# CHILE AGRICULTURAL ASSESSMENT: 79

# CONSTRAINT ANALYSIS AND CONCLUSIONS

## VOLUME II

USAID/Chile
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| | |
|---|---|
| ATAC: | American Technical Assistance Corporation |
| BECH: | Banco del Estado de Chile<br>Chile State Bank |
| BIH: | Basic Irrigated Hectare |
| CORA: | Corporación de la Reforma Agraria<br>Agrarian Reform Corporation |
| IANSA: | Industria Azucarera Nacional S. A.<br>National Sugar Industry |
| ICIRA: | Instituto de Capacitación e Investigación de la Reforma Agraria<br>Institute for Training and Research of the Agrarian Reform |
| INACAP: | Instituto Nacional de Capacitación<br>National Institute for Training |
| INDAP: | Instituto de Desarrollo Agropecuario<br>Agrarian Development Institute |
| INE: | Instituto Nacional de Estadísticas<br>National Statistics Institute |
| INIA: | Instituto Nacional de Investigación Agropecuaria<br>National Institute for Agrarian Research |
| IREN: | Instituto de Recursos Naturales<br>Natural Resources Institute |
| ODEPA: | Oficina de Planificación Agrícola<br>National Agriculture Planning Office |
| ODEPLAN: | Oficina de Planificación Nacional<br>National Planning Office |
| SAG: | Servicio Agrícola y Ganadero<br>Agricultural and Livestock Service |

(continued)

| | |
|---|---|
| SARA: | Sociedad Agrícola de Reforma Agraria<br>Agricultural Society of Agrarian Reform |
| SOCA: | Sociedad de Cooperación Agrícola<br>Society of Agricultural Cooperation |
| PPIS: | Policy Planning Information System |

# PREFACE

When A.I.D. reinitiated project development in Chile in late 1974. the available information on the agricultural sector did not adequately reflect the drastic changes which had occurred in the structure of the sector (e.g., output, land tenure, price relationships and the statist and collectivist policies which Allende introduced during the early 1970's). In a short span of years, the previous wealth of literature and studies on Chilean agriculture became of limited value for development planners. Accordingly, USAID undertook an agricultural sector assessment.

In considering the design of the sector assessment, USAID decided that the study should be performed by a local institution so that the experience gained in the process would not be lost to Chile. The graduate school of the Agricultural Economics Department of Universidad Católica de Chile was selected as the most appropriate local institution.

Initially, $100,000 were earmarked for the purpose of preparing the sector assessment. In early 1975, however, the Mission concluded that the study effort should be in two phases so that early results and conclusions could be reviewed before committing the full funding level. (See Santiago 644 of January 29, 1975.) The first phase was intended to be a descriptive overview that would be completed by mid-1975. The initial effort was expected to lead to other studies and the entire package to serve as the sector assessment.

Universidad Católica's final report entitled Chile, Agricultural Sector Overview: 1964-1974 constitutes the first part of Phase I of the USAID/Chile Sector Assessment. Although the Overview by design is limited in analytical depth, it is broad and comprehensive. It brings together for the first time in several years an up-to-date review of the current agricultural situation. It also brings out an aspect of the Chilean agricultural sector that bears recalling from time to time, viz., agricultural productivity is low and rural poverty is prevalent. The Overview also provided much data necessary for the identification of key constraints to agricultural and rural development.

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The Overview and a Mission Strategy Supplement were presented for DAEC review on March 19, 1976 for satisfaction of the DAP II programming requirement. The DAEC "deferred approval of the assessment until an additional section is prepared which provides a sharpened analysis of the constraints to the development of the sector" ( State 091873 of April 16, 1976).

The Mission with the assistance of AID/W and Universidad Católica has prepared the present document which addresses all the points raised in the DAEC review cable (State 091873). This document is therefore submitted to satisfy the DAP II programming requirements for the rural sector.

Between the DAEC review of March 19, 1976 and the completion of this document, Revised DAP Guidance was issued in AIDTO-286. This Revised DAP Guidance among other things required that revised DAPs contain an "analytical description of the poor majority." USAID/Chile believes that Part I of this document, "A Profile of the Rural Poor" constitutes the "analytical description" required.

AIDTO-313, which was issued only a short time ago instructs Missions to include in their agricultural sector assessments a P.L. 480 Title I programming strategy. It was not possible for the Mission to include in this document on such short notice such a P.L. 480 strategy. The Mission therefore plans to submit a P.L. 480 Title I programming strategy, if additional P.L. 480 Title I is anticipated, in a revised DAP/Phase Out plan scheduled for completion in January 1977.

Perhaps the weakest parts of the present document are the sections dealing with GOC sector policy and Mission intervention strategy. The former is weak because GOC sectoral policy is in a state of flux because of high level personnel changes in the GOC Ministry of Agriculture (a new Minister, Sub-secretary, Director of ODEPA) and new leadership in many executing agencies. The latter lacks better definition because of the uncertainty of future A.I.D. programs in Chile.

The Mission hopes to be able to carry out some supplementary studies which obviously are needed for the GOC to refine its agricultural development strategy. Some of the possible areas for further micro-analysis and study are detailed in of this document.

# I. A PROFILE OF THE RURAL POOR

## Introduction

Current information on the situation of the rural poor in Chile is sparse. Some recent direct information on the status of the rural poor has been gathered, such as the A.I.D.-financed Survey of Small Farmers of the Central Irrigated Agricultural Region of Chile and the UNDP/FAO/ICIRA, Current Status of Land Reform Grantees up to 1974; but, unfortunately, these micro-level studies only cover part of the rural poor, probably the most prosperous part. Other, more general information, is usually of a pre-1970 vintage and much has transpired in Chile since then. In large part, the scarcity of the information on the rural poor is what motivated USAID/Chile to assist the GOC in establishing the Policy Planning Information System (PPIS) component of the Agricultural Credit Loan (067); the PPIS is designed to provide an accurate, dynamic picture of Chile's rural poor.

Given the paucity of current and reliable information on Chile's rural poor, this "profile" attempts to patch together such information as does exist, current and dated, into an analytical description of Chile's rural poor. The methodology employed will often be of a "painterly" nature and it must be stated that several programatically important issues are less than fully resolved -- this is true especially in the critical rural employment area.

## A. General Economic Indicators

### 1. Sectoral Labor Productivity

Average productivity per worker in agriculture should not be confused with labor income; it does, however, have some value for intersectoral comparison. The average productivity of labor in the Chilean agricultural sector is the lowest of any sector of the economy. In 1970, for example, average agricultural sector labor productivity was only 12% of that mining, 23% of that in utilities, 28% of that in the industrial sector, and between 53 and 63% of that in the remaining sectors of the economy. From 1940 to 1970 the increase in labor productivity in the sector was 75%. This

figure compares with a 286% in mining, 161% in industry, 113% in utilities, and 108% in construction. Productivity increases in transport and storage, commerce and services were lower than in agriculture in the 1940-1970 period.

## 2. Income Distribution

In 1967, Isabel Heskia studied Chilean income distribution.[1] She found that of the lower 50% of the population, in income terms, 45.9% were located in the rural sector even though the rural sector contained only 30.9% of Chile's population. She found that the average monthly income of agricultural workers was only equal to 52% of the average monthly income of industrial workers, and 70.2% of that of all workers. Similary, she found that the average monthly income of rural population was only 51% of that of the urban population. Table I-1 compares the income distribution in the agricultural sector to that of the total economy.

TABLE I-1

Comparison of Agricultural and Total Income Distribution in Chile, 1967

| Income in terms of # of Sueldos Vitales* | % of Total Population | % of Agricultural Population |
|---|---|---|
| 0-1 | 45.7 | 75.8 |
| 1-2 | 29.8 | 15.9 |
| 2-3 | 10.2 | 3.3 |
| 3-4 | 5.8 | 1.4 |
| 4-5 | 2.4 | 0.7 |
| 5-10 | 4.5 | 2.0 |
| 10-20 | 1.3 | 0.7 |
| 20-40 | .3 | 0.2 |
| 40-80 | - | - |

* One "sueldo vital" was considered in Chile to be the minimum subsistence level; in 1967 a "sueldo vital" was equal to about U.S. $61 per month.
Source: Adapted from I. Heskia, op. cit., Cuadro 8.

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[1] Heskia, Isabel. "La Distribución del Ingreso en Chile", Bienestar y Pobreza", CEPLAN, 1974.

It is clear from Table I-1 that in 1967 a much larger percentage of the agricultural population was in the lower income strata than the population a whole. To the extent that 0-1 Chilean "sueldo vital" constitutes a valid indicator of the A.I.D. target group, it appears that at least in 1967 some 75 to 80% of the Chilean rural population would have been included.

Heskia, in her study also developed "Gini" income concentration coefficients from her data; some of these are presented in Table I-2.

TABLE I-2

"Gini" Income Distribution Coefficients Comparing Certain Segments of the Chilean Population, 1967

| Segments of the Population | "Gini" Coefficient |
|---|---|
| Workers: | .36 |
| Agricultural | .28 |
| Industrial | .36 |
| Services | .44 |
| Rural Population: | .48 |
| TOTAL POPULATION | .52 |

Source: Adapted from I. Heskia, op. cit., Cuadro 9.

"Gini" coefficients are higher the more unequal the income distribution, thus Table I-2 indicates that income distribution was more equal in 1967 among agricultural workers than among other workers and more equal in the rural areas than in the population as a whole. In light of the low absolute income figures for the rural sector, however, all this indicates is that rural poverty is quite evenly distributed.

The major implication of the above for A.I.D. programming in the rural sector is that the A.I.D. target group should be a broad one, perhaps 75-80% of the rural population.

### 3. Employment Patterns

The importance of the agricultural sector as a source of employment has dropped sharply in recent times as can be seen from Table 1-3.

TABLE I-3

Comparison Between
the Agricultural and Total Labor Force,
1960-1970
(000s of Persons)

| Economically Active | 1960 | 1970 | %Change |
|---|---|---|---|
| Total | 2,388.5 | 2,731.2 | 14.3 |
| Agriculture | 662.4 | 570.2 | -13.9 |
| Agriculture as % of Total | 27.7 | 20.9 | - |

Source: Population Censuses of 1960 and 1970.

This table indicates that the agricultural labor force dropped from 27.7% of the total labor force in 1960 to 20.9% of the total labor force in 1970. Assuming that the intercensal growth rates have continued, then the agricultural labor force in 1976 is equal to approximately 515,900 persons or 17.6% of a total labor force of 2,936,800.[1]

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[1] Because the Chilean censal definition of urban and rural is quite sensitive to the availability of "urban" services such as electricity, etc., the economically active population engaged in agriculture is thought to be a better index of "rurality" than the censal definition, i.e., the censal definition over-estimates "urban" growth.

Table I-4 breaks down the agricultural labor force by sex for 1960 and 1970.

TABLE I-4

Sex Distribution of Agricultural Labor Force
1960, 1970
(000s of persons)

| | 1960 | 1970 | % Change |
|---|---|---|---|
| Total | 662.4 | 570.2 | -13.9 |
| Males | 638.7 | 551.7 | -13.6 |
| Females | 23.7 | 18.6 | -21.5 |
| Females as % of Total | 3.6 | 3.3 | - |

Source: 1960 and 1970 Population Censuses

It can be seen from Table I-4 that women constitute a small and decreasing part of the agricultural labor force in Chile, at least as this is conventionally defined. Women seem to be leaving the sector at an even a faster rate than men which is probably due to better opportunities open to them outside of the agricultural sector. No doubt the traditional censal definitions underestimate the role of women in the agriculture sector.

Table I-5 distributes the agricultural labor force into occupational categories, and it indicates that significant structural changes took place in the labor force between 1960 and 1970. These changes are no doubt due to the agrarian reform process and the GOC policies put in place from 1964 on which affected agricultural salaries, agricultural unionization, etc. These measures appear to have been strong disincentives to the hiring of agricultural workers.

TABLE I-5
Agricultural Labor Force
According to Occupational Categories,
1960, 1970 (000s of persons)

| Occupational Category | 1960 | 1970 | %Change |
|---|---|---|---|
| Employers | 12.3 | 16.2 | 31.7 |
| Worker for own account (principally minifundistas) | 153.0 | 153.5 | .3 |
| Employees | 20.0 | 25.7 | |
| Workers and paid family labor | 442.5 | 328.8 | -25.7 |
| Unpaid family labor | 33.8 | 45.7 | 35.2 |
| Servants and Others | .7 | .2 | -71.4 |
| TOTAL | 666.3 | 570.1 | -13.9 |

Source: 1960 and 1970 Population Censuses

In addition to the population census data, other classifications of the agricultural labor force exist. Based on the 1965 Agricultural Census, it has been estimated that in 1965 there existed in the sector 595,200 permanent workers, that an additional 58,800 workers were engaged in agriculture from 3-6 months and that there were 133,200 workers who worked less than 3 months a year in the sector. These estimates indicate, then, that in 1965 approximately 797,000 persons were employed at some time of the year in the sector and that approximately 200,000 of them, about 25%, were seasonal workers only (sex unknown).

4. Rural Unemployment and Underemployment

The question of the degree and importance of underemployment in rural Chile is one on which the lack of informed concensus is notorious. Because less controversy exists in the area of open unemployment as traditionally defined, this topic will be treated first.

a. Open Unemployment

As noted in the Sector Overview, rates of open unemployment as conventionally defined have traditionally been lower in Chile's agricultural sector than in other sectors of the economy. The 1960 and 1970 Population Censuses measured

rural unemployment at 1.1% and 0.9% respectively; these figures compare with urban rates of 5.6% in 1960 and 3.8% in 1970. The employment surveys carried out by the Instituto Nacional de Estadísticas (INE) show a very similar pattern as shown in Table I-6. It can be seen that on the average over the period, the total unemployment rate was about 2.6 times that of the agricultural sector.

TABLE I-6

Comparison of Agricultural and Total Unemployment 1966 - 1972 in Percent

| Year | Agricultural | Total |
|---|---|---|
| 1966, 2nd. Sem. | 2.2 | 6.4 |
| 1967, 1st. Sem. | 1.9 | 4.6 |
| 1967, 2nd. Sem. | 2.0 | 5.1 |
| 1968, 1st. Sem. | N.A. | N.A. |
| 1968, 2nd. Sem. | 1.8 | 5.5 |
| 1969, 1st. Sem. | 2.0 | 5.0 |
| 1969, 2nd. Sem. | 1.1 | 3.9 |
| 1970, 1st. Sem. | 1.8 | 3.3 |
| 1970, 2nd. Sem. | 1.6 | 3.6 |
| 1971, 1st. Sem. | 1.6 | 4.6 |
| 1971, 2nd. Sem. | 1.4 | 3.1 |
| 1972, 1st. Sem. | 1.0 | 3.1 |
| Average, 1966-1972, | 1.67 | 4.38 |

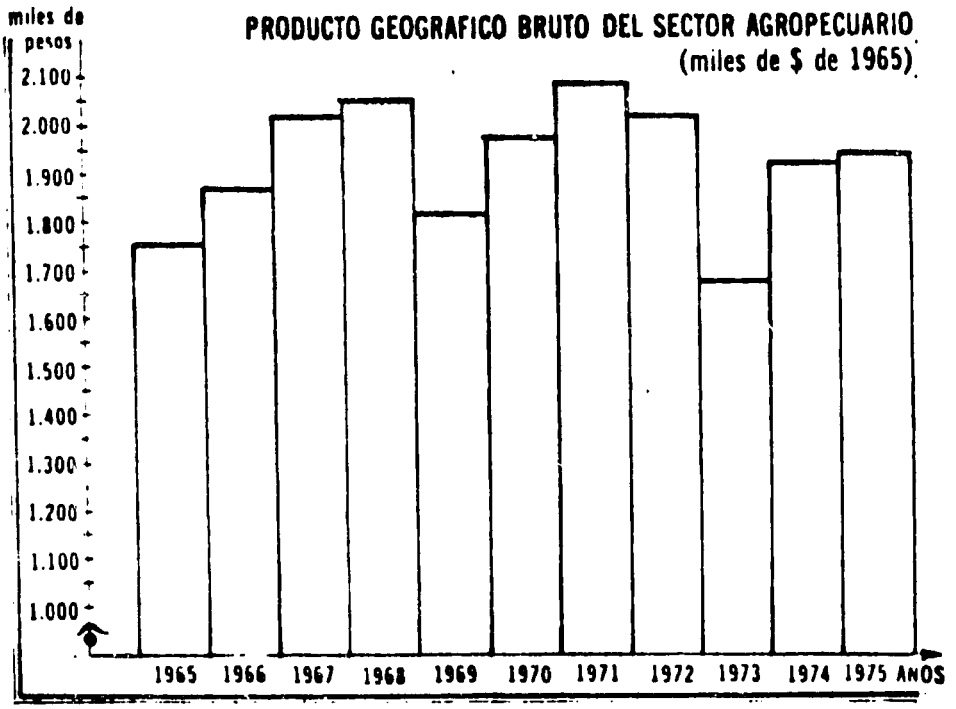
Source: INE, Encuesta Contínua de Mano de Obra.

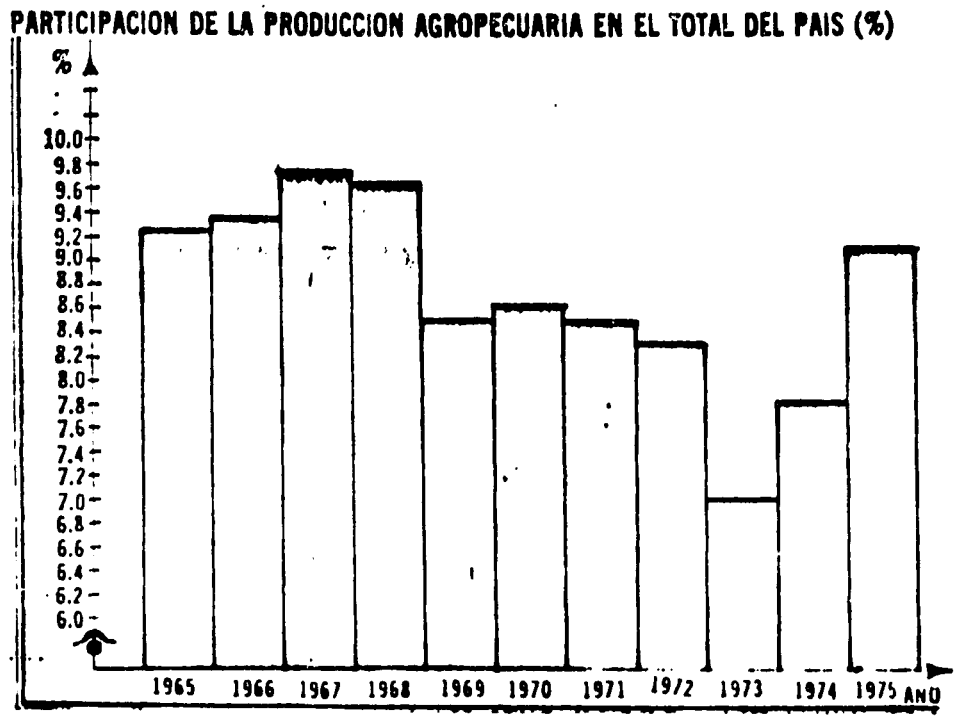
From 1972 to 1974 no reliable unemployment statistics exist. It is clear however that overall unemployment has been more serious in the 1973-1976 period. Recently released INE figures for 1975 from La Primera Encuesta Nacional de Empleo indicate an overall level of unemployment of 14.7%. The figure was 16.6% in the urban areas and 8.8% in the rural areas. In the agricultural sector, as such, only 3.1% unemployment was registered. The difference between the high rural area figure and the low agricultural sector figure argues strongly for not using the latter as a "proxy" for the farmer, i.e., there are many non-agricultural workers in the rural sector (fishermen, miners, forestry workers, etc.).

Chart I-1

Agricultural Sector GDP, 1965-1975; and Agricultural Sector GDP, 1965-1975 as a Percent of Total GDP.

(Constant 1965 Pesos)




Source: ODEPLAN

Probably one of the major reasons that open unemployment in the agricultural sector was less of a problem than in the overall economy has been the relative expansion of the sector from 1973 to the present. This overall relative expansion is illustrated in Chart I-1.

b. Underemployment

Numerous studies have been undertaken which have estimated rural underemployment by comparing total labor availability with the need for labor by applying technical labor requirement coefficients for differ ng crops. Representative of such studies is one performed by the I.L.O.'s PREALC which is cited in the Sector Overview. Table I-7 summarizes the PREALC findings by month for the year 1965 and indicates zero underemployment in the month of March, 35.6% underemployment in July, and an average yearly level of about 20%.

TABLE I-7

Estimated Underemployment by Month
1965 (in percent)

| Month | % Underemployment |
|---|---|
| January | 16.1 |
| February | 13.1 |
| March | - |
| April | 18.4 |
| May | 25.1 |
| June | 31.8 |
| July | 35.6 |
| August | 31.8 |
| September | 22.1 |
| October | 20.6 |
| November | 22.1 |
| December | 7.1 |
| Yearly Average | 20.3 |

Source: PREALC, El Empleo y el Proceso de Desarrollo en Chile, 1960-1970.

A. Giglio[1], using a similar methodology, calculated underemployment also in 1965 for Chile's five central provinces. He calculated the following rates:

| | |
|---|---|
| O'Higgins | 11.9% |
| Curicó | .37% |
| Talca | -8.4% |
| Maule | 9.89% |
| Arauco | 14.06% |

There exist, nevertheless, reasons for not having confidence in this method of detecting underemployment. Underemployment is generally defined as follows:

- when employed persons do not work full time and are able and willing to undertake supplemental work, or

- when income or productivity could increase, taking into account qualifications, persons would take work under better conditions or would change professions.

With regard to the first of the underemployment definitions, INE statistics indicate that the percentage of the labor force working less than 35 hours a week is consistently lower in the agriculture sector than in other sectors. Real controversy arises with the second part of the definition, a test of which is much harder to quantify. Suffice it to say that there exists a considerable body of informed opinion in Chile which maintains that even though rural people are working, they are qualified and willing to undertake more productive work than they are presently performing, were such work available.

The most recent study undertaken and one which does not use the questionable technical coefficients - production technique for measuring underemployment is the 1974-1975 A.I.D.

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[1] Giglio, Atilio. Ocupación Agrícola en Cinco Provincias de la Zona Central, 1967.

financed ATAC Survey of Small Farmers in the Central Irrigated Agricultural Region of Chile, 1976. The ATAC study is one of the few in Chile which is actually based on solid farm level data. In calculating the available male labor supply, ATAC counted all persons between the ages of 12 and 64; because of the low labor force participation rates due to school attendance in the 12-14 age group, which constitutes 13.7% of the 12-64 age group, adjustments have had to be made to the ATAC figures. Making these adjustments to the ATAC figures, it is estimated that on the average, men between the ages of 14 and 64 in the minifundista sector worked only an average of 136 days (45.3% of 300 days), on and off the farm. A similar statistic for the reform sector is 140 days (46.5% of 300 days). Women between the ages of 14-64 in the traditional and reform sectors were only "employed" (in the conventional sense) for an average of 17 days (5.7% of 300 days). In spite of the low utilization of their own labor, both the reform sector farmers and minifundistas paid others for 22% of the labor used on their farms (58 days for the average minifundistas and 75 days for the average reform sector farmer).

To say the least, the ATAC Survey implies a strong seasonal variation in labor demand and serious seasonal underemployment.

Given the importance of underemployment as a possible development opportunity, further studies should be carried out to establish its nature, magnitude, location and periodicity. The general outline and methodology for such a study are detailed further in Section III. D. 2. On the basis of the ATAC study, the balance of this assessment will assume that significant underemployment of a seasonal nature exists, but that at certain times of the year labor supply constraints undoubtedly exist. These seasonal constraints no doubt vary with latitude but for the Central Region appear to be most serious in March and December.

## B. Welfare and Demographic Indicators

### 1. Population Growth and Migration Patterns

Chile's rates of population growth over the last 30 years are as follows:

| Years | Total | Urban | Rural |
|---|---|---|---|
| 1940-52 | 1.40 | 2.55 | -0.09 |
| 1952-60 | 2.76 | 4.36 | -0.06 |
| 1969-70 | 1.84 | 2.89 | -0.62 |

It is clear from the above, that the overall Chilean population growth rate has dropped significantly in recent periods and that there exists a significant decrease in the population officially classified as "rural" (as indicated earlier the Chilean censal definition of "rural" leaves something to be desired). As pointed out in Table II-3 of the Sector Overview, in only three provinces did the rural population increase during the 1960-1970 intercensal period (Aconcagua, with a rate of 0.10%; O'Higgins, with a rate of 0.96%, and Llanquihue, with a rate of 0.10%). Even allowing for the somewhat distorting rural censal definition, the overall picture is clear -there exists significant and sustained outmigration from the rural areas.

Meller and Rahilly have attempted to quantify internal migration and found that the poles of attraction were Santiago and Concepción - La Frontera. Their results are summarized in Table I-8 and show that although Santiago received the largest absolute number of inmigrants, the Concepción - La Frontera area received relatively more. The relative outmigration from the central zone (excluding Santiago) was the highest both in absolute and relative terms, with the south being second.

## 2. Health and Nutrition

The relative poverty of the rural sector permits the assumption that the rural health and perhaps nutritional status of the sector as well is inferior to that of the urban sector. Some evidence to that effect is presented below.

### a. Infant Mortality

The existing infant-mortality statistics do not differentiate between the urban and rural sector. The infant mortality rate varies from 66.3/1,000 live births in the Province of Tarapacá to 148.4/1,000 in Arauco. A correlation analysis was performed between the infant mortality rate and the percent of the rural population on the provincial statistics and a positive correlation was found to exist ($R^2$ = .41).

## TABLE I-8

Estimate of Net Internal Migration, 1960 - 1970, (000s of persons)

| Areas | (1) 1960 Population | (2) 1970 Population | (3) Theoretical 1970 Pop. 1/ | (4) Net Internal Migration (3) - (2) | (5) Net Internal Migration as % of 1960 Pop. |
|---|---|---|---|---|---|
| North a/ | 763.5 | 904.9 | 916.7 | -11.7 | -1.5 |
| Central Zone, excluding Santiago b/ | 2024.7 | 1997.8 | 2430.8 | -453.0 | -22.4 |
| Santiago | 2437.4 | 3236.9 | 2926.3 | + 310.6 | +12.7 |
| Concepción & La Frontera c/ | 1366.7 | 1835.3 | 1640.8 | + 194.5 | + 14.2 |
| South d/ | 781.8 | 878.3 | 938.6 | - 60.3 | - 7.7 |
| Chile, Total | 7374.1 | 8853.1 | - | - | - |

1/ Assuming all areas increased at the national average.

a/ Tarapacá, Antofagasta, Atacama and Coquimbo.

b/ Aconcagua, Valparaiso, O'Higgins, Colchagua, Curicó, Talca, Linares, Maule.

c/ Concepción, Arauco, Bío-Bío, Malleco, Cautín, Ñuble.

d/ Valdivia, Osorno, Llanquihue, Chiloé, Aysén, Magallanes.

Source: Adapted from R. Meller and C. Rabilly, Características de la Mano de Obra Chilena, 1940-1970, V.C., 1974, Cuadro 9.

b. Nutrition

Few facts exist that permit differentiation between urban and rural malnutrition in Chile. A study by Dr. F. Monckeberg and others in Curicó indicates that except for the 0-1 age group, infant malnutrition appears considerably worse in the rural areas (this may be related to a lower incidence of breast feeding in the urban areas). The Monckeberg Curicó study indicates serious nutrition problems as measured by the Iowa scale (most LA countries use the Gómez scale, thus intercountry comparisons are difficult to make.)

Recent personal communication from Dr. Iván Contreras of the Servicio Nacional de Salud (S.N.S.) indicates that in four rural communities near Santiago nutritional deficiencies were the underlying cause of death in 35.6% of infant mortalities (under age five). For the urban area this same statistic was 23.7%. Dr. Contreras does not consider the above mentioned rural statistic as representative of the rural sector as a whole because of the closeness of these communities to Santiago. He indicated that in a study performed in the asentamiento of La Comuna de Colina, it was found that 45% of the children under the age of 6 were weight deficient for their age and that the incidence of medium and serious malnutrition was approximately 13.9%. These figures contrast unfavorably with those of the SNS which indicate that for the under age 6 population under care, the statistic of low weight for age was 15.4% and that the statistic for medium and serious malnutrition was 3.9% in the 0-6 age group.

In summary, such fragmented data as does exist indicates a worse nutrition picture in the rural areas that in the urban ones. Prior to having the results of the 1974-75 nutrition study which is presently being processed and which includes a definitive rural sample, there is little more that can be said about this matter.

3. Education

Educational and literacy levels of the rural population are considerably worse than those of the urban population.

a) Literacy

Table I-9 compares urban adult illiteracy in Chile from 1940 to 1970; it indicates that even in 1970, a fairly high degree of rural illiteracy persisted. The following provinces have rural adult illiteracy rates that in 1970 were higher than average:

| | | | |
|---|---|---|---|
| Malleco | 33.6 | Ñuble | 30.0 |
| Maule | 31.2 | Arauco | 29.9 |
| Talca | 30.7 | Coquimbo | 28.8 |
| Bío-Bío | 30.2 | Cautín | 28.0 |
| Colchagua | 30.2 | Concepción | 27.9 |
| Curicó | 30.1 | Linares | 27.0 |

TABLE I-9

Comparison of Urban and Rural Illiteracy Population Aged 15 and More, 1940-1970 in %

| Year | Total | Urban | Rural |
|---|---|---|---|
| 1940 | 27.1 | - | - |
| 1952 | 19.6 | 10.1 | 35.9 |
| 1960 | 16.4 | 9.1 | 34.6 |
| 1970 | 11.6 | 7.3 | 26.6 |

Source: Meller & Rahilly, op. cit.

b) Scholarity

Table I-10 indicates the highest level of schooling attended by the Chilean urban and rural population in 1970. 80.3% of the rural population attended only primary school while the comparable figure for the urban sector was 51.1%. Chilean scholarity figures are undoubtedly good in comparison to other countries in the hemisphere and reflect a lagging rural sector in the educational sense.

TABLE I-10

Highest Level of Schooling Attended
Urban and Rural, 1970

% of the population

| | | | |
|---|---|---|---|
| Primary | 57.1 | 51.1 | 80.3 |
| Less than 4 years | 19.8 | 15.3 | 37.4 |
| 4 years and more | 37.3 | 35.8 | 42.9 |
| Middle Level | 38.8 | 43.7 | 18.9 |
| General | 31.9 | 36.9 | 11.4 |
| Technical | 6.9 | 6.8 | 7.5 |
| University | 4.2 | 5.1 | 0.7 |

Source: 1970 Population Census

4. Housing

As is the case in health and education, the rural housing situation is significantly inferior to the urban one. This can be inferred from the existing statistics on water supply and over-crowding. Table I-11 indicates that while only 9.3% of urban households were without some type of potable water, 87.3% of rural households were in this situation. The figures on persons per dwelling provide a similar picture; in 1970 the average rural household contained 6.2 persons, while the average urban household contained 5.6 persons (these figures may be more indicative of larger rural families than overcrowding).

TABLE I-11
Water Supply to Urban and Rural Dwellings, 1970

| | Urban | Rural |
|---|---|---|
| Inside the Dwelling | 72.2% | 8.5% |
| Outside the Dwelling | 18.5% | 4.4% |
| Without Potable Water | 9.3% | 87.1% |
| TOTAL Number of Dwellings | 1,312,860 | 376,980 |

Source: Population Census of 1970

## 5. Geographic Distribution of the Rural Poor

In 1975, ODEPLAN (Oficina de Planificación Nacional) developed a Mapa de Extrema Pobreza. Since this has had such an important impact on the way poverty is viewed by the GOC, it is important to make some comments on how A.I.D.'s rural target group definitions compare with the standard used by ODEPLAN. ODEPLAN's poverty indicator was housing, and in particular the sanitary facilities due to the availability of census data. Even those homes without any sanitary facilities which did not suffer from dangerous accumulations of excrement on the date of the census interview were excluded from the "extreme poverty" group. This standard is not very useful to A.I.D. Too many of those without adequate diets, with no education, and severely limited incomes would be excluded simply because their homes did not have dangerous accumulations of excrement. For example, in Cautín at least 2/3 of the rural population are Mapuche indians on small farms of well under six Basic Irrigated Hectares [1] (BIH), and therefore within A.I.D.'s target group; yet less than 1/3 of the rural population of Cautín was classified as being in "extreme poverty" based on the sanitary facilities standard. The sanitary facilities standard should be very useful in urban settings, but in rural areas households even of the very poorest type may be able to avoid dangerous accumulations of excrement without this fact indicating anything of importance about their general welfare.

In spite of its limitation the Mapa de Extrema Pobreza is of some usefulness for assisting the location of the rural population of the rural poor in Chile. Table I-12 and Map I-1 present, on a province by province basis, the rural poor as a percentage of the total population. It can be noted from the map that although poverty pockets exist throughout Chile's extension, in the main, there tends to be a concentration of poverty in the more southern parts of the country. B the ODEPLAN criteria, then, there are approximately 600,000 rural poor people in Chile.

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[1] A land reform standard of measurement which attempts to adjust for fertility of land.

TABLE I-12

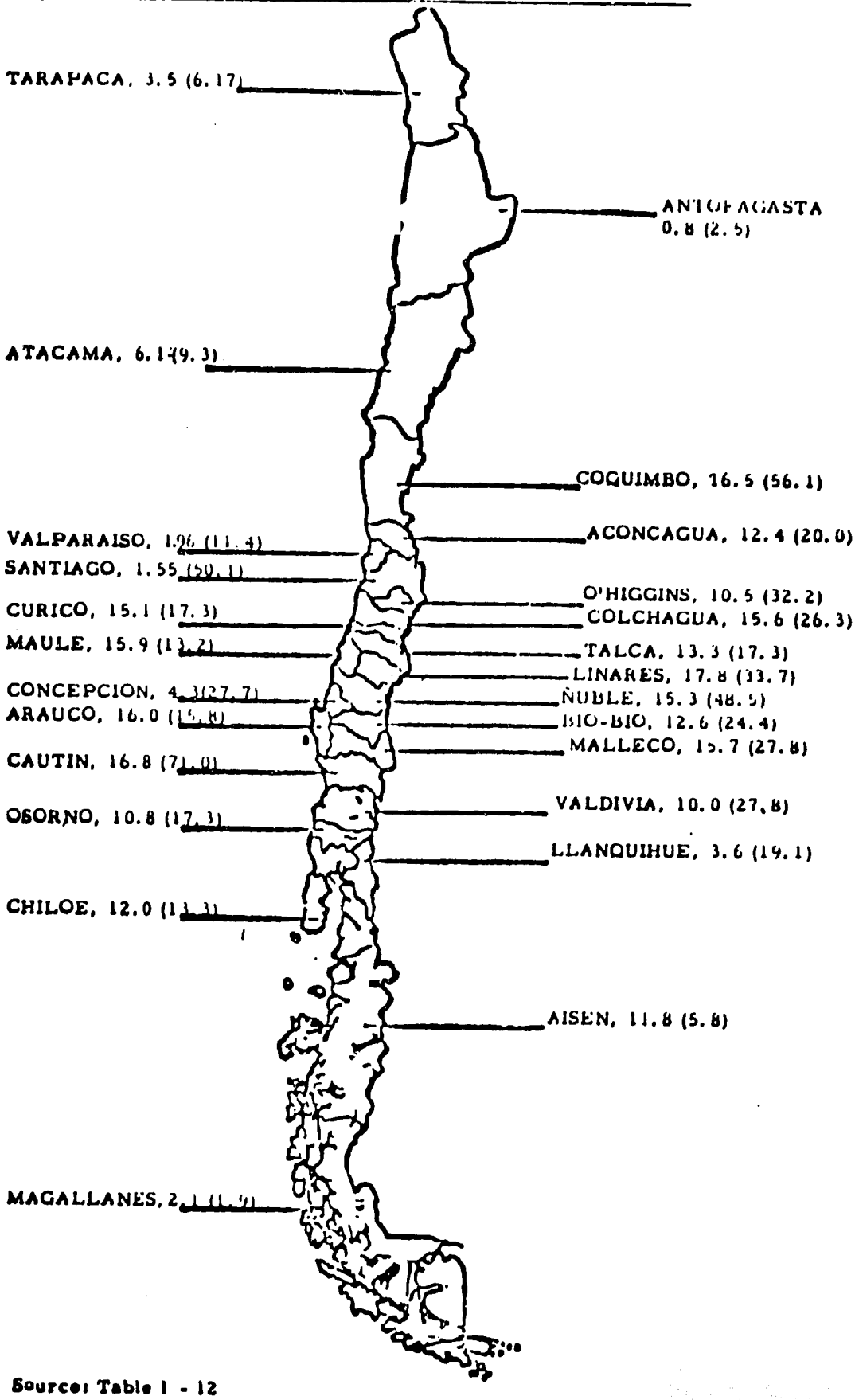
Rural Poor in Chile According to ODEPLAN "Mapa de Extrema Pobreza" by Province (000s of persons)

| Province | Total 1970 Population | Rural Poor as % of Total | Number of Rural Poor |
|---|---|---|---|
| Antofagasta | 251.9 | 0.08 | 2.5 |
| Santiago | 3, 230.8 | 1.55 | 50.1 |
| Valparaiso | 738.3 | 1.96 | 11.4 |
| Magallanes | 89.4 | 2.10 | 1.9 |
| Tarapacá | 175.0 | 3.5 | 6.1 |
| Concepción | 644.1 | 4.3 | 27.7 |
| Atacama | 152.6 | 6.1 | 9.3 |
| Llanquihue | 199.3 | 3.6 | 19.1 |
| Valdivia | 277.9 | 10.0 | 27.8 |
| O'Higgins | 306.9 | 10.5 | 32.2 |
| Osorno | 160.2 | 10.8 | 17.3 |
| Aysén | 48.9 | 11.8 | 5.8 |
| Chiloé | 111.2 | 12.0 | 13.3 |
| Aconcagua | 161.3 | 12.4 | 20.0 |
| Bío-Bío | 193.5 | 12.6 | 24.4 |
| Talca | 232.2 | 13.3 | 30.9 |
| Curicó | 114.7 | 15.1 | 17.3 |
| Ñuble | 317.0 | 15.3 | 48.5 |
| Colchagua | 168.5 | 15.6 | 26.3 |
| Malleco | 177.1 | 15.7 | 27.8 |
| Maule | 82.9 | 15.9 | 13.2 |
| Arauco | 98.8 | 16.0 | 15.8 |
| Coquimbo | 340.2 | 16.5 | 56.1 |
| Cautín | 422.8 | 16.8 | 71.0 |
| Linares | 189.4 | 17.8 | 33.7 |

Source: Adapted from: Pobreza Rural en Chile, PPEA, Serie Investigación N° 18-A, 1975 and 1970 Population Census.

MAP I- 1

Rural Poor as a Percentage of the Total Population
by Province (thousands of ODEPLAN rural poor in parentheses)




Source: Table I - 12

The two provinces having the largest numbers of the rural poor, even using ODEPLAN's "urban biased" criteria are Coquimbo and Cautín. The Santiago province follows in third place, but of course has a small percentage of "rural poor" population.

## C. Characteristics of Major Target Sub-Groupings

### 1. Traditional Small Farmers - Minifundistas

#### a) Origin and Composition

The minifundista sector, like the traditional large farm sector, has its historical origins in Spanish royal land grants made during the colonial period. The grants from which the minifundio developed were called peonías and were given to lower rank soldiers as a reward for their actions during the conquest. Originally, prior to subdivision because of inheritance, peonías fluctuated in size between 50 and 150 hectares. Not only were they smaller than the larger land grants but there were located in zones that were more isolated and less fertile. They tended to concentrate in the coastal mountain range and the Andes foothills, places where most minifundios are found today.

Also within the minifundio grouping should be included what remains of the Chilean indigenous populations. Although these groups are organized by law into communal land holdings, their form of working the land is essentially individual. These indians, Mapuches, are located in the old provinces of Bío-Bío, Arauco, Malleco, Cautín, Valdivia and Osorno, with the major part of them being located in Cautín. In 1966 it was estimated that there were 326,000 Mapuches living in the zone on some 653,000 hectares.[1]

Another group which should be included in the traditional sector are the so-called "Comunidades Históricas" located in the area of Coquimbo. Essentially, these "Comunidades Históricas" or historic communes hold large areas of land in common and undivided. It is estimated that they approximate 100,000 people holding approximately 700,000 hectares

[1] A. Saavedra, "La Cuestión Mapuche" in Cuadernos de la Realidad Nacional, September 1970.

of dryland. Their principal activities are the grazing of sheep and goats. There exist in the area severe problems of over-grazing, soil erosion, and lack of water. The animal and human population pressure on limited soils and water appears to be the underlying cause of deep poverty.

b) Socio-economic Characteristics

More detail on the socio-economic characteristics of the Minifundio group can be found in Section 6.3.2. of the Sector Overview. The table on page VI.59 of the overview indicates that welfare levels in health, and per-capita production are very closely associated with the degree of minifundio concentration - the picture with regard to the education and housing of the minifundio groups seems better. In fact, the ATAC study indicates that both in terms of education and housing the minifundista sector (at least in the central irrigated area which excludes the Mapuche and "Comunidades Históricas" areas had higher levels than the reform sector. An important general program implication of the relatively good educational level in the minifundista sector is a probable high receptivity to new technologies which might be offered.

c) Soils, Crop Mix, and Input Use.

The counterpart to the above, is the scarcity of the basic soil resource that the majority of the group possess, its generally poor quality, and the state of deterioration which it has reached. As pointed out in the Sector Overview, in many minifundio areas of the coastal mountain range and Andes foothills, the soil is being cultivated at more than a 100% of its agricultural potential. The result has been a serious soil erosion problem in most minifundio areas.

Even the limited farm-level data that presently exists for the minifundistas indicates considerable geographical differences in crop mix among them even in the central irrigated zone as can be seen in Table I-13.

TABLE I-13

Average Value of Production by Small Farmers
Central Agricultural Region of Chile. 1974 - 75
Distributed by Crop
(in thousands of May '75 Escudos)

| Crop | Traditional Small Farms | | | | Reform Sector |
|---|---|---|---|---|---|
| | | AREAS | | | |
| | Total | Aconcagua | O'Higgins | Curicó & Talca | |
| Grand Total | 4,559.4 | 2,642.6 | 3,681.4 | 7,334.8 | 11,365.7 |
| Cereals: | 681,2 | 366.5 | 248.3 | 1,425.5 | 4,141.1 |
| Wheat | 390.4 | 114.7 | 56.7 | 997.0 | 2,555.5 |
| Corn | 257.3 | 206.8 | 191.6 | 373.0 | 1,115.8 |
| Rice | -- | -- | -- | -- | 451.9 |
| Oats | 3.3 | -- | -- | 10.3 | 15.5 |
| Rye | 30.0 | 45.0 | -- | 45.2 | 2.4 |
| Gardens: | | | | | |
| Mixed Products | 213.8 | 206.5 | 236.5 | 198.2 | 253.4 |
| Other Annual Crops | 2,232.5 | 1,675.7 | 1,645.2 | 3,370.7 | 6,349.6 |
| Potatoes | 462.5 | 52.2 | 353.7 | 977.5 | 1,209.1 |
| Sugar Beets | 205.5 | -- | -- | 614.5 | 798.1 |
| Beans | 244.6 | 28.3 | 162.9 | 540.4 | 1,043.1 |
| Vegetables [1] | 1,156.9 | 1,249.1 | 1,005.1 | 1,217.2 | 946.4 |
| Sunflower Seeds | -- | -- | -- | -- | 82.2 |
| Alfalfa & Clover [2] | 74.1 | 98.5 | 102.9 | 21.1 | 311.2 |
| Other [3] | 88.9 | 247.6 | 20.6 | -- | 1,959.5 |
| Permanent Crops | 1,431.9 | 393.9 | 1,551.2 | 2,340.4 | 621.6 |
| Grapes | 177.2 | 94.6 | 45.0 | 391.2 | 18.9 |
| Grape Wine [4] | 52.9 | -- | 98.1 | 60.2 | 376.6 |
| Peaches | 136.5 | 194.6 | 184.1 | 31.5 | 114.6 |
| Apples | 117.7 | -- | 36.0 | 315.9 | 16.9 |
| Other Fruit [5] | 947.6 | 104.7 | 1,188.0 | 1,541.6 | 94.6 |

[1] Includes melons and other minor related crops.

[2] Quantities harvested only. Excludes production consumed directly by animals.

[3] Reform sector includes substantial amount of tobacco.

[4] Production consumed or sold as wine.

[5] Cherries, plums, pears, nuts, apricots, avocado, etc.

Source: ATAC Survey

In 1974-75 to the Minifundistas in Aconcagua vegetables were the most important, to those in O'Higgins permanent fruit crops were most important, to those in Curicó and Talca even though fruits and vegetables remain important, wheat, potatoes, sugar beets, beans are much more important relatively. The former seems to be indicative of a general pattern, the further south, the more important crops such as wheat, potatoes, and beans become.

From Table I-14, it can be noted that direct inputs are extremely important to the Chilean minifundista. Unlike his cohorts in many other Latin American countries, he does use chemical fertilizers, insecticides, herbicides and other agricultural chemicals. Cash for inputs or adequate sources of production credit for the purchase of inputs are correspondingly more important.

d) Income and Assets

Income and asset figures for the minifundista exist only for Chile's central irrigated area for the 1974-75 crop year. It should be recalled in examining these figures that the minifundista in the central irrigated zone are not truly representative of minifundistas throughout Chile; the areas covered by the ATAC Survey did not, for example, include any observations in poorer Coquimbo or Cautín areas, nor even of the poorer central zone minifundistas such as might be found in the non-irrigated coastal mountain or Andean foothill areas. Table I-15 summarizes the ATAC Survey minifundista incomes.

There is no reason to suspect that the 1974-75 crop year was an especially atypical one; even though it was a period of contraction in the Chilean economy in general, the agricultural sector was already recuperating from its 1973 low point.

TABLE I-14

Distribution of Value of Crops and Costs
of Direct Inputs by Principal Crop Groups
(in thousand of May '75 Escudos per hectare)

| | Reform Sector | Traditional Small Farms | | |
|---|---|---|---|---|
| | | Aconcagua | O'Higgins | Curicó Talca |
| Total Production | 1697 | 1488 | 1601 | 1797 |
| Cost of Direct Inputs | 393 | 352 | 492 | 401 |
| Gross Margin | 1303 | 1136 | 1109 | 1396 |
| Percent | 76 | 76 | 69 | 77 |
| Vegetable Production | 1904 | 1608 | 1143 | 1457 |
| Cost of Direct Inputs | 297 | 406 | 326 | 282 |
| Gross Margin | 1607 | 1202 | 817 | 1175 |
| Percent | 84 | 74 | 71 | 80 |
| Fruit Production | 1209 | 1697 | 3000 | 2763 |
| Cost of Direct Inputs | 158 | 653 | 942 | 392 |
| Gross Margin | 1051 | 1043 | 2057 | 2370 |
| Percent | 86 | 61 | 68 | 85 |
| Other Production | 1725 | 1352 | 1212 | 1566 |
| Cost of Direct Inputs | 423 | 236 | 382 | 435 |
| Gross Margin | 1301 | 1116 | 830 | 1131 |
| Percent | 75 | 82 | 68 | 72 |

Source: ATAC Survey.

Notes: Alfalfa and trébol are not included in product groups. "Direct Inputs" should be understood to include fertilizer, seeds insecticides, herbicides, other agricultural chemicals, lime and similar soil improvement materials, and packaging materials for products. It does not include labor nor does it include animal or machinery costs.

TABLE I-15

Incomes of Traditional Small Farms
in Chile's Central Irrigated Region
1974-1975
(equivalent in US$ Dollars)

| | TOTAL | AREAS | | |
|---|---|---|---|---|
| | | Aconcagua | O'Higgins | Curicó Talca |
| Total Family Income | 819 | 539 | 662 | 1254 |
| (per capita income) | (175) | (120) | (168) | (235) |
| Net Farm Income | 661 | 341 | 498 | 1141 |
| Non-Farm Income | 158 | 198 | 164 | 113 |
| Work on other farms | 30 | 23 | 41 | 26 |
| Non-farm work for others | 44 | 51 | 38 | 45 |
| Non-farm work for self | 71 | 117 | 63 | 34 |
| Investment, pensions, etc. | 13 | 7 | 23 | 9 |

Source: ATAC Survey.

Table I-16 presents the asset profile of minifundistas in the central irrigated region. The average farm size of the minifundistas surveyed was 3.9 physical hectares . Of these 3.9 has., on the average 3.4 were farmer or family owned; .2 has. rented for cash and .3 has. sharecropped.

TABLE 1-16

Assets of Traditional Small Farms
in Chile's Central Irrigated Region 1974-75
(equivalent of US Dollars)

| | TOTAL | AREAS | | |
|---|---|---|---|---|
| | | Aconcagua | O'Higgins | Curicó Talca |
| Total Capital | 6817 | 5860 | 6384 | 8200 |
| Farm Capital | 4735 | 3456 | 4388 | 6347 |
| Land [1] | 3026 | 2042 | 2512 | 4513 |
| Structures | 446 | 323 | 352 | 670 |
| Machinery & Tools | 884 | 697 | 1254 | 700 |
| Animals | 317 | 297 | 249 | 484 |
| Crop Stocks | 49 | 85 | 17 | 46 |
| Seeds | 11 | 13 | 4 | 15 |
| Non-farm Capital | 2082 | 2404 | 1996 | 1850 |
| Farmhouse | 1358 | 930 | 1627 | 1514 |
| Other | 724 | 1473 | 369 | 336 |
| (Farm Size, physical hectares) | ( 3.9) | ( 2.2) | ( 3.8) | ( 5.8) |

[1] Value estimated by farmers

Source: Calculated from ATAC Survey.

As the data generated from the PPIS begins to provide a basis for further analysis and study of the minifundio group, it will be possible to say more about target group minifundistas located outside of the central irrigated zone. For the moment, it is proper to conclude on the basis of the above income and asset profiles that even the relatively prosperous central zone minifundistas fall into the USAID/Chile target group.

## 2. The Reform Sector Farmers

### a) Origin and Composition

This group of farmers is constituted of former farm laborers and tenants who now live on and are in the process of becoming owners of the land expropriated during the Chilean agrarian reform which effectively began in 1964.

From 1964 to 1970 this sector was organized into asentamientos or settlements which in essence retained the form of productive organization of the expropriated farm. From 1971 to 1973 an attempt was made to reorganize the asentamientos into Centros de Reforma Agraria which were groupings of asentamientos or Centros de Producción, these were organized as state farms. From 1973 to the present, the GOC efforts have been directed to the division of the asentamientos into individual parcels. Needless to say, these many changes in the productive organization of the reform sector have had negative effects on its productivity.

### b) Socio-economic Characteristics

Although the socio-economic characteristics of reform sector farmers are broadly comparable to those of the minifundista sector, it must be remembered that their origins are basically from a lower socio-economic level, i.e. the farm labor and tenant class. These lower literacy and educational levels among reform sector farmers than among minifundistas as is illustrated in Table I-17.

TABLE I-17

Comparison of Educational and Literacy Levels of Minifundista and Reform Sector Farmers in the Central Irrigated Region, 1974-75

| Educational/Literacy Level | Reform Sector | Minifundista Sector |
|---|---|---|
| Attended Middle Level | 7.7% | 16.8% |
| Reached 6th grade | 23.3% | 26.4% |
| Can read and write | 48.6% | 43.1% |
| Illiterate | 20.4% | 100.0% |

Source: ATAC Survey.

The lower literacy and educational levels exist among the reform sector in spite of their younger average age; according to the ATAC Survey, 75% of the reform sector farmers between the ages of 12 and 64 are under 40 years old, while this is true for 65% of the minifundistas.

In addition to lower educational and literacy levels than the minifundistas, there exists a lack of entrepreneurial experience in the reform sector. Not only are their origins mainly from the salaried labor classes, but paternalistic GOC policies in earlier times have to some extent inhibited the development of entrepreneurial experience; e.g., on the state farms GOC employees took most major management decisions. More recently, for better or worse, they have been left more to themselves. A recent ICIRA survey indicates that only 28.5% of the asignatarios interviewed had attended some kind of training course in the last three years and that less than half had received any kind of technical assistance (extremely broadly defined) during this same period.

c) Soils, Crop Mix and Input Use

Tables 6.1 - 6.6 of the Sector Overview indicate in detail the type and quantity of land received by the reform sector farmers. In general, the land base of the reform sector is much better than that of the minifundistas. However, the best land in the central valley seems to have

remained in the hands of the so-called "reserve sector", i.e., the ex-latifundistas who were allowed to choose up to 80 BIH and undoubtedly retained the best land for themselves.

The ATAC Survey indicates that the average asignatario plot equals 9.2 physical hectares or 7.7 BIH in the central irrigated region. Table 6.7 of the Sector Overview indicates that the average plot distributed by CORA between September 1973 and July 1975 equaled 17.7 physical hectares. The CORA-distributed average plot sizes are higher than those surveyed by ATAC because in the southern rainfed area, excluded from ATAC's Survey the size in physical hectares of the average plot is much larger than in the central irrigated area. Furthermore, the asentamientos that have been parceled to date have been in areas of lesser population pressure such as the south.

In summary, the land reform sector farmer is relatively land rich. The Sector Overview, the ATAC Survey, and various Land Tenure Center studies indicate a relatively low degree of land utilization with a high percentage of land in natural or cultivated pasture.

In Table I-13, presented previously, it is clear that fruits and vegetables are much less important to the reform sector farmer than to the minifundista. Wheat, for example, is clearly the reform sector's most important crop. Corn, potatoes, beans, and sugar beets follow wheat in importance. In short, the reform sector crop mix tends to be much more extensive than that of the minifundio sector.

Like the minifundista, the reform sector farmer is a direct input user. This can be seen from Table I-14. In general, however, the gross margins/hectare of the reform sector seems higher for comparable types of crops and consequently input use as a percentage of the value of total production is lower. This generally lower use of inputs is probably due principally to the fact that the land of the reform sector is, in the main, better than minifundista land. (It cannot be due to lesser credit availability because according to the ATAC Survey in 1974-75 reform sector farmers had greater credit availability than minifundistas, and that credit availability was directly related to input use.

d) Income and Assets

Like for the minifundista sector, income and asset figures exist only for the 1974-75 crop year in the central irrigated area. Table I-18 breaks down the components of reform sector farmer income and compares them to those of the minifundio sector. Net farm income can be seen as a much more important component of total income in the reform sector than in the minifundio sector, with non-farm income accounting for only 3.5% of the reform sector farmer's total, while it accounts for almost 20% of the minifundista's total income.

The reform sector farmer's asset profile is somewhat confused by the fact that although he has or is soon to have title to his land, he is quite indebted for it and must pay for it over a 28-year period (see note 2 to Table I-19). From the comparative asset profile between reform farmers and minifundistas (presented in Table I-19) several facts are apparent:

- If land values are not taken into consideration then total capital of the reform and minifundista farmer are very similar, though higher for the minifundista farmer ($3,003 V. $3,791).

- Minifundista farm capital, excluding land, is also slightly higher ($1,472 V. $1,709); this is true especially for the machinery and tools category.

- Minifundista land is slightly more valuable per hectare ($666 V. $776); this is probably because more permanent crops are established on minifundio holdings.

- On a per hectare basis minifundista non-land farm capital is much higher ($160 V. $432).

TABLE I-18

Comparison of Elements of Total Average Income Between Reform Sector Farmers and Minifundistas
Central Irrigated Region
1974-75

(equivalent of US Dollars)

| | Reform Sector | | Minifundio Sector | |
|---|---|---|---|---|
| | Amount | % of Total | Amount | % of Total |
| Total Family Income | 1,926[1] | 100.0 | 819 | 100.0 |
| (per capita income) | (319) | -- | (175) | -- |
| Net Farm Income | 1,859 | 96.5 | 661 | 80.7 |
| Non-Farm Income | 67 | 3.5 | 158 | 19.3 |
| Work on other farms | 21 | 1.1 | 30 | 3.7 |
| Non-farm work for others | 35 | 1.8 | 44 | 5.4 |
| Non-farm work for self | 11 | 0.6 | 71 | 8.7 |
| Investments, pensions, etc. | + | + | 13 | 1.5 |

Source: ATAC Survey

1 Includes return on agrarian reform land for which a charge will be made in the future. If a 6% capital charge is applied on this land value, the income figures are $1,558 ($223), and $1,491, respectively.

TABLE I-19

Comparison Between the Assets of Reform Sector and Minifundista Farmers in Chile's Central Irrigated Region 1974-1975 (equivalent of US Dollars)

| | Reform Sector | | Minifundio Sector | |
|---|---|---|---|---|
| | Amount | % of Total | Amount | % of Total |
| Total Capital | 3,003 | 100.0 | 6,817 | 100.0 |
| Farm Capital | 1,472 | 49.0 | 4,735 | 69.5 |
| Land [1] | (6,136)[2] | -- | 3,026 | 44.4 |
| Structures | 424 | 14.1 | 449 | 6.6 |
| Machinery and Tools | 427 | 14.2 | 884 | 13.0 |
| Animals | 312 | 10.4 | 317 | 4.7 |
| Crop Stocks | 255 | 8.5 | 49 | 0.7 |
| Seeds | 53 | 1.8 | 11 | 0.1 |
| Non-farm Capital | 1,513 | 51.0 | 2,082 | 30.5 |
| Farmhouse | 1,284 | 42.8 | 1,358 | 19.9 |
| Other | 247 | 8.2 | 724 | 10.6 |
| (Farm size, physical hectares) | ( 9.2) | -- | ( 3.9) | -- |

1
Value estimated by farmers.

2
Title has not necessarily passed to new owners. In any event the land must be paid off over a 28 year period without interest at average of approximately $5,000, adjusted for the price of wheat as of August 1, 1975.

Source: Calculated from ATAC Survey.

The general picture that emerges from these data then is a reform sector farmer who is relatively undercapitalized. This is a picture which conflicts with previous studies carried out in 1967 which are summarized in the Sector Overview in page VI. 32. A possible explanation -- much machinery and existing pooled assets have been disposed of for debt settlement or have not been replaced. Similarly, reform sector farmers may not have reported as theirs such capital as may still belong to the SARAs.1 The ICIRA Current Status of Land Reform Grantees up to 1974 indicates that reform sector farmers were rapidly increasing their number of draught animals, which also tends to point to their current inadequate or inappropriate capitalization.

Even though 62% of the ICIRA surveyed reform sector farmers received credit in 1974-75, there appears to be a severe shortage of farm improvement (medium and long term) credit and a lack of subsistence and labor credit (which often leads to sales of needed assets for subsistence purposes). Furthermore, low amounts of credit may be biasing crop mix towards extensive crops (See Constraints Analysis Section.).

In summary, although in the main the reform farmers are somewhat better off than the minifundistas their income ($319 per capita) and asset profiles clearly indicate that they form a part of the "poor majority" in Chile. Their relative under-capitalization, good land base, and general development potential make them an especially attractive target subgroup for A.I.D. assistance.

### 3. Landless Rural Workers

At the present time, of all the target group subgroupings, the least is known about the landless or nearly landless rural worker.

Traditionally within this group there has existed a series of categories, some of a hierarchical nature and others of a contractual nature. The first distinction that exists is between

empleados (employees) and obreros (workers). Empleados are essentially supervisory personnel while obreros actually perform the physical work. Not enough is known about the incomes or assets of empleados to be able to classify them definitively either inside or outside of the target group. According to Table I-5, empleados constituted less than 5% of the agricultural labor force in 1970, therefore this lack of knowledge is not a serious issue. The obrero group clearly does constitute a part of the A.I.D. target group and according to Table I-5 constituted about 58% of the rural agricultural labor force in 1970.

Among the obrero group there are further distinctions depending on the contractual relations which exist. First there is the inquilino or renter. The inquilino may be there on a voluntary basis (voluntario) or may have certain rights and obligations to be there (obligado). The voluntario and obligado fall into the category of permanent workers. Another group is the afuerino or outsider who is not a permanent worker.

Until the turn of the century, the inquilino constituted the major source of labor to the Chilean agricultural sector. The principal difference between the inquilino and other groups was that he received part of his income in money and part (the major part until the 1960s) from his own plot and the animals he was able to raise. Often he worked his own plot on a sharecrop basis. In 1930, this inquilino group constituted 20.6% of the agricultural labor force -- in 1965 it constituted only 8.4% . Thus, over the years the agricultural work force has become similar in many characteristics to the urban-industrial work force, with the portion of labor paid for in money assuming a greater importance. Nevertheless, payment in kind still persists.

The salaried sector of the work force has traditionally enjoyed low levels of income and welfare, lower even than the minifundio group, which this group merges into.

There has existed a minimum wage in agriculture in Chile since at least 1953. From 1953 to 1964 the real minimum wage in agriculture constantly declined. Between 1965 and 1967 by means of adjustments that exceeded increases in the cost of living, the minimum agricultural wage was made equal to the urban-industrial minimum wage. At the same time it was made obligatory that a larger proportion be paid in cash.

In the 1965-1972 period there existed a massive unionization of rural workers. The increase in unionized workers according to the Sector Overview was as follows:

| Year | No. |
|---|---|
| 1968 | 74,900 |
| 1970 | 138,500 |
| 1972 | 280,300 |
| 1974 | 124,000 |

Many of these workers were able to attain wages above the minimum by means of collective bargaining agreements. Some evidence exists in the study prepared by Downey and Cortázar which is cited in the Sector Overview that real wage levels between 1965 and 1970 increased by 30% in the sector while the per-capita national income only went up by 13% in the same period. The employment effects of the minimum agricultural wage policy and massive unionization are not known with certainty, but were probably negative. It is likely, however, that such negative employment effects as these policies probably created were in part mitigated by the agrarian reform process while rapid urbanization was at the same time decreasing the wage labor supply in agriculture.

Very little is known about the present status of the landless group. From 1970 on, the contraction of the economy coupled with relative labor union inactivity after 1973 probably has resulted in a decrease in their overall levels of welfare.

From the ATAC Survey it is possible to calculate the average daily wage paid by small farmers to rural wage earners during 1974-1975 in the central irrigated zone. In the reform sector this was $1.03, while in the minifundista sector it was $1.18. It is not known what the wage level on larger farms was, nor how it might differ from what small farmers paid.

In addition to rural agricultural workers, the landless poor group also comprises poor fishermen and subsistence miners. These latter two groups are not insignificant in size in rural Chile and often merge into the agricultural labor force or also may be included in the minifundista group with the smallest land holdings. They may fish part of the year, farm another part, and mine during a third.

## D. The Role of Women in the Sector

According to the 1970 population census, women constituted only 3.3% of the agricultural labor force (or at least of those who defined themselves as so belonging). There is some evidence, however, that indicates that the censal figure tends to understate their role. It is thought that women play an important role as temporary workers during certain seasons of the year and perhaps form a significant part of the 200,000 temporary workers mentioned previously. The major evidence for this comes from the ATAC Survey which indicates that in the minifundista sector women provided 17% of the on-farm work days. A comparable figure for the reform sector is 13%. These figures contrast sharply with the 3.3% figure in the 1970 census, and tend to indicate that although women may not tend to think of themselves or be defined as members of the agricultural labor force, they nevertheless supply a significant "productive" effort to the sector, perhaps at key times. There also are indications in the ATAC Survey that the role of women is particularly important in the care and feeding of poultry and other small animals.

The available information does not permit a more detailed description of the role of women in the sector, nor does it permit an analysis of such constraints as might or might not exist to their fuller involvement. For example, almost nothering is known about the possible roles women play in the marketing process; similarly the importance of their role in agro-industry or handicrafts is unknown.

A proper and accurate assessment of the role of women in the rural sector would require a special study which focuses on the way rural women spend their time. To the Mission's best knowledge such a study has never been undertaken in Chile ; it is suggested that a study be undertaken as part of the rural employment study described later in this paper.

## E. The Target Group Definition

On the basis of the rural poor profile presented above, the USAID/Chile target group in the rural sector is defined to include the following:

- The farm families of Chile's newest land holding group, the reform sector.

- The traditional small farmers or minifundistas whose assets or income are equal or less than the reform sector farmers; operationally, at the present time, this group is defined as owning 6 or less BIHs.[1]

- The landless or almost landless rural worker whose income is equal or less than that of the reform sector farmer.

This definition of the target group includes approximately 313,000 families; although the group includes over 80% of Chile's rural population, it is only about 15% of the total population. The target subgroupings and their approximate numbers are detailed in Part II of this document and are summarized in Table II-24.

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[1] In the Constraints Analysis Section of this document, i.e., Part II, for analytical purposes the minifundista target group cut-off point is often placed at 5 BIH. This 5 BIH break is for analytical purposes only and is due to fact that much statistical information is presently grouped as 0-5 BIH and is therefore only an analytical device.

# II. IDENTIFICATION AND ANALYSIS OF CONSTRAINTS TO THE DEVELOPMENT OF THE RURAL POOR

## A. Natural Resources and Land Distribution

### 1. Characterization of Land and Water Constraints in the Two Provinces with the Largest Number of Rural Poor

The objective of this section is to outline the degree to which natural resources are a binding constraint which limits the improvement in the situation of the rural poor. Since the natural resource setting of the rural poor is so varied in Chile, this section has been divided into three principal sections, corresponding to three general regions. The conclusions drawn from the natural resource constraint divide the rural poor into three principal categories:

a. Rural poor in areas where the availability of agricultural land and water is so currently pressured by population that the availability of arable land with water is the most critical constraint and must be addressed first before other measures will be effective.

b. Rural poor in areas where approximately 2/3 of the arable land with adequate water is not being cultivated. In these areas the cropping of these uncultivated lands should be the priority policy interest, and the factors which limit improved land use on small farms are the priority constraints.

c. Rural poor in intermediate areas in which land and water availability are not first priority constraints, but neither is the abundance of land and water such that expanding cultivation should be the first policy priority. This implies that while neither land availability nor land use are first priority constraints they may be constraints of secondary priority.

In order to simplify the presentation of the natural resource constraints, two provinces* drawn from the land availability constraint type (Coquimbo), and from the land use constraint type (Cautín) will be used as examples. Only the broadest outlines of the constraint will be presented in this two province comparison, to be followed by a more detailed treatment of the three regions which cover all of the three natural resource

*Coquimbo is now synonomous with Region IV and has recently been divided into three provinces.

constraint types. These two provinces have been selected because they have the largest total number of "extreme rural poor", as defined by ODEPLAN, Cautín with 71,000 and Coquimbo with 56,000.

Table II -1 presents selected indicators of natural resource use and potential for these two provinces.

TABLE II - 1

Agricultural Land Constraints on the Rural Poor in the Provinces of Cautín and Coquimbo

(land measurements in thousands of hectares)

| | COQUIMBO | | CAUTIN | |
|---|---|---|---|---|
| | Use | Potential | Use | Potential |
| Total Area | 3,965 | | 1,838 | |
| Cultivated(able) | 86 | 118 | 288 | 918 |

If we use the figures from Table II-1 of the Sector Overview the land constraint situation in Coquimbo is even bleaker than that presented in Table II-1 above, the Sector Overview figure indicates that only 60 thousand has. are irrigable with 85 percent water security. This would indicate that there is land being currently cultivated which has such a low water security as to make cultivation unprofitable.

In Table II-2, the population pressure on the available arable land is presented.

TABLE II-2

Rural Population Pressure on Arable Land in the Provinces of Coquimbo and Cautín

| | Coquimbo | Cautín |
|---|---|---|
| Total Rural Population | 134,183 | 218,043 |
| Rural Pop. in "Extreme Poverty" | 56,357 | 70,864 |
| Population Pressure on Currently Cultivated Land (Ha./Person) | 0.64 | 1.32 |
| Land Expansion Potential (Ha. of Cultivatable Land not Currently Cropped per Person) | 0.00*<br>0.24** | 2.89 |

* No added land is currently available for cultivation if the Sector Overview estimate from page 11.3 is used.

**If the ODEPA estimate based on the joint SAG/INIA/IREN study is used.

The conclusion of these tables is clear and significant. Land is the critical constraint in Coquimbo, and is not constraining in Cautín. In fact, the abudance of slack arable land in Cautín (and the rest of the rainfed central south) is not only dissimilar to the Coquimbo situation, but unlike the land pressure situation in most small farmer areas in Latin America. Of course, small farms do not control all or even most of the good arable land which is not under cultivation in Cautín or in the rest of the rainfed central south region. Medium and large farms are still important owners of this land. Yet the land situation is so basically distinct from the minifundia situation in both the arid north and the irrigated central valley minifundia areas, that by comparison it, in general, has little land limitation and land and water development should most certainly not be priority policy or program directions here. Since this document is an attempt to give an overall sketch, it of necessity fails to adequately deal with exceptions to the rule; the Galvarino-Cholchol area in Cautín, for example, is an area in which minifundistas are constrained by lack of irrigation.

Table II -2 indicates that the current cultivated land per rural person is twice as much in Cautín as in Coquimbo, but more important, the potential area for additional cultivation is at least ten times as high in Cautín as in Coquimbo.

These two provinces are representative of differing portions of the rural poor or A. I. D. target group. The Cautín and Coquimbo examples represent land resource situations roughly representative of the arid north, and the rainfed central south. Between them the situation changes gradually by degree through the mixed irrigation and rainfed central region. At the northern end of that central region (Aconcagua) no cultivation could be supported without irrigation, while at the other end (Bío-Bío) substantial cultivation is without irrigation. Even though land and water resources are not the principal constraint as a general rule in this central region, the minifundistas in the central region are concentrated in the coastal areas where arable land is seriously limited and irrigation is generally unavailable. What this implies is that while the land constraint situation is reasonably easy to characterize in the arid north and the rainfed central south, in the central region the rural poor in the central valley must be distinguished from those in the coastal area.

## 2. Land and Water Resource Constraint Categories by Major Rural Poor Sub-Group

Three types of rural poor have been defined as A. I. D. target group candidates: minifundistas , land reform beneficiaries or asignatarios , and landless rural workers. The subsections which follow attempt to estimate the approximate proportions of these target sub-groups which fall into each of the land constraints categories which have been regionally defined above. Table II-3 presents rough magnitudes of the sizes of the three target sub-groups.

TABLE II-3 **

Estimates of the Distribution of the Rural Population

| | Number of Families | Percent(%) |
|---|---|---|
| Minifundistas ( 1-5 BIH) | 180,000 | 48 |
| 0-1 BIH | (113,000) | (30) |
| 1-5 BIH | ( 67,000) | (18) |
| Land Reform Beneficiaries | 49,000* | 13 |
| Other Farms ( 5 + BIH, Non-Reform) | 59,000 | 16 |
| Landless Rural Workers (Rural Residual) | 84,000 | 23 |
| Total Rural Families | 372,000 | 100 |
| Total A.I.D. Target Group | 313,000 | 84 |

Notes: * CORA intended final assigned families based on Sector Overview.

** Based on calculations from Table 2.4, Sector Overview; family size assumptions from ATAC and ICIRA studies.

a. The Minifundistas

The minifundista class is of particular interest to A.I.D., and has been selected as the principal target group for the Agricultural Credit Loan (067) through the GOC agency which deals with the minifundista class, INDAP. To obtain an idea of the concentration of minifundistas in the three land constraint classes, Table II-4 presents the distribution of small farms in the minifundista category. Since INDAP is the principal executing agency for the A.I.D. Loan, and since the basis on which INDAP selects clients among the minifundistas reflects on the land constraint, the distribution of their clientele by region is also presented. INDAP attempts to select as clients those farms whose land resources offer enough potential that the farm may be classed as having an "agricultural solution" meaning that there is hope that the farm might support its occupants. A companion criteria of INDAP which makes the distribution of its clientele an interesting indicator from A.I.D.'s point of view is that if the farm has reached its potential, it is

not to be included in INDAP's clientele. Thus (at least theoretically) INDAP clients should be those minifundistas with agricultural potential, but still currently impoverished.

TABLE II-4

Minifundistas by Estimated Land Constraint Class

| | % of All Farms 0-5BIH | % of All Farms 0-5BIH |
|---|---|---|
| Arid North: Severe Land and Water Constraint 1st. Priority (Coquimbo) | 4.5* | 3.1 |
| Central Irrigated Region: Neither Land Availability nor Land Use 1st. Priority (Aconcagua-Bío Bío) | 63.5 | 26.3 |
| Rainfed Central South: No Current or Foreseeable Land or Water Constraint Land Use is 1st. Priority (Malleco-Chiloé) | 32.0 | 70.6 |

Source: INDAP records 1976, and ICIRA/Depto. Economía Agraria, Universidad Católica (based on results in Sector Overview.).
* Underestimates Number of Farmers in this class.

The first land constraint implication of Table II-4 is that the minifundistas in areas where land and irrigation development are necessary preconditions to improved welfare are a small portion (3-5%) of the total.

It can be seen that the regional distribution of INDAP clientele and the distribution of small farms less than 5 BIH are almost mirror images of each other, 2/3 of the INDAP clientele are in the rainfed central south and 1/3 in the central region, while 2/3 of all small farms are in the central region and 1/3 in the rainfed central south.

An examination of the possible reasons for this dramatic difference in distribution will assist in illuminating the land and water constraint situation of the minifundistas in these two major regions.

The first point that must be made is that the criteria of 0-5 BIH is unfortunately broad gauge and includes a wide variety of farmers who range from the very small and very poor to farmers who are much less poor. While the BIH idea has a certain technical attraction in that it might have been a careful technical measurement of the economic potential of land, in practice there were political considerations within broad technical guidelines at the time of the original land reform law.

What this implies for the examination of the land/water constraints and the distribution of the target group by land constraints type is that the BIH has shortcomings as a way of deciding on a target group for A.I.D. It may be adequate in the provinces around Santiago where one can be reasonably certain that at least the 0-5 BIH farms are small, though not in all instances poor. For example, the average physical size of farms in the 1-5 BIH range in Aconcagua is a reasonable 4.66 hectares. In Llanquihue, over 600 miles from Santiago, the same average is 43.02 physical hectares.

Unfortunately, the only alternative to the BIH measure which is readily available in Chile is a physical hectare measure which is itself very distorting. Data exists in the OAS/Chile Aereo-Photogrametric Study which could provide a very adequate measure of land quality based on a seven land quality classification already completed. A special study to organize this data in usable form would be needed, but would provide a reliable measure of economic potential.

Another shortcoming of the BIH measure is that it was a measure used to divide farms and thus has shortcomings for comparisons between small farmers. Assume for the moment that a pre-reform farm had 160 BIH; the "reserve" was 80 BIH. Because the land owner got to pick his reserve, he often picked the best. Thus, his BIH are not necessarily comparable to the 80 BIH in the reform sector.

In spite of the shortcomings of the BIH measure, for A.I.D. purposes it is far superior to a strictly physical hectare and should be used by A.I.D. until a technically superior measure of agro-economic land potential is developed.

The second point required to understand the difference between the INDAP and the BIH regional distributions of minifundistas in Table II-4 is that the INDAP selection criteria should result in a narrowing of the wide BIH range to more nearly approximate A.I.D.'s target group interest in the small and poor. From the analysis of the land and water potential it would appear that INDAP has regionally concentrated on those areas where there is a concentration of very poor small farmers with substantial land potential for increasing their income. Whether or not the INDAP selection has in fact resulted in such an appropriate distribution of farmers or whether the regional distribution is simply coincidence is not known.

While the number of minifundistas is very large in the central irrigation region, it is very possible that the large majority of these are eliminated by INDAP's selection criteria.

The small farms in the central valley of the central region are likely to be relatively well off (when compared to similarly sized farms in the central south), hence not qualifying for INDAP involvement because they are already served by the Banco del Estado de Chile (BECH) or cooperatives. These farms may not be in the INDAP clientele because they are not poor enough. On the other hand there are the large number of central region small farmers in the coastal area from Colchagua to Arauco who are very poor and reasonably small. Many of these farms may not qualify because their land is inadequate to hold out hope of an "agricultural solution" in INDAP terms. What this leaves for INDAP in the central region are the small farms on the coast with an adequate supply of inadequately exploited land. In the central south by contrast, almost all of the BIH qualifying farms are central valley farms with adequate land which is almost always inadequately exploited and therefore, almost all would qualify for INDAP support.

Neither the INDAP nor the BIH definitions are entirely adequate for A.I.D. target group definition, the BIH because it includes farmers too far out of the critical poverty group, and the INDAP criteria since it leaves out the rural poor who have little hope of a strictly agricultural solution to their plight.

Even though the land and water constraint is not first priority in the central region as a whole, it is an important second or third priority for the 20-25 thousand non-INDAP minifundistas in the coastal portion of the central region.

TABLE II-5

Minifundistas (0-5BIH) by Land Constraint Class and Region
(number of families)

| | |
|---|---|
| Arid North: Land and Water 1st. Priority Constraint | 8,000 |
| Irrigated Central Region: Total | 115,000 |
| (a) Land and Water 2nd. Priority Constraint: Non-INDAP Coast | 21,000 |
| (b) Land and Water not a Priority Constraint | 94,000 |
| Rainfed Central South: Total | |
| (a) Land and Water not a Constraint: INDAP (Land Use 1st. Priority) | 57,000 |
| TOTAL | 180,000 |

Table II-5 indicates that among the minifundista group the land and water constraint is first priority among 4.4% of the target minifundistas group located in Coquimbo, and second priority among 11% of the target group located in the coastal areas of the central region from Colchagua to Arauco. For the 84.6% balance of the minifundistas target group, it would appear to be a currently limiting constraint.

b. Land and Water Constraints and the Land Reform Beneficiaries

The land reform beneficiaries represent about 64,000 families (based on Tables 6.1 and 6.4 of the Sector Overview and Working Paper No. 3 of ICIRA) in all the country. However, only 49,000 of these families are projected to receive individual plots or to become final asignatarios. Therefore, the other 15,000 families are included in this document as "landless rural workers". How many of the reform farmers face first and second priority land and water constraints to their income improvement is difficult to estimate. Table II-6 estimates their distribution into the four land and water constraint areas defined above.

TABLE II-6

Estimated Distribution of Land Reform Beneficiaries by Region and Land and Water Constraint Category

| | # of Reform Families | Reformed Sector |
|---|---|---|
| Arid North: Land and Water 1st. Priority Constraint | 5,000 | 9.4% |
| Central Irrigated Region: Land and Water not a Priority Const. | 35,000 | 72.0% |
| Rainfed Central South: Land and Water not Constraining (Land Use 1st. Priority Constraint) | 9,000 | 18.8% |
| TOTAL | 49,000 | 100% |

The reformed sector, except in the arid north, benefits from having been settled on among the best lands, and in the central irrigated region this land is almost always irrigated. It is unlikely that land and water are first priority constraints outside of the Coquimbo area.

### c. Land and Water Constraints on Rural Landless Workers

Though the effect of land and water constraints on landless workers are indirect, they are none the less real. By subtracting the population of minifundista families (at 5.6 per family based on ATAC study), that of reformed sector families (at 6.9 per family based on ICIRA Working Paper No. 3) and other farms at 5.6 per family, from the total rural population, it is possible to estimate the distribution of rural landless workers by land and water constraints regions.

TABLE II-7

Estimated Distribution of Landless Rural Workers by Region and Land and Water Constraint Category

| | Number of Families | Percent of Families |
|---|---|---|
| Arid North 1st. Priority | 10,000 | 12 |
| Central Irrigated Region | 40,000 | 47 |
| Rainfed Central South | 35,000 | 41 |
| | 84,000 | 100 |

Source: ICIRA, Working Paper No. 3 - Table 2.4, Sector Overview ATAC Study (Draft Version)

It is quite clear that the rural workers in the arid north cannot be absorbed in agricultural activities EVEN if the land and water constraint is adequately addressed. Thus, even though one might characterize this group of 10,000 as having a first priority land and water constraint on their improvement, that should not encourage investment to attack the constraint unless there is some reasonable hope that the magnitudes of investment available are capable of making some significant difference in the incomes of the reasonably large numbers of landless poor. Mining has traditionally been the employment cushion which has kept this small group alive when (as is the

rule and not the exception) agriculture is unable for want of water to employ them. Other non-farming rural enterprises should be looked to as possible solutions for this group.

An uncertain number of the 39,500 families in the central irrigated region live in the rural minifundia areas of the coast from Colchagua to Arauco. For the summary presented below, an estimated 4,000 families is used. In these areas, land and water availability are important if not first priority constraints to their welfare. Intensive agriculture, which is the only avenue to absorbing these additional workers, will be impossible in these areas until sufficient water for adequate irrigation is available.

For the balance of the landless rural workers (probably 3/4 of the total), other constraints besides land and water availability are more important.

Table II-8 presents in summary form an estimate of the numbers of target group rural poor by land and water constraint category.

TABLE II-8

Land and Water Constraint Summary
Number of Target Group Families by Land and Water Constraint Category

| | # of Target Fam. | % of Families |
|---|---|---|
| Land and Water 1st. Priority Constraint | 23,000 | 7 |
| Land and Water 2nd. Priority Constraint | 25,000 | 8 |
| Land and Water Not Priority Constraint | 164,000 | 53 |
| Land and Water Not Constraining at All | 101,000 | 32 |
| TOTAL | 313,000 | 100 |

## B. Production System Constraints

The organization of this section separates constraints into three principal types (1) land and water or natural resource constraints (2) farm level production system constraints, and (3) constraints which include demand, prices, marketing and institutions.

Production system constraints are taken to be those factors which limit or impede the improvement of income, employment, or other financial objectives which relate to the farm level production system. The availability of resources not classed as "natural" (credit, capital goods, labor, fertilizer, etc.) and the way in which the farmer organizes the production (land use, crop mix, crop and livestock technologies) may each be viewed as constraints in the event that they are current and important limitations on change(s). Thus, if farmers could significantly improve their incomes by changing land use, or by obtaining additional credit, then credit and land use may be though of as constraints.

The scheme of constraints which is outlined below begins by suggesting that increasing income or employment on small farms may come from three principal sources:

1. Increase land under cultivation: the farmer may produce more of the same products he is currently cultivating.

2. Changing the combination or mix of products: the farmer may cultivate the same amount of land, but by cultivating a larger proportion of his land in higher value crops his income may increase.

3. Changing crop or livestock technologies: the farmer may improve the yield he obtains from the same amount of land in each crop or livestock activity.

These three alternatives are viewed as the production system constraints and their sequence of presentation implies a priority order. If the small farm has good land which is not cultivated, then land use (increased cultivation) is taken to be the priority constraint. If substantial increases

in income can be achieved without changing the technology of small farms, simply changing the proportional combination of the crops they cultivate, then crop mix is seen as the priority constraint. If slack land and alternative crop combinations are neither significant alternatives, then increased income will only come with an improvement in yields, which is classified in the constraint scheme as "crop and livestock technology." Changes in farm technology would be required for any of the options mentioned, be they increased cultivation (implying altered rotation practices) or crop mix (implying changes in the technology of farm management. ).

Any one of these constraints may be unfortunately only a "shadow constraint". For example, seemingly unwise land use may only be a symptom of a more important underlying constraint such as the lack of credit to finance added cultivation: inefficient crop mix may be a "shadow constraint" for inadequate marketing infrastructure or lack of internal demand which prevents a better mix.

These interactions are difficult to capture even in an exhaustive analysis, and there is little hope of more than sketching some possible links in this document. The production system constraints have been sequencially presented in the hope that the earlier ones (land use and crop mix) are at least partially symptoms of the later ones ( credit, technology, marketing and institutions).

## 1. Land Use Constraints

Table II-9 divides the A.I.D. target group into land use constraint classes.

TABLE II-9

Rural Poor by Land Use Constraint Type

(number of families)

| | | Total Target Group Families | Percent |
|---|---|---|---|
| | | | % |
| A. | Rainfed Central South Region | | |
| | 1. (land use 1st. priority constraints) | | |
| | Minifundistas (5BIH) | 57,000 | 18.2 |
| | Asignatarios (Reform) | 9,000 | 2.9 |
| | Landless Rural Workers* | 17,000 | 5.4 |
| | 2. (land use not a priority constraint) | | |
| | Landless Rural Workers* | 17,000 | 5.4 |
| B. | Arid North and Irrigated Central Region | | |
| | 1. (land use not a 1st. priority constraint) | | |
| | Minifundistas (5BIH) | 123,000 | 39.3 |
| | Asignatarios (Reform) | 40,000 | 12.7 |
| | Landless Rural Workers | 50,000 | 16.0 |
| | T O T A L | 313,000 | 100 |

* Improved land use is estimated to have the potential of absorbing only 1/2 of the rural landless workers in the central south region. 1/2 or 17,000 families therefore are not limited by land use but by other factors.

From Table II-9 it is observed that 1/4 of the A.I.D. target group is in the land use constraint category. This means that a significant amount of arable land is not being cultivated on small farms in this category, and hence inadequate land use is the first priority constraint.

Included in this 1/4 are 17,000 landless rural workers families. They have been included in the land use priority group since it appears that there is sufficient arable uncultivated land to absorb approximately 1/2 of the total rural landless worker families in this region.

According to ODEPA figures (See ODEPA,

Uso Potencial de los Suelos de Chile 1968, Cuadro 4) 83% of all under-utilization of potential food crop land in Chile occurs in the central south region. Almost all of the land which ODEPA classified as "underutilized" can be found in natural pasture. Some of this natural pasture land has not been cultivated, but most of it has been under cultivation at one time and is now in natural grass to be cultivated again at the end of an unnecessarily long rotation period.

While much of this underutilized potential crop land is on medium and large farms, a substantial share is on target group farms. Even that which is not owned by small farmers would if drawn into crop production, generate employment and income for landless rural workers, and off-farm employment for the labor surplus of the families on the smallest farms.

It should be remembered that the category of "crops" includes artificial pasture crops and hence does not exclude intensive livestock production which is very well suited to this zone.

In order to illustrate the potential of improved land use in the central south region, the employment and income potential of incorporating the available arable land into crop production will be sketched. From Table 6.12 of the Sector Overview the average size in physical hectares of small farms (1-5BIH) in this region is 24.4 hectares. By assuming that the A.I.D. target group of minifundistas are one third smaller than this average, and that the reform beneficiaires are one third larger, the average target group farmer would be about 22 Ha. While the PPIS Small Farmer Credit Survey now underway will provide a detailed outline of land use and potential for small farmers in this region, these results will not be available until early 1977. In the absence of any overall study of land use on small farms, the estimates below are based on the production patterns outlined for small farms in the Llanquihue province, which is part of the rainfed central south region. This study is described in the Sector Overview , page VI.66.

At 22 Has. for the average farms, the A.I.D. target group of 66,000 farmers would own a total of 1,452,000 hectares. Of this land about 14% (203,000 hectares), is

cultivated or in permanent crops, 43% is in natural pasture, and 38% is fallow or unusable. According to the 1968 ODEPA study cited above, in Llanquihue the crop land area (excluding the potential of increasing the cultivation of artificial forage crops) could increase fourfold. For the province as a whole this implies a potential increase in non-forage crops of 32,000 - 123, 600 hectares. While two of the other provinces which make up the central south are similar to Llanquihue in their potential for exapanding the area in non-forage crops, two others have less potential. There is little doubt from reviewing the land use accounts that a conservative estimate is that cultivation of all crops could at least double in areas without straining the availability of arable land on small farms.

Land use is in a sense a "shadow constraint" in that if there is arable land unutilized, some factors must be limiting cultivation. Improved land use is here narrowly defined as increasing the cultivation of unutilized potential cropland. The factors which may be limiting this expansion of cropped land in the central south include:

a. Lack of credit
b. Lack of market opportunity (demand) and processing capacity
c. Inefficient rotation and fallow practices
d. Inefficient technologies

Credit and market capacity as constraints on land use will be discussed in the sections relating to those two constraints.

Some studies have indicated that rotation practices in the central south region result in an unnecessarily reduced cultivation intensity of the land. However, evidence is too limited to draw final conclusions until results from the PPIS credit evaluation surveys are available. Much more frequent cultivation may be possible on these soil types without serious damage to either texture or fertility. The soils of this region are divided between volcanic based and relatively heavy clay soils. The volcanic trumao soils require heavy phosphate fertilization and benefit little in texture from rotational practices. The clay soils are more sensitive to erosion and may require special practices to improve texture. In both soil types, increased cultivation is possible.

Increased cultivation of arable land in the central south could be achieved by cultivating forage crops or artificial pastures. Since the principal basis for livestock is currently natural grasslands grazing, this change would require a shift in the predominant livestock technology.

Land use (increasing the portion of land cultivated) in the central irrigated region is categorized in Table II-10 as "not a first priority constraint". The reasons for this categorization may be illustrated by comparing the land use patterns of minifundista and reformed small farms in the central south as represented by Llanquihue with the central irrigated region as indicated in the ATAC Survey of Small Farmers of the Central Irrigated Agricultural Region of Chile. Table II-10 presents this comparison.

TABLE II-10

Land Use Patterns on the Small Farms in the Central Irrigated Region and in the Rainfed Central South

| | Central Irrigated Region | | Central South |
|---|---|---|---|
| | Minifundista | Asignatario | Minifundista |
| % of Land in Natural Pasture | 10.2 | 5.4 | 43.0 |
| % of Land in Crops | 77.7 | 79.4 | 14.0 |
| % of Unutilized | 8.5 | 14.1 | 38.0 |
| % of Other Uses | 3.6 | 1.1 | 5.0 |
| TOTAL | 100.0 | 100.0 | 100.0 |

Source: ATAC Survey of Small Farmers in the Central Irrigated Region of Chile.

From Table II-10 the dramatic difference in land use between the central irrigated region and that in the central south is obvious.

The importance of improved land use in the form of increased area cultivated in the central south region for both the welfare of small farmers, and for the production of food for improved nutrition is demonstrated in Table II-11 where a summary of land use and land potential is presented.

TABLE II-11

Summary of Land Use and Land Potential by Region

| | Arid North | Central | Central South | TOTAL |
|---|---|---|---|---|
| Arable Land 000 has. | 83 | 2,080 | 2,390 | 4,553 |
| Percent of National Arable Land | 2% | 46% | 52% | 100% |
| Land in Crops 000 has. | 109 | 1,359 | 954 | 2,422 |
| Percent of Arable Land in crops | 131% | 65% | 40% | 53% |
| Arable Land Uncropped 000s has. | 0 | 721 | 1,436 | 2,157 |
| Percent of National Uncropped Arable Land | 0% | 33% | 67% | 100% |

Source: For arable land, Table 2.1, Sector Overview. For land use, Table 4, ODEPA, Uso Potencial de los Suelos de Chile, 1968.

Table II-11 indicates that Chile has in fact a large uncropped land potential for expansion. Almost half of the arable land is not being cropped in annual or permanent food, fiber and forage crops. In a national sense the incorporation of much of this uncropped land into cultivation should be a primary short run agricultural objective. From policy documents such as the ODEPA, Perspectivas de Desarrollo Agropecuario 1975-1980 , and Sáez, Chilean Short and Medium Term Development Program (Presented to OAS/ICAP), it appears that Chilean agricultural policy is focused on this objective. The ODEPA documents state..."The (GOC) development perspective proposes to increase the area under cultivation by a more intensive use of the soil irrigation..." (p.27). The Sáez document indicates that the top priority problem of agriculture is land use in the reformed farms which hold almost 2/3 of the arable land. It states ... "The top priority problem in agriculture is the reformed area. ... The reformed area represents 60 percent of the national irrigated area and 60 percent of the dry arable land available in the country. In the reformed area resources are underused, lands lie idle, and there is an extensive production structure that results in low production indices for the resources...It is postulated that grazing lands covered with natural meadow (pasture) will be incorporated into farming."

While exploring policy alternatives for Chilean agriculture, one must not lose sight of the simple fact that Chile could roughly double its agricultural production if the uncultivated arable land were brought into production at existing technological levels. This is not to say that the internal market could absorb the production, only that it is physically and climatically feasible.

The rainfed central south region has 2/3 of the uncropped arable land in the country, and 83% of the unused land apt for food crops as indicated in the 1968 ODEPA study.

While the contrast between the arable land slack in the two major regions is important, more important for the purpose of this document of identifying constraints on the rural poor is the fact that in the central irrigated region most of this land slack is apparently not on the small or poor farms. In contrast, the land slack in the central south is almost as prevalent in the small farms as it is in the region as a whole.

This implies that while land use may be a national priority problem in both regions, it is the small farmer 1st. priority constraint only in the rainfed central south.

The relative position of the land use (increased cultivation) constraint in the central irrigated region is complicated by conflicting evidence about the situation of land use on reformed farms. The ATAC study used for Table II-10 indicated that reformed farms had a very small unutilized arable land base. A larger sample taken by ICIRA, of 1,073 reform farms (the ATAC Survey included 103) in all of the central irrigated region indicated that the reform farms have 31% of their land in natural pasture. The ICIRA figure will be used as being more reliable. In that light it appears that the central region target group must be divided in terms of the priority of the land use constraint between the minifundistas and the reform farms. Table II-12 indicates the position of the land use constraint of the target groups in the central irrigated region.

TABLE II-12

Increased Cultivation Potential and the Land Use Constraint Position of the Target Group in the Central Irrigated Region.-

| Land Use 2nd. Priority | Number of AID Targeted Families | % of National AID Targeted Families |
|---|---|---|
| Land Reform Beneficiaries | 35,000 | 11 |
| Land Use Not a Priority | | |
| Minifundistas | 114,000 | 36 |
| Landless Rural Workers | 40,000 | 13 |

The importance of the land slack in the reform farms in the central irrigated region is difficult to estimate with much confidence since both the ATAC and ICIRA studies are samples of the earliest asignatarios and there is reason to believe that they are not representative of all land reform families. The earliest assignments of reformed land were probably on asentamientos with lower than average population pressure on the land which permitted rapid decision on division. One would expect these asentamientos to have a less intense land use pattern than the average, where population pressure is more acute. While land use appears from the larger (ICIRA) of the two available samples to be an important potential source of increased income on reform farms in the central irrigated region, a firmer judgement is unwarranted until further statistical information is available.

2. Crop Mix Constraints

The second production system alternative for increasing income and employment on small farms is to grow a larger proportion of higher value crops which produce more income and require more labor per cultivated hectare. This is the alternative referred to in GOC policy documents as increasing the intensity of land use. Changing crop mix should be distinguished in this presentation from cultivating natural grassland which was used for extensive grazing. Incorporating

unimproved grasslands into cultivation is included with extending cultivation rather than changing crop mix, and hence was treated in the land use section above. The crop mix section will discuss the alteration of the crop composition of cultivated land and not the cultivation of additional land.

The last of the three production system alternatives to be treated in the next subsection is the improvement of crop and livestock technologies. Crop and livestock technology improvement as defined here results in higher physical yields or lowered per unit costs for a given crop or livestock product. It should be remembered that technological change, broadly defined , is involved in not only crop yield improvement, but also in changing crop mix (this subsection), increasing the cultivation of unutilized land (subsection B-1), and even in farming newly irrigated dryland or farming to control erosion (section A). All of these changes involve to some degree changed management practices which may be broadly called "technological change". However, the narrower "yield improvement" definition will be used for this paper.

Chilean policy apparently recognizes the importance of increasing the intensity (shifting to a larger proportion of high value crops) of the product mix of agriculture. The Sáez Chilean Short and Medium Term Development Program outlines both the increased cultivation and increased intensity issues as follows:

> "C) CHANGES IN THE USE OF LAND. This involves an increase in cultivated area to eliminate the under-utilization of resources, a change from the extensive agriculture how practiced to a more intensive agriculture, and increase in the use of labor ... the agricultural year 1970 - 1971 has been used as an indicator of 100 to show how the crop structure is expected to vary up to 1979-1980. With a total increase in farmed area to 128 percent, the more intensive crops such as small farm (horticultural) crops (138 percent) and industrial crops (166 percent) increase considerably faster, thereby reflecting the policy directive on intensive agriculture."

This discussion of crop mix will focus on the extent to which income and employment of the rural poor target group

is constrained by current crop mix, and the feasible improvement which intensification of crop mix composition could cause for each of the subgroups which have been previously defined.

Before proceeding to outline the constraint and the potential impacts of changing crop mix, the problems and secondary constraints which limit how far intensification can feasibly reach should be at least mentioned to avoid the impression that intensification is a relatively easy alternative.

Market demand for the majority of the higher value crops is limited inside Chile. External markets must be accessed in order to permit large scale shifts to a more intensive product mix. While Chilean climatic growing conditions and seasonal juxtaposition with major Northern Hemisphere consuming countries gives Chile a good long run comparative advantage in this regard, there are many difficulties in obtaining and defending a significant export market for high value products.

Marketing and processing for high value crops requires infrastructure which is both more extensive and more complex than that required for lower value crops. Farm level intensification in most cases must be preceded by marketing and processing infrastructure.

High value crops imply a larger farm business with consequently increased management burden. Farm management capacity is an important limitation on the potential of intensification.

The problems mentioned above will be discussed in more detail in the marketing systems section and are mentioned here only to caution the reader to not over interpret the ease with which the potentials described below can be reached.

a. Income and Employment Potential of Changing Crop Mix

In the ODEPA, Perspectivas de Desarrollo Agropecuario, 1975-1980, the labor demand generated by agricultural, livestock and forestry activities is estimated for 1974-75 at 84 million man days. There are approximately 516 thousand economically active rural workers which implies a supply of 155 million person days. This implies about 45% unemployment of rural labor in direct agricultural activities. Almost all of this lack of productive employment is concentrated in the target group.

If we assume that the underemployment rate among small farmers is 40%, this implies that the labor demand of their farms must rise far above the current level in order to absorb productively the family labor. As we have seen, part of that labor can be absorbed by increasing the area cultivated, but this expansion potential is limited mostly to the rainfed central south region. In the central valley and in the minifundista area of the central coast, increased employment must come principally from intensification. In all areas, however, possible seasonal constraints must not be overlooked.

One of the most unfortunate characteristics of small farms in Chile is that even though their land base is much more limited and their labor supply much larger than the balance of farmers, their crop mix is not identifiably more intensive. A review of the ATAC, ICIRA, INDAP and Sector Overview studies comparing the crop mix of minifundistas and reform farms with regional averages from ODEPA and INE confirms this conclusion. The Sector Overview concludes a review of the cropping patterns of minifundistas by stating:

"In conclusion, the minifundista sector seems to follow the overall cropping patterns of the region in which they are located, concentrating more heavily than the other farmers in the more traditional crops (mainly wheat and potatoes)."

The reform sector appears to be even less intensive than the minifundista group as a whole. The ATAC study indicates that in the central irrigated region reform farms

derive 34% of their income from cereals whereas the regional average for all farms is only 14% and minifundistas in the same area derive from 6-16% of income from cereals. The Sáez document states, "Almost 60 percent of the land cultivated in the reformed areas was planted with grains or pastures, as compared to the small area occupied by legumes, vegetables, and industrial crops."

The employment potential of changing crop mix is illustrated in Table II-13.

TABLE II-13

Employment Potential of Crops

| | Man days per ha. | Labor Index by crop Cereals=100 | Cultivated Ha. to employ one family 2 workers |
|---|---|---|---|
| Cereals & Oils | 8 | 100 | 75.0 |
| Tubers and Pulses | 98 | 1225 | 6.1 |
| Horticultural Crops | 173 | 2165 | 3.5 |
| Forage Crops | 6 | 75 | 100.0 |

Source: Calculations based on information in ODEPA, Perspectivas de Desarrollo Agropecuario, 1975-1980.

If one compares the crop mix of both classes of target group farms (minifundistas and reform beneficiaries) with the information in Table II-13, the seriousness of the crop mix constraint on employment is obvious. While the range in employment generation between the major classes of products is wide, it is much less than the range of employment differences when compared at the individual crop level. In the central irrigated region, where additional cultivable land is scarce, the small farms must either have a crop mix which on the average productively utilizes about 200 man days per ha. or face continual unemployment. This means that not only must they cultivate the more intensive crop types, but also the more intensive crops inside those general crop types. To the degree possible, seasonal diversification is also desirable.

The income potential of intensification follows closely the patterns observed in labor, that is the crop types which utilize the larger amounts of labor per hectares generally

have higher total value per hectares of product, and higher net income per hectare potential. The profitability of crops in small farms is a subject about which little can be said empirically since no general studies are available. The ODEPA/INE/AID PPIS Small Farm Credit Survey will provide data on this issue for many small farm areas. Unfortunately neither the ATAC nor the ICIRA studies are detailed enough to generate crop level accounts from which crop profitability could be measured. Table II-14 presents ODEPA average value per hectare figures for major crop types, and also estimates from Guatemala of net income per hectare for various crops. The Guatemala figures are presented only in the absence of Chilean small farm crop profitability figures and illustrate the wide range in income change which would be implied by crop mix shifts to more labor and income intensive crops. The Guatemala figures must be used only illustratively because market (demand) situation in Chile especially for intensive crops, is undoubtedly quite different.

TABLE II-14

Value and Net Income Potential of Crop Mix Changes

| Crop Type in Chile | Value Index (Cereals=100) (All farms) |
|---|---|
| Cereals & Oils | 100 |
| Tubers & Pulses | 200 |
| Horticultural Crops | 920 |
| Fruit and Grapes | 480 |
| Forage Crops | 80 |

| Crop (Guatemala) (Small farm Aver.) | Net Income per ha. US$/ha. | Ha. in Cultivation Required to provide US$268 per capita of net income on a Chilean small farm |
|---|---|---|
| Wheat | 116 | 13.0 |
| Corn | 121 | 12.4 |
| Beans | 168 | 9.0 |
| Rice | 215 | 7.0 |
| Tomatoes | 522 | 2.9 |
| Carrots | 572 | 2.6 |
| Potatoes | 848 | 1.8 |
| Oranges | 750 | 2.0 |
| Garlic | 1,484 | 1.0 |
| Onions | 1,551 | 0.97 |
| Avocado | 2,435 | 0.62 |
| Flowers | 5,246 | 0.29 |

These same crops do not have the same profitability in Chile (for example potatoes in Chile on small farms probably have a profitability per hectare only slightly above cereals), yet the range is at least as large among crops in Chile as in Guatemala. When we compare the cultivated area in minifundista and reform farms in the central irrigated region (minifundista average ATAC study = 3.0 ha., Reform ATAC & ICIRA studies = 7-9 ha.), we can see that only the most intensive crops will provide reasonable income levels.

b. Crop Mix Situation on Minifundios and Reform Farms in the Central Irrigated Region.

Table II-15 indicates the priority of the crop mix constraint among the target farmers in the central irrigated region.

TABLE II-15

Crop Mix Constraint on Target Farmers
Central Irrigated Region

| | No. of Families | Priority of Crop Mix Constraint | Percent of Total Target Group |
|---|---|---|---|
| Minifundistas | | | |
| INDAP clients | 15,000 | 1st. priority | 5 |
| Coastal (very small) | 20,000 | 1st. priority | 6 |
| Other | 79,000 | 1st. priority | 26 |
| Reform Farmers | 35,000 | 1st. priority | 11 |
| Landless Rural | | | |
| Ag Solution | 15,000 | 1st. priority | 5 |
| No Ag Solution | 25,000 | not priority | 8 |
| Total Crop Mix 1st. priority | 164,000 | | 53 |

The minifundistas in the coastal areas of the central irrigated region are shown in the table among the first priority crop mix constraint group. In Section A, this group was classified as having a second priority land and water constraint. While this order of priorities makes some sense, these two problems in the coastal areas are intimately related and perhaps it would be more accurate to suggest that the combination of the two constraints should be jointly first priority. The coastal areas is an area in which few intensive crops can be grown on small farm lands without irrigation, and since there is inadequate irrigation on most small farm lands, the crop mix is limited to

dry land cereals and some pulses. In addition to the irrigation constraint erosion there is a second constraint in this area which should be included as a part of the "land and water constraint". While the quality of land in this area is inferior to the central valley soils, it is the water availability and not soil quality which currently limits crop mix. For example vegetable acreage in northern California was 41% on lands of class IV and poorer which are of a lower quality than most of the small farm soils in the coastal minifundia.

### c. Crop Mix Constraint in the Rainfed South and Arid North Regions

Crop mix is not a priority constraint in the arid north because the mix is already very intensive on the adequately irrigated land, and it is likely that the programs which focus on the land and water constraints will result in rather intensive crop mixes on any additional irrigated land in order to pay for the infrastructure investment. As we shall see in the next section, the second priority constraint in the arid north (after irrigation and land development) is increased yields through improved crop and livestock technologies and not crop mix.

In the rainfed central south region crop mix is a second priority constraint for all target farm classes. The type of crop mix change in this region, however, is both different in terms of the range of crop choice and the degree of employment and income change which can be expected. The range of crop choices is limited by climate and internal market distance to a larger extent than in the central irrigated region.

The northern half of the central south region (Malleco and Cautín provinces) have climatic conditions which will allow a very broad crop mix including most of the temperate climate fruits and vegetable crops common the central irrigated region. Citrus, tomatoes and melons for example, will not do well in this area, but apples, pears, peaches and a wide variety of other intensive fruits and vegetables will. This area for Chile is still in a certain sense the frontera and even though it has large arable areas with climatic conditions very similar to Quillota (the center of the horticultural industry) it is 600 miles away from Santiago and has traditionally

not been looked on as a possible area for intensive agriculture. That is unfortunate since it has the heaviest concentration of rural poor in the country, and the prevalence of cereals in the crop mix will destine these rural populations to continual poverty. Intensive agriculture is a climatical viable alternative in these two provinces. Its commercial viability will depend, like intensification in the central region, on access to external markets. Intensification should be considered a close second priority to increasing the area cultivated.

From Valdivia to Chiloé, the crop mix choice is severely restricted. While crop mix is still a second priority in these areas, it is not nearly as important as it is in Cautín and Malleco. This is due partly to the fact that there is more uncultivated land available in the area from Valdivia to Chiloé which implies that while land use (increasing cultivation) is first priority in both sub-regions, it is less important in Malleco and Cautín; the other part is due to the reduced flexibility of crop choice due to climate.

In the southern provinces (Valdivia-Chiloé) the principal potential for increasing the intensity of cultivation is in increasing the proportion of sugar beets and potatoes in small farms. Table II-16 indicates the crop mix range from which choices could be made inthese two sub-regions based on climatic limitations in the Valdivia-Chiloé sub-region.

TABLE II-16

Climatic Limitations on Crop Mix Choice in the Rainfed Central South Region

| Crops not in Optimal Climatic Conditions in either Sub-region | Crops in Optimal Climatic Conditions only in Cautín/ Malleco Sub-region | Crops in Optimal climate in both Cautín Malleco Sub-region and Valdivia/Chiloé |
|---|---|---|
| Citrus Fruits | Apples, Pears | Cereals, Oilseeds |
| Corn | Cherries, Plums | Potatoes, Carrots |
| Peppers | Peaches, Apricots | Sugar Beets |
| Melons | Onions, Garlic | Broccoli, Spinach |
| Sweet Potatoes | Cucumbers, Squash | Lettuce, Peas |
| Papaya | Beans & Lentils | Artichokes |
| Olives, Tuna | Tomatoes | Cabbage |
| Almonds | | Strawberries |
| | | Raspberries |
| | | Cauliflower |
| | | Celery |

Source: Climatic comparisons with Dr. Claron Hesse, University of California, contained in Daines', Analysis of Alternative Agricultural Strategies in the South of Chile, Ford Foundation 1968.

While a wide variety of vegetable crops are climatically feasible in the Valdivia-Chiloé sub-region, they are probably not commercially viable because Chile has not yet entered export markets for these crops and large domestic markets are probably too distant for effective competition. Sugar beets and potatoes are the only intensive crops which offer wide spread potential among small farmers in this sub-region.

Table II-17 outlines the crop mix constraint position of the target group in the arid north and the rainfed central south region.

TABLE II-17

Crop Mix Constraints in the Arid North and the Rainfed Central South Regions

| | No. of Families | Percent Total Target Group |
|---|---|---|
| Arid North (crop mix not a constraint) | 23,000 | 7 |
| Rainfed Central South(crop mix 2nd. priority) | | |
| Minifundistas | | |
| INDAP clients | 43,000 | 14 |
| Non-INDAP | 14,000 | 4.5 |
| Reform Farms | 9,000 | 3 |
| Landless Workers | 17,000 | 5.5 |
| TOTAL(crop mix 2nd. priority) | 83,000 | 27 |

In summary, it appears that crop mix is either a primary or secondary limitation on income and employment in the large majority of the national target group. It is most important in the central valley portion of the central irrigated region, of decreasing relative importance in the coastal areas of the central region, the subregion of Malleco and Cautín, and the subregion from Valdivia to Chiloé. In the arid north it is not a priority constraint.

While crop mix is an important constraint, it is very much a "shadow 'constraint" in that crop mix is limited by financial, market, and marketing constraints as will be indicated in the sections which follow.

### 3. Crop and Livestock Technology

As has been mentioned earlier, this section deals only with technology which relates to per unit physical yields or per unit costs. Crop and livestock technology is a constraint to the degree that yields limit income and employment and hold significant feasible potential for increases in the welfare of the target group.

Target group small farmers of all classes and in all regions are characterized by low yields, and therefore, crop and livestock technology is considered a priority constraint in all of the target group farms. The relative priority position of yield increases varies by region and farm type but it is important to note that there are significant yield increase potentials on all small farms.

#### a) Differences in the Potential of Feasible Yield Increases by Crop Type

The term "Green Revolution" has come to represent the best of what modern technology can do for agriculture. It is important to recognize that the "Green Revolution" and the modern input packages which are such well-known results of technological improvement in the last two decades are not equally important for all crops. That they are most important in the world's most important crops accounts for the notoriety which accompanies these improvements. In order to accurately assess the potential of modern input packages and related yield-increasing technology for improving income and employment on small target farms in Chile, it is necessary to examine this potential by crop type, since those crops which may be most important world-wide or even Chile-wide may not be the most important for the target group.

The crops in which yield-increasing technology has the largest potential in Chile are the cereals. Since they are the crop type which contributes the largest single share of value in the Chilean agricultural sector, it is fitting that yield increases are a sector-wide priority. The ODEPA Development Perspectives document states: ..."Yields are projected at levels notably higher than historical levels, particularly toward the end of the 1975-80 period. These yield increases will be derived from increased capitalization and from a generalization

of the use of adequate technology. In many cases it is hoped that yield increases alone will account for the increased quantities of production, e.g., in wheat and the other cereal crops, with constant area cultivated should double production by 1980 due to yield increases."

The document then goes on to explain that in the case of sugar beets, oilseeds, tobacco and pulses in the increased production projected will come not principally from yield increases but from a mix of area and yield increments. In the case of horticultural products the document states that new installations of marketing and processing infrastructure will cause the production increases based on increased area cultivated.

The projections of ODEPA accurately reflect the technological reality that by and large recent technological advances in modern input packages (improved seeds, irrigation and fertilizer combinations) are focused principally on cereals. While there have been obvious and important advances, for example in carrot technology, there are significant reasons why they are not as easy to nationalize as are wheat improvements.

One reason is that carrots by themselves are not nationally important enough to justify national research and experimentation along with the intensive extension effort required to disseminate improvements. There are significant economies of scale and substantial overhead costs involved in research and technical assistance. Wheat, corn and rice are all individually important enough to justify the overhead investment in research and technical assistance even in a country like Chile where agriculture contributes only 10% to GNP. Carrots by themselves are simply not important enough. For a country whose agriculture is rather heavily concentrated in cereals and livestock products, the overhead required for research and technical assistance to cover 80% of their production is small because it involves only 7 or 8 products. This is not however the case in Chile where the crop mix is very diverse.

Not only are most of the major technological advances of the recent past limited to a few cereals and livestock products, but also the unfeasibility of field adjusting and disseminating those advances which relate to the myriad

of fruit, vegetable and horticultural products both work against yield increases as vital, outside of cereals and livestock products. These realities seem to be reflected in the relative importance given to yield increases by crop in the ODEPA projections.

Even in the case of cereals and livestock products, one would expect that yield increases would be both more feasible to achieve and more important in quantity terms on the small number of reasonably accessible and receptive large farms than on the numerous, disorganized and backward target group.

Before proceding to examine the implications of these crop differences in yield potential for the target group it is useful to aasess the relative importance in Chile of the crop types mentioned.

TABLE II-18

Relative Share of Agricultural Value of Production and Agricultural Employment by Crop Type

| | % of Value Agric. | % of Agric. Employ. | Potential for Yield Increases | Small Farm Income & Employ. Potential |
|---|---|---|---|---|
| Cereals & Oils | 21 | 10 | high | lowest |
| Tubers & Pulses | 10 | 30 | low | medium |
| Vegetable Crops | 13 | 20 | low | medium |
| Fruit and Grapes | 18 | 26 | low | high |
| Other Crops | 1 | 1 | low | medium |
| Beef, Milk & Sheep | 25 | 5 | medium | low |
| Pork Poultry & Live-stock | 12 | 8 | low | low |

Source: Based on ODEPA Estimates for the 1974-75 Crop Year

Major yield increasing technological change has an important potential in the two most important crop groups, with a high potential in 21% and a medium potential in 25% of the value of production. This implies that nearly half (46%) of the total value of production is in crops with significant potential for yield increasing technology. However, a review of Table II-18

indicates a distinct difference between the potential of these crops for income and employment on target group farms and their importance and potential for the country as a whole. Neither of the high technology potential crop groups offer even medium income and employment potential for target farms.

Table II-19 outlines the relative priority of yield-increasing alternatives for the various regional and farm types of the target group.

TABLE II-19

Crop and Livestock Technology Constraints by Region and Farm Type

| | No. of Families | Priority of Crop and Livestock Tech. | Percent of total Target Group |
|---|---|---|---|
| Arid North | | | |
| Minifundistas | 8,000 | 2nd. Priority | 2.6 |
| Reform Farms | 5,000 | 2nd. Priority | 1.6 |
| Landless Workers | 10,000 | Not a Priority | 3.2 |
| Central Irrigated | | | |
| Minifundistas | | | |
| INDAP clients | 15,000 | 2nd. Priority | 4.8 |
| Coastal | 20,000 | 3rd. Priority | 6.4 |
| Other | 79,000 | 2nd. Priority | 25.3 |
| Reform Farms | 35,000 | 3rd. Priority | 11 |
| Landless Workers | 40,000 | Not a Priority | 13 |
| Central South | | | |
| Minifundistas | 57,000 | 3rd. Priority | 18.2 |
| Reform Farms | 9,000 | 3rd. Priority | 2.9 |
| Landless Workers | 35,000 | Not a Priority | 11 |
| Total 2nd. Priority | 107,000 | | 34 |
| Total 3rd. Priority | 121,000 | | 39 |
| Total Not Priority | 85,000 | | 27 |
| TOTAL | 313,000 | | 100 |

Since employment is the principal manner in which the landless poor participate in the agricultural sector, and since yield increases are not likely to have a significant positive employment impact, the landless poor are not constrained by yield increases in either employment or income.

The fact that yield-increasing technology is shown as a priority in all of the target farms, implies that efforts underway should continue in full strength among the third priority farm groups, and should receive additional program focus in second priority groups. Yields have shown a slow historical improvement trend (except for a decline during the Allende Government) and that can be expected to continue as the general level of education and standard of living increases in rural areas. From the information reviewed here, only sugarbeets are a significant exception to these general guidelines. This case of dramatic yield increases among small farmers will be discussed under the role of agro-industry and the rural poor, and in the subsection dealing with research and extension services.

Technology changes related to improved farm management, more adequate land use, and the varied technological problems related to intensifying crop mix are implicitly associated in this document with the constraint to which they relate. For farm groups with a first priority land use constraint, technological changes in land use, rotation, and fallow practices are likewise considered implicitly first priority.

In summary, it appears that while yield increases are vital for overall sector production, the highest priority yield increasing crops are not high potential target group crops. Yield increasing technological change is seen as an important but secondary priority for target group farms.

## C. Credit and Financial Constraints

The production system and natural resource constraints focus attention on the nature and priority of changes which must take place at the farm level for improvement in the situation of the target group. With these in mind, the various policy mechanisms and institutional programs may be

reviewed with a view to suggesting lines of action which are aimed at causing, complementing or at least not impeding the aforementioned farm level changes. The tasks of carrying the farm level constraints analysis to a review of existing agricultural policy and institutional programming will be done in two steps. The first of these steps is to review the possible role of different classes of policies, or types of institutional programs in causing or complementing the desired farm level changes in accordance with the earlier constraints analysis without reference to specific existing policies or particular institutions. No attempt in this first stage will be made to compare the actual performance with the suggested directions, nor will there be an estimate of the availability of resources to implement them. In the first step, for example, the role of agro-industry will be examined without suggesting how close actual GOC policies and programs seem to be in accord with the directions suggested. The second step will be the examination of specific GOC policies and institutional programs to compare the apparent problems with existing or proposed public and private activity. The first of the policy mechanisms and institutional programs to be reviewed is credit. Of all of the policy mechanisms this is the most flexible or neutral constraint, in that a credit can be used to cause or to complement any of the farm level changes we have suggested are needed. This flexibility of credit is at once an advantage and a disadvantage; an advantage in that it is not limited to any one of the constraints nor to any particular region or type of farm; a disadvantage in that credit at the farm level is not only flexible but fungible, it may be intended for one purpose and be used for another.

In a general sense, the role of credit in the improvement of target group welfare is amply demonstrated in the few studies which are available on small farmer behavior. The ATAC Study states: "The credit extended is found to have been remarkably productive."

While demand for small farmer credit is difficult to estimate with any precision due both to conceptual and data problems, few would question that it far outstrips supply, though the degree to which demand is satisfied varies widely between the minifundista and the reform sub-groups. The ATAC Study states: "The survey has not been designed with the objective of providing data that can be extrapolated to determine the overall need or demand for all small farmer credit in Chile. However,

it permits various crude estimates which indicate that the demand is far in excess of available loan (065) funds. The demand within the traditional (minifundista) sector was found by the survey to be 40 times higher than the current level of lending. In the reform sector it was found to be seven times higher. Serving all farmers who want credit merely up to the limited levels currently supplied to borrowing farmers would more than double the amount of credit required for small farmers."

Credit in Chile should be the primary policy and program mechanism directed at improving the welfare of the rural poor.

The analysis of credit and financial constraints will proceed with an examination of the role of credit in each of the four natural resource and production system constraints. Before commencing that review, a theme of overall importance to agricultural credit must be treated, the problem of credit and inflation.

As long as inflation continues to be Chile's first priority economic problem , credit expansion will likely be viewed with concern by the country's chief economic planners. The credit discussion below could be viewed as either a discussion of what to do with additional credit or how to reallocate existing resources, but it is unlikely that Chile could achieve the release of the major limits on the target group farmers without a rather large increase in the credit available to them. This implies that inflation, because it causes a restriction on internally generated credit, is indirectly a major constraint on target group improvement.

The non-inflationary impact of externally funded credit directed at the target group presents a significant opportunity for external assi tance.

## 1. Credit and Land/Water Constraints

The rural populations in the arid north depend on increased availability of irrigated land in order to significantly increase their welfare. Land development outside of the irrigated areas with improved grasses and grazing practices may hold some p rom ise if it focuses the crop mix into very

extensive livestock but the capital costs of such improvement per family supported is relatively high. Even though irrigation requires a large investment per hectare when compared with grassland alternatives, it is the only way to support the labor intensive high value crops which must be the basis of any long term solution to the problems of the rural poor in the arid north.

In both the central and peripheral farm level installations, irrigation investment requires long term financing. Credit for these works should be first priority in the arid north. Once this large investment is in place (as it already is for 80,000 has.), credit should be provided for increasing yields on these cultivated areas. It is assumed that this high cost irrigated land whould not be wasted in cereals nor livestock. This implies that yield increases will not be easy since the priority crops are not those which have "green revolution" or other recent technological breakthroughs.

The other area in which land and water development is given a priority status is in the minifundistas in the coastal areas of the central irrigated region. Two aspects of land and water development in this area require credit for solution. These are irrigation and erosion control. The lower quality of the coastal soils and the difficulty of irrigation due to the hilly nature of these areas indicate that irrigation alternatives are likely to be farm level (or small group) reservoirs or well-based alternatives rather than large irrigation projects. While in the arid north the funding for irrigation development through credit will be largely long term large scale projects, credit for irrigation in the coastal minifundia is likely to be for farm level credit to individuals or cooperatives for on-farm irrigation works and small reservoirs. The other credit component of land development in the coastal minifundia should be for erosion control, which is largely a farm level investment. Many of the erosion control methods do not carry short term financial benefit for farmers and are hence not among those alternatives for which a small farmer will undertake financial risk. Those alternatives which are short term should be identified and funded with special credit lines to small farmers in the coastal area. The balance of erosion control measures will of financial necessity have to be directly undertaken by the public sector.

## 2. Credit and Increasing Land in Cultivation

Table 19 of ODEPA's 1974 document Background for the Definition of a Production Strategy indicates that between 1973 and 1977, 58.3% of the projected increase in production would come from increased area under cultivation. Between 1977-80, the increase would come 54.4% from increased area. The predominance of cultivated areas as a source of increased output carries important implications for credit. Land use is a first priority constraint for 83,000 of the target group and a second priority for 46,000 and credit is probably the most important constraint to increasing the cultivation of arable land.

Increased cultivation is the easiest of the credit tasks, its requirements would conform the use of the credit to annual inputs to finance cultivation. Since current agricultural credit in Chile is largely for annual inputs this would represent only slight change from the predominant current patterns. The difference is that credit aimed at bringing idle land into production should be used to crop currently cultivated land. The problem is one of fungibility. Farmers might be asked to indicate the area in unused land which they intend to bring under cultivation. In the majority of cases in the central south rainfed region this slack land is in natural pasture and will require one full year of plowing and replowing to break the natural sod. Loans directed at financing the costs of breaking the sod should be a major focus of credit in this region. This type of credit should be medium term. INDAP, and the BECH should have little trouble in administering loans aimed at increasing the area cultivated on the farm ; yet it would be impossible to assure that all funds lent for this purpose actually resulted in expansion. This credit should be additional to be useful, that is if the overall credit availability is reduced in order to direct some of the existing resources away from regular BECH or INDAP loans which are used to finance the annual costs of the existing cultivation and into adding cultivated land, the farmer will be faced with the problem of how to finance his ongoing cultivation program and may be forced to let last year's cultivated land go idle and cultivate his natural grass simply because that is all he can finance. All of the suggested uses of credit presented here depend on incremental funds in that they assume that the current base of funding for annual inputs would not be reduced. To reduce the current base in order to fund these suggested directions would be to defeat the very purpose of the incremental directions by undermining the limited stability

of the base on which they depend.

### 3. Credit and Crop Mix Constraints

Credit is an important constraint to the development of a more intensive crop mix on small farms. There are two aspects to this constraint, the first is that more intensive crops have much higher annual costs which range from double to ten times as high per hectare as cereals and livestock activities. The second is that credit for the agro-industrial and marketing system is also needed to complement and in fact to cause the farm level production. Discussion of the credit requirements of agro-industry is contained in Section C.

Credit to support crop mix changes is most efficiently channeled through the agro-industrial or marketing entity which handles the product IANSA is an excellent example of how this approach can succeed with small farmers. When the credit is so channeled a wide variety of technical and administrative problems are solved. Intensive crops may be distinguished from other crops in part by the distinctively intimate relationship which usually exists between the producer and the processor/marketor of the product. This will become increasingly so as this produce begins to tap the export market where quality control in production becomes the partial role of the processor/marketor. The supervision of the credit in a technical sense is linked with its administrative supervision in a way that tends to increase the technical performance. The institutional links are private sector lines which means that once established they do not drain, as do INDAP technical assistance and administrative costs, the public treasury. The success of IANSA in this regard should be duplicated in the private sector focused on small farms with public credit support at the processor/marketing level to the extent that such possibilities are feasible.

Credit aimed at intensifying the crop mix must include short and medium term credit of up to ten years to permit the maturation of fruit trees. The agro-industries need only be the principal channel for the shorter term production credit; to channel the longer term orchard or vineyard establishment credit through them creates a kind of monopsonist

situation which tends to distort market forces and limit the ability of the small producer to obtain his fair share of final product value.

### 4. Credit and Crop and Livestock Technology Constraint

The role of credit in increasing yields requires substantial investigation. Unofrtunately the available studies were not able to examine credit-purchased inputs with particular crops and hence no significant relationship could be inferred. If one assumes that crop mix is constant between farms in the ATAC study, it appears that credit did result in a more intensive use of modern inputs and that increased yields resulted. If this chain is true at the crop level (as opposed to the ATAC measured farm level), and if the increased yields are more than enough to cover the added expenditure, then credit could be said to be a prime catalyst in technological improvement. Even in the absence of concrete evidence it would appear to follow logically that the increased input purchase burden of improved technology would require additional credit and that credit may therefore be a critical constraint to improving technology, especially in a credit scarce environment such as rural Chile.

### 5. Summary of the Credit Constraint Position of Target Group Farms and Workers

The structure of constraints in this section places as first level constraints the farm level alternatives which are the most important limits on added farm income. With the analysis of credit in this section the analysis shifts from the examination of first level limits on income to an examination of the causative factors or second level constraints which are limiting the achievement of increased income via each of the production system or natural resource constraints. Credit is a major constraint in all of these alternatives, but its priority varies between groups.

This section provides a priority ordering of the first level constraints for each of the target groups. Starting with credit, a new ordering of priority is assigned for the same groups among the second level constraints. In evaluating the priority position of credit in the second level constraints indicated in Table II-20, it should be remembered that the marketing

system and institutions are included in the priority ordering of the second level constraints.

TABLE II-20

The Priority of the Credit Constraint on Income Improvement of the Rural Poor

| | First Level Constraints | | | | Second Level Constraints | Number of Families |
|---|---|---|---|---|---|---|
| | Land & Water | Land Use | Crop Mix | Crop Yield | Credit | |
| Arid North | | | | | | |
| Minifundistas | 1 | | | 2 | 2 | 8,000 |
| Reform Farms | 1 | | | 2 | 2 | 5,000 |
| Landless Workers | 1 | | | | | 10,000 |
| Irrigated Central | | | | | | |
| Minifundistas | | | | | | |
| INDAP | | | 1 | 2 | 1 | 15,000 |
| Coastal | 2 | | 1 | 3 | 1 | 21,000 |
| Valley | | | 1 | 2 | 1 | 79,000 |
| Reform Farms | | 2 | 1 | 3 | 1 | 35,000 |
| Landless Workers | | | 1 | | 1 | 40,000 |
| Central South | | | | | | |
| Minifundistas | | 1 | 2 | 3 | 1 | 57,000 |
| Reform Farms | | 1 | 2 | 3 | 1 | 9,000 |
| Landless Workers | | | | | | |
| Ag. Solution | | 1 | 2 | | 1 | 17,000 |
| No Ag. Solution | | | | | | 17,000 |
| | | | | | | 313,000 |

## D. Marketing Systems

### 1. Agro Industry and the Rural Poor

The role of agro-industry as a second level constraint on the improvement in the status of the rural poor is twofold:

a. Agro-industrial capacity constrains the volumes of many intensive crops which may be produced on small farms.

b. Agro-industrial employment opportunities are limited in rural areas and this limits the welfare of both the landless poor who could provide labor and the labor surplus from underemployed farm families.

#### a. Agro-industry and the Intensification of Crop Mix

Wherever the intensification of crop mix is a first level constraint agro-industry is an important second level limit on that expansion, and this is particularly true for the small farmers. Most intensive agricultural products are more market and marketing sensitive than cereals and livestock products, that is to say the market prices have more marked fluctuations, and the products themselves are usually delicate and require efficient and timely marketing in order to prevent devastating losses. For the small farmer this implies that there is more risk as well as more potential income.

Agro-industry in the form of food processing plants can provide a necessary buffer in this situation. First they can provide the forward marketing function, identifying market opportunities both internal and international and amass the necessary financing to penetrate these markets. Small farmers alone can never hope to penetrate even important local markets without some kind of sophisticated marketing entity to represent them. While cooperative marketing institutions can serve this purpose, an agro-industrial establishment can often do a superior job. In the event that monopsonistic conditions indicate that cooperative ownership of the agro-industry will be the only manner

in which small farmers can protect their price competitive position, this is possible and already common in Chile.

The intensification of crop mix is already a process well in motion in Chile, particularly among central valley small farmers in the irrigated central region and in the arid north, and the role of agro-industry (both cooperatively and commercially owned) need only be substantially expanded; little that is really new need be introduced.

Using the agro-industry as a channel for credit and technical assistance has significant benefits for an intensified agriculture. The credit benefits are mentioned in Section C and technical assistance benefits are described in Section E.

The ATAC study indicated that prices for vegetable crops in the survey year in the national market were deteriorated to the point that only those producing intensive crops for export were reaping significant income benefits. The national market in Chile will support little added intensification; export markets must be accessed. Both the quality and market organization dimensions of exporting are likely to be addressed effectively by agro-industrial firms and not by small farmers or even by small sized small farmer cooperatives. Only if small farmers can intensify can they achieve acceptable incomes; only if efficient agro-industrial concerns are effective in tapping external markets can they intensify. Thus both rural income and employment depend in large part on the establishment of rural agro-industry.

Crop mix is not the first priority in all regions, hence neither would the establishment of agro-industry which is directly related to intensification be first priority. Table II-21 indicates the relative priority of the agro-industrial constraint on the rural poor. In the coastal are where pulses for export are important small farm crops, tapping additional export markets is of almost equal importance with the expansion of drying capacity.

The expansion of sugar processing capacity and potato processing and marketing facilities are of critical importance to intensification in the Valdivia-Chiloé portion of the

south central region since these are the only two large crops which may be turned to for intensification in this region. The major agro-industrial development should be in the southern part of the central irrigated region, and in the Malleco/Cautín area where little installed capacity exists and where rural populations are large. In this area the lack of agro-industry is a serious constraint on a good climatic potential for intensification.

b. Agro-industry as an Employer of Rural Landless Workers and the Labor Surplus of Farm Families

The second role of the agro-industry in the welfare of the rural poor is as an employer of rural labor. It is an interesting coincidence that those agro-industries which process labor intensive crops are usually themselves labor intensive. For example, milling requires from US$50,000 to $100,000 of capital for each man-year of labor and the technology is not very flexible to labor/capital substitution, whereas fruit and vegetable processing range is from US$3,000 to US$20,000 and relatively flexible to using increased labor in substitution of mechanized functions. There are numerous examples of successful rural plant locations of agro-industry in Chile and a strong preference for this should be made a part of all public industrial policies and credits. In areas like Coquimbo and Cautín where substantial rural populations exist, priority should be given to agro-industrial installations as a part of any integrated rural development scheme.

Table II-21 also indicates that rural agro-industry is the first priority constraint on the welfare of the part of the rural landless workers which cannot be absorbed into either an expanded nor an intensified agriculture. This represents 52,000 families, 17% of the total target group.

Table II-21

The Relative Position of Agro-Industry as a Priority Constraint on the Welfare of the Rural Poor

| | First Level | Second Level Constraints | | No. Fam. |
|---|---|---|---|---|
| | Crop Mix Constraint Position | Credit | Agro-industry | |
| Arid North | | | | |
| Minifundistas | 0 | 2 | 4 | 8,000 |
| Reform Farms | 0 | 2 | 4 | 5,000 |
| Landless Workers | 0 | 0 | 1 | 10,000 |
| Central Irrigated | | | | |
| Minifundistas | | | | |
| INDAP | 1 | 1 | 2 | 15,000 |
| Coastal | 1 | 1 | 3 | 21,000 |
| Valley | 1 | 1 | 2 | 79,000 |
| Reform Farms | 1 | 1 | 2 | 35,000 |
| Landless Workers | | | | |
| Ag. solution | 1 | 1 | 2 | 15,000 |
| No Ag. solution | | | 1 | 25,000 |
| Central South | | | | |
| Minifundistas | 2 | 1 | 2 | 57,000 |
| Reform Farms | 2 | 1 | 2 | 9,000 |
| Landless Workers | | | | |
| Ag. Solution | 1 | 1 | 2 | 17,000 |
| No Ag. Solution | | | 1 | 17,000 |

It is important to note that the agro-industries intended to be among the priority industries are those which process the crops which are classified as intensive. This would exclude, for example, milling and the processing of dairy products, meat, and edible oils.

## 2. Transportation, Storage and Handling

Chile is a country with relatively beneficial physical configuration from a transportation point of view. Although distances may be long, the predominance of the central valley and the excellent transportation infrastructure which exists there means that transportation is not likely to be a major constraint. There are some regional exceptions to this in the arid north and in isolated areas in the south, yet the pattern is mostly of reasonable access to efficient transport facilities for the areas of population concentration.

Storage is a different case. Capacity for storage of fruits and potatoes are among the most important for the target group. Improvements and expansions of both of these types of storage facilities are in the investment plans of ODEPA.

Handling systems are less adequate for the intensive crops both in production areas where packing facilities are needed and in the major markets where disorganization results in substantial unnecessary losses. Packing and handling facilities will need significant improvement before export quality produce can be handled in large enough quantities to unlock the latent production capacity of the small farm group.

Eighteen packing facilities and a major improvement in the Santiago wholesale market are planned in ODEPA's investment outline.

One target sub-group for whom storage, marketing and handling are high priority constraints is the landless worker group for whom there is no agricultural solution. While a first priority occupation for this group might be rurally located agro-industry, the second alternative might be employment in the many marketing activities which will result from a more intensive agricultural production pattern.

Table II-22 indicates the relative second level priority of the transportation, storage and handling constraint.

## 3. Agricultural Price Policy

After many years of price controls the effect of which was to reduce agricultural incentives for production in order to reduce the consumption burden on a basically urban population, the GOC has set a definite course of action in motion aimed at returning prices to a basically market determined system. Thus while prices have traditionally been an important constraint on agricultural production in general, and an important constraint on the welfare of the target group in particular, that is no longer the case.

There are obvious cases in which interim cases of differential treatment of prices may have negative indirect effects on the target group. The price policy aimed at stabilizing the wheat price obviously encouraged many small farmers to grow more wheat and less of the more intensive crops where no government action was taken to stabilize prices. Since cereals and livestock prices are the principal areas in which some kind of pricing intervention on the part of the government is likely to persist, and since these products hold little long run potential for the smallest farmers, price policy is only indirectly important for the target group now that market forces have been reestablished.

In stating the price "policy" is not a central constraint is not to say that "prices" are not. The intensive crops in which small farmers must concentrate to prosper are characterized by elevated price risk in any market economy. The narrowness of the local market for these products accentuates these swings. The only hope is not price control but access to the broader external market where Chilean production will not have a large price impact. In intensive crops access to export and not domestic price policy is the only direction for obtaining a more stable price base for the small farm crops. A possible obstacle is the value of the exchange rate (discussed in Section III-A, 1.).

In summary, the absence of price policy as a priority constraint for the target group in Table II-22 is based on three observations:

- a) The major negative effect of past price controls on agricultural incentives is being removed.

b) The cereals and livestock products where price intervention probably will continue to be an important policy issue only indirectly affect the potential of small farm crops.

c) While price instability is a very high priority constraint in the small farm crops, it cannot be adequately addressed by domestic price policy, but rather by vigorous promotion of access to external markets.

## 4. Export Policy and Export Marketing Constraints

While internal demand prospects in Chile for cereals and livestock products is presently good, the basic objective of a more intensive agriculture must depend on export markets. The ODEPA 1974 document on background for policy recognized this fundamental fact in the following statement:

"Faced with the growth in internal demand, the orientation of production should be fundamentally directed at the domestic market for the basic products which the country is importing and can produce such as beef, wheat, corn, oils, and rice. Nonetheless this emphasis should be modified in the future by specializing certain zones, such as the central and central north in export orientation in crops such as fruits, wines, beans, wool, honey and wax, garlic, onions, melons, etc."

What ODEPA indicates for the sector as a whole is accentuated for the target group given their potential concentration in the crops for which internal demand is already insufficient. The longer run future of the small farmer's welfare depends directly on access to external markets.

In the classification of constraints for this document the discussion of exports have been divided into two parts. The first of these deals with those exports which could be additionally made without "new" access to external markets. These exports are essentially "supply" constrained. Chile has for many decades exported limited quantities of many intensive agricultural products. There is a certain amount of unexploited market acceptance for Chilean products. The constraints on this added supply of Chilean products lies in adequate export marketing and processing and in

credit for producing the export quality produce. The fact that the export constraint in Table II-22 appears as only a third or fourth priority constraint is because that part of the export constraint which is "supply" limited by lack of internal credit, processing or marketing structures was included in those constraints, not in the export constraint.

The part of the export constraint which is included under the title "export" is that part of exports which will be needed to expand target group welfare which will come from "new" access to export markets. While a short term capacity probably exists in the most products to increase supply without accessing new markets or expanding shares in competition with others, the longer run future of intensive small farm agriculture in Chile will require new access. Expanding supply is easier than accessing new markets. In order to access new markets, well-funded and organized commercial ventures will need to be mounted by processing and marketing entities in dispersed areas of the world.

Intensive agriculture in the arid north is a limited exception to this rule because it does not compete seasonally with the large production areas in the central valley of Chile. Its seasonal lead means that even though the Chilean market is reduced for intensive products, a large part of the production in the north can be absorbed in the major Chilean markets. The seasonal differentiation, and the limited volume also means that small market shares of the larger total Chilean export to a particular destination can come from the north without substantial new access. The result of these factors is that an expanding but small internal market, and improved processing and marketing facilities for export will likely cover the export potential of the north without a substantial burden of accessing new markets. This accounts for the absence of an "export" constraint in Table II-22 for the arid north.

While the export constraint is shown as a third priority constraint for the central south it should be noted that this is principally true for the Malleco-Cautín portion of that region for two reasons:

1. The Malleco-Cautín region has a

much more flexible climate for intensive export potential crops.

2. Those few intensive crops appropriate for the Valdivia-Chiloé subregion either have a very attractive internal demand (Sugar) or have very unattractive export potential (potatoes), and therefore exploiting export markets is not a central concern.

In summary, accessing new export markets, while not currently the first priority, is probably the most important long run constraint on the welfare of the Chilean rural poor.

TABLE II-22

Relative Priority Position of the Marketing, Prices and Export Second Level Constraints

| | Marketing | Ag. Prices | Export | Number of Families |
|---|---|---|---|---|
| Arid North | 5 | 0 | 0 | 23,000 |
| Central Irrigated | | | | |
| Minifundistas | | | | |
| INDAP | 5 | 0 | 3 | 15,000 |
| Coastal | 5 | 0 | 4 | 21,000 |
| Valley | 5 | 0 | 3 | 79,000 |
| Reform Farms | 5 | 0 | 3 | 35,000 |
| Landless Workers | | | | |
| Ag. Solution | 0 | 0 | 3 | 15,000 |
| No Ag. Solution | 2 | 0 | 0 | 25,000 |
| Central South | | | | |
| Minifundistas | 5 | 0 | 3 | 57,000 |
| Reform Farms | 5 | 0 | 3 | 9,000 |
| Landless Workers | | | | |
| Ag. Solution | 5 | 0 | 3 | 17,000 |
| No Ag. Solution | 2 | 0 | 0 | 17,000 |

## E. Institutional Constraints

The institutions which compose the agricultural sector are the subject of a major report which is being prepared by Booz-Allen-Hamilton for ODEPA. This study was a major effort costing one half million dollars and should include a comprehensive review of public sector institutional constraints. Part III of this document and the Sector Overview provide more detail on institutional programs and entities. This section contains only a few limited paragraphs of observations aimed more at the constraint priority of the functions which these institutional types provide.

### 1. Research and Extension Entities

SAG and INIA are the two public research and

extension entities. Their activities are directed principally at improving the crop and livestock technological base (INIA) and extension including livestock sanitation (SAG).

There have been only two important examples in recent Chilean experience in which increases in crop technology has resulted in dramatic increases in yields. It is important for the setting of research and extension priorities to note that neither one of these can be associated with SAG or INIA. The corn case can be directly credited to private sector improved seed firms, and the sugar beet case to the broad technical assistance and research function of the product processor IANSA.

It is suggested that these two success situations should be viewed as a pattern rather than viewed as isolated exceptions. The encouragement of the private sector research and technical assistance functions either through subsidization (as was the case in IANSA) or from less direct market assistance should be an important component of technological improvement.

Outside of the possible integration of technical assistance functions of processors and private sector input vendors, the SAG and INIA institutional structures can have an important small farm contribution to the degree that they can efficiently organize research and extension in small farm crops, and in farm management assistance. As was mentioned earlier, research and technical assistance in fruits and vegetables is difficult because of the multiplicity of products. Nonetheless a few of these products are individually important enough to establish research and extension efforts. Potatoes is an example in which INIA in the south has made successful technological contributions.

Outside of the cereals and livestock products, the public entities should not be looked for major successful small farm yield increasing innovation in the near future. It is not likely to occur.

Improved farm management technology may be an area in which public technical assistance can make an important difference for small farmers. There is some evidence in the ATAC report that INDAP and SAG have been successful in this area. The process of intensification places significant strain on the farm management capacity of the small farmer

even if he makes no changes in crop technologies nor in per unit yields. Farm management assistance may be a critical input in this regard.

Table II-23 indicates the relative position of research and extension functions as priority constraints on small farmer welfare. The priority of this function would be much higher if all farms, and not just small farms, were included.

2. Irrigation and Natural Resources

Since these two factors are priority first level constraints for important segments of the target group, it is fitting that the operative institutions which organize and fund these efforts should be priority second level constraints. There is evidence that the institutional efficiency in irrigation is a major constraint on the capacity of Chile to expand and effectively exploit irrigated acreage. In addition to the institutions themselves, the legal, administrative, and rate structures which regulate the use of the scarce water resource are in need of reorientation. IREN is included in the constraint Table II-23 in the coastal region where erosion control is an important land issue.

3. Trained Manpower

Trained manpower in Chile for the agricultural sector is the responsibility of INACAP, the National Institute for Training. This institution is a well organized and practically oriented training organization which provides short courses in almost every conceivable skill. Many of their courses serve to provide a service which blends into technical assistance. While the educational level of small farmers is a significant constraint, it is not due to institutional insufficiency. This accounts for the absence of trained manpower as a priority institutional constraint in Table II-23.

4. Budgetary Resources

One of the principal thrusts of the GOC in controlling inflation is the reduction in public expenditures and the reduction of the size and role of most public entities. While not disputing the importance of inflation control, it is

impossible to ignore the impact that this policy has had on institutions such as INDAP, and the more important impact on credit availability. Much of this reduction is intended to result in smaller yet more efficient public programs. Whether this will in fact result is yet to be seen. What is clear at present is that the programs are smaller. As long as the first priority public problem is inflation, budgetary resources for public sector programs will continue to be a seriously limiting factor. Public funds as a category are not presented in the institutional constraints Table II-23 because this limitation cuts across all of the institutions, and includes the earlier second level constraints like credit, export promotion, marketing and other constraints as well.

## 5. Organizations and Administration

### a. Public Sector

Organization and administrative bottlenecks are almost always important constraints to achieving efficient public rural programs. In order to place this constraint in perspective for A.I.D., it is useful to note that it is perhaps less a factor limited by the availability of well-trained public personnel than by non-personnel, budget resources. Salary level constraints are causing an exit of qualified personnel from public service. The adequate supply of qualified personnel has not resulted therefore in an adequately staffed public sector. Trained personnel are not a priority constraint on organizational efficiency as in the case for most of the countries in which A.I.D. is involved. That administrative bottlenecks are nonetheless important obstacles cannot be ignored, yet there is no obvious entry for assistance if the personnel are well trained. The Booz-Allen-Hamilton report may clarify ways in which the administrative machinery may be streamlined for more efficient programming.

### b. Private Sector

As stated earlier, agricultural growth in Chile must come from the small scale producers who are or will be owners of much of Chile's productive land. In order to try to recoup some efficiencies of scale, these producers must be organized or associated into groups to undertake in common

such activities as the distribution of input supplies, obtaining of technical assistance and related services, and marketing arrangements.

Two particular problems will complicate the effort to organize producers.

First, as individual titles are distributed to the beneficiaries of agrarian reform, the organizational units of the land reform settlements cease to exist. Yet, there remains the need to manage some of the resources, such as barns, milking sheds, tractors and equipment, and irrigation facilities on a common basis. Moreover, the newly titled farmers will likely encounter greater difficulties in obtaining supplies, credit, technical assistance and favorable marketing arrangements as individuals than the institutional infrastructure of the land reform settlement existed.

Second, the number of cooperatives serving the rural sector has increased greatly during the last decade. In many cases, the cooperatives were promoted more for political purposes than for economic need. Consequently, there are a number of chartered cooperatives which either are defunct for all intents and purposes or are incapable of benefitting their members significantly because of their slack of scale.

In response to the first problem, SAG is actively promoting the formation of quasi-cooperative associations of reform sector farmers. The law now enables any group of farmers to form Sociedades de Cooperación Agrícola (SOCAs), Chapter II, page 207 of Sector Overview. The process involves minimum procedural difficulties. Membership in the SOCA is voluntary and the SOCA can undertake on a communal basis the activities assigned to it by its members, e.g., obtaining credit, purchase of inputs, management of farm machinery, marketing, etc.

To resolve the problem created by the existence of a large number of inefficient cooperatives, the GOC is encouraging the cooperative movement to form larger scale, multi-purpose cooperatives on a regional basis

through the merger, affiliation, or combination of existing cooperative entities. Again, this is voluntary effort which the GOC hopes the cooperative movement itself will be able to promote and achieve.

The complexities of the organizational problems identified are considerable. However, the importance of obtaining an efficient organization of producers cannot be under-estimated given Chile's new land tenure structure. Any external assistance to Chile must take into account the need to strengthen farmer organizations. As indicated by the discussion in the Overview, the cooperative concept is culturally acceptable to the Chilean farmer, and is being encouraged by the Chilean government.

The need for improving producer organization is sector-wide and like the GOC budget is not treated as a constraint -- almost all activities require it.

TABLE II-23

Relative Priority Position of Institutional Constraints

| | Research Extension | Irrigation Natural Resources | Trained Manpower | No. of Families |
|---|---|---|---|---|
| Arid North | 3 | 1 | 0 | 23,000 |
| a)Central Irrigated Minifundistas | | | | |
| INDAP | 4 | 0 | 0 | 15,000 |
| Coastal | 6 | 2 | 0 | 21,000 |
| Valley | 4 | 0 | 0 | 79,000 |
| b) Reform Farms | 4 | 0 | 0 | 35,000 |
| c) Landless Workers | 0 | 0 | 0 | 40,000 |
| Central South | 4 | 0 | 0 | 100,000 |

## F. Constraints to the Incorporation of Women as Agents and Beneficiaries of Development

Women enter as agents and beneficiaries in the target group in the marketing, management and processing activities. Among the target group in the central south women in the Mapuche areas have important positions in management functions on many small farms. In other areas cultural biases limit effective involvement of women.

## G. Summary of Relative Importance of Constraints

### 1. Critical Constraints to Development of the Rural Poor Presented on a Priority Basis

Table II-24 presents the constraints discussed in this document and indicates their relative priority. The presentation of constraints is made in two levels to indicate that there are farm level or primary constraints which may be changed by secondary level constraints or interventions.

The poor in the arid north are constrained by natural resource availability and the chain of secondary constraints connected with this reality. The poor in the central south have abundant land and water and are constrained by a lack of cultivation of that land. In the central irrigated region a combination of more intensive crop mix, improved yields and expanded cultivation are the priorities.

### 2. Interrelationships Between Constraints

The presentation of Table II-24 in two levels is meant to express the most important interrelationships between constraints. In an agricultural sector as complex as Chile's these interrelationships are in fact more complicated than can be captured in as short an evaluative effort as this, much less in a table like Table II-24. With the restoration of market forces in Chile, less and less interrelationships are within the direct control of the public sector.

TABLE II-24

SUMMARY OF CONSTRAINT PRIORITIES

| | Number of Families | PRIMARY LEVEL CONSTR. | | | | SECONDARY LEVEL CONSTRAINTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Institutional Constraints | | |
| | | Land & Water | Land Use | Crop Mix | Yields | Credit | Agro Indust. | Market-ing | Ag. Prices | Export | Res. & Exten. | Irrig. & Nat.Res. | Trained Man-Power |
| Arid North Total | 23,000 | - | - | - | - | - | - | - | - | - | 3 | - | - |
| Minifundistas | 8,000 | 1 | - | - | 2 | 2 | 4 | 5 | - | - | 3 | 1 | - |
| INDAP | 2.000 | 1 | - | - | 2 | 2 | 4 | 5 | - | - | 3 | 1 | - |
| Non-INDAP target | 6,000 | 1 | - | - | 2 | 2 | 4 | 5 | - | - | 3 | 1 | - |
| Reform | 5,000 | 1 | - | - | 2 | 2 | 4 | 5 | - | - | 3 | 1 | - |
| Landless Rural | 10,000 | 1 | - | - | - | - | 1 | - | - | - | - | - | - |
| Central Irrigated | 189,000 | | | | | | | | | | | | |
| Minifundistas | 114,000 | - | - | - | - | - | - | - | - | - | - | - | - |
| INDAP | 15,000 | - | - | 1 | 2 | 1 | 2 | 5 | - | 3 | 4 | - | - |
| Non-INDAP Coast | 21,000 | 2 | - | 1 | 3 | 1 | 3 | 5 | - | 4 | 6 | 2 | - |
| Non-INDAP Central Valley | 79,000 | - | - | 1 | 2 | 1 | 2 | 5 | - | 3 | 4 | - | - |
| Reform | 35,000 | - | 2 | 1 | 3 | 1 | 2 | 5 | - | 3 | 4 | - | - |
| Landless Rural Poor | 40,000 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ag. Solution | 15,000 | - | - | 1 | - | 1 | 2 | - | - | 3 | - | - | - |
| Non Ag. Solution | 25,000 | - | - | - | - | - | 1 | 2 | - | - | - | - | - |
| Central South | 110,000 | | | | | | | | | | | | |
| Minifundistas | 57,000 | - | - | - | - | - | - | - | - | - | - | - | - |
| INDAP | 43,000 | - | 1 | 2 | 3 | 1 | 2 | 5 | - | 3 | 4 | - | - |
| Other | 14,000 | - | 1 | 2 | 3 | 1 | 2 | 5 | - | 3 | 4 | - | - |
| Reform | 19,000 | - | 1 | 2 | 3 | 1 | 2 | 5 | - | 3 | 4 | - | - |
| Landless Rural Poor | 34,000 | - | - | - | - | - | 2 | 5 | - | 3 | 4 | - | - |
| Ag. Solution | 17,000 | - | 1 | 2 | - | 1 | 2 | 5 | - | 3 | 4 | - | - |
| Non Ag. Solution | 17,000 | - | - | - | - | - | 1 | 2 | - | - | - | - | - |

Note: Not included in the above is the important area of producer organizations, the lack of which is not really an important constraint as such because many exist. However, the effecting of many of the above secondary constraints will require the improvement in the producer organization area. Similarly the important question of GOC budgetary is all pervading and therefore not included.

## III. POLICIES, PLANS AND ACTIVITIES DEALING WITH IDENTIFIED CONSTRAINTS FACING THE TARGET GROUP

### A. GOC

#### 1. General Policy Framework

As part of its economic recovery program, Chile has adopted economic policies long recommended by international experts for stimulating agricultural growth in developing countries. These include: elimination of price controls on agricultural products; adoption of realistic interest rates; elimination of exports barriers; establishment of an exchange rate favorable for exporters; and encouragement of private investment in agro-industries and private operation of processing and marketing facilities. State owned agro-enterprises have been sold to the private sector, wherever feasible to farmer cooperatives. The macro-economic framework for growth is favorable. Many principal policy decisions which are required to stimulate the growth of the agricultural sector have already been taken. For example, the excessive concentration of land ownership is no longer an issue in Chile. Due to the extensive land reform that has occurred, unparalleled in Latin America, some 60% of the most productive irrigated crop land in Chile will be in the hands of small scale producers once the land titling process is completed in 1977.

One of the major problems which continues to plague the Chilean economy are high rates of inflation. Combatting inflation is the GOC's number one priority concern, and inflation rates have approximately been cut in half over the past two years. At the present ime the rate of inflation is still running in excess of 100% per annum and is regarded by the GOC as unacceptable. The fight against inflation has two significant implications for GOC actions to deal with the identified constraints:

- It restricts the possibilities for the expansion of public sector development activities in agriculture.

- It seriously restricts the possibility of expansion of agricultural credit that is internally generated -- particularly medium and lon-term credit.

The latter is particularly important given that the foregoing constraints analysis identifies the lack of credit as the most important priority constraint.

A new and possibly serious general policy impediment seems to be surfacing. Recently, Chile actually showed a quarterly current balance of payments surplus. This was principally due to higher copper prices and short term capital inflows attracted by relatively high Chilean real interest rates. The Chilean response was a revaluation of the Chilean peso relative to the U.S. Dollar. Furthermore, in recent months regular peso devaluations have not kept pace with increases in costs, especially of agricultural products. The result is that many potential Chilean agricultural and agro-industrial products have lost their previous world market price advantage during the last six months. It will be remembered that the constraints analysis section identified internal effective demand for small farmer produced fruits and vegetables as a secondary level constraint to changed crop mix. This could become a binding constraint if Chilean small producers and agro-industries are unable to place production on world markets because of exchange rate policy.

## 2. Specific Rural Poor Development Policies

As stated previously, GOC policy in the agricultural sector seems to be in a state of flux because of recent changes in the Ministry of Agriculture. It is therefore premature to specualte on what new policies might emerge in the agricultural sector. There are strong preliminary indications, however, that the new Ministry of Agriculture management seems interested in a stronger public sector role in agriculture, especially in favor of small farmers. Specific GOC small farmer development policies, to the present time however, appear to be the following:

### a) Reform Sector

The principal GOC priority in the reform sector appears to be the division of previous collectives into individual holdings. Beyond this, present GOC policy and action in the reform sector appears inadequate. The dissolution of the asentamientos and their SARAs is withdrawing support from the

reform sector farmers (such as machinery services, etc.) and the GOC's efforts to replace partially the SARAs with SOCAs, which would be more cooperative-like in structure, has only just initiated. In part, this appears to be due to a lack of producer understanding of the potential benefits that a SOCA-type organization might be able to offer them, in part because of a lack of GOC promotion, and in part because the SOCA's appear to have an ambiguous legal status.

To date, the GOC through BECH with CORA guarantees has been giving the reform sector farmers priority in credit allocation. However, high default rates due to various causes (principally insufficient lending and organizational problems at the SARA/SOCA level) and lack of CORA budget to make good on guarantees are leading to a restriction of credit to these farmers. Partially as a consequence of lack of GOC support, a new land market in agrarian reform plots appears to have developed. It is rumored that in some zones significant numbers of plots are changing hands on the open market. GOC officials in the Ministry of Agriculture are presently studying possible measures to regulate these sales and are at the same time attempting to find appropriate means of assisting the reform sector to eventual self sufficiency.

b) The Minifundistas Sector

The GOC has one agency, INDAP, which specializes in assisting the minifundista group with credit and technical assistance. During the Unidad Popular, INDAP was staffed with a large group of promotores sociales whose function was in large part political. INDAP has traditionally been plagued by negative real interest rate policies and poor collection practices. The GOC has decided to restructure INDAP. INDAP is now charging positive real interest, is concentrating on improving collections, and has trimmed its staff. A.I.D. technical and capital assistance to INDAP through the recent Agricultural Production Credit Loan (067) is expected to greatly strengthen INDAP or its successor agency. The GOC seems convinced that for the present the minifundio sector with its special problems needs a specialized public entity like INDAP and INDAP seems likely, in one form or another, to survive the future reorganization of the agricultural public sector.

c) The Landless Poor

The GOC and especially ODEPLAN have focused on the rural extremely poor as deserving of special attention. Although the precise GOC approach to rural poverty among this group has not yet fully crystallized, the general approach seems to be a mixture of GOC administrative decentralization coupled with an area-based integrated rural development approach which would focus on the country's poorest regions. Agro-industrial development and small scale rural enterprises are also seen by the GOC as possible solutions to the poverty of this group, whose poverty is seen as not having an agriculturally based solution.

3. Public Sector Organization

The organization, function and programs of GOC public sector institutions in the rural sector are dealt with in depth in Section II.5 of the Sector Overview.

The new Government that came into power in 1973 encountered an extremely large public agricultural public sector whose ranks were swelled with employees accumulated over past administrations, especially during the Unidad Popular ( See Table 2.32 of the Sector Overview.). These public employees were making almost all important production and marketing decisions in the sector. In its first years the GOC has focused primarily on dismantling this structure. It is now planning the agricultural public sector's reorganization.

As the basis for this reorganization, with the assistance of the IBRD, the GOC engaged the services of the firm Booz-Allen-Hamilton. The firm has submitted its draft final report to the GOC which is considering the firm's recommendations. The report is believed to consist of four basic parts: a summary of past and current policies; a critical analysis of the public services being provided to the sector; a proposed new public agricultural

sector organization; and a detailed description of what public services should be provided to the sector and by which entities. In addition, the report contains a listing of differing projects which might be the subject of international financing and a detailed analysis of the rural credit system. The report also projects agricultural public sector staffing needs and contains an estimate of the supply and demand for labor in the agricultural public sector and its training and retraining needs.

The Booz-Allen -Hamilton study was conducted with the close collaboration of the Ministry of Agriculture management team. Present Ministry of Agriculture management is studying the report and reportedly has problems with some of the report's recommendations. It appears to the USAID that a reorganization of the public agricultural sector will take place, but not necessarily precisely along the lines suggested in the Booz-Allen-Hamilton report.

B. Private Sector Organizations and Activities

Chile has a myriad of private sector institutions in the agricultural sector. Their organization, functioning, and membership is detailed in Section 2.5.2 of the Sector Overview. According to Table 2.34 of the Sector Overview, productive agricultural cooperative membership totals approximately 137,000; another 50,000 producers are organized in service and multirrecoops.

The cooperative institutions most closely related to the A.I.D. target sub-groups are the so-called "Peasant" (campesino) cooperatives, which number 86,000 members and the land reform cooperatives whose membership totals approximately 10,000. Multirrecoops are second level multi-active service cooperatives organized on a regional basis and serve approximately 30,000 reform sector farmers.

GOC policy is not to encourage organization along class lines; rather, the GOC encourages organization on a regional basis in organizations which include differing social classes, e.g., large and small farmers combined. One of the results of this policy has been to weaken the functioning of the minifundista group peasant cooperatives many of which are not functioning effectively. To judge the effectiveness of the newer classless cooperatives or to assess their effectiveness in dealing with target group problems

would be premature. It is known that the peasant cooperatives have had mixed results in the past, some being effective in serving their membership's needs and other being more akin to social or political clubs.

Other private sector institutions which impact directly on the target group welfare are rural campesino labor unions, whose activities like those of all Chilean labor unions have been severely restricted (they were declared to be suspended by Decree-law 198 of December 1973.).

## C. A.I.D. Projects

On-going or planned activities in Chile of the U.S. Agency for International Development (A.I.D.) which are directed to assist the rural poor target group as defined in Part I include the following:

### 1. Approved Activities

#### a) Agricultural Cooperative Development Loan: $15 million - FY 1975.

This project addresses the secondary level constraints of agro-industry and marketing which in turn impinge on primary constraints such as crop mix and land use. It also assists in the critical area of producer organizations to which reform and minifundista groups belong. The agro-industries assisted by the project will create job opportunities for the landless poor.

#### b) Agricultural Production Credit Loan: $14 million - FY 1976

This project affects directly the first priority production credit constraint and impacts on priority farm level constraints such as crop mix, land use, and yields. It indirectly promotes formation of producer organizations and creates or revitalizes credit mechanisms to serve both minifundistas and the reform sector. By permitting the financing of hired labor (unlike

other Chilean credit programs) the credit activities will contribute to the welfare of the rural landless. The project also includes an activity that will improve the process of gathering and analyzing information necessary for planning agricultural programs and policies.

c) Upgrading Rural Cooperatives Grant: $250,000 T.Q. - $765,000 Future Years

This project promotes the improvement of producer organizations in both reform and minifundista sectors. Such improvement often is required to be able to reduce the effect of constraints at the farm level. Future year funding is planned, subject to the availability of funds for this purpose.

d) Housing Investment Guarantees - Rural Housing : $5 million - FY 1975/76

The construction activities under this project will generate job opportunities for the landless laborers both on site and in materials provision, e.g., lumber, gravel, etc. The costs of the houses and home improvements financed will be low enough so that people in the minifundista and the reform groups hould be able to participate.

2. Proposed for FY 1977

a) On-Farm Irrigation Loan: $7 million

This project will alleviate the first priority water constraint in the arid north for both the reform and minifundista groups.

b) Farm Management Improvement Loan: $ 2 million

This project will impact on the primary level constraints of land use and crop mix for reform sector farms by providing technical assistance in the maintenance and use of farm accounts. It is also expected to impact on yields through

the application of better farm management practices.

c) Intermediate Rural Technology Loan: $2 million

This project, together with the proposed FY 1978 Small Scale Rural Enterprises loan, will focus on under-employment of the landless rural poor while developing suitable technologies for both the reform and minifundista sectors. Through the development of appropriate technologies for small farms, land use and crop mix will be improved.

3. Proposed for FY 1978

Small Scale Rural Enterprises Loan: $9 million

This project has as its primary emphasis the improvement of the lot of the landless rural poor. The enterprises created through this effort will provide more and better rural off-farm employment in addition to providing goods and services which will affect farm level land use, crop mix and yields. Agro-industry and export markets also will be affected. Minifundistas, particularly those without an agricultural solution, also should benefit from this proposed project.

## D. Other Donor Activities

The programmatic foci of other major donors do not, in general, include projects specifically designed to address the mix of constraints currently hindering target group development. The IDB and IBRD, however, are developing several large programs which include target group members.

The IDB is, for example, developing large irrigation projects which will have some target group incidence. The largest project ($38 million) will take place in the Digua and Maule areas, south of Santiago. An estimated 95% of the farmers to be served by this project have a per capita family income of around $200 per year, considerably below Chile's $720 estimated average annual per capita income. Additionally, the IDB is

is considering a loan in the $15 million range for financing an artisan fishing improvement program with emphasis on cooperative marketing activities. A loan in the $9.0 million range for strengthening the Ministry of Agriculture's animal health control program is also under consideration by the IDB.

The IBRD is planning a loan of approximately $20 million which would supply long and some medium-term credit to fruit growers, vineyards, livestock production and agro-industries. The portion of the loan to be devoted to agro-industries and the types of agro-industries to be funded are still being developed but the size of the proposed industries is much greater than those planned for the A.I.D. Small Scale Rural Enterprises Loan.

The U.N. has a multi-faceted program of assistance to Chile with target group incidence found mainly in agriculture, forestry and fisheries. Programs exist or are planned for technical assistance or pilot projects related to increased crop and livestock production, animal husbandry, improvement of fish culture and fish marketing systems, improvements in water and land use, institutional reinforcement (specifically in the areas of agricultural training and extension), and evaluation and upgrading of Chile's agricultural statistics. Two proposed study/pilot activities, both related to irrigation, would include members of the target group: a project for the irrigation of the Bío-Bío river basin for $107 thousand and a project for the water resources research in the arid northern regions of Chile for $347 thousand.

Assistance from other countries, for the most part, is not directed toward the target group or is of a relatively small magnitude.

# IV. PROPOSED AGRICULTURE DEVELOPMENT STRATEGY FOR RURAL POOR

## A. Suggested General Objectives

The GOC's general agricultural policy framework as outlined in Section III-A is a strategy aimed at the country's crop and livestock production. These physical production targets have previously been defined by ODEPA and more recently by ODEPLAN. 1/ Adaption of a small farmer and rural poor strategy, which includes the reform sector farmer, appears entirely consistent with GOC's efforts to improve overall production This small farmer target group at present is responsible for the agricultural production on at least 50% of Chile's cultivated area. If this target group with its presently underutilized labor is given access to credit, technical assistance, adapted research and market opportunities, it could intensify production and contribute substantially to national production targets.

The emphasis on small farmer production increases provides a complementary benefit of increasing incomes to those presently on the lowest end of Chile's social/economic scale. The rural poor target group of small producers and rural landless labor represent over 80% of the total rural population. Improved agricultural production could represent a major improvement in the incomes and welfare of the rural poor.

The small farmer objectives might therefore be summarized as follows: 1) Increase agricultural production of the target group small farmers (reformed sector and minifundista) by 40% from 1976 to 1981. 2) Increase the income generating possibilities available to the small farmers and rural poor so that their real incomes would increase in the order of 25% to 30% between 1976 and 1981.

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1/ ODEPLAN plans for a 4.8% annual growth in agriculture between 1976 and 1981. Plan Nacional Indicativo de Desarrollo 1976-1981, ODEPLAN, GOC.

## B. Suggested GOC Rural Poor Agricultural Development Framework

### 1. Policies

#### a. Small Farmer Strategy:

The first objective of the GOC should be to establish firmly a comprehensive small farmer and rural poor policy. As pointed in following sections the small farmers subsector will have certain special requirements and needs in order to be able to fully participate in the agricultural development of the country. The GOC can provide or otherwise encourage directed programs of assistance to the small farm and landless laborers sub-sector while remaining consistent with its general agricultural policy framework.

#### b. Price Stabilization:

Development strategies must be accompanied by a policy to provide economic stability. The GOC's efforts to curb inflation is one such a policy to provide the stability necessary to encourage growth and development in all sectors of the economy. For the small farm sector it may be necessary for the GOC to provide additional economic stability to mitigate the risk inherent in these producers of more marginal capital and income levels.

The GOC general policy has been to eliminate wherever possible price supports and controls and to encourage free markets and trade. While this policy is encouraged and should be continued nevertheless there are a wide variety of selectively applied programs of price stability which could be highly supportive of small farmer development. Selected programs may take the form of guaranteed markets, floor price or tariff and trade policies for various agricultural commodities. The preceding constraint analysis indicated the major potential for the small farm and rural poor sector is not in expanded production of extensive crops such as wheat, beef cattle, or oil seeds, but rather in farm products which are labor intensive such as potatoes, other vegetables, milk, fruit, small livestock, honey, etc. These products, however, are the ones most vulnerable to seasonal and cyclical supply and demand variations. Many of these intensive crops can quickly

be imported at times of high domestic prices but are difficult for the small producers to store or organize for export at times of low domestic prices. In other words, it is suggested that the GOC policy should be sensitive to the particular needs of the small producer in the area of price stabilization. The GOC policy should be able to provide targeted programs for these producers without a wholesale change in the general strategy of encouraging free markets and trade.

c. Export Marketing:

Access to export markets is vital for the long run development of the small farm sector. The domestic market is not sufficiently large to support the land and labor potential in production of intensive crops of Chile's small producers. Accordingly, the GOC should vigorously pursue its policies of promotion of Chile's non-traditional exports while simultaneously encouraging cooperative development for export marketing of small farmer crops.

Of particular concern in this regard is the GOC's present policy decision to revalue the peso vis-a-vis the dollar and the continuing trend to adjust the exchange rate at a slower pace than is indicated by the internal rate of inflation. This policy appear to have an adverse impact on growth of Chile's non-traditional exports including many intensive agricultural crops. For GOC policy consideration of small farmer production it is important to determine what extent were the small producer and landless laborer participating (and benefitting income-wise) in the recent boom in fruit and vegetable exports and at what point do Chile's small producers lose their competitive advantage in non-traditional export because of an unfavorable movement in the exchange rate.

d. Irrigation:

For the small farmer sector in the Arid North the major limiting constraint is irrigation. The GOC should continue its policy of assuring efficient and rational use of this limited resource through pricing irrigation water to the uses at rates which tend to reflect the real value of water. As these water pricing programs are initially put into effect, however, there may be some hardship on the small producers.

This problem would ease considerably with the provision of adequate credit to these producers to continue operations and to intensify their farming operations.

The complementary policy of rational pricing of water should be accompanied by a policy of ensuring more efficient water use through adaptive research in those regions where water is a high priority constraint. These policies would not replace the existing need for the highly capital intensive investment required for new irrigation dams or canals but they would improve the rate of return on existing irrigation structures. Once the improved on-farm water use programs have proven themselves, future public capital investment in irrigation structures will be a more atractive alternative.

e. Agricultural Credit:

Lack of production credit is a priority constraint for a large number of small producers in Chile. The GOC current policy of providing credit to all farmers at real interest rates is consistent with the view that this is the best way to encourage rational, effective use of credit. The allocation of credit to the agricultural sector is still subordinate to the overriding GOC need to control inflation. While it may therefore be inappropriate to urge for major immediate increases in the flow of credit to the agricultural sector, growing increase of agricultural credit availabilities in real terms should be a priority objective in terms of alleviating this serious small farmer constraint. Moreover, credit allocated for agriculture (particularly production credit) may have very little inflationary impact especially in comparison with credit channelled to other sectors.

Within this general objective there emerges the need to have credit funds specially channelled to the small farmer sector. The reason is that while the small producers may even be the most effective utilizers of credit funds (i.e., the returns to investment per unit of land on intensively farmed small plots tends to be higher than on the large land holdings), the small size of loans, the lack of collateral, the lack of sophistication about the credit markets, and the current practice of focusing on single crop loans (crédito por pauta) all work to the small producer's disadvantage in obtaining credit from BECH or commercial sources.

f. Adapted Research and Technical Assistance:

The GOC policy on farm level technical assistance and adapted research favors reduced public sector involvement and more private or cooperative participation where feasible. Future Government services may be reorganized along regional lines. However, private sector and/or regional sources of technical assistance might not be adequate to reach effectively the reform sector farmer and the small scale producer in areas where crop-mix and livestock and crop technology have been identified as priority constraints to development. Since these groups occupy an important share of the agricultural land base, an appropriate policy on research and technical assistance would take into account their particular needs to bring about a more productive use of their land and labor.

g. Non-Farm Enterprises:

A rural poor development strategy in Chile must have a broader economic scope than agriculturally based activities. Fisheries, forestry and small scale mining activities can complement the impact of agricultural programs, by providing off-season employment opportunities and reaching out to the rural poor outside the farming sector.

The coastal artisan fisherman is of particular interest because of his number, his level of poverty, and the fact that he is a small scale producer of food for the country. In some areas of the country he may also farm small plots of land or may be forced to move to and from other marginal employment activities as dictated by the varying economic situation in fishing.

The GOC should clarify its policy objectives of integration on this rural poor sub-sector into its development program. The possibilities of inland fishing, particularly in hte Central-South Region, as an income and nutrition supplement should also be considered within this policy context.

## 2. Programs and Studies

### a. Cooperatives:

The GOC has recognized the advantages of a strengthened rural cooperative system in order to reach the many small producers with needed services in an efficient manner. Just as no specific policy recommendation is made for cooperatives, no specific program is proposed herein. Rather, the GOC should consider the impact of and the role for cooperatives in all its rural development policies and programs. Cooperatives can not only provide their members with farm level services, but their participation in backwards (e.g., inputs distribution) and forward (e.g., processing) linkages in the food production chain should bring efficiencies for the economy as a whole. The overall growth of the cooperative movement and its expanded coverage of the rural sector must be considered a basic element in the GOC's development efforts, including the more specific rural programs described below.

### b. Farm Services:

#### (1) Credit

INDAP has traditionally been the source of credit for the small scale farmer and minifundista. As a development agency, it should be seeking to graduate its successful clients into other more commercial sources of credit and direct its own resources to the more difficult cases. To facilitate the successful implementation of such an approach, BECH and the other sources of credit must be more willing to accept new small scale clients that have proven themselves with INDAP. A program of this nature not only would require closer INDAP/BECH coordination but may need to be supported with special measures in order to remove existing impediments. These measures would also assist in easing the priority credit constraints of the reform sector farmer who must depend more on the commercial credit system as CORA withdraws its special support. Some of the measures to encourage greater participation of BECH and other banking institutions in small farmer lending that warrant further study are:

i. Risk sharing - Programs for crop insurance or credit guarantee would reduce the banking risk inherent in lending to the rural poor because of their lack of

collateral. A program of guarantees could extend beyond farm loans and provide coverage for small scale rural enterprises.

ii. Land title clarification - Often, the principal source of collateral for small farmer is his land title. Yet, it may be that his title is not outright or as legally clear as that of the medium and large scale farmer with whom he must compete for credit. A legal study of how the small scale farmer might better be able to use his de-facto ownership of land to support his loan requests might lead to actions that would reduce this impediment.

iii. Special funding - A special fund for credit small scale farmers could bear terms and conditions reflecting the particular needs of this group. The interest margins earned by the banking institutions could be modified as may be appropriate to reflect the added cost of administering small loans. More importantly, the small scale farmer could receive financial asistance based on the whole farm enterprise needs rather than the crop oriented credit presently available under the crédito por pauta mechanism used by the banking system. He also could finance the medium and long term investments needed to make his operation more profitable. Further, readjustment of credit debt in accordance with changes in the CPI may represent a real or at least a psychological barrier for small farmer participation. Revision of the indexing technique should be studied to see if a more acceptable procedure can be derived while still offering the necessary protection to the lender's capital.

A final note with respect to credit for the small farmer concerns the generation of funds for the rural sector. One of the original purposes of BECH was to establish a mechanism to facilitate the flow of funds from established urban centers to the rural areas. A study of the flow of funds within the BECH system between urban and rural sectors would be enlightening. It may be that the rural areas are able to generate a greater degree of savings than previously considered possible. If so, consideration should be given of how best to encourage capture of rural savings for the purpose of financing rural credit programs. One possibility may be through expanded local ownership and/or control of BECH on a regional basis.

Another approach might be to encourage cooperative rural savings and credit systems. In this regard, indefinite continuation of the current practice of making agricultural credits available at lower cost than other financial instruments (albeit, at still a positive interest rate) discourages the eventual formation of a mechanisms that would reduce the reliance on the allocation of funds from the national or external sources. The need for an interest rate differential for agriculture should be reconsidered.

(2) Technical Assistance:

As recommended in the policy discussion, a program of adoptive research and technical assistance directed at the special needs of the small scale producer appears warranted. Such efforts should focus on maximization of profits for this category of farmer rather than the crop focus of existing research programs. This would include improved crop mix, more economical use of inputs (e.g., lower cost fertilizer practices) and other innovations of appropriate technology.

The program should include the outreach or extension services needed to bring research results to the small scale farmer in a meaningful way. It would seem unlikely that this reponsibility would be carried out by the private sector in a manner that would provide adequate access by the more remote, small scale producers. It would be appropriate, then, to study further the need for retaining certain technical assistance functions within the GOC despite the general policy emphasis to increase private sector involvement. Pilot projects on this subject would be useful to test out the degree to which the private sector can provide the needed farm level assistance.

c. Agro-Business, Processing, and Marketing

Much of the growth in area intensive crops will depend on the growth of agro-industries to procure, process and market the small farmer produce. Following a small farmer strategy, there needs to be certain decision made on the most appropriate kinds of agro-industries (e.g., crops to be emphasized, scale of technology, and location of facilities) if use of rural labor and small scale producer resources are to be optimized. Knowledge of the impact of agro-industries on rural poor can be vital in guiding GOC policy on investment in this area. While some study efforts have been made with the assistance of an OAS funded advisor, they appear to have been sidetracked.

Agro-industry and marketing investments should lead to a more efficient food distribution system. Studies of the greater Santiago wholesale produce marketing system and of the milk distribution practices in Chile are underway and could lead to future investment programs. With respect to export marketing, a study is being made of the external markets for agricultural products. Investment decisions resulting from these studies should take into account any ancillary programs that might be appropriate to assure that the small scale producer can participate in programs that will enable him to use his labor and land resources more intensively.

Implementation of a price stabilization scheme would require studies of commodity market relationships in addition to the studies described above . Such studies should take into account regional or area development plans and their expected impact on alleviating crop-mix constraints. There is probably no single study which can supply all the answers but rather a series of commodity groups studies done by areas or regions and aimed at both domestic and export market channels.

The channels for agricultural inputs should continually be analyzed to see that they are efficient, competitive, and that the small farmer has access to inputs appropriate to his scale of farming. The CORFO investigations on improved fertilizer technology in mining and processing sodium

nitrate is one important aspect. Further work needs to be done on marketing of fertilizer, seeds, farm equipment, etc. so that the organizations such as cooperatives can better serve the small farmers.

d. Regional Rural Development Programs

INDAP is preparing regional rural development programs on which it intends to base future investment decisions. CORFO is planning to undertake river basin development studies for selected regions. A study of the dry land farmers in the Coquimbo zone is underway. As the Government's regionalization program is implemented, there will undoubtedly be efforts to undertake or plan integrated rural development projects on an area basis.

A program to determine the relative priority of such projects and to assure they consider criteria relevant to the needs of the target group (i.e., minifundista reform sector, and landless laborer) appears appropriate. As indicated earlier in this document, the constraints facing this group will vary from region to region. Follow up study should be made to provide more precise guidance to the planners of regional development projects on appropriate strategy adoptation.

One of the refinements of the constraint analysis that should be possible to perform on a regional basis is the determination and classification of the farms that do not have a so-called agricultural solution. The alternative solution most often discussed for this group has been the generation of off-farm employment, just as with the landless laborer. As a complementary measure however, the rural development programs in regions with an acute minifundia problem should look at land consolidation possibilities and measures to prevent the continued subdivision of already small parcels. In this regard, it may be appropriate to study the creation of a credit fund for financing the acquisiton of land by existing small scale farmers or landless laborers. This group is the group least able to compete for land as it becomes available. Regional planning studies would identify these special constraints to the full utilization of available land and labor resources.

# V. POSSIBLE EXTERNAL ASSISTANCE TO IMPLEMENT A DEVELOPMENT STRATEGY FOR THE RURAL POOR

## A. Prerequisites for Further External Assistance

Consideration of new programs in small scale agriculture and rural development by the donor agencies would be facilitated by the following Government of Chile actions:

1. Reiteration and re-emphasis of a small farmer and cooperative focus within its agricultural development policy framework would clarify understanding of the GOC's intentions by the donor agencies. Similarly, a more detailed explanation of the programs the GOC plans to use to attack rural extreme poverty is necessary to enable more effective collaboration by the donor agencies.

2. The intended organizational changes in agricultural institutional infrastructure should be presented together with a timetable for its implementation. Of particular concern for small scale agriculture activities is the intended public sector role for providing farm level technical assistance and the management water and irrigation systems. The implications of the new regionalization program on national level activities such as research, extension, plant and animal sanitation, and small farmer lending (i.e., INDAP) need to be explained.

3. The experience of the land titling program should be updated and the intended solutions to any problems encountered be explained. Of particular concern is whether the newly titled small scale farmers are able to work their lands productively and profitably and what are their special needs for enhancing their situation (e.g., access to production credit, acquisition of farm capital, technical assistance, etc.). The extent to which resale or leasing of farm land by the land reform beneficiaries may be occurring and the Government's position on such actions should be investigated. As a related matter, the experience under the recently promulgated law permitting the formation of SOCA's should be reported. The SOCA's status as a cooperative under the cooperative laws of Chile need to be clarified.

4. The Government's internal capacity for selecting, preparing and appraising agricultural and rural development programs must be strengthened. Such capacity should extend through the implementation phase of the projects to assure prompt draw-down of the external funds and should include systematic evaluation of the impact of programs on national production and farmer welfare. More active Government leadership in coordination of donor agency activities also appears appropriate.

## B. Areas Where External Assistance can be of Greatest Value

All major donor agencies are increasing their attention and priority given to the poorest income groups in the host countries in which they operate. Not only will requests for external assistance involving projects having strong impacts for the small scale farmer and the landless laborer be well received, but the external agencies are increasingly gaining experience and skills that can be used to enhance and improve the design and execution of these projects. With respect to the special needs of the rural poor, externally supported efforts would best be concentrated in the capital and technical assistance activities described below:

### 1. Capital Transfer

As discussed in the constraint analysis, credit availability has been severely curtailed due to the monetary policy calling for overall credit contraction. As credit becomes scarce the poorer income segment of credit users are the first to lose access because of their inability to meet the tighter banking criteria. External loans for directed credit purposes permits the monetary authorities to maintain a higher level of credit availability than otherwise would be possible and yet meet the anti-inflationary objectives of Chile's recovery/development efforts. Accordingly, the greatest priority for external assistance should be to relieve this credit crunch.

Based on the results of this sector assessment, external assistance for credit programs in the following areas

would appear to bring the most benefit for the rural poor:

- agricultural production, including medium and long term loan on-farm capital investments;

- expansion and improvement of irrigation distribution systems directed at more efficient farmer use of available water; and

- modernization of the fish marketing system for the output of the artisan fishermen and capital improvements in their productive capacity;

- agro-industries for export and domestic markets

Each program of external assistance in these areas should, of course, include study of how best to assure that benefits will reach the target group. The studies should take into consideration constraints, geographic area emphasis, and the ancillary activities (e.g., technical assistance, insurance coverage, marketing, etc.) that may be needed to enhance participation of the rural poor. With respect to agro-industry loans, priority should be given to identify labor intensive industries that can create jobs at relatively low capital costs.

2. Technical Assistance

Given the lack of a shelf of development projects, the priority area for external technical assistance would appear to be activities that would generate new projects either directly through feasibility studies or through training and institutional development of entities responsible for project preparation. Within this general priority, emphasis should be given to activities involving irrigation, intensification of land use, and marketing with respect to helping the small scale farmer, and to promotion of non-farm rural enterprises with respect to helping the landless rural poor. Technical assistance in domestic and export marketing of the production of the artisan fishermen and promotion of inland fishing activities also warrants attention.

## C. Proposed A.I.D. Assistance Strategy

A.I.D. program strategy for assistance to the agricultural sector in Chile must take into consideration the following limitations:

1. Given Chile's degree of development relative to other countries in Latin America and to other A.I.D. clients, the A.I.D. program in Chile cannot be expected to continue indefinitely; therefore it should not include projects that imply the need for follow-on A.I.D. financing over an extended period.

2. Given the foregoing, general Agency funding constraints, and certain exogenous factors, A.I.D. will have only limited resources it can bring to bear on Chile's problems of agricultural recovery and rural development.

Taking the above into account as well as the general uncertainty about a future A.I.D. program in Chile, USAID recommends the following course of action:

1. Proceed with development of the Small Scale Rural Enterprise Loan for FY 1978.

2. Finance in early FY 1977 the following additional studies:

   a) Credit demand and projects identification for the rural enterprises;

   b) Nature of rural employment providing information on availability of labor including consideration of possible sociological/anthropological constraints on supply;

   c) Regional strategy assessments for small farmers and landless laborers for selected zones with high incidence of rural poverty; and

d) Survey of the experience to date within the reform sector and analysis of particular problem areas for short and medium term development of the sector.

3. Identify and recommend additional rural development activities for FY 1979 in the DAP up-date to be submitted in January, 1977 in the event the DAP strategy concludes that continued A.I.D. loans and grants beyond FY 1978 are appropriate and necessary.