


**JOINT MID-TERM EVALUATION REPORT
ON
THE IMPROVEMENT OF PRODUCTIVITY
FOR THE SMALL-SCALE DAIRY FARMERS PROJECT
IN
THE REPUBLIC OF CHILE**

Valdivia, July 24, 2002

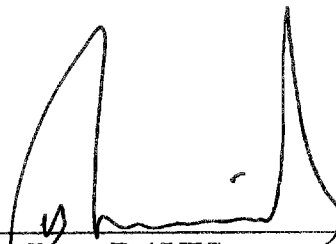
**JAPANESE - CHILEAN
JOINT MID-TERM EVALUATION COMMITTEE**



Mr. Hidetaka FUNO

Leader

The Japanese Mid-Term Evaluation Team
Japan International Cooperation Agency



Mr. Ivan DAVIS

Leader

The Chilean Mid-Term Evaluation Team
Regional Secretariat of Agriculture

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Abbreviation

AGCI	International Cooperation Agency of Chile (Agencia de Cooperacion Internacional de Chile)
CENEREMA	National Center of Training and Capacitation in Animal Reproduction and Management (Centro Nacional de Capacitacion y Entrenamiento en Reproduccion y Manejo Animal)
CIA	Artificial Insemination Center (Centro de Inseminacion Artificial)
INDAP	Institute for Agricultural and Livestock Farming Development (Instituto de Desarrollo Agropecuario)
INIA	Institute for Agricultural and Livestock Investigations (Instituto de Investigaciones Agropecuarias)
IRA	Institute of Animal Reproduction (Instituto de Reproduccion Animal)
IZ	Institute of Zootechnique (Instituto de Zootecnia)
MINAGRI	Ministry of Agriculture (Ministerio de Agricultura)
SAG	Agricultural and Livestock Farming Service (Servicio Agricola y Ganadero)
SEREMI	Regional Secretariate of Agriculture (Secretaria Regional Ministerial de Agricultura)
UACH	Austral University of Chile (Universidad Austral de Chile)
Xth GORE	Regional Government of Xth Region (Gobierno Regional Xa Region)
ACOLECHE	Milk Collecting Centers Association of Xth Region (Asociacion de Centros de Acopios Lecheros Decima Region)
CAL	Milk collecting Center (Centro de Acopio Lechero)
COOPRINSEM	Artificial Insemination Cooperative (Cooperativa de Inseminacion Artificial)
CAFRA	Agriculture and Dairy Cooperative of Frutillar Ltd. (Cooperativa Agricola y Lechera de Frutillar Ltda.)

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I . JOINT MID-TERM EVALUATION OF THE PROJECT

1. Objectives of the evaluation

Evaluation study was conducted with the purposes of:

- (1) Evaluating the level of achievement, overall effects and strategies based on Record of Discussions (R/D), Plan of Operations (PO) and Project Design Matrix (PDM),
- (2) Evaluating the Project in terms of five criteria that are shown below, and
- (3) Reviewing the project design and strategy through the joint study and meetings with experts and their counterparts for the improvement of project implementation.

2. Method of Evaluation

Evaluation activities were conducted by the Joint Evaluation Committee, which was composed of the Japanese Evaluation Team and the Chilean Evaluation Team in accordance with the R/D, PO, and the PDM. These activities included report analysis, field survey, and discussions with concerned officials staff members based on the five evaluation criteria listed below

(1) Relevance

Relevance refers to the validity of the Project purpose and the overall goal in connection with the development policy of the Chilean Government as well the needs of beneficiaries.

(2) Effectiveness

Effectiveness refers to the extent to which the expected benefits of the project have been achieved as planned, and examines if the benefit was brought about as a result of the Project (not of external factors).

(3) Efficiency

Efficiency refers to the productivity of the implementation process, examining if the input of the Project was efficiently convert into the output.

(4) Impact

Impact refers to direct and indirect, positive and negative impact caused by implementing the Project, including the extent to which the overall goal has been attained.

(5) Sustainability

Sustainability refers to the extent to which the recipient country can further develop the Project, and the benefits generated by the Project can be sustained under the recipient country's policies, technology, systems and financial state.

3. Composition of the Joint Evaluation Team

3-1. Japanese side

- (1) Mr. Hidetaka FUNO: Leader
Deputy Director,
Livestock and Horticulture Division,
Agricultural Development Cooperation Department,
Japan International Cooperation Agency



- (2) Mr. Tetsuro BEPPU: Feeding Management
Deputy Director,
Experiment Support Division,
Technology Department,
National Livestock Breeding Center
- (3) Mr. Makito TOYAMA: Reproduction and Breeding / Artificial Insemination
Staff,
Livestock Breeding Division,
Kumamoto Station,
National Livestock Breeding Center
- (4) Mr. Chiaki KATAI: Program Evaluation
Staff,
Livestock and Horticulture Division,
Agricultural Development Cooperation Department,
Japan International Cooperation Agency

3-2. Chilean side

- (1) Mr. Ivan DAVIS : Leader
Professional of Technical Support,
Regional Secretariate of Agriculture
- (2) Dr. Wolfgang STEHR : Feeding Management
Professor,
Institute of Zootechnique,
Faculty of Veterinary Science,
Universidad Austral de Chile
- (3) Dr. Mario MARTINEZ: Reproduction and Breeding / Artificial Insemination
Professor,
Institute of Animal Reproduction,
Faculty of Veterinary Science,
Universidad Austral de Chile
- (4) Mrs. Cecilia ROJAS: Program Evaluation
International Cooperation Coordinator,
Studies and Agrarian Policies Bureau,
Ministry of Agriculture
- (5) Dr. Patricio PEREZ: Program Evaluation
Program Coordinator
International Cooperation Agency

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4. Schedule of the Evaluation

Date & Time	Activities	Japanese Eva. Team	Chilean Eva. Team
16/July(Tue) AM PM	Courtesy call to MINAGRI and AGCI Courtesy call to SEREMI and Xth GORE	○	
17/July(Wed) AM PM	Courtesy call to UACH and CENEREMA 1 st Joint evaluation committee meeting (Method of evaluation) Meeting with CENEREMA	○	○
18/July(Thu)	Presentation of the Project activities in each fields by the counterparts	○	○
19/July(Fri)	Field survey to Breeder, SAGO and CAFRA	○	○
20/July(Sat)	Field survey to Mafil model milk collecting center and dairy farmers	○	○
21/July(Sun)	Preparation of draft evaluation report	○	○
22/July(Mon)	2 nd Joint evaluation committee meeting (Draft evaluation report)	○	○
23/July(Tue)	Discussion of evaluation report	○	○
24/July(Wed) AM PM	3 rd Joint evaluation committee meeting (Signing of evaluation report) Joint Coordinating Committee meeting (Signing of the M/M)	○	○

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II. OUTLINE OF THE PROJECT

1. Background of the Project

Agriculture, forestry and fishery are important sectors in Chile and amount to 9% of GDP (16% of the working population). Wild grassland amounts to 76% of the total agriculture land because of strict natural conditions. It is important to promote dairy industry from viewpoints of poverty alleviation as well as regional development, land reservation and utilization.

Another important situation to consider is that the national dairy production is supported by the contribution of Xth Region, which accounts to more than 65% of milk supply to dairy industry; in the same sense, most of dairy farmers are located in this region, specially small-scale dairy farmers, whose productive contribution is currently low. The small-scale dairy farmers (with less than 100,000 ℓ of annual milk production) are approximately 85% of the total dairy farmers and contribute to 14% of milk supply at plants. Xth region, where dairy farming is suitable and main industry, is considered one of the poverty areas. Therefore, the improvement of productivity of dairy farming and profit stability has become an urgent major issue.

Under such circumstances, Japanese Government received the official request for technical cooperation from Chilean Government to establish the CENEREMA in order to develop and promote appropriate technology for small-scale dairy farmers in Xth region.

According to the request, JICA dispatched several missions to study the proposal further more in detail and to draw up an overall plan. Both Governments signed the R/D in 1998, and the Project began at the period of five years starting from October 15th, 1999.

2. Summary of the Project

The Project is designed as follows in the R/D signed in December 9, 1998.

2-1 Objectives of the Project

(1) Overall Goal

Increasing cattle productivity at small-scale dairy farmers mainly Xth region

(2) Project Purpose

Developing and promoting appropriate technology for animal reproduction and animal feeding / management at the farmer's level.

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2-2 Outputs of the Project

- (3) Training of specialists for animal reproduction and animal feeding / management technology
- (4) Improvement and extension of appropriate animal reproduction and animal feeding / management technology at the farmer's level
- (5) Improvement of breeding value of the *Overo Colorado / Overo Negro* sires

2-3 Activities of the Project

(1) Artificial Insemination (AI)

- a. Survey and monitoring of the practical use of AI
- b. Educational training course of AI for farmers
- c. Training course and refresher course of AI

(2) Feeding and Management

- a. Survey and monitoring of dairy farming in Xth region
- b. Execution of extension and educational training for farmers for feeding / management of dairy cattle
- c. Establishment of the recording system of individual milk yield and reproduction in a herd
- d. Establishment of milk quality-control system and its utilization by small-scale dairy farmers

(3) Reproduction and Breeding

- a. Survey and monitoring of the breeding system and breeding value of the *Overo Colorado / Overo Negro* breeding farms
- b. Establishment of the sire production system using Embryo Transfer techniques

III. PROJECT DESIGN MATRIX

The PDM was revised by the Project and the Joint Evaluation Committee through discussion according to current situation. Outputs and verifiable indicators of the Project were modified to clarify the direction of each activity.

The proposed PDM is attached as ANNEX 1.

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IV. RESULTS OF THE EVALUATION WITH FIVE CRITERIA

Based on the evaluation survey regarding the achievement of the Project, the Project was evaluated in terms of the five criteria as follows.

1. Relevance

Overall Goal of the Project is set as the increasing cattle productivity at small-scale dairy farmers mainly in Xth region.

In Chile, it is important to promote dairy industry from viewpoints of poverty alleviation as well as regional development, land reservation and utilization. On the other hand, domestic prices for fresh milk paid to farmers have fallen for a reason of increased international competition. There are no domestic price supports for milk or dairy products. Imported milk and dairy products pay general tariff enforce to the whole imported products.

Under the circumstances, the improvement of productivity for small-scale dairy farmers has been one of the priority issues for the government in order to support small-scale farmers and develop dairy industry, mainly in South Region including Xth Region, as described in the State Policy for Chilean Agriculture (2000-2010). Under this document, Central and Regional Government has been taking several activities for small-scale dairy farmers through the related institutions such as INDAP, INIA, SAG, SEREMI and Xth GORE.

JICA places higher priority in its cooperation in the fields of regional economic development as an important task in Chile, and this matches to the significance of the Project's outputs.

The Project is also found to be relevant to the needs of beneficiaries. Milking cows in Chile have traditionally been dual purpose breeds for milk and meat, mainly *Overo Negro* and *Overo Colorado*. This cattle is suitable for small-scale dairy farmers in Xth region in the respects of their feeding style and needs. Improvement of productivity of *Overo Negro* and *Overo Colorado* can provide an increasing income for small-scale dairy farmers.

Therefore, it can be said that the goal of the Project is highly relevant to the policy of Chilean Government as well as the needs of beneficiaries.

2. Effectiveness

The major achievements of the Project activities as of July, 2002 are summarized below and the detail explanations are in ANNEX 2

2-1. Artificial Insemination

- (1) Artificial insemination has operated in 46 milk collecting center in Xth Region as of March 2002. CENEREMA is collecting the record of artificial insemination, which is necessary for reproduction control of farmer's cattle, from small-scale dairy farmers through artificial insemination technicians. The recovering rate is not so high because of lack of cooperation with

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artificial insemination technicians and farmers, though it has been improving recently.

- (2) Training of Artificial Insemination to farmers was held 52 times from 2000 to 2001. 1,096 farmers participated in this training. Moreover, training materials (textbooks) for artificial insemination technique were prepared and training course was held 12 times for 136 artificial insemination technicians. Re-training course for inseminators was also held twice for 127 inseminators.
- (3) In 47 milk collecting centers, 714 small-scale dairy farmers (33% of total dairy farmers) accepted artificial insemination and 7,613 dairy cattle (25% of total dairy cattle) were inseminated in 2001. It is expected that farmer's knowledge on artificial insemination have been improved and artificial insemination has been extending in milk collecting centers gradually. However, some problems are remained for further extension of artificial insemination. Dairy farmers do not always have confidence to artificial insemination because some inseminators have not been skillful yet; small-scale dairy farmers are short of basic knowledge on artificial insemination. For further extension on artificial insemination, more effort should be made for training and re-training on artificial insemination technique. Materials for training need constant improvement.

2-2. Feeding Management

- (1) The field situation of feeding management at farmer's level, including the milking hygiene control, has been surveyed and analyzed through questionnaire and interviews with 34 farmers in Xth region. According to the results of the survey, training course of feeding management technology of dairy cattle has been implemented. Technicians of all milk collecting centers in Xth region participated in training course of feeding management. It is found that the growth rate of dairy cattle is improved in some monitoring farmers.
- (2) Technology for hygiene control of milking has been transferred and utilized. Technicians of all milk collecting centers in Xth region and 30% of dairy farmers in 4 model milking centers participated in training course of milking hygiene control. And milk control system has been established and bacterial test and quality control have been enabled at laboratories in 4 model milking centers. The above technology is useful for decreasing bacterial count in milk. In one model milk collecting center, the average number of bacteria in milk decreased to less than 100,000 per ml.

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2-3. Reproduction and Breeding

- (1) *Overo Negro* and *Overo Colorado* have been breeding by embryo transfer technology. These cattle are adapting in the climate of Chile and suitable for feeding management and needs of small-scale dairy farmers as dual purpose breeds for milk and meat. And, the purebreed *Overo Negro* and *Colorado* are rare, because the large numbers of them have been crossed with imported Holstein Friesian. In this sense, the number of bulls and donors for planned mating of candidate bull production is limited. So embryo transfer technology is an effective method to produce candidate bulls with certainty.
- (2) Embryo transfer system is well programmed according to the standard procedures and embryo transfer technology has been appropriately transferred to the counterparts in CENEREMA. Bulls and donors for planned mating of candidate bull production are selected in cattle which has superior performance within 25% of Holstein Friesian. 12 calves were produced by embryo transfer and 4 candidate bulls are selected. Their weight and height are monthly measured for checking whether the rising ability and the growing rate are well. The collection of semen will start in August 2002 for genetic evaluation by Progeny Test. The standard of selection of candidate bulls will be necessary.
- (3) Embryo transfer technology as a system to produce sire, has been done correctly. However, the number of sire produced up to now is not enough to select candidate bulls. The efficiency of this technology could be improved if the following problems are resolved; unreliable cow response to superovulation, low embryo quality and low pregnancy rate after embryo transfer. The diffusion of *Overo Negro* and *Overo Colorado* breeds by embryo transfer technique has important worldwide implications in relation to preserving this genome before disappearing completely.

2-4. Demonstration in model milk collecting center

- (1) Milking hygiene control and reproductive training have been implemented in 4 model-milk collecting centers to demonstrate technicians how to carry out training courses for farmers. And feeding management and forage production training courses were held for all technicians who are in charge of guidance for small-scale dairy farmers in Xth region. And, individual guidance, such as flaming of udder hair and improvement of sanitation of milk churn has been implemented for technicians.
- (2) Milk collecting centers are expected to play a main role of extension for small-scale dairy farmers. To sustain and strengthen their activities, milk collecting centers need to organize and secure their own income.

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3. Efficiency

The inputs from the Japanese and Chilean sides are summarized in ANNEX 3-5.

3-1. Inputs from Japanese side

(1) Dispatch of Japanese Experts

Timely assignment of long-term experts in 5 fields on Chief Advisor, Project Coordinator, Artificial Insemination, Feeding and Management, Reproduction and Breeding has facilitated the smooth implementation of the Project, complemented by the dispatch of 9 short-term experts in the above and other fields.

(2) Acceptance of counterpart personnel for training in Japan

A total of 15 counterpart personnel have finished their trainings in Japan. Counterpart training was effectively organized with close coordination with the progress of the Project's activities.

(3) Provision of equipment

Equipment for the Project was carefully selected taking CENEREMA's capability into consideration. The equipment provided has been working properly and maintained.

(4) Linkage with other cooperation scheme

Previously, UACH has cooperated with JICA in the implementation of research cooperation in the field of animal reproduction. This earlier work has paved the way and facilitated the current activities in this field.

3-2. Inputs from Chilean side

(1) Assignment of the counterpart personnel

Assignment of counterparts for the Project has not been sufficient yet. The lack of counterparts is still affecting some Project's activities, especially in the field of feeding management

(2) Budget allocation for the Project operation

Chilean side has secured the budget for the assignment of administrative staff, domestic telephone charges, water service fees, electricity fees, facility management and maintenance costs, etc. However, CENEREMA has not had its own budget yet as agreed.

4. Impact

The Project impact is difficult to be seen while the Project is running; the following observation can be made from the evaluation.

4-1 Institutional Impact

CENEREMA was organized for implementing the Project, based on the declaration of UACH. CENEREMA is expected to make a main role to assist small-scale dairy farmers even after the Project terminated, in cooperation with the related institution such as MINAGRI (SEREMI, INDAP, SAG, INIA), Xth Gore and UACH (CIA, IRA, IZ).

4-2 Technical Impact

Milking ability test implemented by the Project is the first trial as milk yield control program for *Overo Negro* and *Overo Colorado* especially for small-scale dairy farmers. It is expected that this program will enable to select the better cows based on the reliable date and contribute to the genetic improvement of milking cow in small-scale dairy farmers.

Weighing tape, which can estimate cattle's weight by taking its chest girth measurement, was developed for *Overo Negro* in the Project. Small-scale dairy farmers are expected to control feeding and reproduction of cattle without difficulty by using this tape.

4-3 Economic and Financial Impact


Though it is difficult to see economic and financial impact at this stage directly, it is expected that the improvement of milk quality and cattle productivity will contribute to increasing the income in small-scale dairy farmers.

4-4 Environmental Impact

Embryo transfer technology is expected to adapt using effectively for not only breeding, but also for reservation of rare genetic resources before disappearing completely.

4-5 Socio-cultural Impact

CENEREMA had dispatched third-country experts to Nicaragua and El Salvador in the field of animal reproduction and management. It is expected that CENEREMA will be a core institution on this field in South and Central America.

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5. Sustainability

5-1 Institutional Aspects

CENEREMA is now organized for implementing the Project, based on the declaration of UACH. The Board of Directors has not discussed yet to make CENEREMA sustain and strengthen as a permanent organization. The Committee sees that there is much doubt as to whether CENEREMA will sustain after the Project finishes.

5-2 Financial Aspects

Though Chilean side has secured the necessary budget and operating fund carrying out the Project through UACH, the Committee sees some difficulties in allocation of necessary budget for assignment of necessary staffs and maintenance of equipment after the end of the Project.

5-3 Technical Aspects

Technology has been appropriately transferred to the counterparts. The Committee is confident of technological sustainability as far as the trained counterparts remain in the posts they hold now. Transfer of technology program to small-scale dairy farmers will continue to be undertaken by INDAP, SAG INIA and ACOLECHE.

V. CONCLUSION

The Committee has observed that the Project is now effectively going on and is expected to achieve outputs in each activity. The Project purpose still has relevance to Chile government's policy for small-scale farmers and dairy industry. Therefore, as there are still 2 years of Project period, Chilean counterparts and JICA experts should continue their best efforts to complete the Project activities within the term of cooperation in consideration of the following recommendations.

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VI. RECOMMENDATIONS

The following issues and necessary measures are recommended by the Committee to both Governments in order to further develop and sustain the Project.

- (1) It is stated in the Record of Discussions that the Government of Chile will implement the Project in cooperation with the Government of Japan. For the success of the Project, it is virtually important that the Chilean side should play a main role and make efforts as an owner of the Project.
- (2) Appropriate technology for small-scale dairy farmers has been introduced and extended via model milk collecting centers in the Project. Milk collecting centers are expected to play a main role of extension for small-scale dairy farmers. For the achievement of Project Purpose, Central and Regional Government should extend the major outputs of the Project to other milk collecting centers in Xth region, considering financial as well as technological supports. In that case, it will be indispensable to have a close relationship with the related institutions such as MINAGRI (SEREMI, INDAP, SAG, INIA), Xth Gore and UACH (CENEREMA, CIA, IRA, IZ).
- (3) CENEREMA is now organized for implementing the Project, based on the declaration of Austral University. In order to sustain and strengthen the Project's organization, CENEREMA needs to operate as permanent organization even after the Project terminated. Therefore, an authorized committee, which consists of the related institutions in Central and Regional Government, should be established to formulate the plan for a relevant organization of CENEREMA in technological, institutional and financial aspects (i.e. establishment of a firm institution with its own purpose and budget like Chiquihue Foundation). Fine solution will be found out by the final evaluation of the Project in 2004.
- (4) Economic incentive is one of the key to extend appropriate technology for small-scale farmers effectively. On the other hand, domestic prices for fresh milk paid to farmers have fallen due to increasing competition, it is important to consider following measures in the Project's activities.
 - a. To provide financial advice to help small-scale farmers.
 - b. To improve milk quality and animal sanitary condition.
 - c. To consider winter milk production depending farms conditions.
- (5) Though Chilean side assured to allocate sound budget, including personnel expense for the employment of full-time counterpart in CENEREMA when Japanese Management Consultation Team visited Chile in 2000, the lack of Counterparts is still affecting some Project's activities. UACH should allocate sound budget to CENEREMA directly, not from CIA, and employ full-time counterparts in the field of feeding management immediately. In addition,

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counterparts should always attend and learn together when the Japanese Experts visit the model milk collecting centers and model dairy farmers for technical assistance.

- (6) In order to coordinate the Project's activities more effectively, it is recommended to have a close communication among the related institutions. Joint meetings are the useful instruments to identify problems and solutions. Especially, the General Project Meeting and Project steering Committee, which were mentioned in the Minutes of Discussions agreed in 2000, should be held regularly.
- (7) It is necessary to accurately monitor the indicators on the extension of artificial insemination and the bacterial number in milk at model milk collecting centers and monitoring dairy farmers. The collecting method of artificial insemination records from small-scale dairy farmers through inseminators is needed to change from document to e-mail if necessary, and CENEREMA should establish database of the records to renew the standard of reproduction regularly.
- (8) It is difficult to complete progeny test of bulls in the term of the Project because it requires approximately 8 years. The schedule during and after the project was clarified. In order to implement progeny test smoothly, the cooperation of the related institutions such as COOPRINSEM and CAFRA will become important. And CENEREMA should introduce PCR method, and collect data of milking ability test and progeny test exclusively.
- (9) Chilean side has already established the Committee to discuss a new central laboratory for milk quality test. The Committee should consider the roles and demands of the central laboratory carefully.
- (10) CENEREMA should hold international seminar to extend the outputs of the Projects to countries in South and Central America by the end of the Project in cooperation with JICA, based on Japan - Chile Partnership Program.

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**PROJECT DESIGN MATRIX (PDM) FOR THE IMPROVEMENT OF PRODUCTIVITY FOR THE SMALL-SCALE DAIRY FARMERS PROJECT
(CHILE) Oct.15, 1999-Oct.14, 2004**

Target area : Xth region in Chile Narrative Summary	Target group : Small-scale dairy farmers Verifiable Indicators	PDM3 (July 24, 2002) Means of Verification	Important Assumptions
Overall Goal			
Increasing cattle productivity at small-scale dairy farmers mainly in Xth region	<ol style="list-style-type: none"> The average milk yield per hectare in CAL in Xth region, is increased in 50 % before 2009. The average bacterial count of milk produced in CAL in Xth region is under 300,000/ml before 2009. 	<ol style="list-style-type: none"> Report of INDAP Report of ACOLECHE 	The policy for small-scale dairy farmers' development is maintained.
Project Purpose			
Developing and promoting appropriate technology for animal reproduction and animal feeding/management at the farmer's level	<ol style="list-style-type: none"> The appropriate AI technique is diffused in 80% of CAL in Xth region before 2004 Over 80 % of correct milking hygiene technique is practiced and bacterial counts of milk are under 50,000/ml at 8 monitored farms in 4 model CAL before 2004. Production/Reproduction recording is utilized for individual selection and herd reproductive improvement in 10 % of farms in 4 model CAL before 2004. An average of two thousand doses of semen per candidate bull, produced by ET technology, selected for AI, is frozen until 2004. 	<ol style="list-style-type: none"> Report of CIA Report of milk laboratory Survey at monitoring farms Report of CENEREMA/CIA 	<p>Sufficient budget is secured for the extension.</p> <p>Milk price does not change drastically.</p> <p>Climate is stable, does not affect Milk yield.</p> <p>The plaque or epidemic diseases of cattle are not accidentally prevalent.</p> <p>CAL technicians cooperate with the Project.</p> <p>Forage production is increased.</p> <p>Candidate bulls produced by ET are not incapacitated by pathology that can be controlled.</p>
Outputs			
<ol style="list-style-type: none"> The knowledge on AI of small-scale dairy farmers is improved and well-capacitated AI technicians are prepared. The knowledge on feeding/management of technicians and small-scale dairy farmers are improved and appropriate technologies are demonstrated in model CAL. Improvement of breeding value of the Overo Colorado/Overo Negro sires. 	<ol style="list-style-type: none"> 1-1. Small-scale dairy farmers of 80% of CAL in Xth region receive the guidance on AI from CENEREMA before 2004. 1-2. AI technicians of 80% of CAL in Xth region are trained, qualified by CENEREMA and participated in refresher course before 2004. 2-1. Knowledge on feeding/management of professionals and technicians of CAL in Xth region is standardized before 2004. 2-2. 80% of farmers in 4 model CAL receive the guidance on feeding/management before 2004. 2-3. The recording and evaluation of cow's individual milk yield and herd reproduction is demonstrated in 10% of farmers in 4-model CAL before 2004. 2-4. The laboratories test bacterial counts in milk produced by each farmers of 4 model CAL at least once a month before 2004. 3. Fifteen candidate bulls that are produced by ET technology are selected for AI until 2004. 	<ol style="list-style-type: none"> Report of CENEREMA Report of CENEREMA and 4 model CAL Report of CENEREMA 	<p>CAL technicians cooperate with the Project.</p> <p>The budget for the management of milk quality test laboratories is assured.</p> <p>The typical breeds of Overo Negro/Colorado for ET in breeding farms are available.</p>
Activities	Inputs		
<ol style="list-style-type: none"> Artificial Insemination (AI) <ol style="list-style-type: none"> Survey and monitoring of the practical use of AI Educational training course of AI for farmers Training course and refresher course of AI Feeding and Management <ol style="list-style-type: none"> Survey and monitoring of dairy farming in Xth region Execution of extension and educational training for farmers for feeding/management of dairy cattle Establishment of the recording system of individual milk yield and reproduction in a herd. Establishment of milk quality-control system and its utilization by small-scale dairy farmers. Reproduction and Breeding <ol style="list-style-type: none"> Survey and monitoring of the breeding system and breeding value of the Overo Colorado/Negro breeding farms. Establishment of the sire production system using Embryo Transfer technique (ET) 	<p><u>Japanese side</u></p> <p>Dispatch of Japanese experts Provision of machinery and equipment Training of Chilean personnel in Japan Dispatch of survey missions when necessity arises</p>	<p><u>Chilean side</u></p> <p>Arrangement of counterpart Personnel and administrative personnel Provision of land, buildings and facilities Provision of running expenses of the Project</p>	<p>The trained personnel continue to work in the Project.</p> <p>The genetic resources for Embryo Transfer do not disappear</p> <hr/> <p>Pre-conditions</p> <p>Small-scale dairy farmers in Xth region cooperate in the Project.</p>

CAL: Milk collecting centers INDAP: Agricultural Development Institute ACOLECHE: Milk collecting centers Association of Xth region
CIA: Artificial Insemination Center CENEREMA: National training Center for Animal Reproduction and Feeding/Management

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ANNEX 2 Attainment of Activities

1.- Artificial Insemination (A.I.)

PLAN OF OPERATIONS		EXPECTED EFFECT	PROGRESS AND RESULT	ACHIEVEMENT GOAL AND PROBLEM
ITEM	ACTIVITIES			
1	Survey and monitoring of the practical use of A.I.			
1.1)	Survey and monitoring of the practical use of A.I. on A.I. Center and Milk collecting center (hereinafter referred as CAL), and about activities of inseminators	Understanding the troubles that could stop the increase on the percentage of farmers and cows being inseminated in each organization (CAL).	Understanding the actual circumstances of A.I. At farmers level Monitoring of practical use of A.I. (Progress condition = 3)	Understanding the circumstances of A.I. at the Farmers Level Detected problems - Skill and eagerness of inseminator - Communication between Farmers and Inseminator - Cost of the Inseminator service - Lack of basic knowledge of farmers for A.I.
1.2)	Survey and monitoring in the small scale dairy farmers (hereinafter referred as 'FARMERS') on A.I. field	Understanding the situations that could affect the percentage of cows inseminated inside the farms.	Monitoring of practical use of A.I. (Progress condition = 3)	The main factors are: - Fertility of the inseminator - Lack of the basic knowledge of farmers for A.I.
2	Educational training course of A.I. For FARMERS			
2.1)	Improvement of training material for A.I. Technique	All the farmers that assist to a Training course may receive and understand the Material	Distribution of training material (Manual, etc.) (Progress condition = 3)	Not all the farmers understand the Manual and the bulls catalogue completely
2.2)	Implementation of training course on basic knowledge's of A.I.	30 Training courses may be realized in the 15 CAL's that entered to the Program	Implementation of the technical training course (Progress condition = 3)	Distribution of training material (Manual, etc.)

Progress condition of each activity

- 4) The activity has been completed
- 3) The activity will be completed before the end of the Project

- 2) The activity has not started
- 1) The condition of the activity is less than condition 2

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PLAN OF OPERATIONS		EXPECTED EFFECT	PROGRESS AND RESULT	ACHIEVEMENT GOAL AND PROBLEM
ITEM	ACTIVITIES			
2.3)	Extension of the use of A.I. In FARMERS and CAL	Improvement on the number of farmers using A.I. Improvement on the number of CAL's having access to A.I. Services Improvement on the Percentage of farmers using A.I. On the CAL already in program	The number of farmers and the number of CAL was increased due to the implementation of 15 new Insemination Services in the same number of CAL. - The percentage of farmers using A.I. In the CAL already in Program is assumed to be the same than in previous times. (Progress condition = 3)	Increase in the number of farmers and CAL using A.I.
3	Training course and refresher course of A.I.			
3.1)	Implementation of training course and refresher course for A.I. Technician	Improvement on the number of A.I. Technicians and improvement of their technical skill	To realized 6 Training Courses and 1 Refresher course for A.I. Technicians (Progress condition = 3)	Implementation of technical training course and repletion of them.
3.2)	Preparation of training material	The Textbook and other material may be distributed to all the assistant to the training and refresher courses	Preparation of training material and distribution of the material (Textbook, etc.) (Progress condition = 3)	Distribution of training material (Textbook, etc.)

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2 Feeding and Management

PLAN OF OPERATIONS		EXPECTED EFFECT	PROGRESS AND RESULT	ACHIEVEMENT GOAL AND PROBLEMS
ITEM	ACTIVITIES			
2-1 Survey and monitoring of dairy farming in Xth region	1) Collection of data available 2) Survey in FARMERS 3) Analysis of data	The actual condition of the feeding and management(including milking hygiene) is understood and adequate plan of operation is elaborated.	The actual condition of the feeding and management(including milking hygiene) has been understood by having questioned 34 farmers on feeding /management and 8 farmers especially on milking hygiene and adequate plan of operation has been elaborated. (Progress condition : 4)	The actual condition of the feeding and management(including milking hygiene) is understood for elaborating adequate plan of operation.
	4) Monitoring of indicators in FARMERS and model CAL -Milk production -Bacteria count in milk -Somatic Cell count in milk -Fat kg in milk -Protein kg in milk and others	The effect of the activities is evaluated and more efficient activity is implemented by being analyzed the points to be improved.	Body weight and size of dairy cattle of 8 farmers in 4 provinces are being monitored. Information on milk quality and others are being collected from more CAL. (Progress condition : 3)	The indicators necessary for monitoring the effect of the activities is evaluated every 6 months. The activity is delayed because of the limited time convenience of personnel.
2-2 Execution of extension and educational training for farmers for feeding /management of dairy cattle	1) Guidance of techniques adaptable to FARMERS by implementing the courses with manual. (contents of guidance are forage production and conservation, feeding and management, and milking hygiene etc.)	Adaptable techniques for FARMERS on feeding/management (including milking hygiene) is extended by CAL technicians.	Milking hygiene and reproductive registration courses for FARMERS have been implemented in 4 model CAL with applicable manual to the area, to demonstrate the technicians how to carry out the course for FARMERS. 3 courses on feeding and management were held for all small scale dairy technicians of Xth region. (Progress condition : 3)	CAL technicians can implement courses on feeding/management(including milking hygiene) for FARMERS by themselves with useful manual after receiving the guidance of CENEREMA.
	2) Individual case guidance to FARMERS in model CAL	Know how of individual case guidance makes the courses for FARMERS more useful and applicable.	Individual case guidance, such as flaming of udder hair, improvement of sanitation of milk churn and feeding management of cows and calves have been done to improve the contents of courses (Progress condition : 3)	Adaptability of techniques for FARMERS is demonstrated and this case study improve the contents of courses.

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PLAN OF OPERATIONS		EXPECTED EFFECT	PROGRESS AND RESULT	ACHIEVEMENT GOAL AND PROBLEMS
ITEM	ACTIVITIES			
2-3. Establishment of recording system of individual milk yield and reproduction	1) Recording of individual cow's milk production and reproduction in FARMERS of model CAL	Information necessary for the evaluation of cow's milk production and herd reproductive condition is obtained.	8 FARMERS of 4 model CAL have been guided to register reproductive record of each cows (Progress condition : 3)	10% of FARMERS in model CAL get accustomed to record individual cow's milk production and reproduction.
	2) Establishment of evaluation system of individual cow's milk production and herd reproductive condition in model CAL	Individual cow's milking performance and herd reproductive condition is evaluated and necessary advice for the improvement is given to FARMERS for more efficient dairy production.	The seminar for technicians on productive and reproductive registration was held. 4 technicians of 4 model CAL are being guided how to evaluate reproductive condition of the herd. Milk production control program started in 4 model CAL by the personnel of genetic improvement division. (Progress condition : 3)	Individual cow's milking performance and herd reproductive condition is evaluated by CAL technicians in 10% of FARMERS in model CAL.
2-4. Establishment of milk quality control system and its utilization by small scale dairy farmers	1) Implementation of courses for technicians	Technicians of Xth region have correct and standardized knowledge on milk quality control that enables them to give adequate guidance to FARMERS.	3 courses on milk quality control were held for small scale dairy technicians of Xth region (Progress condition:4)	Technicians of Xth region get correct and standardized knowledge on milk quality control
	2) Advice for the sufficient function of model CAL's laboratories	FARMERS can get quick result of their milk quality that enable them to take quick action for the improvement.	The guidance are being given to 4 laboratories. 4 laboratory are functioning. (Progress condition : 3)	4 CAL laboratory function well with sufficient utilization by FARMERS.
	3) Study and decision on the establishment of central laboratory	The proper decision is made.	Preliminary study meeting was held. The decision is supposed to be made in October 2002. (Progress condition : 3)	The decision is made after the sufficient study on the establishment of central laboratory. In case of positive decision, sufficient function of laboratory is assured.

3

3. REPRODUCTION AND BREEDING

PLAN OF OPERATIONS		EXPECTED EFFECT	PROGRESS AND RESULT	ACHIEVEMENT GOAL AND PROBLEM	
ITEM	ACTIVITIES				
3-1	Survey and monitoring of the breeding system and breeding value of the Overo Colorado / Negro breeding farms	1) Survey and monitoring of the breeding system	Acquirement of the current situation of the breeding system of Overo Colorado / Negro	11 breeding farms of Overo Negro and Overo Colorado, 3 pedigree registration organizations, 4 milk control and milk analysis organizations and the Artificial Insemination Center (CIA) have been already investigated and the survey results were already reported as "Actual condition survey (2001, April, in Japanese)". (3)	The information on the breeding system of Overo Colorado / Negro was obtained and the objective at the start of the project was achieved.
3-2	Establishment of the sire production system using Embryo Transfer technique	1) Establishment of the sire production system	To establish the sire production system which is appropriate in Chile	The program to produce the sire was designed. But, actually, it takes 8 years at least to get the genetic evaluation of the proven sire by data analysis and collection of it. For this reason, it was suggested that the cooperation activities within 5 years in this JICA project is until the frozen semen production of the candidate bull. In other words, it was suggested that Chilean side would implement the activities after that by yourself. It has been already confirmed by The Japanese managing consultation team (2000, December)" (3)	The program of the sire production system using embryo transfer technique was designed and is running.
		2) Establishment of Embryo Transfer system	To establish the recovery and transfer system of embryos from donor cows.	The establishment of the Embryo transfer system was well programmed and developed, at present the personnel is working well. the counterpart personnel can do all procedures from superovulation to transfer of embryo on technically. (3)	The technique is working properly.
3-2	Establishment of the sire production system using Embryo Transfer technique	3) Implementation of sire production			
		a) Establishment of the criteria	To use for selection of donor by the criteria created	Two criteria was set up for selection of donor cows to the planned mating for the candidate bull production. One is to select animals under / within 25% of Holstein Breed, another is to select donors with the superior performance in the breeding farm. (4)	The criteria was made up for selection of donor and are.
		b) Selection of donor cows in breeding farms	To select donor cows using for embryo recovery	36 donor cows were selected. The information on pedigree, milking and reproductive performance of donors was collected. (3)	The number of the pure Overo breeds is getting lower and they are becoming old.
		c) Selection of sires in CIA	To select sires using for embryo recovery	17 sires were selected and 300 doses of frozen semen are obtained. (3)	Sires have been selected.
		d) Collection of embryos from donors	To obtain an adequate number of embryos to transfer	64 cows were flushed and 144 embryos out of 370 ova were obtained. (3)	The number of embryos obtained is lower than expected.
		e) Transfer of embryos to recipients	To transfer the embryos recovered from donors to recipients.	85 embryos recovered were transferred to recipients and 23 out of 78 recipients were pregnant. (3)	The number of pregnant recipients have been lower than expected
		f) Production of candidate bulls	To produce calves born from embryo transfer to be bulls at the AI center.	12 calves were born by embryo transfer and 4 candidate bulls were obtained. (3)	The number of calves obtained have been lower than expected.
		g) Direct Test: Raising ability of candidate bull and sister	To prove raising ability of candidate bull.	4 candidate bulls and 6 sisters are raising and evaluated the raising ability. (3)	It is necessary to continue the measurement of candidate bulls.
	h) Collection and production of frozen semen	To produce frozen semen for distribution of the test mating.	The collection and freezing of the semen has not been done yet because the age of the calves are still young. It will start from the coming August as scheduled. (2)	it is not yet start.	

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yes

J.F.Y.	1999												2000												2001												2002					
Japanese Inputs	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6									
Long and Short Term Japanese Experts in Chile	15/10/1999-14/10/2001 Tsukasa Miyashita(Chief Advisor/Artificial Insemination)												15/10/1999-14/10/2001 Mami Yamada(Coordinator)												15/10/1999-14/10/2002 Satoshi Saito(Reproduction and Breeding)												16/05/2000-15/05/2003 Kazuhiwa Hosokawa(Feeding and Management)					
	10/04/2000-09/06/2000 Masaaki Iida(Artificial Insemination)						03/10/2000-02-12-2000 Mitsugu Sasano(In Milk Hygiene)						09/04/2001-25/05/2001 Hiroshi Saito (Artificial Insemination)						19/11/2000 - 28/12/2000 Mitsugu Sasano SASANO(In Milk Hygiene)						07/04/2002-06/06/2002 Masakazu INUI(Breeding for Cattle)																	
	10/04/2000-09/06/2000 Kazuya Sasaki(Reproduction and Breeding)						25/10/2000-09/12/2000 Kazuya Sasaki(Reproduction and Breeding)						09/04/2001-25/05/2001 Katsushi Minegishi (Progeny Test)																													
													03/10/2000-02-12-2000 Ken Nakabayashi(Feeding and Management)																													
Training of Chilean Counterpart	17/11-02-12 Enrique Villalobos (Introduction to the Livestock Activities)						08/05/2000-20/08/2000 Patricio Molina (Artificial Insemination)						01/02/2000-31/03/2000 Hector Uribe(Breeding for Cattle)						10/09/2001 - 26/10/2001 Ruben Pulido (Feeding and Management)						22/1/2002 - 20/2/2002 Eugenio Larson (Animal Breeding for Cattle)																	
	17/11-02-12 Fernando Wittwer (Introduccion a las actividades ganaderas en Japon)												01/02/2000-31/03/2000 Javier del Valle(Breeding for Cattle)						25/09/2001-02/12/2001 Carmen Shuler (Animal Breeding for Cattle)																							
	17/11-02-12 Eduardo Meersohn (Introduction to the Livestock Activities)												01/02/2000-31/03/2000 Carlos Jara(Artificial Insemination)						25/09/2001-02/12/2001 Carmen Shuler (Animal Breeding for Cattle)																							
	17/11-02-12 Jorge Oltra (Introduction to the Livestock Activities)												01/02/2000-31/03/2000 Hugo Ulloa(Milk Quality Control)						06/08/2001-02/12/2001 Manuel Ortiz (Embryo Transfer Technology)						7/2/2002 - 5/3/2002 Ricardo Monje (Milk Quality Control)																	
																									23/04/2001-12/08/2001 Ricardo Pena (Breeding and Artificial Insemination)																	
Donation of Machinery and Equipment	3 vehiculs, 6 computers, 7 TV, 2 Copy Machine 6 incubaters, 3 autclaves etc. Total 97 items US\$230,084=¥24,458,000												2 vehiculs, 1 tractor and accessory, Equipment for Laboratory Equipment of E.T. etc. Total 66 items US\$256,635.71=¥27,930,000												2 tractors and accessory, Equipment for A. I. etc. Total 11 items US\$120,410.52=¥16,092,000																	
Managing and Consultation Team													26/11-09/12/2000																													

yes

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Local Expenditure by JICA (15. Oct. 1999~)

JICA Local Cost	First Year 1999(JFY)	Second Year 2000(JFY)	Third Year 2001(JFY)	Forth Year 2002(Plan)	Contents
General Local Expenditure	2,489	5,384	4,811	4,000	Materialies, Traveling allowance for Japanese experts, Others
Expenditure for Extension	0	2,776	3,000	2,700	Technical Manual, Training course
Total	2,489	8,160	7,811	6,700	25,160

(thousand yen)

D

(1) Dispatch of Japanese Experts

Long-term Experts

Area of speciality	Name	Period of Dispatch
Chief Advisor/A.I.	Tsukasa MIYASHITA	1999.10.15~2001.10.14
Chief Advisor/A.I.	Koki KYAN	2001.11.26~2003.11.25
Project Coordinator	Mami YAMADA	1999.10.15~2001.10.14
Project Coordinator	Nobuhisa SUZUKI	2001.09.27~2003.09.26
Feeding and Management	Satoshi SAITO	1999.10.15~2002.10.14
Reproduction and Breeding	Kazuhisa HOSOKAWA	2000.05.16~2003.05.15

Short-term Experts

Area of speciality	Name	Period of Dispatch
Artificial Insemination	Masaaki IIDA	2000.04.10~2000.06.09
Reproduction and Breeding	Kazuya SASAKI	2000.04.10~2000.06.09
In Milk Hygiene	Mitsugu SASANO	2000.10.03~2000.12.02
Feeding and Management	Ken NAKABA YASHI	2000.10.03~2000.12.02
Reproduction and Breeding	Kazuya SASAKI	2000.10.25~2000.12.09
Artificial Insemination	Hiroshi SAITO	2001.04.09~2001.05.25
Progeny Test	Katsushi MINEGISHI	2001.04.09~2001.05.25
In Milk Hygiene	Mitsugu SASANO	2001.11.19~2001.12.28
Animal Breeding for Cattle	Masakazu INUI	2002.04.07~2002.06.06

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(2) Training of Chilean Counterpart

Training Area	Name	Period of Training or Study
Introduction to the Livestock Activities	Enrique VILLALOBOS	1999.11.17~1999.12.02
Introduction to the Livestock Activities	Fernando WITTWER	1999.11.17~1999.12.02
Introduction to the Livestock Activities	Eduardo MEERSOHN	1999.11.17~1999.12.02
Introduction to the Livestock Activities	Jorge OLTRA	1999.11.17~1999.12.02
Artificial Insemination	Patricio MOLINA	2000.05.08~2000.08.20
Animal Breeding for Cattle	Hector URIBE	2001.02.01~2001.03.31
Animal Breeding for Cattle	Javier DEL VALLE	2001.02.01~2001.03.31
Artificial Insemination	Carlos JARA	2001.02.01~2001.03.31
Milk Quality Control	Hugo ULLOA	2001.02.01~2001.03.31
Insemination	Ricardo PEÑA	2001.04.23~2001.08.12
Embryo Transfer Technology	Manuel ORTIZ	2001.08.06~2001.12.02
Feeding and Management	Ruben PULIDO	2001.09.10~2001.10.26
Animal Breeding for Cattle	Carmen SCHÜLER	2001.09.25~2001.12.02
Animal Breeding for Cattle	Eugenio LARSON	2002.01.22~2002.02.20
Milk Quality Control	Ricardo MONJE	2002.02.07~2002.03.05

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Utilize Condition of Machinery and Equipment

General Machinery and Equipment (more than 1.6million yen)

July 2002

Year	Number	Name (maker, Form)	Price	Quan	Instalation	Utility	state	Note
1999	I-11-1	Truck (Mercedez Benz, Sprinter 312D, 2500cc)	¥2,015,448	1	CENEREMA	A	A	
1999	I-11-2	Station Wagon (Toyota 4-Runner, 4WD, Automatick, 3378cc)	¥2,383,246	1	CENEREMA	A	A	
1999	I-11-3	Pick-up (Toyota Hilix Diesel, 2800cc, Double Cabin)	¥1,610,445	1	CENEREMA	A	A	
2000	I-12-1	Pick-up (Toyota Hilix Diesel, 2800cc, Double Cabin)	¥2,067,770	1	CENEREMA	A	A	
2000	I-12-2	Pick-up (Toyota Hilix Diesel, 2800cc, Double Cabin)	¥2,067,770	1	CENEREMA	A	A	
2000	I-12-3	Mini-bus (Mercedez Benz, MB140D2.9)	¥2,096,718	1	CENEREMA	A	A	
2000	I-12-4	Semen Injector Machine (Minitub 13020/013MPP133)	¥7,733,023	1	CIA	A	A	
2000	I-12-5	Tractor (New Holland TL80 FWD)	¥2,495,254	1	CAL LAS AVELLANOS	A	A	
2000	I-12-6	Nitrogen Tank (MVE XLC1370)	¥2,062,328	1	CIA	A	A	
2000	I-12-7	Tractor (Massey Ferguson 290/4)	¥2,490,503	1	CAL MAFIL	A	A	
2000	I-12-8	Tractor (Massey Ferguson 290/4)	¥2,490,503	1	FUNDO SAN MARTIN	A	A	
2000	I-12-9	Grass seeder (SEMEATO TDAX 2500)	¥1,899,614	1	CAL MAFIL	A	A	
2000	I-12-10	Grass seeder (SEMEATO TDAX 2500)	¥1,899,614	1	CAL SANTA BARBARA	A	A	

July 2002

General Machinery and Equipment (more than 100 thousand and less than 1.6 million yen)

Year	Number	Name (maker, Form)	Quan.	Disposal	Instalation	Utility	state	Note
1999	K-11-4	P.C. (COMPAQ PRESARIO 5443, 64MB, 15")	6	0	6	A	A	
1999	K-11-5	Note Book P.C. (IBM THINK PAD 390 300, Pentium Celeron 32Mb, 3.2Gb)	2	0	2	A	A	
1999	K-11-6	DATA/VIDEO Projector (EPSON ELP-5500C)	2	0	2	A	A	
1999	K-11-7	Color T.V. (SONY WEGA 34")	1	0	1	A	A	
1999	K-11-8	Color T.V. (SONY WEGA 29")	2	0	2	A	A	
1999	K-11-9	Degital Video Camera (SONY DCR-TRV110, DIGITAL 8)	2	0	2	A	A	
1999	K-11-10	Copy Machine (RICOH FT-4822)	1	0	1	A	A	
1999	K-11-11	Copy Machine (SHARP SF-1014)	1	0	1	A	A	
1999	K-11-12	FAX (RICOH 1700)	1	0	1	A	A	
1999	K-11-13	Incubater (BINDER BD53)	6	0	6	A	A	
1999	K-11-14	Microscope (Sargent Welch)	3	0	3	A	A	
1999	K-11-15	Autclave (Amsco HACH2460-02)	3	0	3	A	A	

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1999	K-11-16	P.C. (Pentium III, 8Gb)	2	0	2	A	A
1999	K-11-17	P.C. OS (WINDOWS N.T.40)	1	0	1	A	A
1999	K-11-18	Note Book P.C. (Toshiba K-6, 4.3Gb, 32Mb, 400Mhz)	3	0	3	A	A
1999	K-11-19	Desk top P.C. (Icono, Pentium III, 500Mhz, 4Gb, 64Mb)	2	0	2	A	A
2000	K-12-11	Tractor Fertilizer (Rondini SR810S)	1	0	1	A	A
2000	K-12-12	Tractor Sprayer (Projet Mixer660)	1	0	1	A	A
2000	K-12-13	Desk top P.C. (System Pentium III 700)	1	0	1	A	A
2000	K-12-14	Incubater (Binder)	2	0	2	A	A
2000	K-12-15	Water Bath (Kyoto)	1	0	1	A	A
2000	K-12-16	Autclave (Oppici VC/47-60/E.L.)	1	0	1	A	A
2000	K-12-17	Tractor Wagon (Stara Tornado 600P)	1	0	1	A	A
2000	K-12-18	Echographic Sistem (Pie Medical 240 PARUS)	1	0	1	A	A
2000	K-12-19	Desk top P.C. (Compaq Presario 7476)	1	0	1	A	A
2000	K-12-20	Echographic Transductor (Pie Medical 240 PARUS)	1	0	1	A	A

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2000	K-12-21	Meter Guide for Echographic (Pie Medical 240 PARUS)	1	0	1	A	A	
2000	K-12-22	Note Book P.C. (Compaq Presario 17XL366)	1	0	1	A	A	
2000	K-12-23	Sterilization Kettle (Binder)	3	0	3	A	A	
2000	K-12-24	Cattle Scales (ICONIX FX-1)	1	0	1	A	A	
2001	K-13-25	Tractor Fertilizer (Jan Lancer 600)	1	0	1	A	A	
2001	K-13-26	Cattle Scales (ICONIX FX-1)	4	0	4	A	A	
2001	K-13-27	Tractor Sprayer (Hardi NK600)	1	0	1	A	A	
2001	K-13-28	Grass Seeder (Tatu RC2-1700)	1	0	1	A	A	
2001	K-13-29	Tractor Fertilizer (Stara Tornado 600P)	1	0	1	A	A	
2001	K-13-30	Grass Harvester (BREUER CFL 150)	1	0	1	A	A	
2001	K-13-31	Grass Harvester (BREUER CFL 150)	1	0	1	A	A	

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Japanese-Expert Item (more than 100thousand and less than1.6million yen)

July 2002

Year	Number	Name (maker, Form)	Quan.	Disposal	Instalation	Utility	state	Note
1999	K-11-1	P.C. (Sharp MN-395-C33, 4.3GB, 64MB)	1	0	1	A	A	
1999	K-11-2	P.C. (Sony Vaio PCV-R60V7, HDD:13GB, RAM:64MB)	1	0	1	A	A	
1999	K-11-3	P.C. (Mac Powerbook G3, 6GB, 64MB)	1	0	1	A	A	
1999	K-11-4	DEGITAL VIDEO CAMERA (Sony, DCR-TRV10)	1	0	1	C	A	
1999	K-11-5	P.C. (SONY PCG-XR75, 18.1GB, 64MB)	1	0	1	C	A	
1999	K-12-1	Program Freezer (FHK, FA3301, -40°C~+30°C)	1	0	1	B	A	
1999	K-12-2	Paraffin Extender (Sakura, PS-53, 35~70°C)	1	0	1	B	A	
1999	K-12-3	Mini CO2 Incubater (FHK, FA3010, 15 ℓ)	1	0	1	B	A	
1999	K-12-4	Cell Culture Transporter (FHK, FA4800, 37~39°C)	1	0	1	A	A	
2000	K-12-5	Note Book P.C. (Toshiba Dynabook, 12Gb, 64 Mb)	1	0	1	A	A	
2000	K-12-6	Note Book P.C. (NEC LAVIE C)	1	0	1	C	A	

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AREA	ESPECIALITY	BELONGING	NAME	PERIOD
Artificial Insemination	Aritificial Insemination	Director CENEREMA/ Director CIA	Jorge OLTRA	1999.10.15~
Artificial Insemination	Aritificial Insemination	CIA	Jorge EHRENFELD	1999.10.15~
Artificial Insemination	Aritificial Insemination	CIA	Patricio MOLINA	1999.10.15~
Artificial Insemination	Aritificial Insemination	CIA	Javier del VALLE	1999.10.15~
Artificial Insemination	Aritificial Insemination	CIA	Carlos JARA	1999.10.15~
Artificial Insemination	Aritificial Insemination	SAG	Ricard PEÑA	1999.10.15~
Artificial Insemination	Aritificial Insemination	CIA	Eugenio LARSON	1999.10.15~
Artificial Insemination	Aritificial Insemination	CIA	Elizabeth STANGE	1999.10.15~
Feeding and Management	Feeding and Management	UACH	Ruben PULIDO	2000.09.15~
Feeding and Management	Milk Quality	INDAP	Hugo HULLOA	2001.04.30~
Feeding and Management	Milk Quality	INDAP	Ricardo MONJE	2001.04.30~
Reproduction/Breeding	Embryo Transfer	UACH	Renato GATICA	1999.10.15~
Reproduction/Breeding	Breeding	CIA	Jorge EHRENFELD	1999.10.15~
Reproduction/Breeding	Embryo Transfer	UACH	Jorge CORREA	1999.10.15~
Reproduction/Breeding	Embryo Transfer	UACH	Carmen SCHÜLER	1999.10.15~
Reproduction/Breeding	Embryo Transfer	CIA	Manuel ORTIZ	1999.10.15~

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ANNEX 5 INPUTS OF CHILEAN GOVERNMENT SIDE TO THE PROJECT

Actualized: 22/07/02

J.F.Y.	1999												2000												2001											
Chilean input	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3						
Counterparts	<p>15/10/1999 Jorge Oltra(Artificial Insemination)</p> <p>15/10/1999-14/10/2001 Jorge Ehrenfeld(Animal Breeding)</p> <p>15/10/1999-14/10/2002 Renato Gatica(Animal Reproduction)</p> <p>15/09/2000 Ruben Pulido(Feeding and Management)</p>																																			
Land and Infrastructure	<p>CIA Office</p> <p>March CAL Santa Barbara</p> <p>April CENEREMA Office</p> <p>September CAL Mafil</p> <p>September CAL Los Avellanos</p> <p>September CAL Trauco</p>																																			
Budget of the Project	<p>Region Government \$75.000.000 (Construction of CENEREMA)</p> <p>Agriculture Ministry(Training and diffusion Finance)</p> <p>SAG \$4.962.544</p> <p>SAG - ACOLECHE \$3.309.460</p> <p>SEREMI \$2.400.000</p> <p>INDAP \$8.931.562</p> <p>Aporte CIA \$29.000.000</p> <p>TOTAL \$123.603.566</p>																		<p>Region Government \$25.000.000 (Construction Training Center)</p> <p>Agriculture Ministry(Training and diffusion Finance)</p> <p>INDAP Subsidy for Model CAL Laboratory \$10,000,000</p> <p>Training Course of Feeding and Management \$8,000,000</p> <p>Training Course of A. I. \$9,000,000</p> <p>Milk Control Project \$13,000,000</p> <p>SAG Breeding Project(diffusion A. I.) \$9,209,500</p> <p>ACOLECHE Difusion A. I. \$1,250,000</p> <p>Aporte CIA \$30,263,000</p> <p>TOTAL \$105,722,500</p>																	

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<CHILEAN INPUTS> CHILEAN EXPENDITURE

DETAILS OF EXPENDITURE, CENEREMA

CHILEAN PESO

DETAILS	2.5month of 1999 and 2000	2,001	2002 (6 Month)
PERSONNEL			
PAY	20,793,748	20,771,427	5,246,999
REMUNERATION	1,322,111	1,756,031	166,667
BONUS	0	153,831	0
(Director, Secretary, Driver, ect)			
BASIC COMSUMPTION			
WATER, GAS, ELECTRICITY, TELEPHONE	1,807,161	2,956,049	813,000
OTHERS COMSUMPTION			
ANIMAL ALIMENT	0	23,527	0
LABORATORY ITEM	0	441,340	0
MATERIALS	0	564,641	0
FOODS AND DRINKS (SEMINAR)	227,375	222,894	0
FUEL, OIL	603,800	518,346	148,870
OFFICE ITEM	216,706	1,649,920	0
MAINTENANCE	71,759	1,309,011	0
INSURANCE	1,506,266	1,740,539	0
BORROW SEMINAR PLACE	8,000	45,000	0
TRAVELING ALLOWANCE	351,220	1,671,611	636,257
PRINTING	0	306,350	0
TRANSPORT	393,530	754,806	11,105
VEHICUL TAX	584,157	2,254,008	1,399,490
CUSTOMS FORMALITIES	0	2,913,361	0
TRAVELING ALLOWANCE TO FOREIGN	0	1,471,585	1,060,508
SPECIAL COST	0	618,294	225,000
OTHERS	14,590	3,138,390	240,000
INTEREST	0	120,043	0
SUBSIDIZE TO CAL	0	3,712,000	1,498,000
SEMINARY REGISTRATIN	0	0	1,045,061
PROJECT OPENING CEREMONY	199,400	0	0
CURTEIN	866,702	0	0
OTHERS	0	70,500	0
CONSTRUCTION			
CENEREMA	54,448,626	0	0
CAL MODEL CENTER	21,260,065	0	0
TOTAL	104,675,216	49,183,504	12,490,967

REF : Final Rate; June 2002

chilean Peso 685.10/USD1

Yen 129.25/USD 1