

## 付 属 資 料

- 1 . 覚 え 書 ( Minutes of Meeting )
- 2 . 要 請 書 要 約
- 3 . 要 請 書 ( 英 文 )



1. 覚え書 (Minutes of Meeting)

Minutes of Meeting  
between  
The Japanese Preliminary Survey Team  
and  
The Authorities Concerned of The Government of  
The Republic of Chile  
on Japanese Technical Cooperation  
for  
Plan of Environmental Preservation on Agriculture and  
Rural Community through the Participation of Inhabitants

The Japanese Preliminary Study Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Kazuyuki Ito visited the Republic of Chile for the purpose of fact-finding the proposed project entitled "Plan of Environmental Preservation on Agriculture and Rural Community through the Participation of Inhabitants" (hereinafter referred to as "the Project").

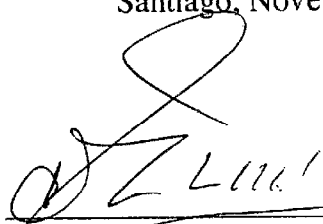
During its stay in the Republic of Chile, the Team acknowledged a project proposal and had a series of discussions with the authorities concerned of the government of the Republic of Chile on the Project from technical and administrative points of view necessary for sharing the understandings on the Project.

As a result of the discussions, the team and the Chilean authorities concerned agreed to report to their respective Governments the matters referred to in the document attached hereto.

Santiago, November 25, 1998

伊藤 一 幸

Kazuyuki Ito  
Leader  
Preliminary Study Team  
Japan International Cooperation Agency  
Japan



Carlos Mladinic Alonso  
Minister  
Ministry of Agriculture  
The Republic of Chile

## Attached Document

### 1. Preliminary Study Team

#### 1-1. Objectives

The Team has been dispatched by JICA for the purpose of fact-finding of the proposed project entitled "Plan of Environmental Preservation on Agriculture and Rural Community through the Participation of Inhabitants" and of studying the possibility of the cooperation as a project-type technical cooperation scheme of JICA.

The objectives of the study are as follows:

To confirm the background, actual situation and problem to be improved in the field of soil and water conservation, plant cultivation and soil fertilizer, rural development;

To confirm the definite contents and methodology of each activity which is described in the project proposal, and

To clarify the further issues to be studied and discussed.

#### 1-2. Team Members

The Team members list is shown in Annex 1.

#### 1-3. Schedule

The Team stayed in the Republic of Chile from 16 November to 26 November 1998. The detailed schedule of the Team's activities is shown in Annex 2.

### 2. System of Concerning Organizations

The system of concerning organizations is shown in Annex 3.

The Team has meetings with organizations listed below:

ODEPA (Studies and Agrarian Policies Bureau) ;

INIA (National Institute of Agricultural Research) ;

INDAP (Institute for Agricultural and Livestock Farming Development) ;

SAG (Agricultural and Livestock Farming Service) ;

CONAF (Cooperation National Forestry) , and

SEREMI (Regional Secretariat of Agriculture)

### 3. Background of the Project

The team confirmed the following background for the Project and the request of the Chilean Government for Japanese technical cooperation.



In the wide areas of Chilean dry land called "Secano", even after applying various programs and resources for its rural development, a large number of farmers' families still find themselves in poverty or indigence, carrying out subsistence activities, over-exploiting land resources already degraded, thus increasing its deterioration.

It reflects the specific difficulties of some agro-ecological zones and the agriculture to participate in the globalized economy where any single solution will not solve the problems unless a set of actions is integrated and farmer's capability is increased at the local level.

Portezuelo is the community that represents those principal problems of rural community and agriculture in the dry land.

Main problems encountered are as follows:

- (1) General condition of poverty and indigence and lack of job opportunities
- (2) Deterioration of resources in agro-ecological systems.
- (3) Moderate efficiency in dominant development models.
- (4) Lack of organization and management capacity to conduct local development.
- (5) An inadequate education and training of the rural population

With the Project it is expected:

- (1) To rely on a methodology for conducting sustainable development projects.
- (2) To coordinate institutions, national organizations and local government for the accomplishment of sustainable processes.
- (3) To introduce new technological basis for sustainable and integrated development of degraded zones.
- (4) To acquire the knowledge and experience accumulated in Japan.
- (5) To rely on concrete experiences and models, which can possibly be applied to other areas, for the development of degraded micro-watershed.

The request of Chilean Government is based on the findings gained through the implementation of FAO field project entitled "Support for Sustainable Agriculture through Land Conservation and Rehabilitation", which is donated by the Government of Japan.

#### 4. Findings from Field Surveys

The Team surveyed the Portezuelo Community, Nuble Province, Eighth Region, which is proposed as a future project site as requested by the Government of Chile. The farmers of the area were also interviewed by the Team. Its results are summarized below.

#### 4-1. Soil and Water Conservation

- (1) The present situation of serious soil erosion has been confirmed by the field surveys.
- (2) The farmers listed Soil Erosion and Water Deficiency as the problems to be solved.
- (3) The possible engineering measures including the construction of contour ridge, terrace and others could be considered.
- (4) For water shortage, the introduction of drip irrigation and other effective water management, using water of springs, well and small reservoir could be considered as effective measures.
- (5) Dry farming methods are also necessary.

#### 4-2. Plant Cultivation and Soil Fertilizer

- (1) The soil is devastated as a result of long-term mismanagement.
- (2) The soil erosion has been caused by the destruction of original vegetation, the cultivation of wheat and other crops on the steep slopes with little vegetative cover, aggravated by the traditional fallow system where the land is ploughed and left without any protective cover.
- (3) The process of its reclamation involves the introduction of no tillage cultivation, crop diversification, animal production, revegetation of abandoned steep slopes, etc.

#### 4-3. Rural Development

- (1) The interview of the farmers revealed that the main reason of the increase of abandoned land is the decrease of their income.
- (2) The outflow of farmers for work to cities and the disposal of the draft animals are considered as a problem.
- (3) Although the measures of individual farmers for erosion are insufficient, rural development has been attempted, with the program of World Bank (hereinafter referred to as "PRODECOP") and the help of INDAP, by the partial usage of traditional organizations, the education of the agricultural high school and other measures.
- (4) It is necessary for future rural development to develop educational system for farmers, workshop for analyzing related factors, modification and development of existing farmer's organization and farmer's participation system.

## 5. Further Issues to be Studied and Discussed

### 5-1. Establishment of Cooperation Structure among Organization Concerned

A project structure, in which INIA would be playing a central role, was suggested by the Chilean side to the team.

The Chilean side agreed to the proposal from Japanese side that the collaboration of INIA and INDAP is indispensable in view of its objectives and activities. Therefore, both sides agreed that the former proposal, after rearranging the structure of the proposed project where INIA and INDAP would be playing a central role and after coordinating the organizations concerned, would be re-presented by the new proposal latter.

### 5-2. Generality of Proposed Model Site

The team has well understood that the model site Portezuelo, proposed by the Chilean side, has serious problems of soil erosion.

Both sides agreed that, in view of the future extension of technologies to be produced by the Project to other areas, Chilean side would carry out a study to prove the advantage of Portezuelo as a model and to estimate to what extent they can be diffused.

The report will be attached to the proposal to be re-presented.

### 5-3. Definition of Detailed Contents of the Project Activities

Both sides agreed that Japanese side, after receiving the new proposal, would dispatch another team to study and discuss the details of the Project activities.

### 5-4. Project Title

Both sides agreed that more suitable title would be considered after studying and discussing the detailed contents of the Project activities.

### 5-5. Collaboration with Exist Cooperation Programs

Both sides agreed, in order to make the Project more effective and efficient, to collaborate with the existing cooperation programs and further discuss with the related organizations such as FAO, PRODECOP, and so on.



## ANNEX 1

### List of the Preliminary Study Team Members

Kazuyuki ITO (Leader)	Director, Land Improvement Engineering Service Center, Tohoku Regional Agricultural Administration Office, Ministry of Agriculture, Forestry and Fisheries (MAFF)
Akira ITO (Soil and Water Conservation)	Vice Representative, Seibu Branch Office, Japan Agricultural Land Development Agency (JALDA)
Kouji YAMANAKA (Plant Cultivation /Soil Fertilizer)	Specialist for Agricultural Development, Institute for International Cooperation, JICA
Sinji KAWABE (Rural Development)	Section Chief, Project Planning Division, Planning Department, Kyushu Regional Administration Office, MAFF
Takakazu WADA (Cooperation Planning)	Senior Technical Officer, Technical Cooperation International Affairs Department, Economic Affairs Bureau, MAFF
Takaya KOMINE (Technical Cooperation)	Staff, Agricultural Technical Cooperation Division, Agricultural Development Cooperation Department, JICA



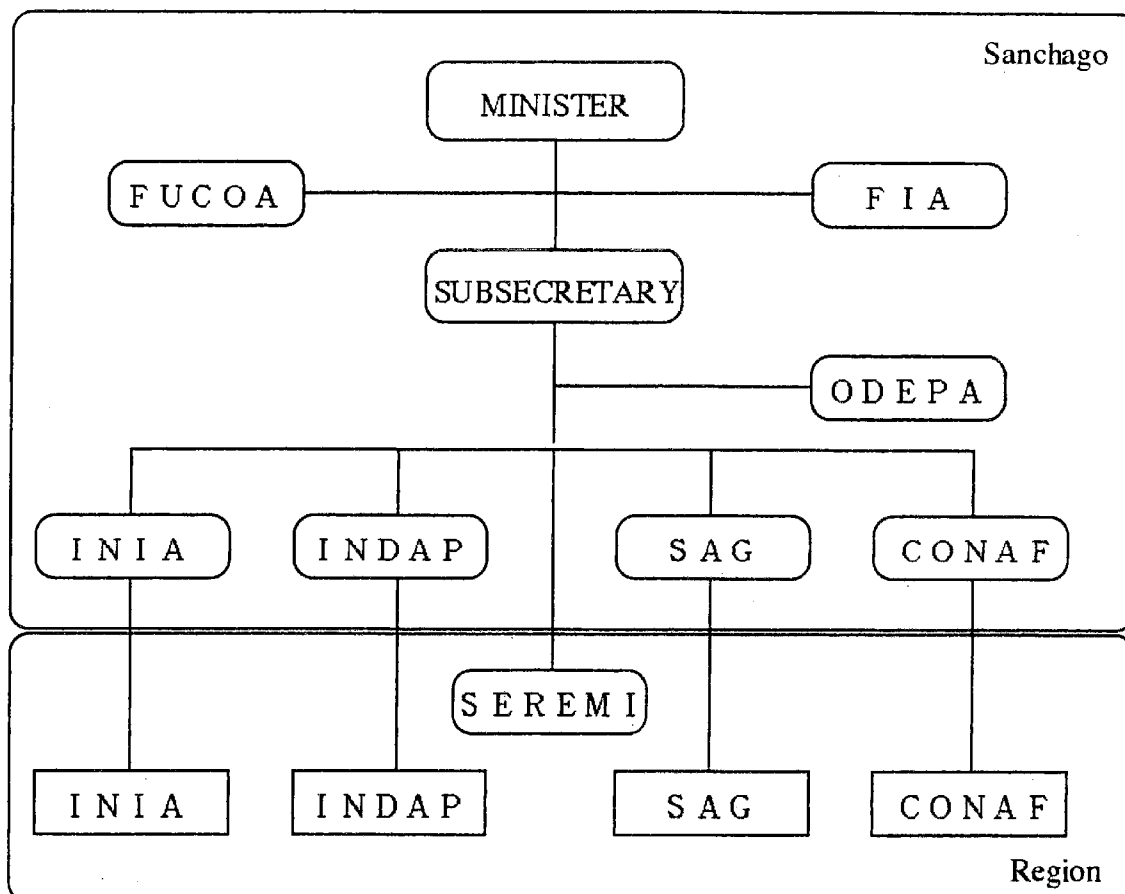
## ANNEX 2

### The Detailed Schedule of the Team's Activities

Date	Time	Activities
Nov. 16 (Mon.)	PM	Arrival in Sanchago
	15:30	Meeting with JICA Sanchago Office
	16:30	Courtesy call on Japan Embassy
17 (Tue.)	11:00	Courtesy call on FAO Sanchago Office
	15:30	Courtesy call on ODEPA
	17:00	Courtesy call on INIA
18 (Wed.)	AM	Leave Sanchago for Concepcion
	10:00	Courtesy call on SEREMI
	PM	Leave Concepcion for Chillan
	19:00	Courtesy call on INIA (Quilamapu) and CORE
19 (Thu.)	9:00	Meeting with INIA (Quilamapu)
	15:00	Field Survey and Interview with farmers at Portezuelo
20 (Fri.)	8:30	Meeting with INIA (Quilamapu)
	11:30	Interview with persons concerned at Portezuelo
	14:30	Field Survey at Portezuelo
	16:45	Interview with farmers at Portezuelo
21 (Sat.)	10:00	Meeting with INIA (Quilamapu)
	15:30	Interview with persons concerned
22 (Sun.)	AM	Report making
	PM	Leave Cillan for Concepcion
23 (Mon.)	9:00	Joint Meeting with SEREMI, INDAP (reg. 8) and INIA (Quilamapu)
	12:00	Meeting with CONAF (reg. 8)
	12:30	Meeting with SAG (reg. 8)
	PM	Leave Concepcion for Sanchago
24 (Tue.)	9:30	Joint Meeting with ODEPA, INIA, INDAP, SAG and CONAF
	15:00	Meeting with CONAF
	16:30	Meeting with INDAP
25 (Wed.)	AM	Joint Meeting with persons concerned on draft of Minutes of Meetings
	12:00	Signing of Minutes of Meeting
26 (Thu.)	9:30	Report to JICA Sanchago Office
	11:00	Report to the Embassy of Japan
	PM	Leave Sanchago for Japan

## ANNEX 3

### Organization of Ministry of Agriculture



FIA: Fundación para la Innovación  
 FUCOA: Fundación De Comunicaciones Del Agro  
 ODEPA: Oficina De Estudios y Políticas Agrarias  
 INIA: Instituto De Investigaciones Agropecuarias  
 INDAP: Instituto Desarrollo Agropecuario  
 SAG: Servicio Agrícola y Ganadero  
 CONAF: Corporación Nacional Forestal  
 SEREMI: Secretaría Regional Ministerial

4/5

## 2. 要請書要約

### プロジェクト方式技術協力要請書（要約）

プロジェクト名：住民参加型農業農村環境保全計画

Plan of Environmental Preservation on Agriculture and Rural Community  
through the Participation of Inhabitants

相手国実施機関名：農業省農業計画室

Ministry of Agriculture,  
Studies and Agrarian Policies Bureau(ODEPA)

同機関事業概要：農業計画室(ODEPA)は、農業省の政策立案部局であり、国内外の農政に係る情報収集・分析・提供を行うとともに、農産物の価格安定政策、農産物輸出政策及び持続的農業開発に係る政策等を実施している。組織人員は122名（1996年現在）、予算は約28百万US\$

協力拠点地域：第8州コンセプション市 (Concepción, Región VIII)

主要都市からの距離（サンティアゴ市より南へ515km）

要請背景：チリ第5州から第8州までの天水農業地域では、不安定な利水状況や水食による土壌侵食の発生などのため、農業開発が著しく制限されており、貧困層が多く遍在している。日本のFAOへのトラストファンドにより1992年から95年までに第8州における土壌侵食現況調査とその対策の既存技術のマニュアル作成等が進められた。こうした背景の下、FAOによる協力をベースとして第8州に選定されたモデル地域を主たる対象として、小規模灌漑技術及び水・土壌の保全を図るための技術等の指導による農業環境保全技術の確立と、モデル地域のみならずチリ国全般への展開をも視野に入れた住民参加型手法による事業計画の立案、実施等普及活動に係る技術の移転を行うことを主な目的として、我が国に対するプロジェクト方式技術協力の要請がなされた。

要請目的・内容：

（プロジェクト目標）

ポルテスエロ流域の住民の参加のもとに、同流域にて農業環境保全技術を確立し、農業省関係機関のスタッフにその技術を移転することによって、FAO プロジェクトで選定された他4つの流域への技術普及と、ひいてはチリ国全体への技術普及を目指す。

(プロジェクト成果) 住民参加型手法による水、土壌保全のノウハウを普及させる

(プロジェクト活動)

現行の生産体系の構造的・技術的な見直しの実施。

総合的・参加型アプローチによる流域管理方法の確立。

農民組織化支援

水・土壌保全モデルの導入による持続的な作付体系への改善

省水あるいは集水可能な作付体系の導入

(プロジェクト裨益者) 農村部貧困農民及び農業セクター全体

希望する専門家の人数・分野：

(長期専門家) 5名～リーダー、水・土壌保全、灌漑、農家指導、農業生産

(短期専門家) 年間4名～作物栽培、技術移転、農業普及、農村社会学

希望するカウンターパート研修の人数：毎年2名

機材供与：約6千万円（トラクター、耕機、普及用AV機材等）

我が国との協力関係：

我が国のトラストファンドによるFAOのプロジェクトの成果の活用

農業省（本部）への個別専門家派遣（農業環境保全）

第3国・国際機関からの協力の有無及びその内容：

FAOのプロジェクトにより現状調査、マニュアル作成、住民組織作り等の基礎的な体制整備が実施された。

国家開発計画における位置付け：

貧困農民の生活改善に資する案件であり、国家開発計画の優先政策である貧困対策に結びつく。

3. 要請書 (英文)

CHILE - JAPAN  
PROJECT

水と土の保全と農村開発計画

WATER AND SOIL CONSERVATION REGIONAL PLAN

PORTEZUELO WATERSHED DEVELOPMENT WITH

PARTICIPATION OF FARMERS

Joint Project: JICA - MINISTRY OF AGRICULTURE / ODEPA

March 1997

## INDEX

I.	BRIEF .....	68
II.	STUDY SITE DESCRIPTION .....	69
1.	Inland Secano Overall View .....	69
2.	Portezuelo Study Site .....	69
2.1.	Agroclimatic Characteristics .....	70
2.1.1.	Topographic Units .....	70
2.1.2.	Soils .....	70
2.1.3.	Climate .....	71
2.2.	Demographic Characteristics .....	71
2.2.1.	Population .....	71
2.2.2.	Education .....	72
2.2.3.	Economic Activities .....	72
2.3.	Productive Characteristics .....	72
2.3.1.	Wheat - natural pastures rotation .....	73
2.3.2.	Pulses .....	74
2.3.3.	Pastures .....	74
2.3.4.	Livestock .....	74
2.3.5.	Viticulture .....	75
2.3.6.	Forestral Sector .....	76
2.3.7.	Land ownership .....	76
2.4.	Market .....	77
2.5.	Self-consumption .....	77
2.6.	Credit .....	77
III.	PROJECT OBJECTIVES .....	78
1.	Project Overall Goal .....	78
2.	Project Purposes .....	78
IV.	PROJECT JUSTIFICATION .....	78
V.	WORK PROPOSAL .....	80
1.	Components .....	80
2.	Program of Activities .....	81
VI.	EXPECTED OUTPUTS .....	82
VII.	MEASURES TO BE TAKEN BY JAPANESE SIDE .....	82
1.	Dispatch of Experts .....	82
2.	Estimated Costs .....	83

VIII.	MEASURES TO BE TAKEN BY CHILEAN SIDE .....	84
1.	Provision of buildings and facilities' .....	84
2.	Estimated Costs .....	84
IX.	PROJECT ADMINISTRATION .....	84

## I. BRIEF

Inland Secano has faced a delay in its development because of the lack of water, use of productive systems unsuitable to its soil and topographic characteristics and scarce investment related to practices and techniques for natural resources conservation. As a result, it is identified as a depressed zone, highly degraded and with few productive opportunities. These factors have a strong influence on the youth migration from rural areas to urban centers that offer better and more labor and personal development perspectives.

The project consists of an integrated study for 3 micro-watersheds in Portezuelo Municipality (prefectures) and testing of water and soil conservation techniques under different productive systems in one pilot watershed. The latter will be carried out as a demonstrative experience for farmers and other watersheds in the region. The project also strongly considers the active participation of farmers in all its development stages.



## II. STUDY SITE DESCRIPTION

### 1. Inland Secano Overall View

Inland Secano stretches from around Llay-Llay (Region V) to the Bío Bío river (Region VIII) on the eastern slope of the Coastal Mountain Range, and represents an area of 1,6 million hectares distributed in 50 municipalities.

In Inland Secano only 7% of the land is arable and suitable for cultivation with regular or occasional irrigation, while 12% is arable rainfed land. In both cases soils are Soil Capability Class from I to IV. A further 17% of the soils corresponds to Class VI, and the majority to Class VII which in this zone, due to its semiarid character, is only suitable for grazing during short periods and for very limited forestation.

The climate in Inland Secano is mediterranean and with long drought period affecting negatively the development of most crops. Plantations must be irrigated during their initial development years to ensure their establishment. Portezuelo would be representative of these agro-ecological conditions.

### 2. Portezuelo Study Site

Portezuelo Municipality is located between the latitud 36° and 37°S. Administratively Portezuelo belongs to the VIIIth Region and agroecologically to Inland Secano. (See map in Annex N° 4).

Since the available data referred to Portezuelo Municipality are scarce, in some cases data from the Inland Secano will be used.

## 2.1. Agroclimatic Characteristics

### 2.1.1. Topographic Units

- a) Plain and lowland sectors associated to seasonal creeks. These sectors are characterized by 0% slope and occupy around 15% of the Inland Secano area.
- b) Low ridges sectors, called "Lomas", with a height that ranges between 100 and 200 meters and averages slopes of 5 to 20 %. They represent about 75% of the Inland Secano area.
- c) Hill Sectors, called "Cerros", with a height from 300 to 500 meters and steep slopes from 20 to 40%. They correspond to approximately 10% of the Inland Secano area.

### 2.1.2. Soils

Inland Secano has two geomorphological units. The east side of the Coastal Range and the central depression, where three types of soils can be distinguished: granitic soils (32%), metamorphic soils (32%) and marine terraces (18%). The rest corresponds to alluvial and volcanic soils. The main limiting factors are its low natural fertility and increasing on-going degradation processes. The soil erosion is considered the most relevant problem. It affects around 66% of Inland Secano soils.

### 2.1.3. Climate

Climate is semi-arid, characterized by a very irregular rainfall system. Average annual rainfall varies from 400 to 800 mm, increasing from north to south, with a dry period of 6 to 7 months. It is the zone more affected during multi-annual periods of drought. Temperatures are more extreme than in other secano areas and the frost-free period does not exceed 7 months.

## 2.2. Demographic Characteristics

### 2.2.1 Population

Demographic data for Portezuelo Municipality (Table N°1) show that in 1982 the population was 7.172 persons, of which 5.770 lived in rural areas (80%) and 1.402 lived in urban areas. These figures show that Portezuelo population lived mainly in rural areas.

Portezuelo Comune has a wide index of male population, reaching 126 male per each 100 female, that in general migrated to the cities.

Table N°1: Demographic Data for Portezuelo Municipality 1992-1990						
Population	Total	Male	Female	Ratio male to female	Annual Growth Rate	Population 1990
VIII R. Total Pop.	1.513.833	751.341	767.547	97,7	1,6	1.674.213
Portezuelo Mun.	7.172	3.869	3.303	117,4	-0,46	6.460
VIII R. Rural Pop.	366.354	193.862	167.522	118,7		486.353
Portezuelo Comune	5.770	2.547	2.547	126,5		6.460
Source: INE, 1982, and estimation for 1990.						

### 2.2.2. Education

Studies done in 1996 in the locality of Lincura in Portezuelo Municipality reveal that small farmers have a low level of education. In fact, the majority of population has reached levels lower than 8<sup>th</sup> grade, being very similar between male and female.

### 2.2.3. Economic Activities

Agriculture is the main economic activity in Portezuelo Municipality. It can be observed that 68,7% of the population younger than 15 years old works in agriculture. The second most important activity is related to State's jobs, such as those of education and health.

## 2.3. Productive Characteristics

According to the bibliography we can say that there are different productive systems in this zone, which depend upon various factors: exploitation's area, agricultural aptitude of the soils, management capacity, etc. These factors conduct to multiples differences between one exploitation and another. Nevertheless, there is a prevailing model, the traditional productive system, based on wheat (almost ever carried out as *mediería*<sup>1</sup>) - natural pastures, and sometimes vineyards.

Table N°2 shows that the average land area in Inland Secano ranges between 6.5 to 27.0 hectares. However, in Ñuble province, where Portezuelo is located, the average land area is 20.1 hectares. The Table also shows the average land area for different uses.

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<sup>1</sup> "Mediería" is an informal contract (done by word) between the land's owner and a tenant (usually a small producer), who rent the land to produce goods. The production profit is shared between both interested parts.

Table N°2: Inland Secano : Small Farmers Land Use Average Structure						
Land Use	VII Region				VIII Region	
	Curico	Talca	Linares	Cauque -nes	Ñuble	Bio-Bio
Average land Area	6.5	18.5	27.0	12.0	20.1	17.9
Vineyards	0.0	0.2	0.5	0.6	1.3	0.5
Horticulture and flowers	0.1	0.0	0.0	0.0	0.1	0.1
Annual Crops	1.6	1.1	3.8	0.6	2.5	1.6
Natural Pastures	1.9	14.5	18.1	9.3	13.3	10.7
Fallow	0.0	0.2	1.9	0.6	1.1	0.4
Others	2.9	2.4	2.7	0.9	1.6	4.6
Source: Echeñique and Rolando, 1989.						

### 2.3.1. Wheat - natural pastures rotation

The farmer plants wheat following the first effective winter rain after the fallow (generally in May), for which he again uses the moldboard plow. This leaves the soil loose and exposed to the four or five months of winter rains, which may last several days at a time with emerging wheat plants as the only protection. In addition to soil erosion, this cultivation system also leads to the deterioration of soil fertility because farmers do not apply organic fertilizers, and apply mineral fertilizers in insufficient doses, if at all.

The combined effect of erosion and use of an inadequate technology (seed varieties of low yields, traditional production techniques, and lack or insufficient use of fertilizers) is reflected in a low productivity. Thus, yields are about 7 to 12 qq/ha, according to studies done by Mellado (1994).

#### 2.3.2. Pulses

Lentils and sweet peas are the main pulses cultivated in this zone in fall and winter time. Both productions are aimed to the market.

Sowing is done by broadcasting and the seed is covered with branch harrows. Usually fertilizers are not used and neither weed control is carried out. Under these conditions, average yields are 4 qq/ha in lentils and 1.000 to 1.500 kg. referred to sweet peas.

#### 2.3.3. Pastures

This zone is poor in pastures and these are provided at the idle stage of the wheat - natural pastures rotation.

Grasses that grow after wheat harvest are of little value, since their production ranges between 0,5 - 0,8 ton/hectare of dry matter per year, which corresponds to a low 0,5 -1 sheep units per hectare. Whether the little nutritional value and the pasture seasonal production are considered, it is possible to conclude that, in these conditions, livestock has serious restrictions for development in this zone.

#### 2.3.4. Livestock

Exploitations devoted to livestock breeding are of small and medium size. These exploitations are characterized by sheep herds and also mixtures of sheep and cattle. Pastures in these exploitations are able to support a maximum of 1 sheep/ hectare/ year. Moreover, this activity is primarily for self-consumption and secondarily for sale.

Next table N°3 shows the prevailing structure of the above mentioned exploitations:

Table N°3: Average Livestock Structure for Small Scale Farmers (animal unit/producer)						
Regions	Province	Cattles	Ships	Swines	Goats	Equine
VII	Curico	1,06	3,35	0,29	0,59	0,88
	Talca	2,47	7,42	1,15	2,49	1,21
	Linares	3,10	14,72	1,23	4,74	2,00
	Cauquenes	3,87	11,24	1,26	2,14	1,24
VIII	Ñuble	2,08	6,96	1,74	0,89	1,21
	Bio - Bio	6,18	1,48	2,13	0,00	0,98
Source: Echeñique y Rolando, 1989.						

#### 2.3.5. Viticulture

The total vineyard land area is about 61 thousand hectares and approximately 55% of it is located between the VIIth and VIIIth Region, from which 50 to 60% is in Inland Secano (Lavín and Sotomayor, 1994). Usually these plantations occupy only small areas of the farm and most of them are over 30 years old. Wine production process is done mainly by farmers with traditional technologies and their own individual resources.

Wine grape is the crop with the highest profitability for the small producer, but the most common stock, the "País", despite its vigor and drought-resistance quality, produces wine of low commercial value and, therefore, has limited development potential. During last years, new varieties have been introduced in the area, such as Pinot-Chardonnay, Sauvignon-blanc, Cabernet-Sauvignon, etc.

### 2.3.6. Forestal Sector

The rapid forest expansion that has taken place in the last two decades, mainly in VII and VIII Regions, is affecting small producers from two points of view. First, these producers have remained largely outside the forestry development process due to the problems faced with access to the incentives offered by 701 Act (Decreto Ley N°701 de Fomento Forestal) because they cannot commit a large portion of their land for the forest activity. Secondly, the small producer is being displaced from areas with forestry potential by large producers and forestry industries, which buy their lands.

### 2.3.7. Land ownership

Table N°4 (Ovalle, 1994) shows the size of the exploitations in Inland Secano Interior and in Portezuelo Municipality, where the small farm property is notoriously dominant. In Portezuelo, 49.4% of the exploitations have between 0 and 5 hectares.

Table N°4: Exploitations Distribution According to Size		
Size (hectares)	Inland Secano (%)	Portezuelo Municipality (%)
0 - 5	45,6	49,4
5 - 20	30,4	32,4
20 - 50	12,7	9,6
50 - 100	5,0	3,7
100 - 200	2,9	2,1
200 - 500	2,3	2,0
500 - +	1,0	1,0
Source: Ovalle 1994.		



#### 2.4. Market

All exploitations are more or less linked to the market for the sale of labor force, product surplus or excess, and input purchase for family living and production. Marketing of products is commonly done individually and through a middleman.

Most usual modalities of marketing are:

- sale of products in the property
- sale of products in the city
- sale of products to the State

#### 2.5. Self-consumption

Small farmer family consumption has not been evaluated in depth. However, it is believed that wine, lentils and sweet peas are sold in the market and the rest of the products are used for the family self-consumption.

#### 2.6. Credit

The credit to which normally have access small farmers is granted by INDAP. Since 1996, the Institute has had available three lines of credit with the lowest rate of interest of the market. Nevertheless, small farmers have difficulties to accede to INDAP's credit, due primarily to a condition of deficit or lack of capital for guaranteeing the loan.

### III. PROJECT OBJECTIVES

1. Project Overall Goal      Improving life conditions of rural farmers families in Portezuelo watershed.
  
2. Project Purposes
  - \* To develop a land use planning proposal for the watershed;
  - \* To carry out soil and water conservation practices in one pilot site of the watershed with a demonstrative purpose;
  - \* To promote farmer organizations and participation in the development process of the watershed;
  - \* To contribute to the task of poverty alleviation through technological transfer.

### IV. PROJECT JUSTIFICATION

During the last 30 years several development actions have been carried out and economic resources have been allocated in Inland Secano. However, farmer families keep living under extreme poverty conditions. They practice a subsistence agriculture and depend highly on external resources for production and marketing of products. Nowadays, these farmers obtain their energetic resources through purchasing or appropriation outside their properties, since native vegetation in their land has been depleted already. It appears that the above situation is the result of an unefficient rural development strategy applied to the area.

- Main problems are related to erosion process, such as:
  - i Lost of the vegetative cover and reduction in the organic matter of soils;
  - ii Decrease in the soil volume and the depth of its superficial horizons;
  - iii Decrease in the productive potential and change in the soil capability classification;
  - iv Increase in the number of problems related to water infiltration.
  - v Increase in the runoff .
  
- Main actions to be developed in the zone are:
  - i. To make the necessary modifications to the structure and technology used in current productive systems;
  - ii. To establish a methodology for watershed management through integrated and participative programs;
  - iii. To support farmers organization and the action of local authorities,
  - iv. To improve the subsistence crops through the introduction of soil and water conservation practices;
  - v. To introduce intensive crop in places where water can be saved or collected.

## V. WORK PROPOSAL

### 1. Components

1.1. Component N° 1: Portezuelo watershed social, productive and natural resources diagnosis.

- |         |  |
|---------|--|
| Actions | <ul style="list-style-type: none"><li>a) Identification of 3 project sites in the watershed;</li><li>b) Identification of the farmers involved in the project;</li><li>c) Identification of the Public Services and local institutions involved in the project;</li><li>d) Establishment of the Investigation Unit</li><li>e) Establishment of the Management Unit</li></ul> |
|---------|--|

1.2. Component N°2: Land use planning proposal for Portezuelo watershed.

- |         |   |
|---------|---|
| Actions | <ul style="list-style-type: none"><li>a) To classify and select the land areas with a larger deficit of vegetation and potentially risky to erosion;</li><li>b) To identify the areas with more environmental pressure from its population;</li><li>c) To quantify the vegetational cover and to propose measures to improve and manage it in the different micro-watersheds.</li></ul> |
|---------|---|

1.3. Component N°3: Water and soil conservation practices

- |         |   |
|---------|---|
| Actions | <ul style="list-style-type: none"><li>a) Physical structures:<ul style="list-style-type: none"><li>i. Natural barriers to control water runoff (stone and trees fences)</li></ul></li></ul> |
|---------|---|

- ii. Structures for rainfall conduction (channels and dams)
- iii. Permanent physical structures (improvement of roads, management of banks and protection fences)
- b) Conservation practices for soil preparation
- c) Agronomics practices (rotations, green manure)

#### 1.4. Component N°4: Irrigation and Drainage

- |         |   |
|---------|---|
| Actions | <ul style="list-style-type: none"> <li>a) To evaluate available water in the zone;</li> <li>b) To analyse the feasibility of constructing a water collector;</li> <li>c) To train small farmers in an efficient management of water.</li> </ul> |
|---------|---|

## 2. Program of Activities

A detailed tentative activity program is presented in Annex N°1. Even though the project will last 5 years, the activity program has been done for 6.5 years, considering 1.5 years for the organization stage.

## VI. EXPECTED OUTPUTS

In addition to support the development of the Portezuelo watershed and thus alleviating the poverty in the area, it is expected to draw the successful experiences and transfer them to other watersheds in the region and country as well as to other Latinamerican countries, through the South-South Cooperation.

With special emphasis, it is expected to optimize issues related to small farmers organizations and women and youth participation, in order to make themselves responsible of their own development.

## VII. MEASURES TO BE TAKEN BY JAPANESE SIDE

### 1. Dispatch of Experts

#### 1.1. Long-term japanese experts:

- a) team leader
- b) soil and water conservation specialist
- c) irrigation and drainage specialist
- d) rural administration specialist
- e) agricultural production specialist

#### 1.2. Short-term japanese experts:

- a) crop cultivation specialist
- b) technological transfer specialist
- c) agricultural extension specialist
- d) rural sociology specialist

In the subject of rural sociology, the expert should be from Latinamerica Region or be familiar with culture.

2.	Estimated Costs (in USS)	3,266,300
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The estimated costs below do not consider the cost of japanese experts. Annex N°2 contains a detailed estimation costs for the 5 year- project.

2.1.	Equipment for in situ conservation practices (in USS)	549,400
a)	machineries	460,000
b)	topographic equipment	38,400
c)	equipment for technological transfer	51,000
2.2.	Operational Cost (in USS)	2,182,500
a)	conservation practices implementation	1,873,600
b)	data generation and purchase	95,500
c)	irrigation practices implementation	213,400
2.3.	Training (in USS)	534,400
a)	Chilean professional trainees (8)	400,000
b)	Latinamerican professional workshops (2)	134,400

## VIII. MEASURES TO BE TAKEN BY CHILEAN SIDE

1.	Provision of buildings and facilities necessities for project implementation	
2.	Estimated Costs (in US\$)	2,202,000
	Offices	252.000
	Furniture	20.000
	Equipment	130.000
	Professionals	1.000.000

## IX. PROJECT ADMINISTRATION

The Ministry of Agriculture will bear overall responsibility for project administration and implementation, through the Studies and Agrarian Policies Bureau, ODEPA. At regional level, VIII<sup>th</sup> Region Seremi will bear direct responsibility of the project implementation.

A detailed scheme for the project administration is presented in Annex N° 3.



Annex N° 1: Preliminary Activity Program							
Activities/ Years	1997	1998	1999	2000	2001	2002	2003
Project organization							
Chilean organization	x x x	x x x x					
Japanese organization, experts							
equipment	x x	x x x x					
missions	x	x					
Information gathering and study sites identification							
Data collection		x x	x x				
Data analysis (SIG)		x x	x x x x	x x x x			
Areas identification			x x				
Data gathering in situ (water, soil, topography)		x x	x x x x				
Plan for demonstrative areas							
Design and programation		x x	x x x				
Agreements with farmers		x x	x x x x	x x	x x	x x	x x
Project implementation							
Structure construction			x x x x	x x x x	x x x x		
Biological measures practices			x x x x	x x x x	x x x x	x x x x	x x x x
Implemented measures management				x x x x	x x x x	x x x x	x x x x
Follow up of practices			x x x x x	x x x x	x x x x	x x x x	x x x x
Project evaluation				x x			x x
Corrective measures after project evaluation					x x x		

## ANEX N° 2

b.1.. <u>Suministro de equipos</u>	-----us\$549,400
1. Equipos para implementación de practicas de conservación in situ:	
a) Equipos móviles:	-----us\$ 460,000
Bulldozer (1 unidad); Retroexcavadora (1 unidad);	
Perforadora de hoyos (1 unidad);	
Tractor (1 unidad equipado); Trilla (1 unidad);	
Motoniveladora (1 unidad);	
Camión taller (1 unidad);	
Vehículos (2 unidades con 4WD y 2 unidades normales);	
Motobike (3 unidades);	
b) Equipos para levantamiento topográfico;	-----us\$ 38,400
Equipo topográfico;	
Equipo de radio;	
2. Equipos para la transferencia tecnológica:	-----us\$ 51,000
Proyectores (2 unidades); Retroproyector;	
Datashow; Televisión (con video grabador);	
Cámara fotográfica; Cámara video; Telón;	
Generadores (2 unidades); Balanza para	
pesar animales; Computadores (4 unidades);	
Software (incluyendo de SIG);	
b.2.. <u>Costos operacionales para la implementación de practica del manejo</u>	
<u>de microciencias seleccionadas (total 1,000 has):</u>	-----us\$ 2,182,500
1) Implementación de practicas conservacionistas;	-----us\$ 1,873,600
1er año:	-----us\$ 1,259,000
2º año:	-----us\$ 171,100
3er año:	-----us\$ 157,300
4to año:	-----us\$ 145,600
5to año:	-----us\$ 140,600
2) Generación y cómputo de datos:	
Caracterización vegetal; Fotografía aérea;	-----us\$ 95,500
Toma de fotografía aéreas; Ortofotos; Cartografía;	
Gastos para actividades de terreno:	
1er año:	-----us\$ 79,900
2º año:	-----us\$ 10,800
3er año:	-----us\$ 4,800
3) Implementación de practica agronomica a través de	
Riego:	-----us\$ 213,400
1er año:	-----us\$ 92,000
2º año:	-----us\$ 67,400
3er año:	-----us\$ 18,000
4to año:	-----us\$ 18,000
5to año:	-----us\$ 18,000

6.3. Capacitación de profesionales nacionales y de los países de

la Región Latinoamericana:

-----us\$ 534,400

1) Capacitación de profesionales nacionales;

Total 8 profesionales, con una duración de un año;

-----us\$ 400,000

2) Capacitación de profesionales de 8 países de Sud-

América;

Total 48 profesionales ; 2 veces de taller con partici-

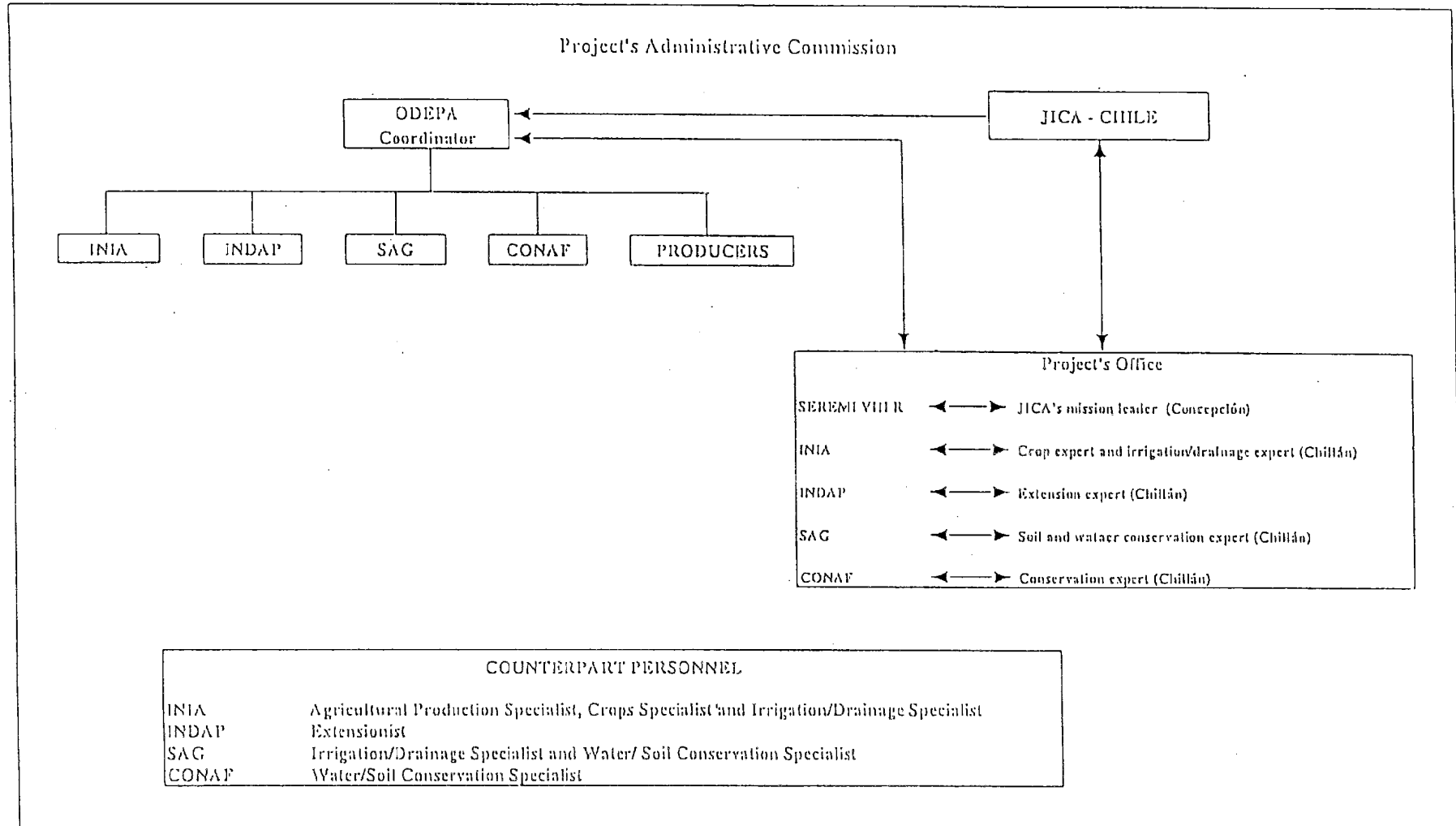
pación de 3 profesionales de 8 países con una

duración de 15 días: -----us\$ 134,400

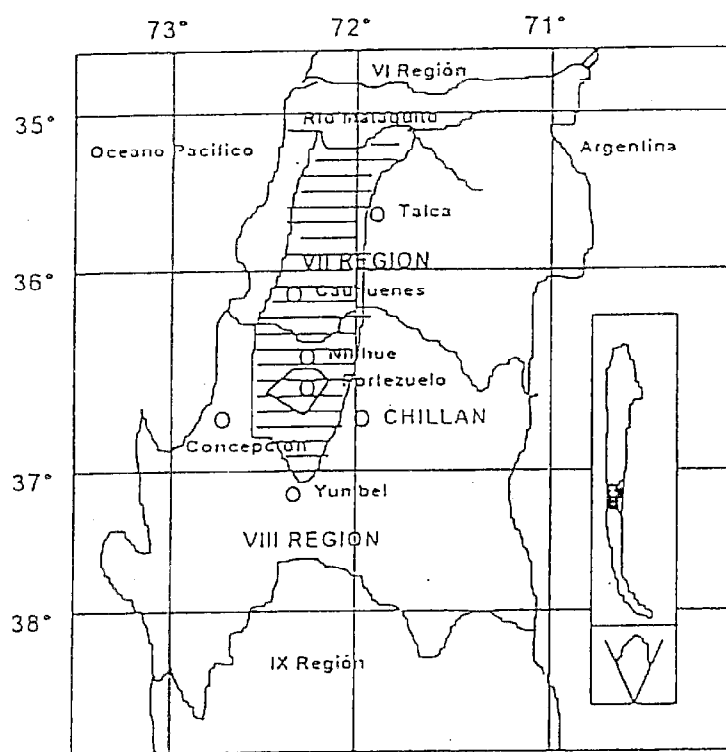
Total

----us\$ 3,266,300

ANNEX N° 3



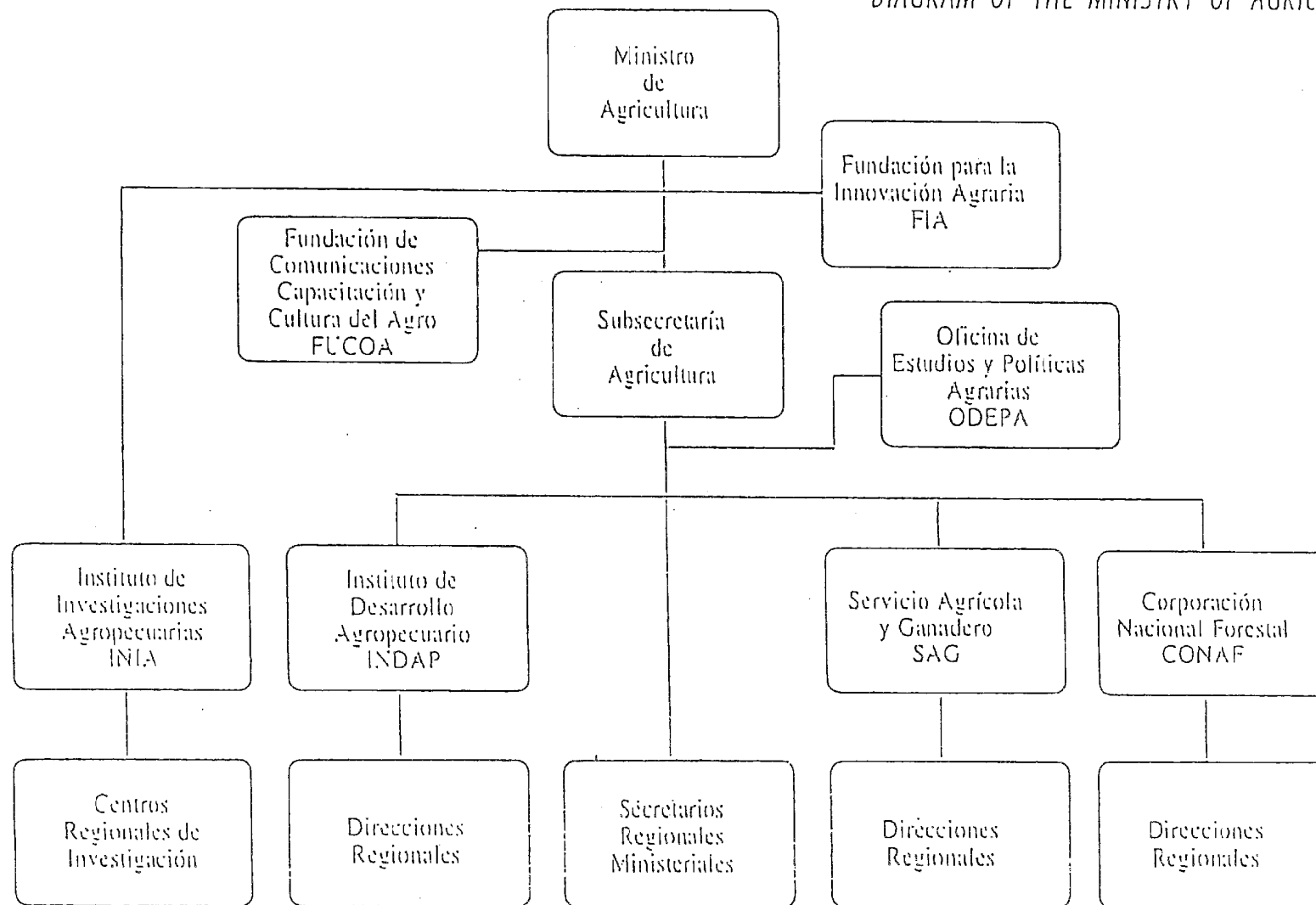
ANNEX N°4

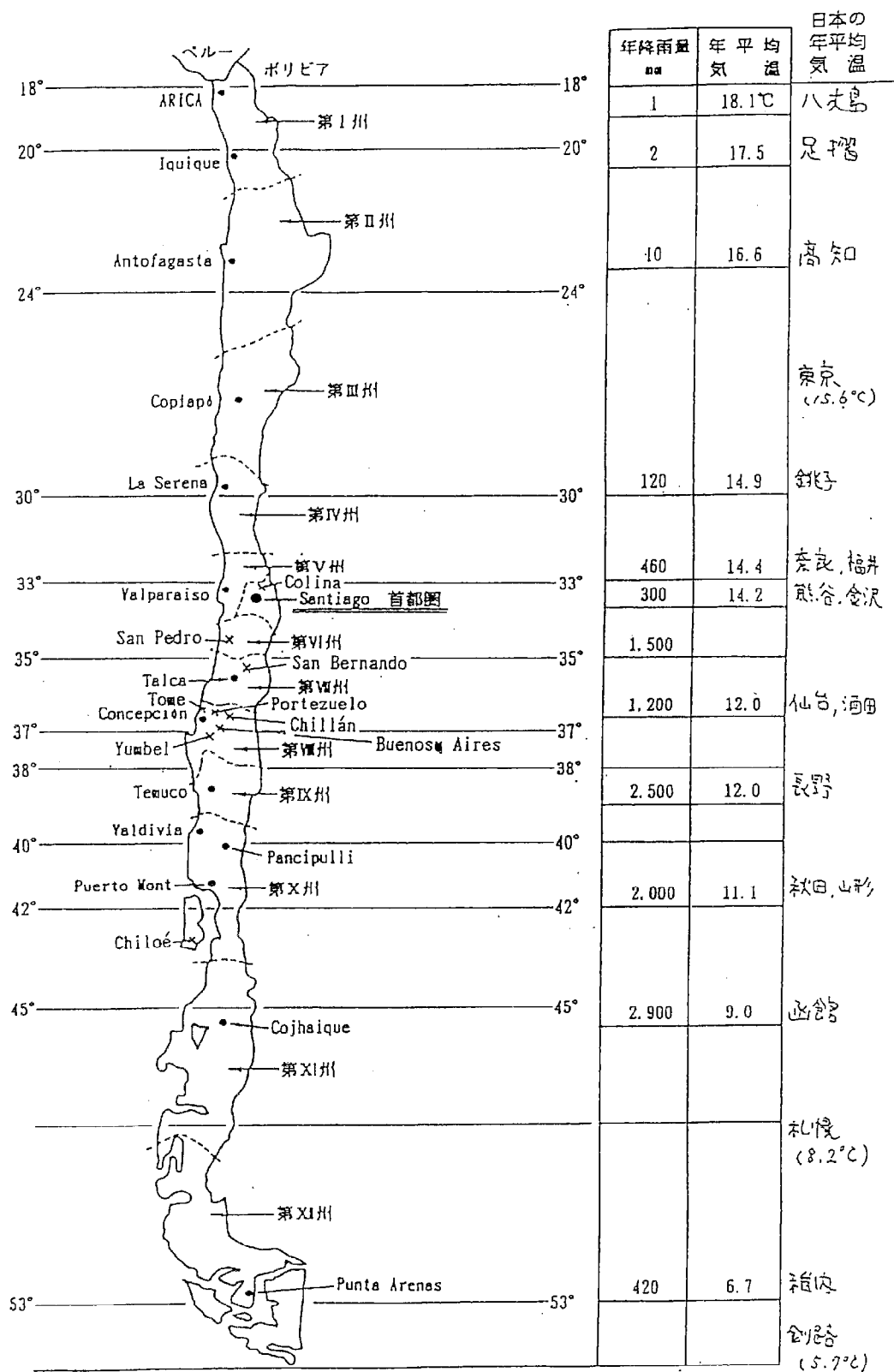


ODEPA, 1968

# ORGANIGRAMA DEL MINISTERIO DE AGRICULTURA

DIAGRAM OF THE MINISTRY OF AGRICULTURE





チリ共和国

行政区分 - 年降雨量 - 年平均気温

# 行政、研究、普及の組織図

