0.18	0.924	0.046	0.569		
ALA						0.75						
M-K	96	64	11	25	Eggs	0.66	0.50	0.422	0.072	0.165		
ALA						0.40						
M-K	91	18	25	57	Vegetables	0.77	0.23	0.032	0.045	0.102		
ALA						0.20						
M-K	94	43	28	29	Fruits	1.37	0.15	0.09	0.058	0.061		
ALA						0.75						
					Annual Cost (¢)							
Totals					M-K	ALA						
Per Capita					258.44	170.56						
Family - 5					1292.0	853.0						
					7	1809.0	1194.0					
					9	2326.0	1535.0					

98

Source: Adapted from [9].

Appendix IV-B:  
Estimated Living Standard Benchmarks for  
the Target Groups

Any new resettlement or crop improvement program must generate at least the current living standards enjoyed by the target groups, otherwise there would be a general net loss to society even before allowance for the resources represented by program costs. We assume therefore, that the proposed small farmer tenure and production program must generate current levels of in-kind and cash income per participant family plus enough in addition to pay program costs before it is possible to assume that a breakeven point has been reached.

As a beginning therefore, we can estimate the total current in-kind and cash income for defined target groups (although only a portion of these families may ever be touched by the actual program) as shown in Table IV-B-1. The values for the secondary group are arrived at through the following arbitrary procedure. From the total 256,000 owner and renter families (Table III-1) we deduct 6,000 owners of larger operations. Then we assume that 30% of the remainder have "good" incomes and utilize modern techniques. We assume 30% of the *colonos* are "well-situated". The residual, totaling about 206,000 families is assumed to average the *colono* living standard estimated in Table IV-4.

Therefore, any program aimed at 10,000 *jornalero* families (primary target) group, would displace a social value of about £9,000,000 (\$3,600,000) and would have to generate program benefits over and above

Table IV-B-1. Estimated Current Total Annual Cash and In-Kind Income of the Primary and Secondary Target Groups

Department	Primary	Secondary
	<i>Jornaleros</i>	<i>Colonos, Arrendatarios and Propietarios</i>
Total Estimated # Families	105,000	206,500
Total Estimated Social Value	₡81,478,765	₡324,072,863
Ahuachapán	2,538,660	21,151,810
Santa Ana	4,372,162	27,380,689
Sonsonate	4,573,450	24,046,210
Chaletenango	853,415	13,717,655
La Libertad	11,298,618	29,655,439
San Salvador	9,208,430	16,633,054
Cuscatlán	2,009,854	14,327,234
La Paz	6,907,190	17,274,832
Cabañas	2,715,906	19,998,996
San Vicente	4,042,424	15,607,027
Usulután	17,401,268	33,503,852
San Miguel	6,811,700	35,667,993
Morazán	2,928,147	21,703,769
La Unión	3,817,528	33,404,303

that amount before it could be judged viable purely from an "economic" standpoint.<sup>6</sup>

Of course, in practice, many of the program families might already live on or near the lands expected to be purchased by the ICR, and might or might not change their economic routine to a high degree. But the point is the same; the program must add to whatever social value the families are already able to produce.

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<sup>6</sup>Note, however, that much of the current "social value" of the cash and in-kind income of rural families is based on off-farm employment (almost all for *jornaleros*), we assume that, to some degree, such employment will continue to be available. Thus, the program does not have to bear the whole burden of offsetting the total estimate of (for example) £9,000,000 for *jornaleros* because a lot of that amount will continue to be earned off-farm during the commercial crop harvests even after the program is in force.



## CHAPTER V

### ₡25,000,000 PROGRAM SIZE:

### LAND, FAMILIES, AND BUDGET

- Section A: Amount and Quality of Land Offered to ICR (ISTA):  
Findings of Agronomic/Engineering Survey
- Section B: Required Parcel Sizes for Participants
- Section C: Expected Number of Family Participants in a  
₡25,000,000 Land Purchase Program
- Section D: Overall Program Budget and Per Family Parcellization Costs
- Appendix A: Relative Worth of Properties Studied in the  
Farm Survey
- Appendix B: Potential Farming Practices on the Surveyed  
Farms
- Appendix C: Calculation of Costs and Returns for Surveyed  
Farms and Extension to Additional Land  
Purchases
- Appendix D: Treatment of Common Fixed Cost Items and  
Development Costs of Farm Survey Sample

Section V-A:  
Amount and Quality of Land Available to ICR<sup>1</sup> (ISTA):  
Findings of Agronomic/Engineering Survey

This section is based on the survey report prepared by Dr. Carlos Burgos, July 16, 1975 [2]. During May, 1975, Dr. Burgos visited lands that had previously been offered for sale to ICR (*Instituto de Colonización Rural*).<sup>2</sup>

Initially it was assumed by RDD, AID, that a considerable number of properties were "on the shelf" if ICR wanted to buy [18, Annex B]. Indeed, the up-dated initial list, prepared by ICR representatives (April 26, 1975), at RDD request, contained some 51 farms. However, Dr. Burgos soon discovered that only four were "considered by ICR agronomists as adequate for parcelling purposes". Dr. Burgos suggested that under a more flexible set of selection criteria, at least 17 of the 51 parcels should be of interest and, finally, in consultation with ICR agronomists, the number was set at 12 [2, pp. 1].

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<sup>1</sup>*Ley de Creación del Instituto Salvadoreño de Transformación Agraria* requires the selection and development of *De Los Proyectos de Transformación Agraria* areas, each of 10,000-20,000 manzanas in size. All large holdings in any selected area will be sold to GOES on a negotiated basis, or will be subject to expropriation. In this report, we assume that any chosen area will fall within the range of the sample results obtained by Dr. Burgos. Therefore, the present report will be indicative of general expectations from the government program if the provisions of the July 8, 1975 law are carried out. The only exception to this is that selected areas might include some parcel of efficiently utilized land and Dr. Burgos' survey did not include such situations.

<sup>2</sup>The objectives of the land survey were partially established by Allen LeBaron and Associates. They are listed as Report 2a in the original plan of work. All the land survey field work was completed within the time span of the Socio-Cultural Field Study. Therefore there was ample opportunity for mutual consultation with Dr. Burgos.

Eleven of the twelve were visited. Three were discovered to be no longer available as units for parcelling or because they were already in the hands of ICR [2, pp. 2]. The results of the careful survey of the remaining eight farms are assumed to be representative of the general range of land purchase possibilities because the properties readily can be put into three land classifications and because they are in widely spaced geographical areas (Figure V-1).

Table 1 of Dr. Burgos' report summarizes the physical characteristics of each property and contains an estimate of suitability for crop types. Table 2 of the same report summarizes the estimated required development (infrastructure) costs. Beginning with portions of both these tables, we can begin to establish the basis for an estimation of the expected returns from particular pieces of land plus the necessary repayment schedules.

In Table V-1, we summarize some of Dr. Burgos' results. These show his estimates of crop possibilities, the amount of land suitable for basic grains, etc., on the eight farms surveyed (see Appendix Table V-A-1 for the selected cropping patterns). The overall costs of the eight farms would be about \$6,735,000 and the average cost per gross manzana would be about \$960. However, it is apparent that a certain portion of the typical farm is likely to be unsuitable for cropping. We assume, therefore, that small *parceleros* could not be expected to bear the entire land acquisition costs in very many instances. For example, only 100 mz. out of 600 total are arable in Farm #1.

On the basis of the above argument and, given our knowledge of land prices, we have estimated the portion of the total of each asking price which might be properly charged to the small farmers who will utilize the land either as owners or renters. It is possible to quarrel with

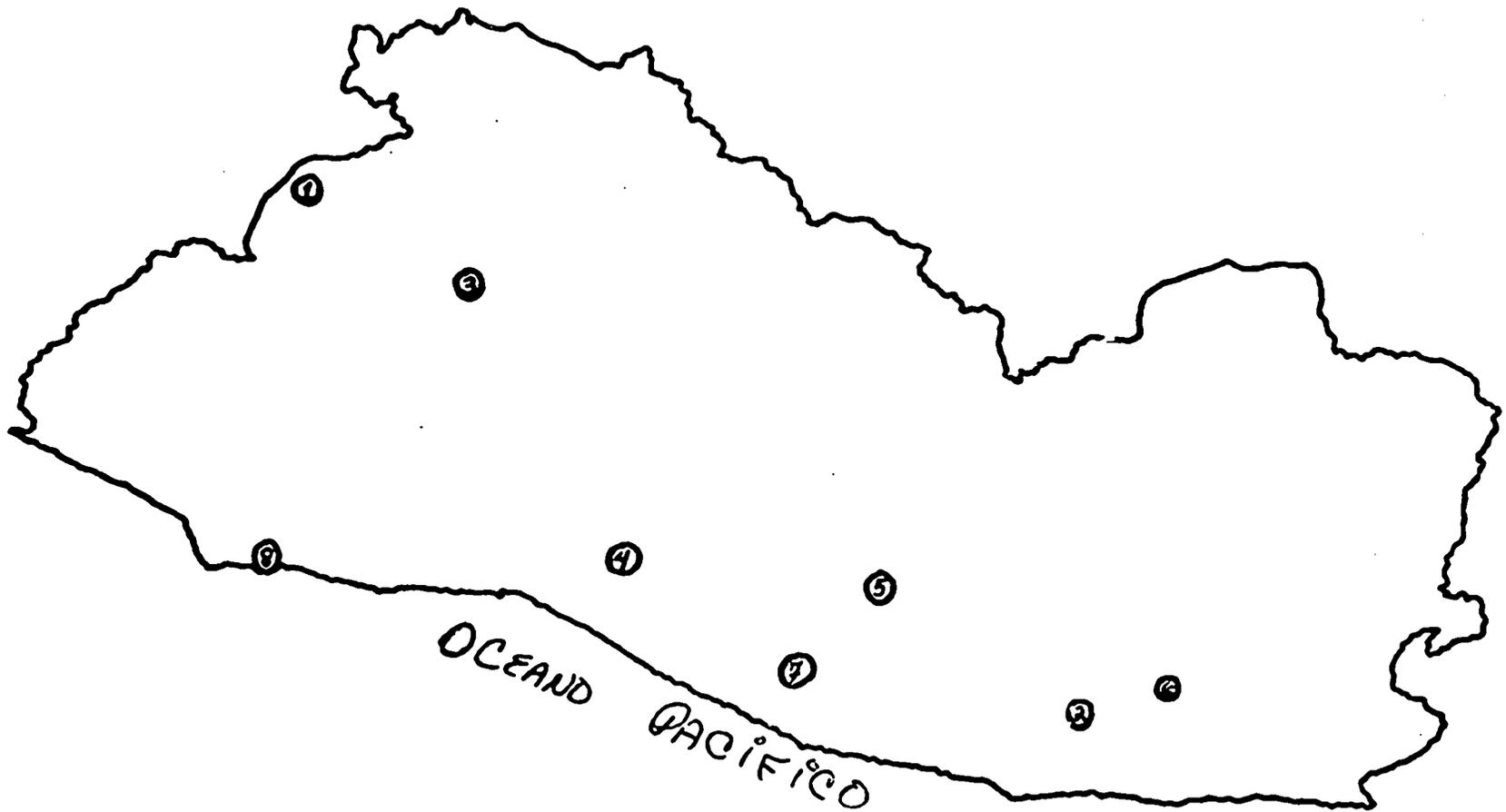


Figure V-1. Location of Properties Studied in Agronomic-Engineering Survey

Table V-1. Selected Characteristics and Costs of Surveyed Farms

Department	Farm Number	Gross Area ms.	Net Area For Grain ms.	Recommended Land Use	Crop Possibilities <sup>a</sup>				Forest ms.	Livestock ms.	Asking Price <sup>b</sup> \$	Portion Changeable To Parcelization Program
					Corn ms.	Sorghum ms.	Beans ms.	Rice ms.				
Santa Ana	1	600	100	Forestry	100	100	100	--	300	50	192,000	80,000
Usulután	2	1920	600	Inten. Ag. & Forestry	600	600	600	--	1320	--	1,000,000	600,000
La Libertad	3	731	120	Int. Crop & Forestry	120	120	200	120	580	120	595,000	220,000
La Paz	4	640	200	Permanent Crops	200	200	200	--	200	200	460,000	375,000
San Vicente	5	300	300	Inten. Cropping	300	300	300	--	--	300	500,000 <sup>c</sup>	500,000
San Miguel	6	670	470	Inten. Cropping	470	470	470	470	--	470	1,400,000	1,175,000
La Paz	7	1586	1188	Inten. Cropping	500	--	--	588	178	1188	1,460,000	1,380,000
Sonsonate	8	460	460	Inten. Cropping	450	450	450	450	10	460	1,400,000	1,400,000
<b>TOTALS</b>		<b>6907</b>	<b>3438</b>		<b>2750</b>	<b>2250</b>	<b>2330</b>	<b>1638</b>	<b>2588</b>	<b>2888</b>	<b>6,735,000</b>	<b>5,730,000</b>
<b>AVERAGE COSTS</b>											<b>2,694,000</b>	

<sup>a</sup>Will not add to gross area due to allowance for erosion and other factors.

<sup>b</sup>Price per manzana varies over a wide range due to slope, need for drainage, susceptibility to seasonal flooding, etc.

<sup>c</sup>This price was originally estimated by Dr. Burgos at \$200,000.

Source: [2]; column 12; ALA.

these estimates, but we believe them to be reasonably correct and accurate enough for present purposes. Thus, the average per manzana cost of the arable portions is estimated at ₡1,544 (Table V-1).

Section V-B:  
Required Parcel Sizes for Participants

Method and Assumptions

The value of bonds to be used as payment for land purchases is assumed to be ₡25,000,000. We assume that the cash requirement for necessary roads and other minimum infrastructure will be available. In fact these amounts may not materialize, however, it is not unreasonable to assume that our estimated impacts can be scaled up or down on a basis proportional to the difference in actual versus assumed financial investment. Thus our results should prove useful even if large shifts in program implementation are encountered.

The general problem is to match up numbers of available families (as defined in Chapter IV) with a ₡25,000,000 land inventory. To the degree possible, all the known "available" lands are considered individually when calculating the number of families that can be absorbed.

The original AID-Intensive Review Request documents (19, 20] set as a program objective a target income per included family of \$1,500. As shown in Chapter IV, this is roughly three times the level of the current living standard of the average landless, rural family. We therefore arbitrarily lower this target amount to \$1,000. Even with this reduction, roughly twice as many landless poor could be accommodated per resource dollar if only "subsistence" amounts of land are distributed. Thus, we

have two possible views of desirable program objectives: incorporating fewer families with relatively better incomes or, affecting a much larger number of families with relatively lower incomes.

In this section, we relate financial resources to land and people, employing both views, although it is our opinion that the more families that can be accommodated, the better.

The following simple model illustrates the method to be employed in assigning families to land areas that might be expected to be purchased.

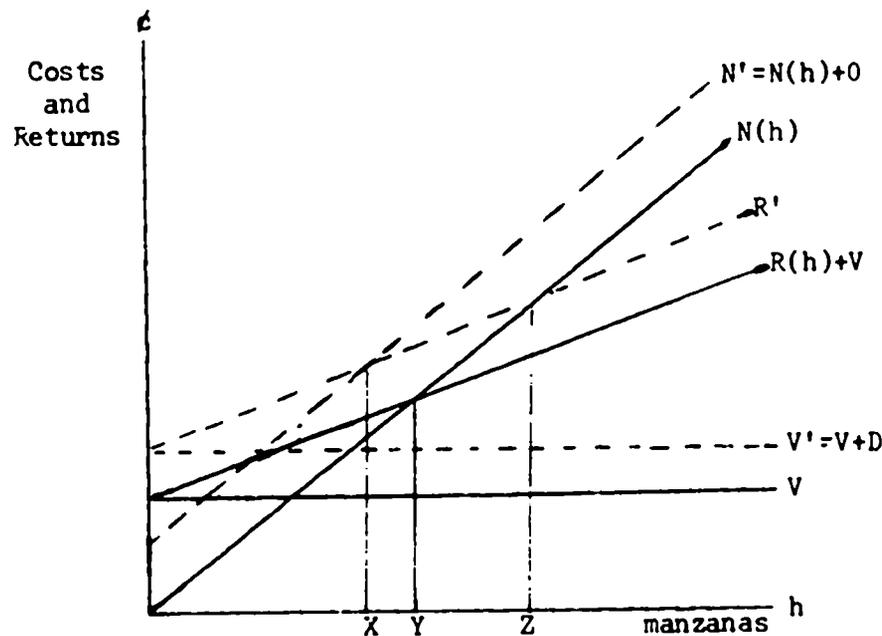


Figure V-2. Method of Establishing Parcel Sizes for Target Families.

$V$  = Value of current standard of living.

$D$  = Adjustment for required incentives and reduced off-farm income.

$R$  = Rent/manzana.

$R' = R(h) + V'$ .

$N$  = Net farm income/manzana.

$N'$  =  $N$  + off-farm income (0).

$Y$  = Number of manzanas required if income is entirely from the land parcel.

$Z$  = Number of manzanas required if adjustment for required incentives is met.

$X$  = Number of manzanas required if allowance is made for off-farm income.

If we let  $V + D$  equal some chosen target income, the model is automatically adapted to the target achieving point of view or goal. Obviously in this case,  $V + D$  will be "higher" and the required land parcels will be larger.

We have no way of knowing just how farmer families will be selected for participation in any land parcelling scheme; families from other tenure groups besides *jornaleros* may be allowed to participate. Since there are many poor families in all groups, an endless combination of possibilities may be imagined. Therefore, for this study we assume that there are only two subsistence possibilities: *jornaleros* only or an "average" of typical poor families from the poor *propietario*, *colono*, and *arrendamiento* groups. Our results will represent two ends of the rural poor spectrum in El Salvador. In the *jornalero* case, smaller parcels will be required and more families can be accommodated. The reverse is true for those families which already have some access to land.

The only other possibility is the case where we investigate the choice of pursuing the target income of \$1,000. In general, under this goal the same number of families will be affected, regardless of their initial classification. Also, regardless of initial classification, there would be fewer families participating. The only difference that would be

created by the initial classification would be in terms of actual net addition to agricultural output.<sup>3</sup>

#### Parcel Size Calculations

In Table V-2, we show the initial costs per manzana of the arable portions of each surveyed farm plus the estimated infrastructure costs as reported by Dr. Burgos.<sup>4</sup> These sums are the basis for calculating annual mortgage repayments per manzana necessary to amortize the entire investment in 10 years at 8% ( $R_1$ ). Also shown are annual rent payments that will amortize all the infrastructure investment in 10 years at 8% plus an element equal to the interest or opportunity cost of the public money locked up in the land investment ( $R_2$ ). Thus, either way, the whole program is self-supporting. Annual rents are cheaper for the farmer but then, he never acquires the land.<sup>5</sup> Payments are calculated on a per manzana basis; actual payments will be some multiple or fraction depending on the size of parcels allocated.

Whether the lands are sold or rented makes a difference because rents are lower than mortgage payments. Rents must cover only the social costs of the infrastructure investments (since we can assume they will depreciate whether in fact they will or not) plus something for the public's ownership of the land. Since the public retains ownership under a rental arrangement, it cannot expect the small renters to bear the whole investment cost in the land.

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<sup>3</sup>There may be some reason to choose to work with non-*jornaleros* but the *jornaleros* are the families in most need of economic security.

<sup>4</sup>For example, Dr. Burgos ignores certain costs such as legal fees, community warehouses, technical assistance, and drinking water systems [2, pp. 9]. See Appendix Table V-D-1.

<sup>5</sup>It would be possible to let a renter convert to a purchaser by requiring a lump payment of the "back" difference in the two methods.

Table V-2. Per Manzana Initial Costs, Rental or Repayment Fees, Crop Patterns and Expected Net Returns Per Hectare<sup>a</sup>

Farm Identity	Initial Costs Per Arable m <sup>2</sup>	Initial Development Costs Per Arable m <sup>2</sup>	Total Initial Costs Per m <sup>2</sup>	Estimated Date of Parcelization	Date of 1st Rent or Mort. Payment	Annual Mortgage Payment per m <sup>2</sup> 8% (R <sub>1</sub> )	Annual Rent Payment per m <sup>2</sup> 8% (R <sub>2</sub> )	Assumed Off-Farm Income Per Family (O)	Expected Net Returns Per m <sup>2</sup> + Off-Farm (N)
	€	€	€			€	€	€	€
1	800	3595	4395	3-'78	3-'79	655	600	500	1196
2	1000	1864	2864	3-'78	3-'79	427	358	50	2280
3	1833	4159	5992	3-'78	3-'79	893	766	100	1650
4	1875	936	2811	3-'78	3-'78	419	289	250	1350
5	1667	809	2476	3-'77	3-'78	389	254	0	1503
6	2500	1251	3751	2-'77	3-'78	559	386	0	2150
7	1161	445	1606	3-'77	3-'78	239	159	250	1437
8	3043	1780	4803	3-'77	3-'78	716	506	0	2824
A	900	2729	3629	3-'79	3-'80	541	479	150	1937
B	1854	2547	4401	3-'79	3-'80	656	528	125	1550
C	2023	1066	3159	3-'79	3-'80	471	326	75	1966

Farm Identity	All Groups		Jornalero		Proprietario		Colono		Arrendatario	
	€2,500 Target Income (V <sup>1</sup> )	Estimated Minimum Parcel Size <sup>b</sup>	Required Living Standard (V <sup>1</sup> )	Estimated Minimum Parcel Size Per Family <sup>b</sup>	Required Living Standard (V <sup>1</sup> )	Estimated Minimum Parcel Size	Required Living Standard (V <sup>1</sup> )	Estimated Minimum Parcel Size	Required Living Standard (V <sup>1</sup> )	Estimated Minimum Parcel Size
	€		€		€		€		€	
1	2500	2.41/2.28	980	0.94/0.89	1850	1.59/1.51	1500	1.44/1.37	2050	1.97/1.87
2	2500	1.31/1.23	1350	0.71/0.68	2285	1.16/1.32	2135	1.23/1.08	2650	1.53/1.34
3	2500	2.92/2.26	1260	1.47/1.28	2170	2.53/2.21	2020	2.36/2.05	2600	3.03/2.64
4	2500	2.12/1.74	1210	1.02/0.92	1910	1.62/1.48	1760	1.49/1.34	2300	1.95/1.75
5	2500	2.20/1.83	1010	0.89/0.82	1850	1.63/1.48	1700	1.50/1.36	2250	1.98/1.80
6	2500	1.57/1.29	1125	0.71/0.64	1900	1.19/1.08	1750	1.10/0.99	2470	1.55/1.40
7	2500	1.73/1.56	1210	0.84/0.79	1910	1.32/1.25	1760	1.22/1.15	2300	1.59/1.51
8	2500	1.19/0.99	1095	0.52/0.47	1810	0.86/0.78	1660	0.79/0.72	2275	1.08/0.98
A	2500	1.70/1.63	1185	0.79/0.76	1968	1.34/1.28	1817	1.23/1.18	2350	1.60/1.53
B	2500	2.45/2.18	1135	1.11/0.99	2040	2.00/1.78	1890	1.85/1.65	2450	2.40/2.14
C	2500	1.59/1.46	1110	0.71/0.65	1868	1.19/1.09	1718	1.09/1.00	2324	1.48/1.36

<sup>a</sup>These are based on current 1974 prices with a 10-year repayment period.

<sup>b</sup>These are minimum parcel sizes per family for the jornalero group under the two assumptions of minimum living standard and a target income for purchaser/renter alternatives, respectively.

Crop patterns expected to be introduced on the surveyed farms are as suggested by Dr. Burgos during the process of mutual evaluation of his report. These are shown in Appendix Table V-B-1. Net returns (N) are calculated from data in Appendix Table V-C-1. Required living standards (V') are found in Table IV-4 of Chapter IV. They are matched up, by department, with the location of each of the eight farms (the values of V' also vary due to assumptions about current average farm output and family size among departments).

Finally, the bottom section of Table V-2 contains all the same estimates as for the survey farms, but the data are averages of the results of purchasing additional lands similar to those in the sample. Dr. Burgos found that the characteristics of the surveyed farms fell naturally into three categories A, B, and C (see Appendix Table V-B-1). The averages for farms 1 and 2 form group A, the averages for farms 2 and 3 form group B, etc. In short, we suppose that the eight surveyed farms will be purchased at a cost of £6,735,000 and that the remainder of a £25,000,000 bond issue will be spent on acquiring lands of the same average qualities and proportions as represented by the sample of eight. This way of studying possibilities creates some notion of the range of expectations within any given set of property purchases. Thus, we gain an impression of the combination of characteristics which contribute to the most beneficial and profitable purchases and vice versa.

Further explanation of Table V-2 is as follows. The values necessary for the simple parcellization model are listed in the various columns, N, V', O, and R (rental payments or mortgage payments). Given these estimates it is a straightforward task to calculate the required amounts of land that must be parcelled to average families of each class, if they are

to achieve at least the value of living standard they currently are assumed to enjoy. Note that, depending on the cropping pattern assumed for each of the eight farms, it might still be possible to obtain some off-farm employment.<sup>6</sup>

Beginning with *jornalero* families, it may be observed that the minimum parcel size, when the land is sold on a mortgage contract, for farm number #1 in Santa Ana, is 0.94 mz. and 0.89 mz. if the land is to be rented. Remember, the minimums in column V' only provide a living standard equal to what is presently maintained (which is pretty low in the case of the *jornaleros*) plus some small incentive increment (Table IV-4). Inspection of any column V' may suggest that the properties requiring larger parcels are the poorer investments but, as will be shown this is only partially correct.

Moving to the goal of achieving target incomes of ₡2,500 (\$1,000), the required minimum sizes necessary to meet the target plus mortgage or rental payments increases substantially. Indeed the requirements are nearly 3 mz. in one case and may not be feasible given a basic assumption on farm labor costs: all labor is supplied by the individual families. If these larger parcels are not manageable with family labor, there would be an additional requirement for out-of-pocket labor costs (see Appendix Table V-B-2). As a result, the parcel sizes would have to include some additional increments to cover the cost of hired labor and even fewer families could be accommodated on any given piece of land.

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<sup>6</sup>We assume families will be busy year around on irrigated farms. But this may be pretty weak; it is possible that combined family earnings per amount of effort are greater during commercial harvesting periods than even good crops can produce on owned land during the same period of the agricultural year. Thus families may still leave or underutilize even irrigated lands during the 3rd trimester of the agricultural year.

The remainder of Table V-2 is pretty much self-explanatory. In general, it is assumed that if current *arrendatario* families participate in the program, they will need the largest of all parcels in order to meet current living standards. *Colonos* are closest to the *jornalero* results and so on. Small, poor, *propietarios* are assumed to have to "sell out" current holdings before they are allowed to participate in the program.

Section V-C:

Expected Number of Family Participants in a  
¢25,000,000 Land Purchase Program

Having established various minimum parcel size requirements per property (or for average properties, A, B, C) given land quality and location, the next step is to estimate the numbers of families that a ¢25,000,000 purchase program could affect. (The results may be generalized as necessary to larger or smaller parcellization programs.) This calculation is shown in Table V-3.

If we divide the parcel size requirements into the available arable portions of the surveyed farms (and into the assumed arable portions of the "extension purchases" - A, B, and C groups), we can estimate the number of [*jornalero*] families that the lands can absorb. For example, the 100 arable manzanas of farm #1 already have about 35 *colono* families and can absorb an additional 71 families if all (35 + 71) are allowed to purchase the parcels, or 77 additional (35 + 77) if the *parceleros* are only able to rent. If a required target income of ¢2,500 is to be met, the absorptive capacity falls to 6 additional [*jornalero*-or other] families in the first case (6 + 35) and 11 in the second (11 + 35)

Table V-3. Estimated Number of Different Groups that can be Accommodated on Farmlands Surveyed

Farm Identity	Arable Land mz	Reported # Colonos in Place	All Tenure Classes at Target Income		<i>Jornaleros</i>		<i>Propietario</i>		<i>Colono</i>		<i>Arrendatario</i>	
			Net Absorptive Potential		Net Absorptive Potential		Net Absorptive Potential		Net Absorptive Potential		Net Absorptive Potential	
			Purch	Renter	Purch	Renter	Purch	Renter	Purch	Renter	Purch	Renter
1	100	35	6	11	71	77	28	31	34	38	16	18
2	600	--	458	488	845	882	454	518	486	554	392	446
3	120(80)	2	66	87	134	154	77	89	83	95	64	74
4	200	30	64	85	157	187	94	107	104	119	73	84
5	300	30	106	134	307	356	154	173	170	190	121	137
6	470	12	287	352	650	722	386	424	415	462	291	324
7	1188	21	666	741	1393	1483	880	929	956	1010	727	768
8	460	26	361	439	859	953	510	563	558	616	400	443
SUBTOTAL		156	2014		4416	4794	2583	2934	2806	3084	2084	2294
A	3998		2352	2453	5061	5260	2990	3116	3239	3375	2504	2610
B	1376		562	631	1240	1390	687	774	742	835	572	644
C	4074		2562	2790	5738	6268	3424	3740	3723	4067	2752	3006
TOTAL		156	7490	8211	16455	17712	9684	10464	10510		7912	8554

The remainder of the table is interpreted in the same way. *Proprietarios* and *colono* families, who are estimated to often have a current standard of living lower than \$2,500, may be accommodated in larger numbers than the target goal would achieve. The assumed current living standard of *arrendatarios* may, however, be greater than the target income, depending on the location, production and cost characteristics of the property in question.<sup>7</sup>

The subtotals or totals indicate what is actually possible. All of the departments where the surveyed farms are located are estimated to contain far more families within each group than can be absorbed by a \$25,000,000 purchase program (even if it is devoted exclusively to a certain group such as *jornaleros*).

If we consider only a policy of land sales rather than leases, 16,445 *jornalero* families could be accommodated versus 7,490 for *arrendatarios*, 7,684 for current small *propietarios* or 10,510 for *colonos*. Somewhat larger numbers of families in every category could be absorbed if a program of renting or leasing the parcels is adopted.<sup>8</sup> Actually, the number of *arrendatario*, *propietario*, and *colono* families is estimated a little high, if allowance is made for the likely costs of necessary hired labor to help work the relatively larger parcels required to meet current

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<sup>7</sup>On average (Table V-2) the current living standard of the three groups, *colono*, *propietario*, and *arrendatario*, is very near a target of \$2,500, so it is a barely feasible alternative for the groups as a whole. The original USAID target of \$1,500 (\$3,750) would be a feasible goal except that family numbers affected would greatly be reduced and parcel sizes would not be manageable by single families.

<sup>8</sup>This suggests that if other than *jornalero* families are allowed to participate, a system of renting (the relatively much larger parcels) would have more "justification" than where *jornalero* families are concerned. Land should be sold to the latter group under adequate and proper repayment schemes.

living standards plus payment for land and infrastructure development. Therefore, the difference between *jornalero* numbers and the other groups exceeds the values in Table V-3.

The calculation of the arable area obtainable through extended purchases of groups A, B, and C lands is contained in Appendix Table V-C-3. The calculation of infrastructure costs is also found there. The assumed extended purchases take into account the proportions of arable and non-arable land as found in the survey sample. The proportion of overall land costs, as calculated from the sample (Table V-1) is also carried forward. Therefore, when we say that *parceleros* will pay for the land and developments, it should be recognized that our calculations will not recover the full £25,000,000 assumed budget. On average the share will be the proportion shown in Table V-1 (£5,730,000/£6,735,000) or 85% of the total spent on land acquisition. The public is assumed to bear the cost of the nonarable purchases. Some of these costs could be recovered from forestry and grazing uses.

Section V-D:  
Overall Program Budget and Per Family  
Parcellization Costs

Based on the characteristics of the eight farms surveyed, and their estimated cost of £6,735,000, the remaining £18,265,000 could acquire 14,279 mz. of group A land (3,998 arable), 4,747 mz. of group B land (1,376 arable), and 5,092 mz. of group C land (4,074 arable). Cost of the arable share would be £5,730,000 for the survey farms and £13,436,644 for the remainder. The overall infrastructure cost would be £19,598,788 (£4,332,300 for the surveyed farms--Appendix Table V-B-1--and £15,267,488

for the extended purchases). This cost for infrastructure is less than suggested to Dr. Burgos by ICR staff planners because as noted above certain expense categories are ignored. However, the amount is still some seven times the estimates of the original USAID/IRR document. (There seems no reason to imagine that a bond issue could pay for infrastructure; it is going to require cash.) Based on what we now know, the table in paragraph V of [19] would look more or less as follows:

Table V-4. Revision of Original IRR Cost Estimates

	(Arable)	AID	GOES -----\$1,000-----	Total
Land Purchase	¢19166644	--	\$10000.0	\$10000.0
Infrastructure	¢19598788	\$7500	339.5	7839.5
Credit		9000	3000.0	12000.0
Tech. Assis.		1000	--	1000.0
Other		2000	5700.0	7700.0
TOTAL	¢38765432	\$19500	\$19039.5	\$38539.5

Source: Adapted from [19].

This would imply a total land, credit and technical assistance cost of about \$2,267 per *jornalero* family for roughly 17,000 families of which \$912 each could be repaid by the farmers (total = \$15,506,172+). For families in other groups, the initial costs would be \$4,000-\$5,000 per family of which, about \$1,600-\$2,000 would be repaid at the mortgage levels shown in Table V-2.

Some costs could be temporarily or permanently reduced if less infrastructure is provided at the start. In this case, production might be

less, but the program could move forward settling families much faster.<sup>9</sup> Of course, it is quite obvious that there is some tradeoff limit between lower infrastructure cost (more land for families) and lower output per land unit (fewer families on larger units). Nevertheless, very poor and landless people are going to believe that the government is trying to do something for them when they feel the land titles in their own hands, not when they see elaborate displays of project planning document or field crews laying out engineering works.

Finally, for solely land and potential infrastructure costs of about \$16,000,000, as many as 16,500 landless families might be settled onto their own parcels. This number would be over 15% of our 1975 *jornalero* family population estimate of 104,000. So, for about \$104,000,000 at today's prices, all the landless people could be settled. The required area based on arable shares and proportions of groups A, B, and C lands in the farm survey would be about 200,000 mz. (see Table V-5).

Table V-5. Land Area in a \$25,000,000 Tenure Program (mz.)

Land Group	A	B	C	TOTAL
Survey Farms	2,520	1,371	3,016	6,907
Extended Purchases	14,279	4,747	5,092	24,118
Total	16,799	6,118	8,108	31,025
<i>Jornalero</i> factor 6.5 →				201,662

<sup>9</sup>This point of view may clash with the requirement of the law passed July 8, 1975, which is to "complete a given project before starting another".

When all the currently owned ICR land is taken into account, (about 70,000 mz.), granted that much may be of low quality, the magnitudes of such an undertaking may not seem too frightening. In point of fact, some pretty big land magnitudes need to be put in the program stream for, as Chapter VI of this study will show, the domestic requirement for basic grains is growing so fast that the output from the program analyzed in this report will barely make a ripple after a few years.

Appendix V-A:  
Relative Worth of Properties Studied  
in the Farm Survey

In Section B, it was noted that a simple, consistent inverse relationship between the required parcel sizes and quality of properties offered for sale does not exist. If we make use of the data for net per manzana returns for each surveyed property (N) as given in Table V-2, plus the estimated land and development costs for each parcel, it is possible to calculate the social value of the potential benefits in each instance. Ignoring any annual operation and maintenance costs for infrastructure development, the internal rates of return are as shown in Table V-A-1.

Table V-A-1. Internal Rates of Return for Each of the Survey Farms - (Return to Investment, Labor and Management - %)

Farm Identity	IRR Percent		Min. Parcel Size for ₡2,500 Target mz.	Min. Parcel Size for <i>Jornalero</i> Standard	Investment Ranking
	With Off-Farm Income	Without Off-Farm Income			
1	36.62	24.06	2.41	0.94	7
2	81.14	79.38	1.31	0.71	2
3	26.40	24.45	2.92	1.47	8
4	56.26	47.01	2.12	1.07	6
5	60.16	60.16	2.20	0.89	3
6	56.87	56.87	1.57	0.71	5
7	104.96	89.33	1.73	0.84	1
8	58.20	58.20	1.19	0.52	4

The best overall investment is property number 7 (also the largest arable area). It is a dry farm but one-third can be in cane, etc. (see Appendix Table V-B-1). The second best farm has good potential to be irrigated (#2). The third best can also be developed for irrigation. Probably the most attractive of all the surveyed properties, from a technical standpoint is #8, but it is the fourth most desirable on a cost/returns basis.

This is the type of analysis that is required to force agency engineers and agronomists to carefully review estimated development costs--or to force a reduction in asking price--or both. In reality, given that these rates of return must cover all value of family on-farm labor, any transportation costs, and other family expenses plus any project water operation and maintenance expenditures, only three or four of the eight properties are clearly good investments. Farms #1 and #3 need to have the investment costs, as now indicated, greatly reduced. Farms #4, #5, and #8 are probably acceptable because, the excluded labor costs would not change the overall cost structure too much.

Caution! Readers should not confuse this analysis with the model in the main body of the report. The model there is purely a mechanical method of splitting up what is, in effect, a fixed pie of costs and returns. The model does not tell us anything about the inherent benefits in any situation. In Chapter VII, we calculate the overall rate of return for the whole assumed investment program of \$25,000,000 plus development costs, from an entire pool of properties of the same general type covered in the farm survey.

What we have shown here is simply that the pool of properties would look a lot better if the expensive and risky offerings were subject to careful re-appraisal before they are included in the "package". This point will eventually be recognized as an economic offset to any political benefits of the expropriation powers conferred by the July 8, 1975 law.

Appendix V-B:  
Potential Farming Practices on the Surveyed Farms

Five out of eight surveyed farms exhibit irrigation potential. In this report we assume that water distribution facilities will be provided because studies in El Salvador indicate that irrigation "pays" not only because it can supplement rainfall but, most importantly, because crops can be grown during the dry season [8, pp. 1]. Irrigation benefits are great enough, even from grain crops, to repay investment costs at the farmer level [8, pp. 29]. In this study, the assumption is made that the cost of project irrigation systems plus land purchases are borne by the *parceleros* relying mainly on basic grain production. There is no doubt that successful vegetable cropping will easily pay for irrigation and other infrastructure, but the test of such social investments is whether the most traditional crops can bear the whole cost.

Two of the properties surveyed are placed in the lowest of three quality groups (A, B, C) [2]. One of these is assumed by Dr. Burgos to continue to operate as an entirely rain-fed area. This is property #1 in the tabulations. Number 2 is expected to have some irrigation development, so, it can also be planted in December. Properties #3 and #4, which Dr. Burgos classifies as medium quality, are not suitable for irrigation; it is technically infeasible on #4. Three of the four farms assigned to the highest quality category can all be irrigated and could easily produce a variety of crop alternatives besides basic grains. This is especially the case for farm #8 which is an excellent (but expensive) property (see Appendix Table V-A-1).

Except for an assumption about sugar cane in one portion of #7 and melons on a portion of #5, all returns are assumed to arise from various combinations of basic grain production. In summary, farms #1 and #4 are assumed to have only the normal two cropping (intercropping) patterns while the rest grow crops in the third trimester of the annual crop year.

Suitable basic ways to farm the arable portions of the surveyed properties are shown in Appendix Table V-B-1. These patterns were arrived at in consultation with Dr. Burgos.

In the main body of this report, reference is made to the assumption that modern inputs such as fertilizers, pesticides, and improved seeds will be universally employed on all lands in the program. In combination with irrigation and good cultural practices, significantly greater than average yields can be achieved (by this we do not mean easily achieved; a more accurate phrase would be readily achieved). Seventy and possibly eighty quintals per manzana of corn can be grown. Thirty and even thirty-five quintals of beans, and over 60 quintals of rice are possible. Under irrigation some yields might be better than during the rainy season, but in some cases, they may be no better or not as good since general humidity, amount of sunlight, etc., are important factors in addition to soil moisture (see Utah State University Team Reports, 1970-present for experimental results).

Despite our belief that very good yields, compared with average experience, can and will be achieved on irrigated lands, we assume the conservative values indicated in Appendix Table V-B-2 for this analysis.

In a recent study, Dr. Madsen reports the yields included in Appendix Table V-B-2, which were obtained from a sample of vegetable farmers, only

Table V-B-1. Cropping Systems Appropriate for the Characteristics of Each Survey Farm. Modern Inputs

Quality Group	Farm Identity	Yield Index	Crop Pattern in Arable Portions (mz)											
			May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
A	Dry	1	M→100				F→100							
	Irr	2	M→600				F→600							
B	Irr	3	F→80											
	Dry	4	M→120				F→120					M→120		
C		5	M/S→200									Sorghum harv. in Jan		
	Irr	6	M/S→200									Sorghum harv. in Jan		
	Irr	7	M→100									Hort→100 (melon)		
	Dry	8	A→160										M→310	
		4	M/S→310											
		2	A→400											
		4	M/S→388											
		4	C→400									Commer. (cane)		
		4	M→460				F→460					M→460		

Source: Dr. C. Burgos.

Table V-B-2. Yields Assumed for Study Purposes (qq/mz) with Comparison Data

Crop	Rainfed		Irrigated		Comparison Sources				
	← Fertility →				Burgos	Madsen	MAG		
	1 Low	2 Med	3 Med	4 High			1	2	3
Corn	45	50	55	65	50	42.9	23	39	60
Beans	17	21	21	25	20	9.22	9	14	20
Sorghum	25	30	37	42	25	18.14	25	40	60
Rice	--	60	65	70	65	64.26	--	--	65

Sources: [2, 12, 8, 10, 7].

21% of which utilized irrigation. He points out, nevertheless, that the corn and bean values are "somewhat lower" ... (and) ... "well below expected yields in El Salvador" [12, pp. 70,71]. The yields employed by Dr. Burgos and by *Dirección de Economía Agropecuaria*, MAG, are also included.

Appendix V-C:  
Calculation of Costs and Returns for Surveyed Farms  
and Extension to Additional Land Purchases

The analysis in this report and in Chapter VI which follows, depends upon the notion of "constant prices". By this, we do not mean that current price levels will be maintained in the future. What is implied is that if price movements are general, say for both farm inputs and outputs, no "real" change in relative price relationships will occur; purchasing power will remain unaltered and measured changes in production value calculated in constant prices will better represent real, physical changes not just monetary (inflationary) movements.

Similarly, wherever any data involving projections into the future are referenced, we prefer to employ measurements in physical units (consumption of quantities, for example) rather than to rely upon expenditures on various items. In this way, revisions or up-dating that take into account influences of inflation (deflation) may be made simply by multiplying quantities by the unit prices appropriate at a given time and place.

In order to estimate the economic productivity of lands that might be purchased for parcellization, it is necessary to convert what may be technically achievable by way of crop output into net worth in the market place or at the farm gate. This is the function of "crop of enterprise budgets". A number of groups, agencies, or individual researchers have prepared such budgets in El Salvador. Some of them are best estimates, some are based upon average achievements as revealed in agricultural

census figures, some are based upon experimental results, surveys of farmers, etc. For this report, we are interested in only certain input costs, and we have relied on only two sources [2, 12].

Since the arrangement of the budgets may appear somewhat peculiar, we assume a word of explanation is in order. The importance of obtaining correct costs of farmer cultivation practices is not in disagreement. But the methods of displaying the information, what to include and what not to include, often is. In our view, the proper determination rests upon the analytical situation and its requirements. For example, a common practice is to "charge off" fixed investments in land and machinery in crop budgets so that any residual can be treated as cash to the farmer. Another convention is to make an allowance for family labor inputs, then the residual appears to be something like net profit. Sometimes, it is appropriate to subtract only out-of-pocket costs and assume the entire residual is actually what is available as a return on all capital, the farmer's labor, etc. [7, pp. 19].

The approach here is essentially the last one named. Since our conceptual model has already allowed for the value of the entire family living standard (which includes the value of family labor) plus a calculated production value we want to achieve, we are interested in allowing only for direct production costs. We assume that the standard of living we have estimated (Table IV-4, Chapter IV) is more or less adequate to cover the acquisition, depreciation, and maintenance of some fairly simple capital requirements in the way of farm tools, etc. The fact that *jornalero* families may not even have this capital is not dealt with explicitly in this report.

In Appendix Table V-C-1, we show the details of the farm budgets utilized for basic grains. The major alterations to common format are that there is no direct allowance for rent or family labor costs. Another cost we simply ignore is any allowance for transportation or other marketing. This may be an arguable point, but our own surveys have shown that where basic grains are concerned, the smallest farmers "sell to anyone". They ordinarily do not raise vegetables and, on average, sell barely 10% of their grain production [10]. Furthermore, we assume merchants can reach the center of any project via a good road. Thus farmers, even a large number of them, can walk their grain to purchasing points.

In Appendix Table V-C-2, we show the cost and return calculations for all the arable lands on each of the surveyed farms. The same calculations for the assumed additional amount of land that could be purchased by ICR (ISTA) within a budget of \$25,000,000 are shown in Appendix Table V-C-3. The "net benefit/mz" values from these tables are introduced into Table V-2 as part of the overall computation of the amounts of land that would have to be allocated to the average families of various groups (*jornaleros*, *colonos*, etc.) that might be included in a parcellization program.

In Appendix Table V-C-2, an allowance is made for the possibility that some part of farm #5 would be put into melons and a part of #7 would be put into sugar cane. We do not show separate budgets for these crops but the values we employ are taken from MAG cost estimates [12].

Table V-C-1. Estimated Costs and Returns for 1 m<sup>2</sup> of Land Planted to Basic Grains Under Improved Management and Technology - No Hired Labor\*

	Intercrop		Interplant		Area
	Mils	Frijol	Mils	Mistillo	
Seed					
30# @.70	21.00		21.00		
120# @.70		84.00		4.00	
25# @.20					90.00
200# @.45					
Fertilizer					124.20
414 kg. Am. Sul. @.30			103.50		
345 kg. " "	103.50				
184 kg. " "		55.20			
230 kg. " "				69.00	
Transport - Fert.	11.00	6.00	11.00	7.00	12.00
Pesticides - Herb.	30.00	15.00	30.00	15.00	100.00***
Animal Power	46.00	4.00	50.00	6.00	30.00
Interest (11 1/2% mo.)	11.63	9.03	11.85	5.56	19.59
Operating Costs	223.13	173.23	227.35	106.56	375.79
Price (¢/qq)	18	46	18	15	30
Yield (qq/m <sup>2</sup> )					
1	45	17	45	25	--
2	50	21	50	30	60
3	55	21	55	37	65
4	65	25	65	--	70
Value Less Cost					
1	586.87	608.77	582.65	268.47	--
2	676.87	797.77	672.65	343.47	1424.21
3	766.87	792.77	762.65	448.47	1574.21
4	946.87	976.77	942.65	--	1724.21

	Mils	Frijol	Cuina	Nolin
	Silo	Silo		
Seed				
30# @.70	21.00			
120# @.70		84.00		
Fertilizer				
345 kg/A.S.	103.50			
184 kg/A.S.		55.20		
Transport Fert.	11.00	6.00		
Pest./Herbicides	72.87	55.77		
Animal Power	50.00	50.00		
Interest (11 1/2% mo.)	14.08	13.55		
Operating Costs	270.00	260.00		
Value of Production			2100	1820
Value Less Cost				
1	340	522		
2	630	706		
3	720	706		
4	910	890	1857	1322

\*All production assumed to require modern inputs - differences in yield due to availability of water, natural soil conditions, and topography of surveyed farms.

\*\*Technical possibilities from Table A-2. \*\*\*40 for herbicides.

\*\*\*\*As suggested by Dr. Durgos' Report [2]. Budgets adapted from [12] and [2].

Source: Adapted from [2]. Power and fertilizer costs are estimated somewhat higher in [12].



Table V-C-3. Estimated Division of £25,000,000 Budget after Purchase of Survey Farms (Based on Proportions Contained in Farm Survey) - Residual = £18,265,000

% of Survey	Land Group A			Land Group B			Land Group C		
	%	Average Price		%	Average Price		%	Average Price	
Total Area	2520	36	473	1371	20	769.5	3016	44	1578.25
Arable %	700	28		400	29		2418	80	
% Arable Area in:									
M-F		100			30			19	
M-S					50			45	
H		86			30			38	
F					05			23	
A								17	
C								04	
Me									
Budget Division									
Amount	£18265000	£6754000		£3653000			£8076600		
Total Land		14279 mz		4747 mz			5092 mz		
Arable Land		3998 mz		1376 mz			4074 mz		
Cost Arable		£3883777	971.43	£2046800	1487.50		£7506067	1842.13	
Infrastructure		£8440937	2111.29	£2361216	1716		£4465335	1096.06	
Area in:									
Me								163 mz	
M-F		3998 mz		413 mz			774 mz		
M-S				688 mz			1850 mz		
H		3438 mz		413 mz			1467 mz		
F				69 mz				937 mz	
A								693 mz	
C									
Production									
C								48510 mt	
Me								1059 mt	
H		371819 qq		80242 qq			248895 qq		
S				23392 qq			74000 qq		
F		75962 qq		10122 qq			17802 qq		
A							62779 qq		
Value Less Cost									
H		£5033205		£1161041			£3665050		
S				£ 308547			£1017500		
F		£3169494		£ 327414			£ 756097		
A							£1615585		
C							£1286901		
Me							£ 215486		
TOTALS		£8202699		£1797002			£8556619		

Appendix V-D:  
Treatment of Common Fixed Cost Items and Development  
Costs of Farm Survey Sample

In our model the fixed investments in land, irrigation provision, drainage and other improvements are recovered via rentals or mortgage payments (as mentioned above). The actual operation costs, say where an irrigation system is involved, are not dealt with. In El Salvador, these have been handled in different ways. Sometimes there is a fee per irrigation (Sitio del Niño [7, pp. 15]) and sometimes there is a small fee based on parcel area (Zapotitán [8, pp. 4]). For this report, we have no good basis for setting such charges. However, they could easily be included in the allowances for mortgage payments, or rental fees. This would have the effect of slightly increasing the amount of land necessary for each family parcel. If it is assumed that the water fee to cover operation and maintenance and other costs is ₡180/year on the irrigated farms, the necessary additional amount of land would not be over 0.1-0.15 mz. Correspondingly, less additional land would have to be added to parcels of rain-fed land if the operation and maintenance costs are less.

We also assume that *parceleros* will have to contribute annual labor for maintenance of road, ditch, and other improvements on the project and that they will not have to subsidize more than a minimum in IRR staff salaries once the project is in operation. Thus we do not explicitly deal with such residual cash (small) expenses anywhere in this report.

Appendix Table V-D-1 contains a ₡25,000,000 program development costs as estimated by Burgos and Stutler. The estimates have been

Table V-D-1. Sample of Survey Farms: Costs of Infrastructure Necessary for Land Parcelization Purposes (thousands of colones)

Property	# Arable Manzanas	Roads	Bridges	Topography	Parcelization	Soil Conser.	Irr. System	Drainage	Total	Cost/ ms*	Groups	
											Total	Av/ms
1	100	270	---	42	37.5	10	---	---	359.5	3.595	1477.9 A	2111.29
2	600	540	110	134.4	120.0	20	140	54	1118.4	1.864		
3	120 (80)	198	110	51.2	45.7	12	82.2	---	499.1	4.159	686.4 B	1716
4	200	82.5	---	44.8	40.0	20	---	---	187.3	0.936		
5	300	108	---	21.0	18.7	30	65	---	242.7	0.809	2355.3	
6	470	180	---	46.9	41.9	--	305.5	13.5	587.8	1.251		
7	1188	208	110	111.0	99.1	--	---	---	528.1	0.445	2168.0 C	1096.06
8	460	64	---	32.0	28.7	20	534.0	130.7	809.4	1.760		
									4332.3			
									\$1732.9			

\*Cost per arable manzana.

Source: Information supplied by Dr. C. Burgos and Prof. K. Stutler.

revised since submission of Report 2a by Dr. Burgos [2]. The overall development cost for the 8 surveyed properties is \$4,332,300. This compares with an overall acquisition cost of \$6,735,000 for the land alone. Therefore, the total costs (probably a minimum) to be recovered are above \$11,000,000 for the eight farms of 3,438 arable mz. or an average of \$3,199 of social resources per manzana that will have to be directed to lands of this overall quality in the kind of parcellization program assumed for this study. Actually, the cost will be higher than this because we have not included any allowance for legal fees, community warehouses, portable water supplies, special technical assistance or efforts by employees of ICR or other agencies above and beyond normal budgets.



**CHAPTER VI**  
**IMPACT OF PROGRAM NET OUTPUT UPON MARKETS**

**Section A: Method and Data**

**Section B: Future Demand**

**Section C: Program Production and Marketing Impacts**

**Appendix A: Population Worksheet**

**Appendix B: Estimated Current Production of Families that  
might be Included in a Tenure Program**

**Appendix C: Projections of Demand for Basic Grains by  
Department**

Section VI-A:  
Method and Data

As long as actual or potential quantity deficiencies (caloric intake) remain in rural diets, staple crops will be the major sources of foodstuff. Poor people will maintain this pattern until basic daily requirements are satisfied. Therefore, programs that help to alleviate this situation are not merely a means of helping establish a demand/supply equilibrium but strike basic questions of social improvement and political stability.

Basic staples are considered to be corn, beans, rice, and sorghum. In addition, parcellizations are expected to contribute net increased production of sugar cane and melons. In this chapter we ask whether the expected production increases will be great enough to disrupt or exceed the expected growth in the domestic demand for basic grains? To obtain an answer, our first task is to project the demand for the crops assumed to be produced in the tenure-production program.

A recent study calculates that these commodities comprise over 90% of the total food in rural diets. Corn is by far the most important single item representing 67% of the total with beans, rice, and sorghum, in that order, account for the remainder [9].

Several methods can be used to project future food demand, but the critical factor is always the availability of reliable statistical data. Empirical requirements are formidable in developed countries and very difficult to meet in less developed ones. Thus, usually such forecasting is constrained to simplified models.

A typical convention is to introduce the notion that, for long-range forecasting, price effects upon quantities demanded will be far outweighed by the effect of increases in real per capita incomes because the projections can be conceived in terms of unchanging relative food prices. Moreover, food consumption, in the aggregate, is linked closely to population growth, which in the case of lesser-developed countries, may be well over 50% in a decade. Thus, we arrive to the system most commonly emphasized in long-range projection studies.

For convenience, we may title it the "Engel method" to distinguish it from the econometric and other more sophisticated models.<sup>1</sup> Particular data requirements for this method are more readily met and there is no need to contrive scarce price or technical coefficients to satisfy complicated price and supply response functions.<sup>2</sup>

Estimates of future demand based on population growth, income growth, and the income elasticity of demand are linked to current consumption patterns for the various food products. A "benchmark" year must be

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<sup>1</sup>Engel's law states that as households (or per capita) incomes rise there is less than proportional increase in food consumption. Actually this is somewhat over-simplified. At very low food consumption levels, an increase in income can generate a more than proportional increase in food consumption, and it is conceivable that a "saturation" level of food consumption could be achieved. Indeed, for individual commodities, saturation might easily be reached; further increases in income would lead to negative increases in consumption.

<sup>2</sup>The "Engel" system requires several steps: a) calculate income elasticities for food products (ordinarily a household budget survey, rural and urban, provides the data); b) compute future domestic consumption ( $C_1 = c_0(Y_1/Y_0)^n P_i$ , where  $c_0$  = per capita consumption of a product in base year,  $Y_1$  = estimated per capita income in projection year,  $Y_0$  = per capita income in base year,  $n$  = income elasticity coefficient,  $P_i$  = population in projected year). Obviously, both population and national income growth must also be projected.

established for per capita consumption and income which, in this case, is 1971. This date is chosen for El Salvador because any population and other statistical computations can be based on the most reliable and recent data. Both the Census of Population and Agriculture were conducted in 1971.

The results of food demand projections often are in terms of expenditures (usually at constant prices). It is actually more useful to employ physical units as basic data, then the results can be converted to raw agricultural product equivalents and can be compared directly with expected supplies of the same items.

Usually, separate demand forecasts are made for urban and rural consumers in order to account for differing rates of population and per capita income growth as well as for the differences in measured income elasticities for the same commodity. In the present study only breakdowns for urban and rural population projections are available. Common elasticity coefficients are all that are available; income projections also are not available for the separate sectors.

#### Estimates of Per Capita Income

A useful step in demand analysis is to avoid reliances upon gross national or net national product projections, moving instead to estimates of disposable income or private consumption. These data, usually on a national basis, show changes and possible trends in purchasing power in the private sector and can be converted to a family or per capita basis. Preferably, estimates would be made for urban, rural or possibly political sectors. However, disaggregation of consumption and

disposable income statistics has not been achieved to any degree of reliability in El Salvador. Therefore, the average per capita disposable income for the country as a whole is employed. The "*Censo de Población, 1971*" provides estimates of private consumption in El Salvador for the years 1961-1971. These figures are presented in Table VI-1 along with the growth rates of recent years. The compound rate of growth in real terms for the entire period is 1.51 percent.

In order to broaden our perspective, trends in private consumption are compared to per capita gross domestic product for selected corresponding years (Table VI-1).<sup>3</sup> The growth rate is 1.67 percent from 1961 to 1971. However, little confidence is placed in the values for 1968, 1969, and 1970. Another estimate for the shorter interval of 1961-1967 yields a 1.99% rate of growth in per capita domestic product. Corresponding to this latter time period, the growth rate for private consumption is 2.05% which is fairly close. Nevertheless, there does not appear to be much consistency in the relationship between private consumption and gross domestic product, so we have chosen to rely upon per capita private consumption trends as our guide to the future. Constant prices are employed in order to estimate consumption changes due to growth in real incomes.

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<sup>3</sup>Official figures for private consumption are utilized as proxies for disposable income. The two estimates differ by actual net amounts of personal taxes and transfer payments. Private consumption ordinarily is a more stable statistic than disposable income, although transfer payments and differential taxation rates do tend to buffer disposable incomes from the broader swings of GDP. In addition, it may be noted that various components of the National Income Accounts could be used to measure rates of future income changes, GNP, NNP, etc., all of which are more or less reasonable. The choice depends pretty much on the degree of detail in available data.

Table VI-1. Rural and Urban Per Capita Private Consumption, GDP, and Growth Rates (1972 = 100)

Year	Per Capita Private Consumption	Annual % Rate of Growth	Per Capita Gross Domestic Product	% Rate of Growth
	₹		₹	
1961	524	---	675	--
1962	558	4.6	730	8.1
1963	563	3.9	726	(0.5)
1964	535	5.0	703	(3.2)
1965	568	4.4	742	5.5
1966	590	4.4	757	2.0
1967	604	1.7	775	2.4
1968	613	2.0	771	(0.5)
1969	609	(1.1)	779	1.0
1970	546	0.4	726	(6.8)
1971	618	3.2	810	11.6

Source: [14, 5].

Projected private consumption (which we treat as income) values based on compounded growth rates yield higher projections than simple trends. Since conservative estimates are desired in order to expose projected increases in basic grains output to the maximum chance of saturating the market, the trend values are used. The results are shown in Table VI-2 for the planning horizon 1971-1990.

#### Income Elasticities

Various functions can be fitted to household consumption data to estimate income elasticities whether data is cross-sectional or time

Table VI-2. Projected Per Capita Private Consumption, 1971-1990<sup>1</sup>

Year	Value	Year	Value
	¢		¢
1971	609 <sup>2</sup>	1979	664
1975	637	1980	671
1976	644	1985	705
1977	650	1990	739
1978	657		

<sup>1</sup>The equation is  $Y = 534.25 + 6.83636 X$ ;  
 $R^2 = .47$ .

<sup>2</sup>Taken from trend line.

series. Some theoretical arguments have been advanced for selecting one form rather than another [6]. In practice, decisions have relied on such factors as ease of computation, goodness of fit, or ease of application. Generally the choice has fallen upon log-long functions. These have the property that the estimated coefficients are the desired elasticities. In addition, they show a constant ratio between the percentage increase in per capita consumption and income. Log-log functions imply a demand for food items that remains below the saturation level throughout the projection period. Finally, the value for any elasticity is assumed to be constant over all ranges of income.

The El Salvador elasticity coefficients used in this report for individual food products are those estimated by the FAO for its study, *Agricultural Commodities--Projections for 1975 and 1985*. Elasticity values are .2, .3, .5, .2, .6, and .2 for corn, beans, rice, sorghum,

sugar cane, and melons, respectively. All of these were estimated on a log-log basis.

Estimates of these coefficients may serve several purposes. By themselves, they provide some impression of the effects that changes in family disposable incomes will have upon future consumption of food products. For example, if the coefficients are low, the main increase in consumption will be due mostly to population changes; large coefficients usually imply an augmentation of impacts of population change, depending on the projection function used.

#### Population Growth

Population censuses for 1961 and 1971 indicate that the rate of urban migration is slightly increasing. In 1961, about 38.5% of the population was living in urban centers whereas 1971 classified 39.5% as city-dwellers. Actual numbers of people better illustrate the contrast. For example, 966,899 people were classified as living in urban areas. However in 1971, 1,402,972 people were so classified. This was a 45% increase over 1961 as opposed to only a 39% increase in rural living. Total population increased for the same time period by 41%.

Population projections are handled in the following manner. First, to establish a base year, population trends are fitted to a straight line for the years 1961 to 1971. Next, the urban and rural growth trends for each department are derived by fitting a trend line through the relative percentage changes in each sector using the same period of time. These calculations are the basis for projecting actual expected population sizes for each department in the years 1975, 1980, 1985, and 1990 (Appendix Table VI-A-1).

Finally, the numbers of people in each department for both urban and rural sectors are summed for the years in question. The results are presented in Table VI-3. These projections are, again, deliberately on the conservative side, and consequently, the rate of compound growth is a low 2.62% annually.

Table VI-3. Population Projections, El Salvador, 1971-1990

Year	Urban	Rural	Total
(1,000s of people)			
1971	1402.0	2147.3	3549.3
1975	1631.9	2457.8	4089.7
1976	1682.1	2501.8	4183.9
1977	1732.3	2545.9	4278.2
1978	1782.5	2589.9	4372.4
1979	1832.7	2634.0	4466.7
1980	1882.9	2678.0	4560.9
1985	2139.6	3093.1	5232.7
1990	2402.0	3403.0	5805.0

In spite of the fact that population estimates exist in abundance we only incorporate national totals in the main body of the study due to lack of good urban/rural breakdown for per capita consumption and elasticity estimates.

#### Per Capita Consumption

Direct estimates of family consumption have not received much attention until recently. Much more work will have to be completed before

reliable figures are available. However, estimates of apparent consumption are available due to the fact that domestic production figures can be corrected for items such as net imports/exports, seed stocks, waste, carry over, and animal and industrial uses. We assume the results to be quite accurate for the agricultural census year of 1971. Table VI-4 shows the per capita apparent consumption figures for each crop used in the study.

Table VI-4. Annual Domestic Per Capita Consumption, Weekly and Annual Expected Totals for Average Families

Crop	Annual Domestic Per Capita Consumption	Weekly Consumption For Family Of 5.5 People	Annual Consumption For Family Of 5.5 People
		(lbs)	
Corn	277.00	5.33	1523.50
Beans	23.96	0.46	131.78
Rice	18.89	0.36	103.90
Sorghum	40.42	0.78	222.31
Sugar Cane	706.38	13.58	3885.09
Melons	32.16	0.62	176.88

There is no necessary reason to accept the agricultural census figures as completely accurate. However, available household consumption or expenditure cross-checks are either not too detailed for basic grains or else indicate enough consumption in the rural areas alone to account for virtually all total, official, production estimates [cf. 9]. We have therefore, opted for conservative figures that may prove to be low. We assume consumption certainly will not be less than our estimates and may

be much more. A conservative demand estimate narrows the apparent domestic market growth for grains and will more readily show if some expected output increases due to the production program may have to be exported.

The most noticeable figure is that for sugar cane. This is raw cane which has not been milled. Transformation of cane into raw sugar is estimated at about 8% which translates into roughly 56.6 pounds of raw sugar per capita. In the case of sorghum, special allowance is made for human (45%) and nonhuman (55%) consumption.

Factors other than income and population also influence demand. Among these are relative prices, increasing urbanization, changes in size and distribution of income, changes in taste, and changes in the age structure of the population (household sizes). Reliable data to allow for such factors are seldom, if ever, available. Thus, we attempt to be as conservative as possible. If incomes rise high enough, per capita demand for basic grains will fall -- but the immediate future for the rural poor is that rapid population growth will hold growth of per capita incomes down.

#### Section VI-B:

#### Future Demand

Demand estimates based on the data presented above have been calculated and are presented in Table VI-5. Changes in quantities demanded are separated out by year from 1975 through 1980 rather than in five year increments to facilitate comparison of expected staged increases in the net addition to agricultural production during the project development period.

Table VI-5. Demand Projections for Selected Crops, 1971-1990

Crop	Year								
	1971 <sup>1</sup>	1975	1976	1977	1978	1979	1980	1985	1990
----- (Metric Tons) -----									
Corn	446889	519581	532712	545729	558942	572208	585502	678418	759740
Beans	38655	45145	46337	47513	48716	49925	51138	59547	67000
Rice <sup>2</sup>	30475	35914	36942	37951	38994	40017	41107	48342	54907
Sorghum	65210 <sup>3</sup>	75818	77734	79633	81561	83497	85437	98995	110862
Sugar Cane	1139616 <sup>3</sup>	1349026	1389179	1428415	1469280	1510543	1552135	1834360	2093313
Melons	51884	60324	61848	63360	64894	66434	67977	78765	88207

<sup>1</sup> Base apparent consumption data are adapted from the *Censo del Sector Agropecuario*, 1971 [13].

<sup>2</sup> All reference to rice is in terms of polished rice.

<sup>3</sup> Current domestic production is estimated to be 130,404 mt for sorghum and 1,639,523 for sugar cane before adjustments are made. In the case of sorghum only 45% is considered to be for human use, while sugar cane was netted to domestic use by estimating that 40,000 metric tons of raw sugar are exported at a conversion rate of 8% of actual cane.

Illustrated in Table VI-6 are demand projections from a study made in 1969 [15]. Comparison of the two sets of estimates shows those of the present study to be significantly lower in the case of rice, sorghum, and sugar cane. (It is possible that the 1969 sorghum estimates include animal with human demand.) As mentioned earlier, we want estimates on the low side in order to view the agricultural production consequences of the tenure program under a conservative set of conditions.

Table VI-6. Nathan Report Demand Projections for Selected Crops, 1970-1990

Crop	1970	1975	1980	1985	1990
------(Metric Tons)-----					
Corn	257000	313000	382000	465000	564000
Beans	33000	41000	51000	64000	81000
Rice	54000	69000	90000	116000	151000
Sorghum	108000	132000	161000	196000	237000
Sugar Cane	1250000	1612500	2087500	2675000	3400000
Melons	32000	41000	54000	70000	90000

Source: [15].

The demand for corn presents the only large discrepancy in that it is higher than the Nathan estimates. This result leads to a strong suspicion of the assumptions about average family consumption employed in 1969. This suspicion arises from the fact that our values are well under the estimated family quantities of recent consumption studies. Other than this point, there appears to be few complications or required

adjustments when these two separate projections are examined on an incremental basis. Yearly increases in demands are almost the same and the only difference is associated with the base year estimates.

The same incremental analysis, as applied to other crops, is shown in Table VI-7. Marginal additions to quantity demanded are estimated each year for 1975 through 1980 and then continue with five year increments for 1985 and 1990. The values in the table will be compared with the incremental estimates of additional output to be expected from the proposed program. See Appendix VI-B for departmental projections.

Table VI-7. Increments in Projected Demand, 1975-1990

Crop	Year						
	1975-76	1976-77	1977-78	1978-79	1979-80	1980-85	1985-90
	----- (metric tons) -----						
Corn	13131	13017	13213	13266	13294	92916	81322
Beans	1192	1176	1203	1209	1213	8409	7453
Rice	1028	1009	1043	1053	1060	7235	6565
Sorghum	1916	1899	1928	1936	1940	13558	11867
Sugar Cane	40153	39236	40865	41263	41592	282225	258953
Melons	1524	1512	1534	1540	1543	10788	9442

#### Section VI-C:

#### Program Production and Marketing Impacts

In Chapter V, we estimated the number of families of different basic groups that could be absorbed in a tenure program based on a \$25,000,000 land purchase program. Any land purchases are assumed to be of the same relative quantity and quality as revealed in the farm survey conducted by Dr. Burgos [2].

In this section we ask: what is the net crop increase the purchases could be expected to generate? All of the families that might participate in a parcellization program are already agricultural producers to some degree. In addition, the lands that may be purchased are productive to some degree, no matter how minor.

#### Lands to be Purchased

As reported earlier, Dr. Burgos' survey revealed a substantial need for infrastructure investment on all eight farms. None of them were found to be operating at peak efficiency. Much of the arable land is unused or poorly maintained. Modern inputs are not always employed. Costs per unit of output are sometimes high. Much of the land is in poorly maintained pasture. Some is currently in cotton or sugar cane.

In Table VI-8, a rough summary of the current status is presented. It is not fully accurate, but it is the best estimate we can make. The arable areas (reported in Table V-1) are adjusted by the estimated percent of effective use. This is not over about 50% on the coastal properties and rises to 80% on the dry farms. These values plus an allowance for yields on the low side of Appendix Table V-B-2 and an allowance for costs (Appendix Table V-C-1), are used to estimate the current production and its value.

Some of the arable portions are in commercial crops. We have used the average per manzana returns for cotton and sugar cane [12] to estimate the values of current production on these lands. Then the overall weighted average of all the surveyed farms is assumed to apply to any extended farm purchases on the basis indicated at the bottom of the table (VI-8).

Table VI-8. Estimated Current Productivity of Surveyed Farms - Estimates for Extended Purchases

Farm Identity	Tech Level	% Eff. Use	Current Crops	Net mz.	Amount Produced			Net Value of Current Production			
					Basic Grains (qq)			Basic Grains			Other
					Corn	Sorghum	Beans	(Cost/mz £160)	(Cost/mz £90)	(Cost/mz £100)	(Net/mz £500)
1	1-2	0.80	Some Grain	80	3600	2000		52000	22800		
2	2	0.50	Cotton/Pasture	300	0	0		0	0		150000
3	2	0.40	Grain-Pasture	50	2250	1250		32500	14250		
4	2	0.80	Some Grain	160	7200	4000		104000	45600		
5	1	0.20	Grain	60	2700	1500		21000	17100		
6	2	0.50	Cotton/Pasture	235	0	0					117500
7	1	0.10	Some Grain	120	3600		1560	58800		51760	0
8	2	0.60	Cotton Grain Pasture	275 (50)	2500		1000	37000		41000	112500
<b>TOTALS</b>					21850	8750	2560	305300	99750	92760	380000
Extended Purchases								← 1648788 →			
A	} Over-	15%	Grains	1417							
B		22%	Other	2079							1039280
C		37%	Overall	----							

For example, of the expected arable land purchases, about 15% is assumed to be in grains and 22% in commercial crops. This means about 1,400 mz. of grains and 2,100 mz. of cotton or sugar cane. The average values covering all crops are shown in estimates in the right hand side of Table VI-8. These or similar estimates must be subtracted from the gross outputs or values assumed to be forthcoming if the program moves ahead.

#### Families to be Moved

The number of families that could be involved in a \$25,000,000 land purchase program varies according to the target group selected. In addition, the average value and amount of current production of each family selected varies for the same reason. We have assumed (Chapter III) that the average *jornalero* family in a given department produces 1/6th the crops (i.e., a garden plot) of the average, poor farmer. If a family is moved, they will no longer produce the current quantity; it will produce much more, but the net increase in farm output will be the before and after difference.

From the standpoint of the families to be moved, the overall output of agricultural products will only increase by the sum of all the individual before and after differences. Therefore, it might appear necessary to adjust expected production on the "new lands" by the current amounts being produced by the "selected" families. We ignore such an adjustment because we feel it necessary to assume that other families will buy, take over, or otherwise acquire all the economically productive land that is sold or otherwise vacated by those selected. Except for some dislocational transitions, the same amounts of production will con-

tinue to be forthcoming from the "vacated" lands. All that is taken into account, therefore, is the before and after situation on the purchased lands.

#### Estimated Net Increase in Crop Production

The expected gross output from program lands has been estimated in Appendix Tables V-C-2 and -3 of Chapter V. The net increase in production due to the program is obtained by subtracting the current average production of the surveyed lands plus estimates to cover purchase of additional lands (Table VI-8). This calculation is shown in Table VI-9.

The net increase in production is not assumed to occur instantaneously since the acquisition of various properties will require some time for planning, organization, and bargaining. Assumed stages are as follows: properties 4, 5, 6, 7, and 8 are bought first. This takes place soon enough to permit crop production in the 1977 agricultural year. The first mortgage or rental payments are received in April, 1978. The second set of properties (1, 2, and 3) are purchased and production occurs in 1978. All of the extended purchases of similar properties, to completely exhaust the \$25,000,000 budget, are made to assure cropping by 1979.

As indicated above, there is no assumed difference in output regardless of the tenure group from which target families are selected. Any target group produces the same output on the "new" lands because, whenever the family assignments are fewer, the parcel sizes are larger, and vice versa. Any amount of production that may be currently produced on a given program farm must be netted out against potential production

Table VI-9. Estimated Net Increases in National Production of Selected Crops According to Assumed Stages of Land Purchases and Parcelization

	Maíz (qq)			Masiillo (qq)			Prljol (qq)			Arroz (qq)		
	1977	1978	1979	1977	1978	1979	1977	1978	1979	1977	1978	1979
<b>New Production</b>												
Annual Δ	146000	83700	710956	38060	0	97392	11500	18500	103886	35200	0	62779
Accumulate I		229700	920656		38060	135452		30000	133886		35200	97979
<b>Current Production</b>												
Farm Survey 1		3600			2000							
Farm Survey 2		0			0							
Farm Survey 3		2250			1250							
Farm Survey 4	7200			4000								
Farm Survey 5	2700			1500								
Farm Survey 6	0			0								
Farm Survey 7	3600			0			1560					
Farm Survey 8	2500			0			1000					
<b>Total for Average of all Additional Land</b>			56680			24000			5838			
Annual Δ	16000	5850	56680	5500	3250	24000	2560	0	5838	0	0	0
Accumulate I		21850	78530		8750	32750		2560	8398			
Net Increase	130000	207850	862126	32560	29310	102702	8940	27440	125488	35200	35200	97979
<hr/>												
	Café de Arábol (mt)			Molón (mt)								
	1977	1978	1979	1977	1978	1979						
<b>New Production</b>												
Annual Δ	28000	0	48510	1182	0	1926						
Accumulate I		28000	76510		1182	3108						
<b>Current Production</b>												
Farm Survey	0	0	0	0	0	0						
Av. Additional Land	0	0	0	0	0	0						
Net Increase	28000	28000	76510	1182	1182	3108						

regardless of the tenure group of the families assigned. *Therefore, tenure status makes little or no difference on net increases in agricultural output unless it is supposed that the land resources vacated by program participants fall idle and are not taken up by anyone else.*

As long as some other people take over the productive resources (land) the program families "leave behind", there is little reduction in agricultural output due to the transfer.<sup>4</sup> The only economic differentiation is in the number "harvesting jobs" vacated. Since a relatively greater number of *jornalero* families could be accommodated on a minimum living standard basis, more of such jobs would be available for other persons than if families from other tenure groups were chosen for the program.<sup>5</sup>

Therefore, to return to Table VI-9, if we consider the year 1977, the first stage of land purchases would produce 146,000 qq. of corn, 38,060 qq. of sorghum, and so on. Meanwhile, we have estimated the existing corn output from the survey farms at 16,000 qq. This provides a net gain of 130,000 qq. In 1978, the net difference in corn output is 207,850 qq. Then, during 1979, when the third stage of land purchases is assumed to make an impact, the difference rises to 862,126 qq. This is the overall net increase that is assumed to be held constant on into

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<sup>4</sup> In reality, there undoubtedly would be some short-run diminutions in crop output until the vacated resources were back at full former efficiency. This would be felt more in the case of groups that currently have significant amounts of land or access to the fruits of the land than for *jornaleros*.

<sup>5</sup> None of this reasoning should be interpreted to mean that all family transfer costs, or harvest time readjustments, or more intensive use of the purchased lands, can or will be entirely internalized by the families affected. There will undoubtedly be some social costs, such as for new schools in impacted areas or the need for extension agents to deal with more people than before. This must be expected. The question is, "are there any major external effects that society must bear?" The answer is no, or at least there is nothing that is very obvious. The program participants bear the greatest bulk of direct program outlays and no big, serious, social costs are apparent.

the future. It is the value of this difference that helps form the benefit stream to repay the investments in land and development.

All of the other crop information is laid out in the same manner. None of the surveyed farms currently produce rice, so this crop is ignored in current assumptions about extended land purchases. Sugar cane, cotton, and horticulture crops are also ignored. Of course, this pattern might not hold in an actual purchase program. And, in addition, it is quite possible that a program involving numerous parcels would run the risk of including some properties that are already quite fully utilized and efficiently operated.

To the degree that quite productive lands are expected to be purchased a downward allowance must be made in the forecast of agricultural benefits of average properties as analyzed here. The "benefit" of parcelling a well-operated, productive property will have to be judged on the basis of the tenure and land distribution aspects, because there will be little or no social benefit from increased output.

The *modus operandi* of public land purchases, all things equal, ought to be to search out properties that are currently underutilized, especially if they do not have lots of *colonos* already upon them. In the sample of farms surveyed, only 156 *colono* families were reported (although we believe more people are actually in place, we have no firm data).

Share of Growth in Domestic Demand that may be  
Met by Program

The estimated relationships between potential net increases in crop output and domestic demands are shown in Table VI-10. Twenty-three

Table VI-10. Share of Projected Crop Demand Increments that can be Covered by Net Output Increases from a £25,000,000 Parcellization Program

Crop	Crop Increase to 1977 wt	% of 76-77 Demand Δ	Crop Increase to 1978 wt	% of 77-78 Demand Δ	Crop Increase to 1979 wt	% of 78-79 Demand Δ	Crop Increase 80,...90 wt	% of 79-80 Demand Δ	% of 1985 Demand Δ	% of 1990 Demand Δ
Corn	5909	23	9448	24	39188	74	39188	56	25	16
Beans	406	17	1247	35	5704	119	5704	95	40	26
Rice	1040	51	1040	34	2895	70	2895	56	23	15
Sorghum	1480	39	1332	23	4668	61	4668	49	20	13
Cane	28000	35	28000	23	76510	47	76510	38	16	10
Melon	1182	39	1182	26	3108	51	3108	41	17	11

percent of the share of increased demand for corn between 1975 and 1977 could be met by the program. Demand continues to increase between 1977 and 1978, but so does the programmed output of corn. Thus, about 24% can still be covered. Output in the third year jumps enough to cover 74% of the growth in demand above 1975 levels. Then the share of increase the program could cover slacks off. The program could cover 25% of the post-1975 growth in demand for corn by 1985 and only 16% by 1990.

By the end of the third crop year, under our assumptions, the jump in bean output could cover 119% of the growth in bean demand from the base year of 1975. By 1990, the output of the program would cover about 26% of the difference in demand.

The increases in annual production are zero after the 1979 crop year, whereas demands keep climbing. The share of increased demand the program can cover begins to fall after 1979. Therefore, 1979 is the critical period as far as program pressures on the absorptive powers of the domestic market is concerned. The only crop that is projected to be in surplus on the basis of the data we are analyzing, would be beans for the year 1979. However, every other crop output could cover a significant share of the market growth as of the critical year. If the rate of growth in average yields of basic grains improves for all existing producers, more crops might be in surplus.

Since we have no good way of anticipating general movements in yields and the program net output as analyzed is based on very conservative estimates of market growth, we assume any surpluses that might materialize will be exported through IRA or other organized channels. We doubt that this assumption will need to be put to the test. A more likely prospect is that some definite staging of all underused lands into

full productivity will be required in order to reduce or contain heavy reliance on food imports and to lessen the load on foreign exchange reserves and annual balance of payments.

In order to convey a better perception of how program impacts relate to total predicted demands for each grain crop under consideration, the information presented above has been diagrammed to form Figures VI-1, VI-2, VI-3, and VI-4. An explanation of each figure is found under corresponding crop headings which follow. No discussion is given of sugar cane or melons since the potential incremental production of both crops (from the lands analyzed here) would be much greater than the domestic market could possibly absorb.

#### Corn

As can be seen from figure VI-1, net corn production from the program could supply approximately 74% of future demand in 1979. The divergence between the two curves grows until, in 1990, only 16% of expected demand is met by the project production. The large projected domestic potential for absorbing more corn is certainly logical when one takes into account the basic role it has in diets and the increasing population which will depend upon it.

#### Beans

Of all the project crops, beans place greatest stress on domestic ability to handle new production (Figure VI-2). This creates an opportunity to displace a portion of bean imports. Still, without additional further action, the gap between future domestic demand and supply for this crop will diverge again.

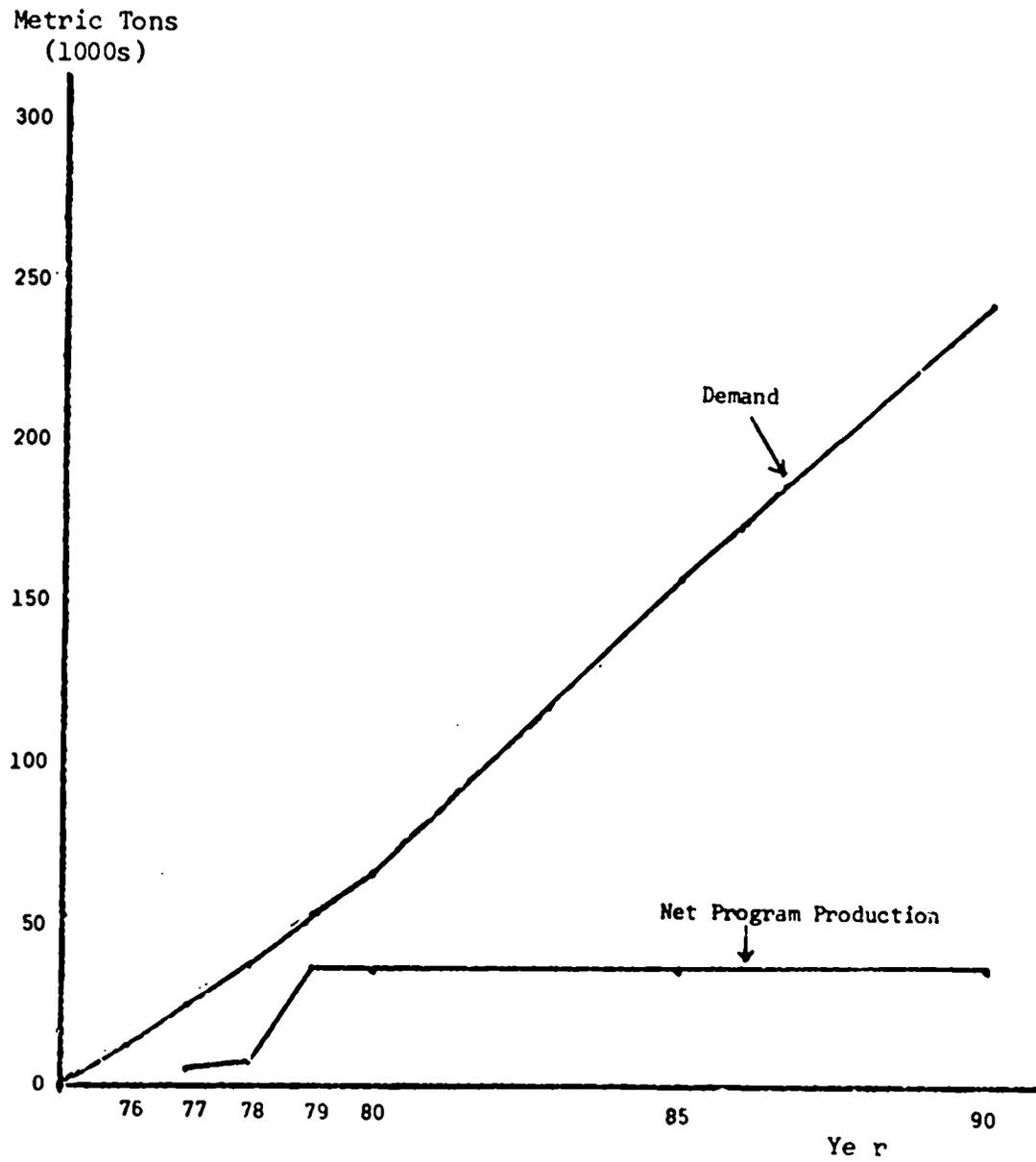


Figure VI-1. Corn: Demand Projections and Program Production.

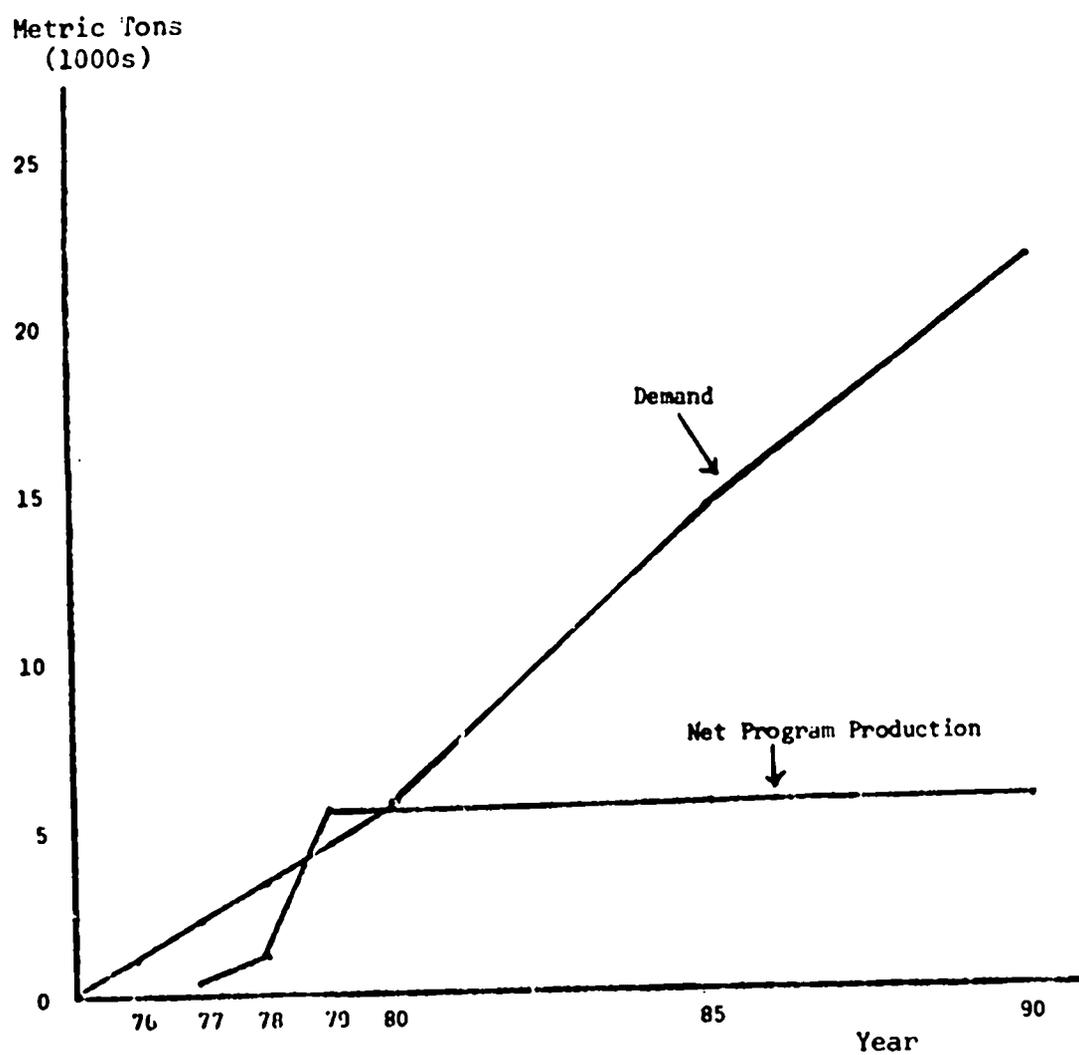


Figure VI-2. Beans: Demand Projections and Program Production.

### Rice

The amount of rice production built into our analysis would cover 70% of the 1979 demand and then taper off to 15% in 1990. Again, there should be no problem for the market to absorb additional rice quantities.

### Sorghum

Human demand for sorghum shows a wide divergence from the net production structured into the analysis. In 1979, this production will account for 61% but the percentage declines rapidly to become only 13% by 1990. Even if we have somewhat overestimated the human consumption of total sorghum output, there appears to be an enormous potential demand, one that is more than ample to absorb impacts resulting from the program.

### Conclusions

Now that we have established the likelihood that additions to production from the program need cause few problems in the domestic market for basic grains, we may reflect upon some implications. First, and foremost in economic terms, is probability of achieving adequate internal rates of return to both the project and society from an essentially basic grains emphasis. This will be elaborated in the next chapter.

Next, the program demonstrates several positive social aspects. It is designed to work within the present institutional framework employing formerly underemployed physical and human resources. Positive net additions to agricultural output are substantial and will somewhat alleviate dependence on growing imports. A big push for technological advance is not necessary at this time, this gives breathing space. A large number

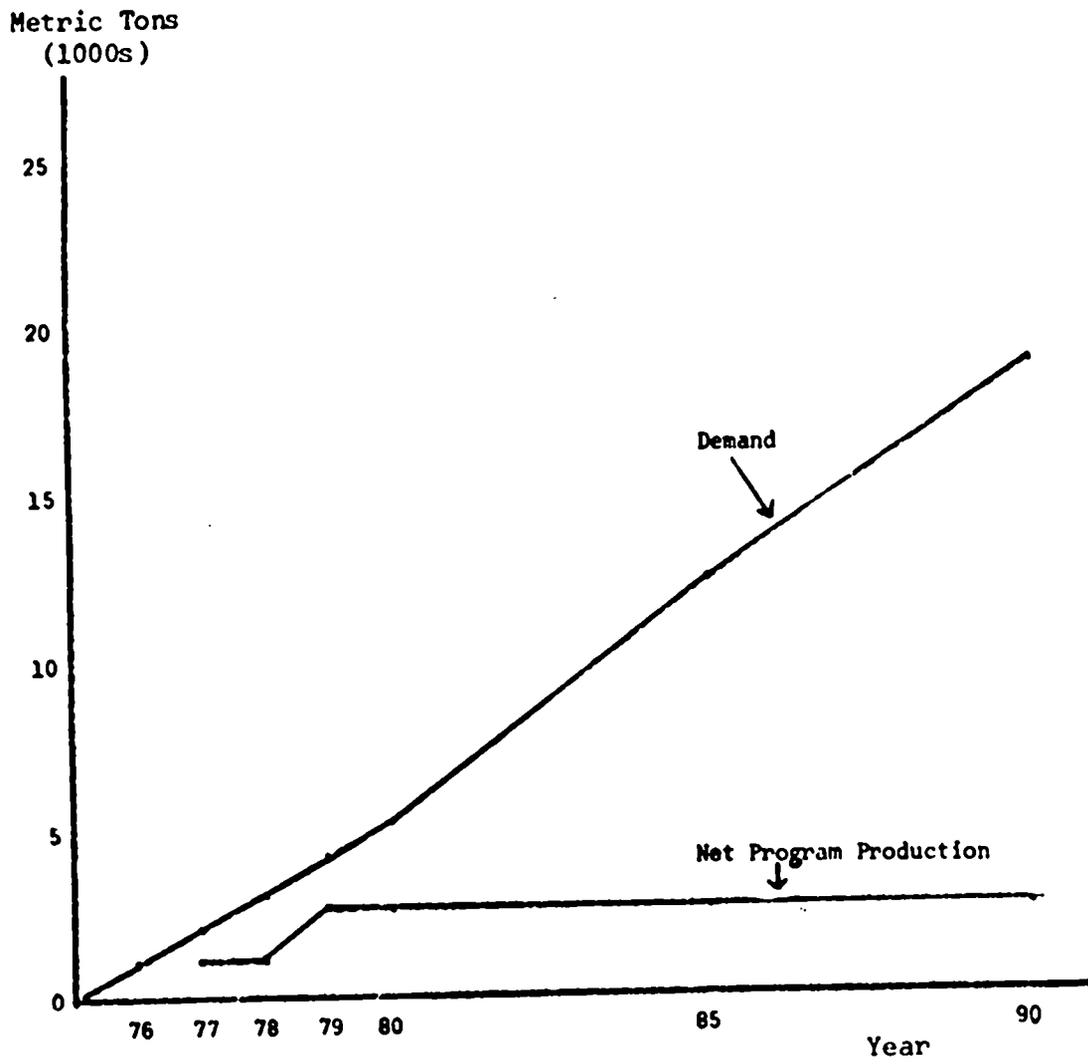


Figure VI-3. Rice: Demand Projections and Program Production.

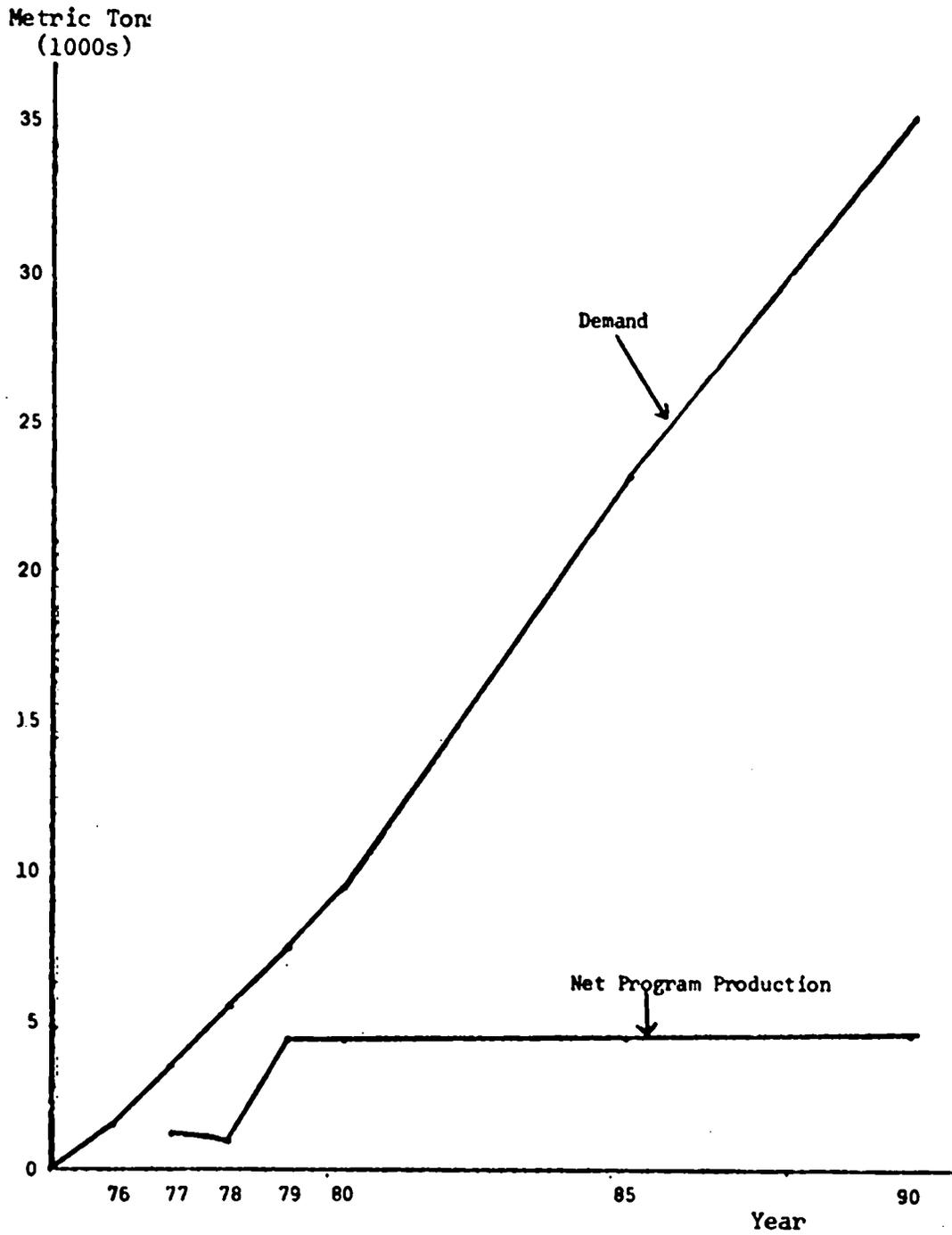


Figure VI-4. Sorghum: Demand Projections and Program Production.

of families can easily be affected by such a project. In the event maximization of family participants becomes the tenure program goal, approximately only seven more such projects of the size of the one studied would be needed to settle all the currently landless families (but this number is growing).

In interpreting the results that have been reported in this section, one must be careful not to think of them as absolute predictions. The future is quite uncertain, especially over a period as long as 15 years and for a small country highly dependent on the world economy for rapid growth. Demand projections are designed to bring together a lot of information which, combined with some simple tools of economic and statistical analysis, help delineate certain possible alternative paths for the future and may alert policy-makers to certain difficulties and opportunities that may otherwise remain hidden.

Appendix VI-A:  
Population Worksheet

In order to base projections as much as possible on actual data, Appendix Table VI-A-1 is used as an important intermediate step in determining population figures to be used for this report. Departmental growth rates are taken into account on a micro level and then a projection is made by summing the totals of each department for the years in question. Data are adapted from the "*Censo de Población, El Salvador, 1971*" to determine the growth rates to be used. These figures are compound rates of growth for this particular time period. Since growth in population for the urban and rural sectors occurs at different rates (often in opposite directions) it is desirable to compute each separately.

The overall estimated compound rate of growth for the total population is composed of the urban and rural growth in each of the respective departments then, after the totals are derived and summed, the overall growth rate is computed. It may be observed that a 2.62% compound figure for the projected rate of population growth is considered well inside present rates (which are expected to slightly fall off in the future). All things considered, population figures used in this report are probably the lowest that could be achieved in actuality; food demands based on the calculated projections are virtually certain to materialize (and then some).

Table VI-A-1. Projected Population by Department, Urban and Rural Sectors

Department	Urban					Rural				
	1975	1980	1985	1990	Rate	1975	1980	1985	1990	Rate
Ahuachapán	47282	50646	53286	55221	1.35	159369	182423	205634	228982	2.74
Santa Ana	160894	179546	196653	212009	2.15	208299	220067	228267	233107	1.04
Sonsonate	98815	113174	127683	142342	2.73	170729	193863	216847	239682	2.56
Chalatenango	50937	55211	58831	61805	1.51	138560	151341	162504	172040	1.67
La Libertad	110269	123531	136303	148593	2.29	214817	244449	274001	303469	2.61
San Salvador	674919	812728	961924	1122721	3.72	200689	233523	266901	300607	3.01
Cuscatlán	49049	57806	66858	76147	3.27	123295	133859	142992	150752	1.63
La Paz	59251	63864	67591	70431	1.44	153117	178044	203858	230557	3.03
Cabañas	24209	27270	30225	33064	2.31	119548	131831	143084	153317	1.87
San Vicente	48362	51850	54616	56681	1.34	129700	148654	167763	187004	2.73
Usulután	93666	106359	118957	131455	2.57	246939	283950	321624	359966	2.82
San Miguel	128097	146787	165669	184735	2.73	241912	272365	302058	330997	2.37
Morazán	31984	33906	35312	36237	1.16	146895	162877	177670	191241	2.10
La Unión	54203	60198	65659	70536	2.04	203906	240791	279915	321328	3.34
TOTAL	1631937	1882876	2139567	2401977	2.87	2457775	2678037	3093118	3403049	2.45

Appendix VI-B:  
Projections of Demand for Basic Grains by Department  
 (For Information Purposes Only)

Table VI-B-1. Demand Projections for Basic Grains, Department of Ahuachapán, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	26254	29920	33569	37196
Beans	2281	2613	2946	3280
Rice	1815	2100	2392	2688
Sorghum	3831	4366	4898	5428

Table VI-B-2. Demand Projections for Basic Grains, Department of Santa Ana, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	46905	51300	55091	58255
Beans	4075	4481	4836	5137
Rice	3242	3602	3926	4210
Sorghum	6844	7486	8039	8501

Table VI-B-3. Demand Projections for Basic Grains, Department of Sonsonate, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	34245	39416	44668	49998
Beans	2975	3443	3921	4409
Rice	2367	2767	3183	3613
Sorghum	4997	5752	6518	7296

Table VI-B-4. Demand Projections for Basic Grains, Department of Chalatenango, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	24075	26516	28696	30605
Beans	2092	2316	2519	2699
Rice	1664	1862	2045	2212
Sorghum	3513	3869	4187	4466

Table VI-B-5. Demand Projections for Basic Grains, Department of La Libertad, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	41301	47239	53196	59164
Beans	3589	4126	4669	5218
Rice	2855	3317	3791	4276
Sorghum	6027	6893	7762	8633

Table VI-B-6. Demand Projections for Basic Grains, Department of San Salvador, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	111243	134312	159317	186281
Beans	9666	11731	13984	16428
Rice	7689	9430	11352	13463
Sorghum	16233	19599	23248	27182

Table VI-B-7. Demand Projections for Basic Grains, Department of Cuscatlán, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	21896	24605	27207	29696
Beans	1902	2149	2388	2619
Rice	1513	1727	1939	2146
Sorghum	3195	3590	3970	4333

Table VI-B-8. Demand Projections for Basic Grains, Department of La Paz, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	26981	31055	35193	39392
Beans	2344	2712	3089	3474
Rice	1865	2180	2508	2847
Sorghum	3937	4532	5135	5748

Table VI-B-9. Demand Projections for Basic Grains, Department of Cabañas, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	18264	20424	22469	24393
Beans	1587	1784	1972	2151
Rice	1262	1434	1601	1763
Sorghum	2665	2980	3279	3559

Table VI-B-10. Demand Projections for Basic Grains, Department of San Vicente, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	22622	25740	28831	31893
Beans	1966	2248	2531	2813
Rice	1564	1807	2054	2305
Sorghum	3301	3756	4207	4654

Table VI-B-11. Demand Projections for Basic Grains, Department of Usulután, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	43273	50106	57121	64316
Beans	3760	4376	5014	5672
Rice	2991	3518	4070	4648
Sorghum	6314	7311	8335	9385

Table VI-B-12. Demand Projections for Basic Grains, Department of San Miguel, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	47009	53808	60641	67497
Beans	4084	4700	5323	5952
Rice	3249	3778	4321	4878
Sorghum	6859	7852	8849	9849

Table VI-B-13. Demand Projections for Basic Grains, Department of Morazán, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	22726	25262	27341	29772
Beans	1975	2206	2388	2626
Rice	1571	1774	1920	2152
Sorghum	3316	3686	3990	4344

Table VI-B-14. Demand Projections for Basic Grains, Department of La Unión, 1975-1990 (mt)

Crop	1975	1980	1985	1990
Corn	32792	38639	44804	51286
Beans	2849	3375	3933	4523
Rice	2267	2713	3193	3706
Sorghum	4785	5638	6538	7484



CHAPTER VII  
PROGRAM BENEFITS AND COSTS

Section A: Two Measures of Net Benefit

Section B: Data and Method

Section C: Estimated Rate of Return on Investment  
Due to Gain in Agricultural Output and  
Gain in Social Value of Family Endeavor

Section VII-A:  
Two Measures of Net Benefit

To determine the profitability of an investment, what is generally needed is a determination of the difference in worth of the existing situation vs. the expected worth of the proposal. This difference is the real gain which must be set off against investment costs. For example, to judge the value of an on-farm irrigation system proposal, one must begin with the net value of existing production possibilities. The difference between this amount and expected net return from the cropping pattern under irrigation is more or less the gain that can be attributed to introduction of irrigation [8]. If the difference appears large enough or can be expected to last long enough, the investment is judged worthwhile. This general pattern has been followed for the present study.<sup>1</sup>

Our first internal rate of return is obtained by setting the current value of the agricultural production from the surveyed farms and averages of extended purchases against the estimated net value of output when the lands are divided and fully utilized and have modern inputs applied. The difference in values is assumed to materialize in various years. This stream of annual net returns may then be discounted to the date of initial investment in order to create a benefit/cost ratio or to calculate an internal rate of return.

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<sup>1</sup>Since we assume that the present production of the families selected as program participants will not be lost to society (because others will take up the land resources), we only allow for the current production on selected lands.

The overall investment cost presents a slight problem since the outlays are assumed to be staged over a three-year period, beginning in April, 1976. Since our aim is to evaluate the whole program impact from a given point in time, we treat April, 1976 as time zero and discount the investments planned for 1977 and 1978 back to time zero at a rate of 8%. Therefore, the total staged investment of nearly £38,765,432 only has a present value of £34,457,356 in April, 1976.

Data on expected net benefits are taken from the work in Chapter V where, it will be recalled, we subtracted only out-of-pocket costs in creating farm budgets for various crops. The projected series of annual benefits are therefore gross values corrected for just the costs of animal power, pesticides, fertilizers and other purchased inputs. No allowance is included for family labor and we do not assume any distribution of land parcels large enough to require use of hired labor.

This way of handling the benefits side of the calculation requires that the results be interpreted with some care. The proposed investment may appear to generate quite a good return but the returns must cover family labor and other nonfood input costs or expenses. Given this caution, it is possible to argue that estimating net benefits only on the basis of out-of-pocket costs has the advantage that the costs to be deducted are easily defined, and that the residual benefit is easily understood--there is no argument about depreciation, annual land values, etc. The basic definition of net return is consistent and the comparison of one set of project figures with another is facilitated.

This all comes down to a concern with analysis of an investment purely or the technical merits of the situation. And often, this is all that is needed, especially when all that matters is the entrepreneurial point of view. Indeed, it is often the case that society would value the allocation of investment resources very nearly the same as would a private individual. At other times, this is not the case, not only for the obvious reason that ethical considerations might loom large for society, but also for the reason that certain information may be missing from the planning equation. What is missing in the present case is an allowance for the social value of off-farm labor which is a benefit to society. This leads to a second view of net benefits.

Our estimates of current living standards (which we treat as a measure of a family's social productivity) are based not only on own crop production, but also upon off-farm employment during the harvest season for commercial crops (see Section C, Chapter IV). Thus, the social value (social opportunity cost) of moving a family into a tenure/parcellization program is a combination of the net value of current family production plus other off-farm income. It is this combination that constitutes the present social productivity of an individual family. The overall social gain from the tenure production program is therefore the expected new levels of social productivity of participant families minus any current value.

It is possible to take this argument into account by treating the whole current living standard of the involved families as an explicit cost of the program. In other words, we can compute a stream of future net benefits based on before and after crop production values, less the

value of current social productivity. Since estimates of average family living standards were made in Table IV-4 of Chapter IV, the data are readily available.

Section VII-B:  
Data and Method

Data for investment costs are taken from Table V-1, and Appendix Tables V-D-1 and V-C-3. Only investment in the arable portion of the probable land purchases is considered. According to the farm survey [2], only about half of the lands were arable. The first investments are assumed to be made in April, 1976 for farms #4, #5, #6, #7, and #8. The total arable land cost plus infrastructure is £7,184,300. In April, 1978, another £2,877,000 is allocated for purchase and development of farms #1, #2, and #3. The remainder of the bond fund is assumed to be committed April, 1979. Of this, about £19,598,788 would be necessary for infrastructure, for a total of £38,765,432. These values are shown in the lower portion of Table VII-1.

The upper part of Table VII-1 contains the estimates, crop by crop, of the difference between the current net value of agricultural production and the future new value (on the £25,000,000 land assumed to be purchased). Estimates are presented for the target group as a whole. Whether the parcelled lands are sold or rented makes no difference as long as it is assumed that there is full production by whatever number of program families participate. However, family numbers differ depending on the option selected.

Table VII-1. IFR Method #1. Basic Data on Net Income and Investment Cost (1975 Prices and Costs)

Crop	Price/mt	1976	1977	1978	1979
	£		£	£	£
Corn	396		2340000	3741300	15518268
Sorghum	330		488400	439650	1540530
Beans	1012		411240	1262240	5772448
Rice	660		1056000	1056000	2939370
Cane	30		840000	840000	2295300
Melons	154		182028	182028	478632
Expected Net Benefits		0	5317668	7521218	28544548
Date Received		April	'78	'79	'80
Investment Cost					Total
Land*		4830000	900000	13436644	19166644
Development		2354300	1977000	15267488	19598788
Subtotal		7184300	2877000	28704132	
Accum. Total			10061300	38765432	38765432

\*Arable portion only. Averages approximately 85.5% of total value.

Obviously there is no way to forecast the exact timing of costs and returns in a big development program so the assumptions made are shown by the dates in the lower portion of Table VII-1. Given these assumptions, we sum up net benefits from each crop at the foot of each crop year column. These amounts are transferred to Table VII-3.

This is all the information necessary to calculate the first internal rate of return shown in Table VII-3.

To make the calculation of net change in overall social productivity due to the proposed program, we must organize some additional data. The

results are shown in Table VII-2. What we want to take into account in this second system is the current average living standard of the types of family groups in question. Since these were calculated in Table IV-4 of Chapter IV, all that is necessary is to multiply those estimates by the families that can be absorbed by each farm or set of farms (Table V-3). For example, on survey farm #1 the annual total value of the current living standard for 108 families is ₡84,240, for the people who will move to the Usulatan Farm (#2), it is ₡992,450 and so forth. This is for *jornalero* families.

The calculated totals for average small farmer families is about the same for each farm because, while number of farmers are fewer, they each enjoy a current standard nearly twice as high as *jornaleros*. The underlying explanation for the close results is that we are forced to assume a constant proportionality between estimated average small farmer crop production and *jornalero* family garden (*huerta familiar*) production in a given department.

Ignoring any distinction in total group value of living standard between average small farmers and *jornaleros*, we also sum and average over the departments depending on which properties are assumed to be purchased in specific years. Thus, the overall average value of current social productivity of the families assumed to shift in 1977 is ₡3 392,040, ₡1,187,865 in 1978, and ₡11,643,249 in 1979. This is shown in Table VII-2.

The current values must now be subtracted from the expected net returns from the new farm parcels. This expected value is estimated at 4,665,761 in 1977. Therefore, the 1977 average net increase in social productivity of the human agents would be ₡1,273,721 (₡4,665,761-₡3,392,040).

Table VII-2. IRR Method #2. Data for Estimating Net Benefits of Increase in Social Productivity

Survey Farms	Jornalero		Average Small Farmer		1977 Weighted Total	1978 Weighted Total	1979 Weighted Total	Expected Net Returns From New Lands	1977 Total	1978 Total	1979 Total	Difference (Benefit)
	# of Fam.	Total Value Living Standard	# of Fam.	Total Value Living Standard								
Santa Ana	1	108	84240	64	64430	1137865	119564	1367784	1817245			(1978) 628520
Uxulatán	2	853	992450	475	926250							
La Libertad	3	146	154780	83	153550							
La Paz	4 & 7	1661	1677610	1025	1619500	3392040	1905693	4665761				(1977) 1273721
San Vicente	5	351	284310	187	284240							
San Miguel	6	698	652630	395	620150							
Sonsonate	8	932	834140	341	811500							
Average on Additional Lands												
Group A	5160	4979400	2972	4850304	11643249	8202699	1797002	18556320				(1979) 6913071
Group B	1315	1512250	709	1160633								
Group C	8003	5474736	3452	5309176								
TOTAL		16646528		15799783		25039466						
												Accumulative Total
												1273721
												1903241
												8816312

This net increase reaches ₡6,913,071 for the extended land purchase which are assumed to be made in 1979. By the end of the 1978 crop year the sum of the net is estimated to reach ₡8,816,312 (see Section C, Table VII-3). We assume this value to continue to be available throughout an investment period of about 12 years--until April, 1988. This series can then be used to create the rate of return to the program investment due to increase in social productivity of the families.<sup>2</sup>

The rate of discount (interest) that will make the net return stream equal original cost is called the average internal rate of return. The simplest computation is for a fixed original investment<sup>3</sup> and a stream of single valued annual net benefits:

$$C_0 = R(F)$$

where

$C_0$  = value of original investment at time zero.

$R$  = average annual net return, exclusive of interest and depreciation on fixed capital.

$F$  = present value of an annuity of  $1 - \left( \frac{1 - (1+i)^{-m}}{i} \right)$

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<sup>2</sup>It is also possible to expect some additional increase in social productivity of persons who will be able to find harvest season employment due to the fact that some program participants will have to forego harvest time migration in order to devote themselves to year around work on their irrigated lands. A program emphasis on *jornaleros* will also have the same general social benefit. More of such families can be absorbed per unit of investment, and this may increase (reduce the competition) commercial crop harvest jobs.

<sup>3</sup>Capital investments having unequal lives can be included by discounting the expected values of replacements (within the time horizon) back to the date or moment of original investment (some interest rate will have to be selected for this purpose). The original time horizon might be set by the longest lived capital item or by some lowest common denominator of the various lives.

$m$  = time horizon of investment.

$i$  = internal rate of return.

If estimates of  $R$  vary from year to year during the time horizon of the investment, the value for IRR is the rate of  $i$  that will create the equality:

$$C_0 = \frac{R_1}{(1+i)^1} + \frac{R_2}{(1+i)^2} + \frac{R_3}{(1+i)^3} + \dots + \frac{R_m}{(1+i)^{n-1}} .$$

Section VII-C:

Estimated Rate of Return on Investment Due to Gain in  
Agricultural Output and Gain in Social Value  
Of Family Endeavor

The estimates shown in Table VII-3 are divided into two categories. The ones in Section I provide an indication of the relative merits of emphasizing, from an agricultural entrepreneurial point of view, returns to the project as an entity in itself. The way the rate has been computed provides important information for farmer-investors because it is the return to capital without allowance for living expenses. The 12.62% shown in the bottom half of the table is the value of most interest as a social measure of the whole program, since more than just agricultural aspects are taken into account.

Assumed dates of investment and repayment are laid out across the top of the table. All of the investment is assumed to be committed by April, 1978. This series is then discounted at 8% to obtain a value of \$34,457,356 at time zero, April, 1976. Next are displayed the net benefit streams due to the project. Since some allowance for construction

Table VII-3. Timing of Program Costs and Receipts - Benefits of Program (Values in Colones)

	Time 0	1	2	3	4	5 -----> 12
	April, '76	April, '77	April, '78	April, '79	April, '80	-----> April, '88
Investment <sup>a</sup>	7184300	2877000	28704132			
Present Value	34457356					
<b>I. IRR Associated With Net Change in Agricultural Output</b>						
Analysis of Agricultural Benefits from Land Tenure Program	IRR (%) 36.67	0	5317668	7521218	28544548	-----> 28544548
<b>II. IRR Associated With the Net Increase in Social Value of Human Agents</b>						
Overall Average Increase in Social Value of Target Group Output	IRR (%) 12.62	0	1273721	1903241	8816312	-----> 8816312

<sup>a</sup> Amortized at 8%.

time must be made, no benefits are presumed to accrue until after the end of the 1977 crop year. The benefits then increase for three years to a peak value which is then assumed to be maintained for at least the time period over which the investment is to be amortized. In our calculations this overall time horizon is 12 years, or until April, 1988.

The results in Table VII-3 are indicative of what might be expected under conditions readily attainable in El Salvador. Nevertheless the results are never more than indicative. The internal rates generated by a series of investment and benefit streams are readily altered by simply shifting repayment dates or by shifting the rapidity with which repayments build up. The calculations are very sensitive to the zero repayments during the time investment funds are being committed. The particular rate of interest we have chosen to employ (8%) to discount the investment stream is not very sensitive in our calculations, small changes in either direction would make little difference.

The data in Table VII-3 can be readily converted into benefit/cost ratios by any reader so inclined. All that is necessary is to select an appropriate discount rate, use it to bring investments and benefits shown back to some common starting point, and form the ratio. It may be noted that the closer any average internal rate of return gets to the cost of borrowing capital, the closer the implied cost/benefit ratio approaches unity.

In summary, given the assumptions about average tenure group family land holdings, the rate of return for the program as outlined is not greatly affected by current tenure group of the participants. The big difference is in number of families that could take part - more than twice as many *jornaleros* as any other tenure group.

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