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**CANADIAN INTERNATIONAL DEVELOPMENT AGENCY**

**EVALUATION OF  
THE ANDEAN FARMING SYSTEMS PROJECT  
PUNO, PERU**

**FINAL REPORT  
SEPTEMBER 1989**

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## **Glossary**

<b>CENASE</b>	<b>National Seed Production Centre</b>
<b>CIDA</b>	<b>Canadian International Development Agency</b>
<b>CIPA XXI</b>	<b>Regional Agricultural Research Centre, Puno (used interchangeably with INIAA VII in this report)</b>
<b>CIP</b>	<b>International Potato Centre</b>
<b>CORPUNO</b>	<b>Puno Development Corporation</b>
<b>IDRC</b>	<b>International Development Research Centre</b>
<b>INIAA</b>	<b>National Agricultural and Agroindustrial Research Institute</b>
<b>INIAA VII</b>	<b>Regional Agricultural Research Centre, Puno (CIPA XXI)</b>
<b>PISA</b>	<b>Andean Farming Systems Project</b>
<b>PISCA</b>	<b>Andean Cropping Systems Project</b>
<b>PNCA</b>	<b>National Program for Andean Crops</b>
<b>PNSAPA</b>	<b>National Program for Andean Farming Systems</b>
<b>RISPAL</b>	<b>Latin American Animal Production Research Network</b>
<b>UNTA</b>	<b>National Technical University of the Altiplano</b>

# Executive Summary

## 1. Introduction

CIDA has been supporting applied research on the Peruvian altiplano since 1973. The present phase of this activity is a Project focussing on Andean farming systems (PISA), and which has two major objectives:

- a) The development of small-farm crop and animal production technology;
- b) The development of farming systems research methodology appropriate to the altiplano.

PISA is being implemented in the Department of Puno by the regional representative of INIAA, INIAA VII. PISA is funded by IDRC from a contribution from CIDA. The total Project budget amounts to \$5.05 million for a five-year period (1985 onwards), of which \$3.73 million is provided to INIAA for local administration of the Project; the remainder is retained by IDRC and CIDA for items administered separately.

This evaluation is intended to be a mid-term assessment of PISA development and direction, in order to provide INIAA, IDRC and CIDA with recommendations for effective and efficient continuation of the Project. It was undertaken by a five-person team, nominated by the three agencies. The evaluation took place between 2 April and 11 May, 1988, a total of four weeks actually being spent in Puno. During this period, the team visited seven pilot communities, and interviewed many PISA, INIAA and local development staff. Preliminary evaluation findings were discussed with PISA and INIAA staff before departure from the field.

## 2. Farming Systems Research

**Antecedents.** In its present guise, the Project owes more to previous IDRC-funded activities (PISCA) on the altiplano than to a continuation of the CIDA-funded previous phase. This is largely due to the involvement of PISCA staff in planning of the present phase; this now has the same principal scientist as Project leader. PISA is implemented within the context of INIAA's National Program for Andean Crops (PNCA). PNCA was formerly PNSAPA, a broader farming systems program that included a focus on livestock. The Project leader is a senior adviser to PNCA.

**Focus.** As a Project meant to be implemented within INIAA's institutional framework, PISA funds have been the basis for the majority of INIAA agricultural research activities on the altiplano between 1985 and 1988. Largely station-oriented prior to PISA, many of these activities are now conducted on-farm in peasant communities. Through PISA, work has been conducted in eleven communities, ten currently. The experimental work is very similar to that conducted on-station, though a strong focus on Andean crops (potato, quinoa and cañihua) and barley has developed. PISA pays less attention to other cereals than did the previous phase of the Project.

**Approach.** The Project has tried to establish an FSR approach to its research program. After an early survey activity presented analytical difficulties, PISA adopted a process of rapid appraisals and longer-term diachronic surveys in the pilot communities. These were implemented concurrently with the experimental work mentioned above. Most of the appraisals are complete, and survey data has been structured into 38 databases. However, little analysis of either type of result has been done, and there is currently no link between such results and research planning. Experiments conducted in 1987-88, therefore, owe more to INIAA's national program commodity focus, than to any integration of feedback from community-level needs analyses.

**Crops vs livestock.** In experimental work to date, PISA has concentrated almost wholly on crop production. The Project has attempted some livestock research activities, but most have been

short-lived. A small amount of forage work is being conducted in the communities, and PISA views this as the livestock program. Methodological constraints appear greater in the development of livestock research than the equivalent crop research at the community level. However, even in crop research, much of the work carried out shows deficiencies in planning, design, analysis and interpretation, with the result that much of the potential is lost.

**Communities.** The Project has established strong working relations with the communities in which it works, and producers are interested in collaborating. PISA provides all the inputs, so it is not yet possible to judge how effective is participatory development of research. PISA staff resident in communities are key individuals in community motivation, but respond more to research directives from the stations than to possible community priorities.

**Staff.** PISA has suffered a major, continual turnover in staff, both at the research and community level. Changes in research staff have limited possible integration of the different activities into a coherent FSR Project; community staff changes have reduced the effectiveness of the communication and learning process ongoing at this level. PISA has no full-time on-site staff member (nor has had) with the FSR experience necessary to guide Project development. The Project leader has duties in Lima and elsewhere which limit the role he can play in FSR development.

**Training.** The Project has undertaken a wide range of training activities for both staff and communities. Four INIAA staff have received PISA support for graduate studies; many others have received short-course training in a variety of areas, including agricultural extension. Large numbers of community-level training events have been conducted, the majority linked to crop production. PISA has given definite attention to women's involvement, men and women participating approximately equally, or women slightly less than men, in different activities.

### **3. Research Output**

**Diagnostic Surveys.** Rapid appraisals have been completed for seven communities; diachronic surveys are being conducted in all ten. To date little analysis of the appraisals has been conducted to identify research priorities; no analysis has been conducted of the diachronic databases, some with more than a year's data. These activities have not contributed to research development.

**Field crops.** Field-crop research is strongly station-driven, with only occasional studies to tailor recommendations to farm conditions. Crop improvement through selection remains the major focus of all research. Occasional on-farm fertilizer studies are conducted. While some studies state economic objectives, no experiment conducted between 1985 and 1988 has received an economic analysis. Many experiments are deficient in design and analysis, leading to information losses. On-farm trials are generally single-component studies, lacking valid controls to provide comparison with farmer material or management. Experiments have not been conducted to elucidate major features of Andean cropping systems, or to determine interactions that occur in space and time; re-examination of some data suggests such interactions to be extremely significant.

**Livestock.** Livestock research has shifted slowly away from on-station production modules towards forage plots at the community level. Little continuity is evident between years. Staff disruptions have limited development in this area; livestock is also a minor component of INIAA's overall program, thus reducing the possible institutional emphasis. As livestock production is the main income-generating activity on the altiplano, PISA does not currently reflect peasant priorities in production.

**Systems.** While PISA tries to incorporate a systems focus to its research program, this has not progressed beyond a conceptual level. Systems trials generally focus on technology components, with most interest in Andean technologies such as beds, terraces, etc.. These studies have been poorly planned, with no continuity over time. PISA tends to see the systems approach requiring the



Project to cover as many activities as possible; this has led to a proliferation of activities, especially in the communities, with a resulting loss of critical attention to detail in important studies.

**Social Sciences.** Social sciences have only been incorporated marginally to the research process. Staff changes again have had a part in this, but so has the minimal input of diagnostic surveys to research planning; a great deal of sociological information is being collected in the surveys, but is not being used. Social scientists currently employed by the Project, while competent, are insufficiently experienced to improve this situation significantly.

**Technology.** Overall achievement in terms of development of technology suited to peasant conditions has been very limited, with significant improvements required in the research process before progress is likely to be possible.

#### **4. Community Activities.**

**Staff.** The Project has been instrumental in establishing a strong community focus to all its activities. It has achieved this through posting resident technicians (an agriculturalist and a data-collector) to each community. Agricultural technicians support research implementation, and provide technical assistance in specific areas, e.g. potato production, livestock production; data-collectors run the long-term diachronic surveys.

**Extension.** Agricultural extension activities in the communities have so far been traditional in nature, with little linkage to the research process. As responsibility for extension has now passed from INIAA to the Ministry of Agriculture, the Project's future extension role and approach is unclear. PISA currently provides technical assistance at a scale not attainable by any regional agency. Much of the technology espoused by PISA has not been tested to determine quantifiable benefits. PISA also provides material for radio broadcast across the altiplano.

**Support Services.** Of the different support services provided to the communities, and intended to support research development, revolving funds for specific production inputs have become the most important; seed, fertilizer, chemicals, livestock supplies and human medicine are covered in all ten communities. PISA provided the initial contribution. Results are variable to date, especially in seed funds affected by inclement weather. Project staff are increasing monitoring of these funds in an attempt to improve recovery rates.

**Community Organizations.** PISA works in the communities through the democratically-elected formal councils and committees. This mechanism has been quite successful, and the Project attempts to strengthen such bodies through training.

**Gender Issues.** The Project has shown sensitivity to gender issues, some studies focussing specifically on the role of women, and women regularly being involved in training. Revolving funds provide resources to women's groups. A separate review of women's issues and their treatment by PISA has been conducted recently.

**Agreements.** PISA has also established agreements with other organizations to provide other services to the pilot communities, including in the areas of health, nutrition, equipment, training and reforestation.

#### **5. Institutional**

**National Context.** Research in INIAA, under the different Directorates-General, is developed through commodity-based national programs. While intended to be a cross-sectoral Project, PISA is

accommodated in the Andean Crops program (PNCA). This has a narrow crop focus. PISA is practically the only INIAA Project that works in communities; the remainder are station-based.

**Institutionalization.** PISA is intended to institutionalize FSR in INIAA. There is a certain amount of imprecision as to what this means, or how it is to be achieved. Whilst PISA is an INIAA Project, the direct-hired staff are contracted outside INIAA by a distinct foundation, and financial administration is handled the same way. In research planning and implementation, PISA tends to run parallel with INIAA in Puno, with evidence of two separate mechanisms operating. Until this relationship matures, PISA may be just a source of funds for some INIAA activities, without any effective institutionalization of mechanisms and approaches. PISA has not reached the point where it stands as a model to INIAA of FSR approaches and achievements.

**Development Agencies.** Puno is the target of many developmental interventions in rural areas. PISA has the opportunity to provide significant input to the overall process, and to provide a research model, through closer coordination with CORPUNO. The potential exists for the latter to provide greater support to agricultural research locally, with the possibility of more effective institutionalization of research methods.

**Management.** PISA management, to date, has stayed outside the INIAA structure, the two senior management positions being funded by the Project. A counterpart, the National Director, has had little decision-making authority, acting more as a liaison between PISA and INIAA locally. A Technical Committee, meeting bimonthly, has been proposed for the Project, to improve the decision-making process, and general Project orientation. More authority has been proposed for the National Director.

**Staffing.** Project staffing has been a major issue throughout the life of the Project. PISA has not been able to attract the quality of staff originally anticipated, and has not been able to keep those hired. These two points have had a major impact on Project development. Only three INIAA staff currently work as full-time counterparts.

**IDRC.** IDRC administrative responsibilities are executed through the regional office (LARO) in Bogotá. Two Program Officers (POs) in LARO monitor PISA and provide technical guidance; a Liaison Officer (LO) was hired, principally for this Project, to provide support to the POs. The LO has also written technical discussion papers, to support conceptual development in PISA, which have largely been ignored. The POs have also made technical recommendations to PISA which again have largely been ignored. The magnitude and complexity of this Project are beyond that of normal IDRC Projects, and the issue of the sufficiency of IDRC technical monitoring as a corrective mechanism has been raised.

**Disbursement.** CIDA disbursement to IDRC to date totals approximately \$2 million, about 40% of the total committed; IDRC has disbursed \$1.4 million to the Project, which is currently expending at about 60% of the rate expected. IDRC administers the difference directly, of which about \$0.4 million has been spent.

**CIDA.** CIDA administered previous phases of this Project directly; IDRC support was requested for this phase to reduce CIDA's administrative load. The two principal CIDA officers responsible for this Project have visited the Project on average more than once a year, generally to attend annual Steering Committee meetings. Felt concerns about lack of information on Project progress have been occasioned by differences in operating style of IDRC compared to a normal executing agency; these concerns have been clarified.

## **6. Conclusions and Recommendations**

### **Conclusions**

**1. Objectives.** PISA has achieved little in terms of developing crop and animal production systems suited to the Project communities. The principal limitation lies in the Project's lack of implementation of an FSR approach; this has three roots:

- a) PISA's inability to attract and retain staff;
- b) Lack of integration in research planning and development between INIAA and PISA;
- c) Lack of experience in FSR methodology and its application.

**2. Constraints.** The constraints to developing effective FSR methods include:

- a) Lack of a longer-term planning framework;
- b) Minimal use of survey results in research definition;
- c) Lack of integration of agricultural and social sciences, including economics, in research.

**3. Emphasis.** PISA is disproportionately weighted towards subsistence crop production. Research on livestock production must receive increased emphasis.

**4. Research capability.** Research capability is at a very basic level, with much information being lost through omissions or errors in planning, design, implementation, analysis and interpretation.

**5. Community Activities.** PISA is carrying out too many activities in the communities. Most lack systematic planning and implementation. These activities demand significant amounts of PISA staff time, reducing the time allocated to key research activities.

**6. Systematic approach.** PISA requires a more systematic approach to most Project activities. This should be a function of improved planning and clearer prioritization of community needs; the latter should come from improved analysis of the appraisals and other surveys.

**7. Institutionalization.** PISA should be emphasizing planning and technical assistance approaches which lead to institutionalizing FSR in INIAA. The Project leader should provide national-level policy support to INIAA in this area.

**8. IDRC Support.** PISA's size and complexity merits increased attention from IDRC in terms of technical monitoring and guidance. IDRC intended to ensure this by hiring a Liaison Officer specifically for the Project. PISA has not responded to most technical recommendations made to it by IDRC. Mechanisms should be established to ensure that PISA is more responsive to such recommendations in the future.

**9. CIDA/IDRC Collaboration.** Due to different operating styles, CIDA has felt some concerns about IDRC's approach to Project implementation. These have generally been minor, and have been clarified.

**10. Project Extension.** The Project is not at the point where it can undertake technology diffusion. A further three years of FSR are needed before the Project is likely to show achievements in crop or animal production technology for the pilot communities. Significant improvements in the joint INIAA/PISA planning process will be necessary for this to be brought about. Specific technical assistance inputs are required.

## **Recommendations**

**1. Agricultural Research.** PISA should improve the joint INIAA/PISA planning process for the 1988/89 research year. Research implemented should meet some of the FSR criteria suggested in this report. Certain studies should be undertaken to satisfy some untested hypotheses, or strengthen the basis for other research activities. Project staff must dedicate more of their time to analyzing results of appraisals and diachronic surveys. The number of communities in which the Project is working, and the number of activities carried out in them, should be reduced.

**2. Social Science and Economic Research.** The Project should redress the balance between agricultural and social sciences in research. Some villagers should be used to collect basic community data. Gender issues should be integrated to FSR. A greater emphasis on economic analysis is required in most studies. Project impact indicators should be developed.

**3. Community Development and Support.** Community activities should be reduced in order to concentrate resources on key research activities. Community activities should be treated as research activities, with appropriate documentation and analysis. Revolving funds require more formal records, management and analysis.

**4. Training.** The Project should develop an overall training program. To support the institutionalization of FSR, training in FSR is essential. Unused training funds should be allocated to hiring a training specialist.

**5. Staffing.** The Project requires a major emphasis on technical assistance to specific areas during the remaining years; this includes FSR (agricultural and social sciences), livestock, and economics. The Project budget should be reviewed to determine the feasibility of the specific proposals made. The Project should reorient its senior staff towards technical support roles to INIAA.

**6. Institutionalization.** Realistic policy and expectations must be established for the institutionalization of FSR during the course of PISA. INIAA should review its current structure to allow for such a process. Stronger links are required between PISA and INIAA. FSR needs to be a routine activity for success in this area. Stronger ties with CORPUNO should be fostered.

**7. Management.** Project management should be rationalized to improve efficiency in this area. A recent draft organization and management manual should be revised to cover all Project personnel. The proposed Project Technical Committee should be constituted. Reporting systems should be improved. FUNDEAGRO should supply more information to the Project on rates of exchange. Village-staff remuneration should be reviewed to improve continuity of this personnel.

**8. Role of IDRC.** IDRC should consider more support to institutional development in INIAA to improve likelihood of achieving PISA institutional objectives. INIAA reporting systems should be a target for IDRC guidance. LARO should improve the timeliness and standards of its reporting to CIDA. The role of the Liaison Officer should be reviewed. Possible involvement in the Project of the Social Science Division should be explored.

**9. Role of CIDA.** CIDA should clarify to its own satisfaction IDRC's approach to technical guidance of Projects. To avoid breakdown in communications, quarterly meetings with IDRC could be instituted. Courtesy visits of both CIDA and IDRC Officers to their respective counterparts in Hull, Bogotá or Lima should be encouraged. The CIDA Post Officer should consider visiting the Project annually in conjunction with an IDRC staff visit.

**10. Project Extension.** A second evaluation of the Project should be conducted in early 1990 to review progress since the present exercise. This should be viewed as an integral part of planning for a subsequent phase. A series of indicators is included in the report. Due to probable increases in expenditure when the recommended program of technical assistance is implemented, the Project

may not have sufficient resources to adopt the seven-year framework proposed by INIAA in the Inception Report. It is recommended that the Project retain its original five-year framework until the second evaluation, at which time, and depending on results, an extension may be authorized.

## **1. Background to Evaluation**

### **1.1 Origin of the Project**

Since 1973 CIDA has supported an applied research Project on the Peruvian altiplano, in the Department of Puno. The Project had its foundation in Peruvian interests in a) increasing domestic production of edible oils, and b) in stimulating the agricultural development of the altiplano. The Project originally centred on efforts to establish canola (colza) as a viable economic alternative to other crops for producers in the region.

Over the subsequent 12 years, the Project passed through three phases. During this period the Project faced many difficulties. These related mainly to fluctuating Peruvian interest and support, and to the major climatic constraints faced by producers on the altiplano. Peruvian interest revived with the successful work on wheat and barley during the Project's second phase, and INIPA, the newly-formed Peruvian agency responsible for agricultural research and extension, became involved with the Project at this time.

An evaluation of the Project in 1981 (during Phase II) recommended that CIDA continue to provide support in order to achieve a wider impact from the research results of the cereal work. After a bridging phase between 1983 and 1985, the current phase of the Project came into being.

### **1.2 CIDA-IDRC collaboration**

During the bridging phase, and subsequent to receipt of the Peruvian request in August 1983 for an extension to the Project, CIDA reviewed its strategy for Project implementation. Wanting to relinquish the day-to-day operational management of the Project, CIDA decided to seek the services of an executing agency. As the Project intended to continue research activities, experience in research direction and administration were important criteria. An external review of possible alternatives indicated that IDRC, on the strength of administrative capability and experience in the region, was the best choice.

A joint CIDA-IDRC mission visited Peru in early 1984. INIPA and IDRC finalized a design for the current phase, which was approved by IDRC's Board of Governors in October 1984. The contribution agreement between CIDA and IDRC was signed in March 1985. The scientific and technical cooperation agreement between INIPA and IDRC was signed by the respective parties between 11 April - 30 May 1985. The total amount of contribution to IDRC is set at \$4,764,900, of which \$3,725,900 is dedicated by IDRC according to a disbursement plan to an independent agency to be administered on behalf of INIPA. The difference is retained by IDRC to cover overhead and IDRC administered activities. The total Project budget amounts to \$5.05 million for a period of five years (1985-1990).

At the time of submission of the Inception Report (November, 1986) IDRC supported a Peruvian request that the Project's life be extended from five to seven years. This request was made in order to include major extension activities within the current phase, INIPA considering that the disbursement rate of the Project budget was sufficient to allow for this. CIDA requires the results of the present evaluation before its formal response to this request.

### **1.3 Project Goal and Objectives**

The Project goals, as expressed in the original CIDA-IDRC Plan of Operations are:

a) To increase the production and productivity of small and medium sized- farmers in seven communities representative of Puno's four agroecological zones (the evaluation team notes that the last written information (March 1988) from the Project indicates eleven communities in five agroecologic zones).

b) To strengthen INIPA's (now INIAA) capability to carry out research and development activities in support of small farmers in Puno and to serve as a model for other areas mainly in the highlands.

To achieve this, the Project intends:

a) To develop, with the participation of families working on small and medium sized farms, crop and animal production systems suitable for the target communities.

b) To develop within INIPA methodologies for conducting farming systems research appropriate for application in other agricultural sectors and elsewhere on the altiplano.

The IDRC Project Summary rewords the general Project objectives as:

To improve production and productivity of crop and animals in the four main agroecological zones of the Puno region, thereby increasing the well-being of small farmers.

Four specific objectives are identified:

a) Support and expand the agricultural research and extension programs in Puno's priority development areas.

b) Complete and update the study of main farming systems.

c) Develop a training program for farmers and technical staff.

d) Provide support and extension services to farmers and communities.

The current Project LFA is shown in Table 1.1.

Título y Número del Proyecto: SISTEMA AGROPECUARIO ANDINO - Proyecto 730/12150

DURACION DEL PROYECTO  
Del año fiscal 1985/86 al A.F. 1990/91  
TOTAL FONDOS CAS.: \$5.1 millones  
PREPAPADO EL

SUMARIO NARRATIVO	INDICADORES OBJETIVAMENTE VERIFICABLES (IOV)	MEDIOS DE VERIFICACION	ASUNCIONES IMPORTANTES
<b>META DEL PROYECTO</b> (Propósito del Programa) <b>METAS:</b> 1. Incrementar la producción y productividad de agricultores pequeños y medianos en las comunidades representativas de las 5 zonas agro-ecológicas de Puno. 2. Fortalecer la capacidad de INIPA para efectuar actividades de investigación y desarrollo en apoyo a pequeños agricultores de Puno y servir de modelo a otras áreas, principalmente en las tierras altas.	<b>MEDICION DEL LOGRO DE LAS METAS</b> 1. Producción incrementada y producción per cápita de pequeños y medianos agricultores de las comunidades participantes, tanto en términos de volumen como de valor. 2. Ganancia incrementada por cultivos y producción de animales. 3. Adopción, por parte de INIPA, del método de Investigación de Sistemas Agropecuarios (FSR). 4. Mejoramiento del nivel de vida en las comunidades representativas.	<b>Fuentes de información y métodos usados</b> 1. Entrevistas, encuestas y estudios de caso con pequeños y medianos agricultores de las comunidades participantes. 2. Planes de Operaciones del INIPA Entrevistas con investigadores del INIPA, con técnicos y representantes de otras instituciones que trabajen en la región. 3. Estadísticas de INIPA sobre el sector agrícola. 4. Estadísticas sobre el ingreso per cápita, inversiones económicas, producción económica, producción agrícola y productividad por cultivo y producción pecuaria en Puno. 4. Comparación de datos de la línea básica con la de final del proyecto	<b>Asunciones para alcanzar la meta:</b> 1. Estabilidad política en el país. 2. Estabilidad institucional en el sector agrícola. 3. Políticas nacionales en concordancia con las necesidades de desarrollo de la región. 4. Estrategias de desarrollo del sector agrícola concordantes con la región. 5. Que los elementos exitosos del método de F.S.R. y los resultados del proyecto sean institucionalizados por INIPA y diseminados a otras regiones y sectores agrícolas.
<b>PROPOSITO DEL PROYECTO:</b> 1. Desarrollar, con la participación de pequeños y medianos agricultores, sistemas pecuarios y de cultivos aptos para las comunidades a las que se dirige el proyecto. 2. Desarrollar, dentro del INIPA metodologías para efectuar F.S.R. que sean apropiadas para su aplicación en áreas similares en las tierras altas.	<b>CONDICIONES QUE INDICARAN QUE EL PROPOSITO SE HA CUMPLIDO:</b> <b>Final de estado del proyecto:</b> 1. Productividad pecuaria y de cultivos aumentada en las comunidades a las que se dirige el proyecto. 2. Conocimiento incrementado y aplicación de técnicas agrícolas apropiadas en relación a cultivos y cría de animales. 3. Metodologías de F.S.R. compartidas a través de participación del personal proyecto/INIPA en talleres y publicaciones a nivel nacional e internacional. 3. Aumento de conciencia sobre beneficios potenciales de las nuevas técnicas y cultivos.	1. Discusiones y entrevistas, encuestas y estudios de casos con pequeños y medianos agricultores, a nivel individual y de grupos comunitarios. 2. Entrevistas con agentes de extensión 3. Datos y estadísticas de INIPA sobre cambio de precios en el sector agrícola, niveles de consumo, inversiones/producción económicas, en las comunidades participantes. 4. Estadísticas sobre producción agrícola y productividad por cultivo y producción pecuaria en Puno. 5. Resultados de las evaluaciones de mitad, fin y posterior del proyecto.	<b>ASUNCIONES PARA ALCANZAR EL PROPOSITO</b> 1. Políticas nacionales en concordancia con las metas del proyecto. 2. Que no haya temperaturas muy extremas. 3. Que enfermedades grandes no ataquen ni a los animales ni los cultivos. 4. Que el trabajo de investigación produzca datos útiles y concretos. 5. Que los agentes de extensión cooperen con INIPA en el establecimiento del método de F.S.R. en las comunidades participantes en Puno. 6. Que los granjeros acepten los resultados de la investigación y los perciban favorables a su bienestar. 7. Que se mantenga colaboración con otros proyectos de desarrollo en Perú y en América Latina.

TABLA 1: ANALISIS DEL MARCO LOGICO DEL PROYECTO



SUMARIO NARRATIVO	INDICADORES OBJETIVAMENTE VERIFICABLES (IOV)	MEDIOS DE VERIFICACION (MDV)	ASUNCIÓNES IMPORTANTES
<p><b>Resultados:</b></p> <ol style="list-style-type: none"> <li>Resultados de un programa ampliado de investigación y experimentación aplicadas para producción agropecuaria.</li> <li>Resultados de un estudio actualizado de los principales sistemas agrop. de la región.</li> <li>Capacitación y asistencia técnica proporcionada a personal técnico, estudiantes, campesinos y agentes de extensión.</li> <li>Atención a necesidades, servicios de análisis de suelos, herramientas apropiadas y material escrito a los campesinos de las comunda. representva.</li> <li>Provisión de programas con información de mercadeo y consejo técnico por radios locales.</li> <li>Red fuerte intercambio interior técnica.</li> </ol>	<p>Magnitud de resultados. Fechas fin. aproximadas:</p> <ol style="list-style-type: none"> <li>Datos de invest. aplicada sobre papas, trigo, cebada, habas, quinus, colza, ganado, etc. 1980</li> <li>Datos sobre sistemas agropec. 1986-1990</li> <li>7 técnicos de INIPA con grados M.Ciencias 1990</li> <li>15 estudiantes con tesis terminadas 1990</li> <li>Personal técnico de INIPA recibe más capacitación 1990</li> <li>Transferencia de información y organizaciones</li> </ol>	<ol style="list-style-type: none"> <li>Informes de Avance de INIA.</li> <li>Informes de Avance del CIID.</li> <li>Informes del Comité Directivo del Proyecto.</li> <li>Informes de Capacitación</li> <li>Informes del Consultor</li> <li>Entrevistas en las comunidades representativas sobre el grado de aceptación de las actividades de investigación aplicada por parte de los campesinos de la localidad, tanto por hombres como por mujeres.</li> <li>Acta de sesiones de los talleres/seminarios a nivel nacional e internacional.</li> <li>Publicaciones por el personal INIPA del proyecto.</li> </ol>	<p><b>ASUNCIÓNES PARA EL LOGRO DE LOS RESULTADOS:</b></p> <ol style="list-style-type: none"> <li>Que INIA continúe como una institución estable y eficiente.</li> <li>Colaboración instituciones adecuada y apropiada.</li> <li>Estabilidad política en el país.</li> <li>Condiciones políticas y económicas que permitan participación significativa de los campesinos de la región.</li> <li>Administración técnica y financiera apropiada.</li> </ol>
<p><b>Insumos:</b></p> <p><u>CANADA</u></p> <p>Contribución de aproximadamente \$4.8 millones al CIID para financiar costos de:</p> <ol style="list-style-type: none"> <li>Personal científico y admin</li> <li>Consultores</li> <li>Capacitación</li> <li>Equipo</li> <li>Control de proyecto</li> <li>Evaluación de Fin de Proyecto</li> <li>Instalaciones, equipo y datos de desarrollo agrícola COLZA</li> </ol> <p><u>PERU</u></p> <ol style="list-style-type: none"> <li>Personl. científ. y admin.</li> <li>Personl. disemin. inform. y Servicios de Apoyo.</li> <li>Contrib. financiera de aprox. \$1.7 millones</li> </ol>	<p>Metas de implementación (tipo, cantidad costo, tiempo)</p> <p><u>CANADA</u></p> <p>Subsidio financiero de aproximadamente \$4.8 millones, 1985-90, incluye:</p> <p>Salarios y Asignaciones -Aprox.\$1.4 millones</p> <p>Equipo -Aprox.\$308,000</p> <p>Gastos investigación -Aprox.\$1.3 millones</p> <p>Capacitación -Aprox.\$184,000</p> <p>Evaluación -Aprox.\$62,000</p> <p>CIID-Fondos administrados para capacitación, administración \$1 millón - aprox. 100 personas/días de ayuda técnica- 1985-1990</p> <p><u>PERU</u></p> <p>Contribución equivalente a \$1.7 millones para:</p> <p>Salarios y Asignaciones - \$90,000</p> <p>Servicios de Apoyo - \$239,000</p> <p>Equipo Capital - \$558,000</p>	<ol style="list-style-type: none"> <li>Informes de Avance de INIPA</li> <li>Plan de Trabajo Anual de INIPA</li> <li>Declaraciones financieras de SRP y FUNSIPA.</li> <li>Informes de Avance del CIID.</li> <li>Minutas de las reuniones de proyecto del Comité Directivo.</li> </ol> <p>Visitas a terreno del CIID y la ACDI</p>	<p><b>ASUNCIÓNES PARA PROPORCIONAR INSUMOS</b></p> <ol style="list-style-type: none"> <li>Que se encuentre personal capacitado científica y técnicamente, consciente de las necesidades de la región.</li> <li>Que los gobiernos del Perú y del Canadá pongan fondos a disposición del Proyecto.</li> </ol>

TABLA 1: ANALISIS DEL MARCO LOGICO (Cont'd)

## **1.4 Evaluation Methodology**

The evaluation team followed a workplan based on an evaluation approach established during 1987, and which was reviewed by CIDA, IDRC and INIAA prior to the actual evaluation. The approach consisted of identifying principal evaluation issues, derived from key Project documents (IDRC Project Summary, CIDA Plan of Operations, INIAA Inception Report), establishing principal indicators and data sources, and the selection of persons with expertise appropriate to an integrated team.

In accordance with the Project objectives stated in Section 1.2, the team approached the evaluation with two working hypotheses:

1. That the Project is developing, with farmer participation, crop and animal production systems relevant to the needs of the pilot communities.

2. That the Project is developing within the INIAA institutional framework, a farming systems research methodology applicable to other similar regions of the altiplano.

These hypotheses were tested through analysis of the issues and using the sources of data described in Appendix 1.

The team reviewed Project documents in Canada, Bogota, Lima and Puno, and interviewed key personnel in all locations. In the field the team followed a schedule established with Project staff. The Project made available to the team all reports published to date. PISA and CIPA staff made a series of presentations to the team on research in progress, and some of the results obtained. The team also visited seven of the Project's collaborating communities and discussed activities with participating men and women of these communities. Apart from key interviews in Bogota and Lima, where specific instruments were used, the team's evaluation approach was iterative, building on an increasing understanding of the previously identified issues in the structuring of interviews. The Team was in the field between 2 April and 12 May, 1988.

Several factors influenced the team's evaluation activities:

- 1) The sheer volume of Project activities required that the team separate into two groups in reviewing field work. The seven communities visited represent the major agroecological, social and cultural features that influence community activities and development on the Altiplano. The team has tried to integrate the results of its field work as objectively as possible, though it should be recognized that a visit to a community of a single day does not allow for more than very basic impressions.

- 2) The Project, including all the agencies involved, has generated a large number of individual or aggregated reports. Where documentation was a prime source of information, this was derived from annual workplans and technical reports, both PISA and CIPA, except where specific detail was required; in the latter case, individual study or experimental reports were consulted.

- 3) The Project has had difficulty in maintaining staff over successive research seasons. This discontinuity has reduced the possibility of development of a strong research group. It is pertinent to note that even since the pre-evaluation mission of November 1987, there has been a turnover of about half of the Project's direct-hired research staff. Many interviews were therefore conducted with persons only nominally familiar with the Project's objectives and research emphasis.

- 4) The evaluation took place at the end of the production season, and at the point where planning was taking place for the next. The team was especially careful in its approach to examine the major

research and support activities so that conclusions and recommendations, where relevant, are immediately applicable to current planning.

The evaluation team consisted of five persons, whose expertise and responsibilities are indicated in Table 1.1. Terms of Reference of the CIDA-nominated members are included in Appendix 2.

*Table 1.1. Expertise and Responsibilities of Team Members*

RESPONSIBILITIES	EXPERTISE	NOMINATED BY
Farming Systems Approach (and Team leader)	Agronomist with FSR background	CIDA
Agricultural economics and experimentation	Agricultural Economist	CIDA
Institutional aspects and community approach	Anthropologist	CIDA
Social Science and Community Activities	Sociologist with FSR background	IDRC
Institutional research focus and field crop research results	Entomologist and adviser to INIAA	INIAA

During the evaluation process the team met regularly to discuss findings. This draft report reflects the general conclusions of the team. Different sections of the report were written by different members of the team, and in the process of review for, and preparation of, the final report, will be further amended to clarify and integrate the findings.

Complete lists of persons interviewed, documents consulted, communities visited, and itinerary, are included in Appendix 3.

The team wishes to note that during the course of the present evaluation, INIAA undertook its own internal evaluation of the Project. Members of the INIAA team were in the field concurrently with the CIDA/IDRC team. One member of the INIAA team acted as counterpart to the latter, assisting in the evaluation process and the drafting of the report. Receipt of the INIAA report was expected prior to the drafting of the present report, for use as reference material, but this did not occur.

### **1.5 Local context**

PISA is a Project being undertaken in an unstable political, economic and institutional environment. Peru is currently facing major economic problems, and it has been a feature of previous phases that counterpart support in financial terms was often precarious, and sometimes non-existent. At no time, however, in the history of CIDA support, has the economic situation been as bleak as it appears now.

Institutional instability is closely linked with political change, both staff and programming changing with shifts in political fortune. INIAA is a young institution (founded in 1981) which has undergone major restructuring within the 12 months prior to the evaluation. This has had a major impact on research approach and programming at the national level. Similar developments at a different scale have occurred at the regional headquarters in PUNO, CIPA XXI (now INIAA VII). Another major feature of institutional instability in Puno is that of staff work-stoppages, several of which have occurred since PISA's inception.

## **2. Farming Systems Research**

### **2.1 Research Priorities and Planning**

#### **2.1.1 General**

PISA is a Project that continues Canadian support to INIAA on the Peruvian altiplano. Previous phases concentrated on station-based genetic and agronomic work, with some on-farm testing and validation activities. Some of the research priorities were expected to be carried over into the current phase, including an emphasis on work with cereals and colza.

The phase prior to PISA was staffed by a team of Canadian cooperants, with Peruvian counterparts provided by INIPA. It had been difficult for CIDA to maintain a full complement of cooperants, with inevitable consequences for the direction and stability of the Project. CIDA's invitation to IDRC to provide an alternative implementation strategy for the current phase, was partially intended to overcome this problem.

Prior to 1984, IDRC was itself supporting Andean research, primarily through the PISCA Project, which involved three regional universities. Toward the end of PISCA's second phase, PISCA's Director promoted interest in INIPA for a National Program on Andean Production Systems, which was intended partly to offset the commodity orientation prevalent in INIPA. INIPA's initial proposal to CIDA for Phase III was a continuation of the Phase II cereal's work. However, CIDA's approach to IDRC led to an involvement of IDRC technical staff in a joint programming exercise which resulted in a broader research focus, including farming systems.

The current Project is therefore also an extension of IDRC support to the research process begun with PISCA. For CIDA, the Project represents a stronger emphasis on small farm agriculture, as well as an implementation approach with no Canadian representation.

During the course of the present evaluation, the team discovered that an earlier evaluation (1985) had been conducted of the PISCA Project by IICA. This document was not made available to the team until the preliminary draft report of the current evaluation had been completed. The team notes that there is a high degree of concurrence between conclusions relating to research strategies and activities in the IICA evaluation and the current one, suggesting that some lessons learned from the PISCA Project were not followed up.

#### **2.1.2 Target groups**

Earlier phases of the CIDA-funded Project had specific technical objectives, with little consideration for who might be the ultimate beneficiary of Project activities. Any stated objectives relating to rural development implied benefits accruing to large scale production of canola or cereals on the altiplano.

Activities of this scale were generally considered appropriate for individual or cooperative holdings of medium-to-large size. While occasional mention was made of the small farm subsector during these phases, and it noted that the approach being taken did not fit with this majority of the population, it was not until the current phase that the research approach was aimed at improving small-farm productivity. This is attributable more to work done with rural communities during PISCA and IDRC involvement in PISA planning, than to any decision by CIDA to reorient the Project. PISA, however, aims to find alternative technological solutions to the crop and animal production problems of the Andean small farmer. It was expected that the research findings of the previous phase would be used to support this process.

CIDA's acceptance of the INIPA/IDRC proposal assured a measure of continuity between PISCA and PISA, and some of the concepts for small farm development which were a focus of the former

Project. As the proposal also supported the Project Leader as being the Adviser to INIPA's National Andean Farming Systems Program, some degree of institutionalization of research focus and approach was supported.

PISA, in terms of research output, is therefore clearly targetted at the small farming families of the rural communities. In the process, it is expected that research staff at CIPA will benefit, through strengthened research capability.

### **2.1.3 Research Development under PISA**

The leader of PISA brought to the Project a research approach developed through university collaboration in PISCA. A major feature of this approach was the part time collaboration of many University staff. However PISA, under INIPA, was intended to be executed by a team of full-time professionals (with specialist technical assistance) who had on-going research programs at the regional CIPA in Puno, which responded to directives of the national commodity programs. As a result there was no immediate institutional niche which could accomodate an interdisciplinary, multicommodity Project such as PISA, even though PNSPA had been formally constituted.

PISA began formally in June 1985. As August represents the beginning of the agricultural year, experimental work to be conducted by CIPA during 85-86 season was already far advanced in planning when the Project started. The PISA Project Leader reviewed 85-86 CIPA workplans with the CIPA Directorate in July 1985 and the decision was taken to fund the major part (93%) of the CIPA 1985-86 research program through PISA, in terms of number of experiments. Research activities are considered in more detail in Sections 3.2-3.5. Had this funding not been advanced, very few of the experiments could have been carried out with just National Program funding. Of the total number of experiments, 76% were carried out on-station and 24% on-farm.

As well as funding experimental work, a significant portion of the 85-86 budget was dedicated to the establishment of on-station infrastructure, the repair of machinery held by CIPA and the provision of equipment and laboratory services.

The planning approach has continued largely unchanged since 1985. The traditional CIPA approach has planning underway during one growing season for the next, the implication being that research results are not immediately incorporated into planning for the coming season but rather the subsequent one. Within the Project framework, planning is carried out between growing seasons (the period of May-August). As a result, a separate planning process has been established, which maintains PISA apart from the institutional planning cycle.

The relationship between CIPA and PISA is similar to that of CIPA and any other funding agency: CIPA submits a list of experiments to PISA for consideration for funding; this is reviewed by PISA to see whether any experiment fits either the systems focus or the main focus on Andean crops (including potatoes). In the PISA context, the systems focus largely implies on-farm participatory experiments, and there has been a gradual increase in the proportion of on-farm trials. During the same period the proportion of CIPA experiments funded by PISA has declined (Table 2.1).

*Table 2.1. Proportion of CIPA's Experimental Funding Provided by PISA and change in on-station and on-farm experiments with time*

	% funds from PISA	% on-station trials	% on-farm trials	No of CIPA on-farm trials
1985-86	93	73(76)*	27(24)*	15
1986-87	68	56(36)	44(63)	29
1987-88	58	26(34)	74(66)	40

*Source: PISA staff*

*\*Discrepancy between number reported by PISA and actual number of trials described in CIPA's reports.*

During this period the focus on Andean crops has increased. Table 2.2 indicates the proportional concentration on the four principal Andean crops (potato, quinoa, ca-nihua and barley), and the principal focus of the experiments.

*Table 2.2. Proportion of Total Experiments Carried Out on Potatoes, Quinoa, Cañihua and Barley, and Principal Foci of Experiments*

	% by number	% on genetic improvement or agronomic management
1985-86	46	78
1986-87	63	90
1987-88	66	93

*Source: PISA staff.*

The emphasis on community research and other activities was strengthened during 1985-86. During a two week period the Project Leader and the Director of CIPA, together with two other PISA and CIPA staff, visited communities in each of the main agro-ecological zones of the Altiplano. A combination of agro-ecological, land-use, organizational and ethnic criteria were used in the selection of potential communities. One of the communities had been included in the previous PISCA Project (Luquina Grande). Table 2.3 indicates the communities selected, and the period during which work has been conducted in them. Figure 2.1 indicates the location of each community on the Altiplano. One community was withdrawn from the sample in 1987 for security reasons. The team understands that work is to be discontinued in two communities in northern Puno in 1988, and at the same time a new community (Isla) is to be added to the sample.

Table 2.3. Pilot communities in Puno selected for study, and the period during which work has been conducted in them

	85	86	87	88
	A S O N D   J F M A M J J A S O N D   J F M A M J J A S O N D   J F M			
Kunurana Bajo	_____	_____	_____	_____
Apopata	_____	_____	_____	_____
Luquina Grand	_____	_____	_____	_____
Viscachani	_____	_____	_____	_____
Jiscuani	_____	_____	_____	_____
Llallahua	_____	_____	_____	_____
Urac Ayllu	_____	_____	_____	_____
Puna Ayllu	_____	_____	_____	_____
Carata	_____	_____	_____	_____
Anccacca	_____	_____	_____	_____
Santa Maria	_____	_____	_____	_____

Source: PISA staff.

The community focus has a two-fold purpose: to provide specific sites for the development of farming systems research (FSR) methodology, and also to develop, validate, and test the viability and transferability of alternative agricultural technologies. The FSR approach requires that the farmer be an integral part of the research and technology development process.

The steps that the Project has taken in the development of its system focus through community activities have been the following:

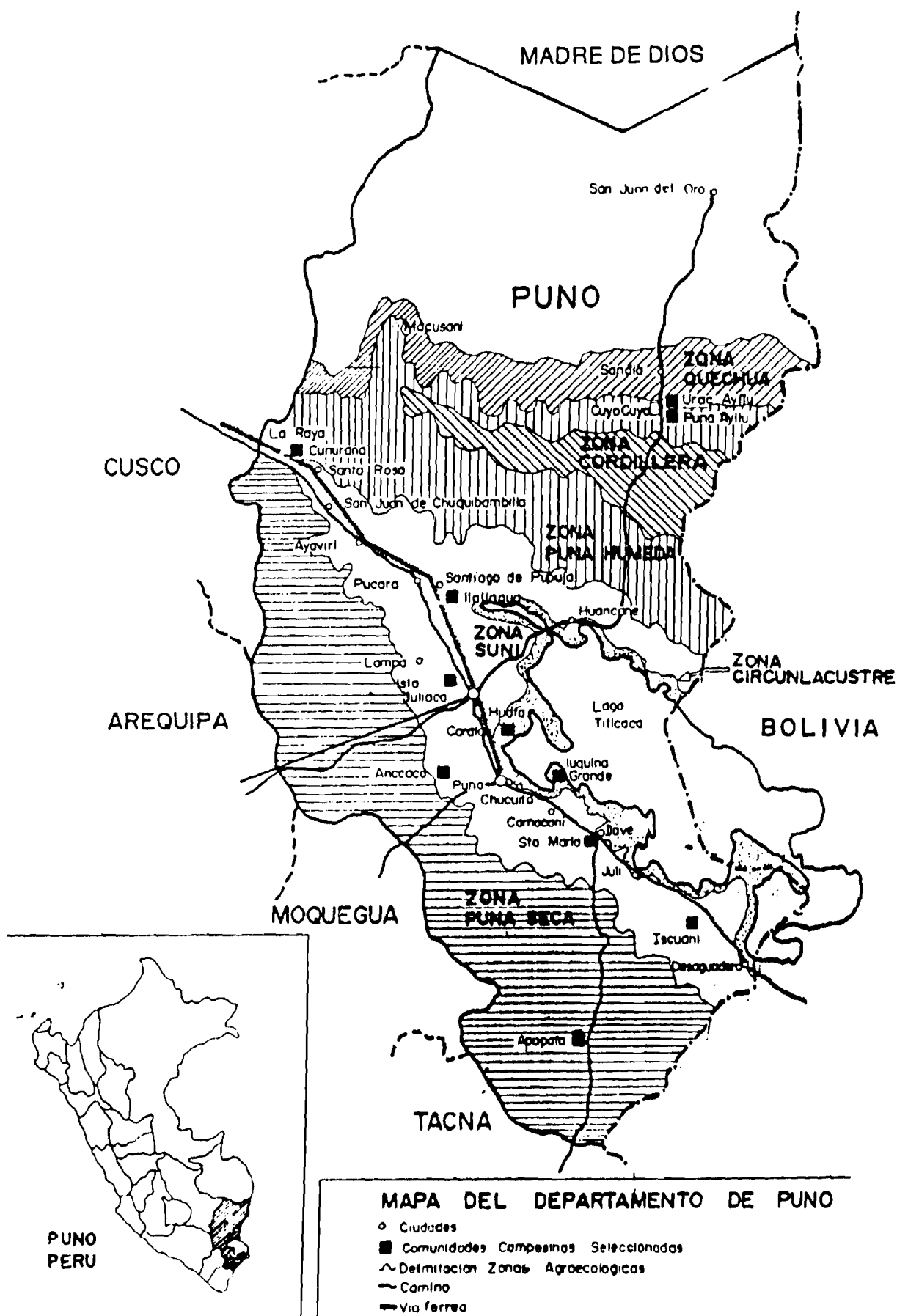
1. Static or detailed questionnaires.
2. 'Sondeos' or rapid appraisals.
3. Diachronic data collection, or characterization surveys.
4. On-farm research.

The overall purpose of these steps was to determine the constraints faced by each community, and then on the basis of a prioritization of these constraints, to design a research program intended to provide solutions. The team notes that the Project has carried out little analysis of the vast literature on Andean agriculture and society.

The initial emphasis on detailed questionnaires resulted in a large volume of data which the Project was unable to analyze. As a consequence, the rapid appraisal approach was adopted, which requires little in the way of data analysis, though which should result in a series of research priorities. These appraisals have been conducted for the majority of the communities in the sample. They have been followed by long-term diachronic data collection of a reduced number (usually 10) of farm families within each community selected from specific resource strata. Some of the resulting data sets cover more than one complete year of observations, depending on the community. It is intended that data be gathered over three years.

None of this detailed data has been analyzed (see Section 3.1), nor have the appraisals provided a clear prioritization of research problems. As a result, the on-farm research studies correspond mainly to the research priorities identified by the National Programs (e.g. Potato, Andean crops) or to the disciplinary interests of specific researchers. While it is clear that the Project has been successful in stimulating farmer participation in research, it is not clear that the research undertaken addresses priorities at the community level.





The Project has had difficulty addressing the issue of livestock production. In general it is felt by PISA staff that the appraisals point to livestock production constraints as a major priority for research. However, the proportion of livestock to crop researchers in CIPA is small and the traditional approach to livestock research (on-station production modules) has not supported the development of community-oriented livestock studies, principally because of a lack of research methods. PISA provided support to various on-station production modules during 1985-86, including contracting the services of a veterinarian to administer one station, but most of these activities were discontinued. The majority of what PISA continues to call 'livestock research' is, in fact, work with native pastures or cultivated forages. The little direct contact with livestock is through extension management services provided by the technician resident in the communities, and the small study conducted in the last year of the cattle-fattening process using plant species growing in Lake Titicaca.

It would appear generally that the research priorities defined by PISA relate more to the subsistence activities of crop production rather than the income-generating activities of livestock production. The team believes that the appraisals and other community survey activities have not been used sufficiently in determining research priorities.

Two separate planning processes appear to be operating, with little input from PISA into CIPA planning. The team believes that the current planning process detracts from the development of an effective research program especially in terms of strengthening CIPA's research planning capability.

## **2.2 Scope and Focus of Research**

PISA is a Project being implemented in a traditional research environment i.e. where research is conducted on-station, and where technology is taken to the producer when it is ready to be proven and applied. Much of the work undertaken therefore relates to optimizing biological performance in the case of crops (e.g. through improved varieties and delivery of inputs), and perhaps also in the case of animals (e.g. through cross-breeding and improved feeding systems). Through an increased emphasis on on-farm research, there has been a shift in where an experiment is carried out, but not necessarily in terms of experimental content.

The Andean environment is a marginal one, in both soil and climatic terms. The previous phase of this Project was successful in delineating the major features of climate on the altiplano, above all the degree of spatial and temporal variability in both precipitation and incidence of frost. During discussion with CIPA and PISA staff it was evident to the team that many researchers were aware of these factors, and knew the types of strategies that farmers took to reduce the risks involved in agriculture (principally, crop production). However, very few experiments have been designed to explore the relationships being managed in current production systems. This knowledge is essential to the development of alternative strategies.

The Project makes much use of the term 'homogenous production zones'. Because this is a concept that could be applied at different levels (macro and micro) there is a certain lack of clarity in terms of its usage. These zones could also be called 'recommendation domains', a term that is perhaps easier to understand in the sense of an assertive approach to FSR, whatever the scale of the system, and which is applicable to socio-economic groups as well as to ecological zones.

While much use is made by PISA staff of the term 'systems focus', and the steps that should be taken in an FSR Project are known, if not understood, the team believes that the Project has not yet achieved the 'systems focus'. Certain elements have been achieved e.g. farmer-participation in planning and execution of on-farm trials, but the trials themselves do not yet appear to correspond to specific needs or constraints (as should have been determined in the appraisals), nor do they mirror the scale of technology that the farmer uses. As the characterization surveys have not been

analyzed, little current information on production systems is used in their design. Rather they reflect the intuition of the researcher, or repeat some aspect of station research.

The systems focus, or FSR, is research that views the farm in an holistic manner, and which considers interactions in the system. Interactions can take on a perspective as important as the productivity of any single component, especially in resource-poor or marginal environments such as the altiplano, where the cropping components of the farming system generally follow a rotation, the latter being a well-understood sequence of crops and fallows intended to conserve and make efficient use of natural fertility under generally unpredictable climatic conditions.

The team would accept as evidence of a systems focus, the execution of experiments which explore such interactions, or which measured the consequence of a given treatment on successive crops in the same locations, or which took into account some of the transfer of crop outputs to animal inputs. In all these cases, the benefit of a treatment or technology has implications beyond the immediate yield of the principal output. A systems focus would also demonstrate a combination of disciplines in experimental design and analysis of results. There should also be evidence of local perception of needs in research design.

Most of the research conducted through PISA concentrates on single- year, single-component experimentation. In some cases these trials are repeated, both in seasons and locations, though not necessarily with the same design or number of treatments. While the issue that the research many be addressing may be significant e.g. crop yield, in many cases the research is limited in scope by failure to link trials conducted in space and time. This is principally an indicator of poor planning, and a lack of understanding of the reason for selecting communities in different agroecological zones as experimental sites.

The main research focus has been that of maximizing biological productivity in Andean crops. As indicated in section 2.1, plant breeding and selection under high-input levels has been a principle area of concentration. Fertility studies have been conducted in some crops. The major emphasis on cereal crops in the previous phase has not been continued in this phase, though CIPA continues to conduct agronomic trials, and some larger-scale demonstration plots. The CIPA Director considers that the lack of major attention to cereals, specifically winter wheat, has reduced the effectiveness of PISA and its role in technical assistance to CIPA.

The livestock research focus concentrates on natural and cultivated forages, in an attempt a) to quantify natural year-round forage supplies, and b) alternatives for supplementary feeding. PISA tends to accept as given that the livestock held by the campesino is of poor quality and that cross-breeding is the only way to achieve improved production. Most true animal production activities under community conditions are not considered in research development.

## **2.3 Disciplinary Integration**

Both the planning methods and the range of activities in CIPA discourage interdisciplinary research development. The 1988-89 research proposal lists a total of 207 experiments in ten National Programs. Each of these is indicated as having a single person responsible for its execution. While joint responsibilities are indicated in some earlier annual reports, there is no clear evidence of interdisciplinary interpretation of results. In many cases where both agronomic and economic objectives are indicated in experimental designs, the analysis covers only biological yields. While CIPA has both an agrometeorology department and a soils laboratory, very few trials interpret results in climatic terms in any quantitative sense, and no case has been noted where soil analysis contributed to interpretation.

Since its inception, PISA has had such a high turnover of staff that it is difficult to perceive any sense of an interdisciplinary approach to research development. The major exception to this is perhaps the diagnostic phase, where appraisals have been carried out by teams.

The evaluation team believes that an interdisciplinary approach to research will develop only when experiments are designed and conducted in order to elucidate more fundamental aspects of Andean agriculture e.g. the between-year and between-crop interactions in crop rotations, when broader technological alternatives are being tested, e.g. when a new crop is being introduced to a cropping system with little flexibility in terms of production resources, and when the number of trials to be carried out by each researcher is reduced.

The integration of biological and social sciences will require a level of analysis and understanding beyond present capacity. The fact that none of the characterization surveys have been analysed suggests that the feedback of community data into research design is not considered important by most researchers, or that it is not understood how this data can be used in research design. Practically every database being established by the Project will require interdisciplinary interpretation.

## 2.4 Site Selection and Experimental Methods

### 2.4.1. Agroecological Zonation

The Project is currently using an agroecological subdivision of the altiplano illustrated in Fig. 2.1. This has essentially three components **suní**, **puna** and **quechua**, based on characteristics of natural vegetation and climate. The latter are summarized in Table 2.4. The team notes that, until PISA, an alternative method of classification was in use, and that this is still preferred by CIPA; this is based principally on climatic data (also summarized in Table 2.4). The CIPA agrometeorologist indicated that zones A, B and C of the latter system are almost wholly encompassed within the **suní** zone of the former.

*Table 2.4. Agroecological zones of the altiplano, and their major climatic characteristics*

#### 1. According to Vidal<sup>1/</sup>

	Annual precip. (mm)	Frost occurrence	Drought occurrence	Hail occurrence
Circunlastre	500-800	x	x	x
Suní	500-900	xx	xx	xx
Puna (seca and humeda)	400-900	xx	x	x
Quechua	600-900	x	x	x

x = infrequent, xx = frequent

#### 2. According to ONERN<sup>2/</sup>

	Annual precip. (mm)	Average annual temperature °C	Altitude m
A (Lakeside)	800	10.2	3820-4100
B (Azangaro)	600	8.2	3950-4150
C (Altiplano)	700	7.6	3780-4200
D (Cordillera)	590	6.8	4200
E (Tropical)	1200	19.0	500-1800

<sup>1/</sup> Source: Tapia, M (1986). *Alternativas para el Desarrollo Agropecuario del Trapecio Andino*.

<sup>2/</sup> Source: PISA (1988). *Informe Resumido*.

On the altiplano, spatial and temporal variability in most climatic factors is significant. Within a given year, therefore, these classifications can only be used as guidelines, though there is greater security in agriculture close to the lake. The significant study of the climate of the altiplano carried out during the previous phase of the Project (Grace, 1983) is an extremely valuable resource for the Project, though little interpretation of results using such criteria appears to be carried out. The team notes that the Project pays less attention to climate and its implications in experimental planning than did the previous phase.

## 2.4.2. Site selection

The objective in choosing target communities for the PISA Project was to represent as much of the Altiplano's wide range of agroecological and socioeconomic variability as possible, so that lessons learned from the research activities would be broadly transferrable to other parts of the region. The team was not able to identify a rigorous sampling methodology based on characteristics of the total population of communities on the Altiplano. The selections seemed to have been subjective, based rather on Project management's assessment of their appropriateness in agroecological and socioeconomic terms and also on their suitability for establishment of Project facilities (community centers, etc.).

Due to time constraints the evaluation team visited only seven of the ten Project communities. It did, however, observe substantial differences between communities and believes that the major characteristics noted in each case reflect the major selection criteria noted above. A brief listing of the ten current target community names and main characteristics is shown in Table 2.5.

*Table 2.5. Pilot communities and their characteristics*

	Carata Kunurana	Anccacca Jiscuani	L. Grande S. Maria	Llallahua Apopata	Puna Ayllu	Urac Ayllu				
Character										
Total population	2408	630	620	632	603	290	1012	320	1297	712
No families	602	105	192	154	132	71	184	64	247	134
Area (ha)										
- total	2510	5845	1250	980	237	340	1560	12960	-	-
- cultivated	360	47	250	134	63	147	115	-	-	-
- pastures	750	2824	420	431	149	43	1125	8527	-	-
- fallow	690	100	550	273	18	130	230	-	-	-
- unused	710	2874	30	142	7	19	90	4433	-	-
Area per family (ha)										
- cultivated	0.6	0.45	1.30	0.85	0.5	2.10	0.60	-	-	-
- pastures	2.4	26.9	5.0	4.6	1.3	2.4	7.4	1.33	-	-
Numbers										
- cattle	4214	777	306	429	274	120	396	111	63	200
- sheep	4094	3937	1401	2200	1333	731	2236	1248	3816	870
- alpaca	-	2468	50	13	-	5	-	2934	10781	-
- llama	-	-	-	5	-	57	520	1030	-	15
- swine	1204	150	30	134	-	41	-	-	-	72

Source: PISA staff.

The Project has seen one community dropped, because of security problems. The team believes a further two villages are to be dropped because of distance from Puno. The team was informed that the security problem continues to exist, and could cause problems in two more Project communities. The team recognizes the fluid nature of the security problem in Puno, and feels that community selection will always be subject to this potential problem. The team also believes that when a community is dropped, an effort must be made to analyze and synthesize the information collected prior to withdrawal.

The team noted that, within communities, the choice of site generally appeared representative of land within the community, though the larger question of accounting for spatial and altitudinal variability in climatic variables could not be so readily determined. The issue of replication of sites within a community is dealt with in Section 2.4.2.

### **2.4.3. Experimental Methods**

The way in which an experiment is conducted can have a marked influence on the validity and reliability of the results. The elements of importance include the choice of variables under study, the treatments to be applied, experimental design, field technique, and data collection and analysis. As has been pointed out in section 2.2, the majority of experiments conducted are single-factor, single-year crop experiments, and which should therefore not require unusual experimental designs. Most data collected relate to yield or morphological characteristics, with some evaluation of disease, insect or frost susceptibility.

Given the restricted nature of most experiments the choice of variable being studied is generally satisfactory, though it may be questioned in those experiments where yield is being studied whether it is biological productivity or stability which should be evaluated. Similarly, the treatments applied, when they are agronomic, should bear relevance to the production system under review. These two points bear more relation to the experimental hypothesis than to methodology.

In terms of experimental design, by far the commonest in use is that of randomized complete blocks (RBC). In many cases a study does not include a design (such as when breeder's material is planted in observation plots, or where forages are established as demonstration plots in farmers' fields). The RBC design allows for some partitioning of the variability inherent in an experimental area, increasing the probability of detecting the effect of treatments over a design where no blocking is used.

Close examination of the CIPA annual reports for 1986 and 1987, the only consistent source of experimental results and analysis available to the team, indicates a large number of experiments where no significant differences were found between treatments. Often there may have been considerable absolute differences between treatments, and there may have been observable trends across treatment ranges. Consideration of these results suggests that, in general, the lack of ability to detect statistically significant treatment differences is a consequence of insufficient replication, most RCB experiments only having two replications. Unfortunately, in many experiments where statistically significant differences were lacking, the results have been interpreted as if all treatments were significantly different. This is dangerous and will almost inevitably lead to false conclusions. Many variety trials and fertilizer trials show these characteristics. The simplest solution is generally to increase the number of replications, though where experiments are being conducted on-farm, increased replication can be achieved by increasing the number of participating farmers rather than by increasing the number of replications within a single farmer's field. This strategy will also help in overcoming some of the spatial and altitudinal variability in climatic factors at the micro, or community, level.

The team has observed some trials where sub-plots have been established, for example, in the winter wheat trial in Santa Maria. This trial again had two replications, and it would appear

unlikely that the variety x fertilizer interaction will be able to be interpreted, because of lack of degrees of freedom.

In many on-farm trials a local control has not been included. It is extremely important that such a control be included as part of the experimental treatments where other varieties are being tested, in order to give the farmer a reference point for his or her own comparison (as well as for technical reference).

The team also observed that some experimental blocks were not correctly randomized. Treatments within blocks should always be completely randomized using a recognized method (e.g. random number tables) to assure that no bias is accidentally introduced to the experiment.

Experimental methods appropriate for FSR require care in their selection. Experiments within a season are simpler than experiments across seasons, but even so there must always be enough degrees of freedom to allow for the intended analysis to be carried out. Usually this can be accomplished through replication, though if the number of treatments is large, or a factorial design is used, other approaches may be more appropriate.

In several cases the same experiment has been conducted simultaneously in different locations, e.g. 'calibracion de analisis de suelos con ensayos de fertilizacion en papa' which was carried out in three locations in 1985-86. Each location was analyzed as a single experiment, but the three experiments could have been analyzed together. Table 2.6 illustrates the combined analysis of variance using data derived from the CIPA 1985-86 annual report.

*Table 2.6. Combined ANOVA for the fertilizer study on potato in three locations, 1985-86*

Source	d.f.	s.s.	M.S.	F
Treatments	6	628.402	104.734	
Within locations	2	56.893	28.447	
Between locations	2	731.288	365.644	
Error	52	Difference		
Total	62	Calculate		

*Source: CIPA Annual Report 1986.*

The ANOVA table requires only that the total sum of squares be calculated across the three experiments, the remaining sums of squares being derived from the individual ANOVA tables. The combined analysis provides almost five times the degrees of freedom for error compared with the individual analyses. It is evident from the mean squares that locational differences were a greater factor in potato yields than were the treatments themselves. The treatment means (Table 2.7) calculated across locations show a stronger relationship of yield with the applied treatments than did the individual analyses, and with a recalculated Duncan's range test would provide a much stronger basis for making recommendations about fertilizer applications for this particular variety. Given the strong influence of location, an intermediate fertilizer application is a logical regional recommendation. The analysis should be repeated by replacing the yield values with the value of the marginal return to fertilizer application, to determine whether the economic optimum coincides with the logical choice based on biological response. This example suggests that a great deal more information can be recovered with a little more analysis. In a similar way, the team believes that the Project should be exploring experimental designs appropriate to crop rotations, in order to be able to develop effective experimental approaches.

*Table 2.7. Treatment means for combined analysis across locations, potato fertilizer study, 1985-86*

Treatment	Mean potato yield t/Ha	Original yields by location		
		1	2	3
160-90-80	14.2	15.0	10.5	17.0
120-90-80	12.7	12.5	8.1	17.5
120-60-80	13.8	17.2	8.4	16.0
120-30-80	11.5	12.4	8.7	13.3
80-90-80	10.7	9.3	6.9	15.8
40-90-80	8.5	11.3	4.4	9.8
00-00-00	4.7	8.6	0.7	4.9

*Source: CIPA Annual Report 1986.*

Apart from on-station data collection on growth and reproduction, and an isolated fattening study, the Project is basically not carrying out any experiments with animals. Discussion with researchers suggests that a major reason for not conducting on-farm animal trials is that all management needs are felt to be fully defined. This would include, for example, vaccinations against parasites, use of improved males for cross breeding, etc. However, if such strategies are viewed as possible treatments in the search for improved animal production, it is clear that the quantitative and economic benefits of each strategy are not known, and that there is therefore very little basis for recommending the particular management campaigns being carried out in Project communities.

The whole issue of the design of on-farm animal experiments, especially with extensive management systems, cannot be reviewed here, but there is a definite need for development in this area. In conceptual terms, and in a sense that should be understood on the altiplano, an animal flock is equivalent to an 'aynoka' (a subdivision of the community's land, managed according to a common rotation, and where each family has a plot of land under the same crop), where each animal is a farmer's plot. Flocks can be divided for treatment application in the same way that an aynoka can, comparison between animal sub-groups allowing estimation of treatment effects. The Project will not achieve significant results in animal research unless a major improvement is made in research approach and design.

## **2.5 Involvement of Communities and Individuals, including Women**

Among the positive aspects of the Project has been the fairly good degree of participation of villagers in most Project activities, including increasingly in the planning and implementation of research. At least in the third year of the Project, three representatives of each community (including a woman leader) took part in annual planning sessions in Puno. Prior to this stage, village assemblies discussed local ideas for inclusion in the research program.

The finally-approved annual plan is discussed again in village assemblies, and individuals volunteer land and labor to participate in various experiments. The technical suitability of each piece of land is checked out before final decisions are made. The only problem with this methodology is that in many cases those who offer their land are those with relatively large landholdings. If these lands, and the way in which they are managed and farmed, are representative of general conditions prevailing in the village, there would be no difficulty. However, if such people, for example, normally invest a higher level of resources in their land, then results obtained will likely be biased.



It should be noted, however, that participation in the full sense of farmer control over the entire research and development agenda, with the Project being responsible to the communities who have decided to involve themselves in its services, is still some distance off.

In the majority of cases visited by the team, the cooperating farmer (or farmers, in the case of communal plots) clearly understood the purpose of the particular experiment and the variables involved. In a number of cases, the women appeared to be equally or better informed than the men concerning the details involved. It was also noted in discussions with farmers whose fields lay at some distance from the experimental plots that they, too, had an appropriate level of acquaintance with the experiments. In discussions with various villagers concerning PISA, the majority were aware of the relevant aspects of the Project's objectives and activities.

It is important to point out here the good training the field workers (technicians and data-collectors) appear to have received in the principles and techniques of social communication. The Team noted little in the way of paternalistic or imposed (top-down) activities on the part of field workers as far as experimental work was concerned. Nevertheless, a certain tendency towards working and communicating mainly with males was noticed, even in fields of activity where women predominate.

On the other hand, in the field of extension activities, particularly in transmitting technical recommendations, the situation is completely the reverse. Here the practice has been solidly traditional: staff arrive with recipes predesigned on experimental stations or in universities, for example concerning soil preparation, improved varieties and fertilization, without an adequate understanding of local "rationality" in this regard. Indeed, a typical peasant "irrationality" and "resistance to change" is assumed.

One problem noted is that there is often little clear distinction between farmer-managed and technician-managed experiments, thus introducing considerable uncertainties in data collection and analysis. In the case of farmer-managed experiments, all risks and costs involved should be borne by the farmer (except for technical advice). In the case of PISA, however, the Project normally provides free of charge a portion of the inputs. Under such conditions, the opportunity cost of the land aside, the farmer would very likely consider the experiment a good investment.

## **2.6 Analysis and Interpretation**

In its first year of operation PISA mainly supported research activities carried out by INIPA which were largely confined to research stations, and which had little applicability to the problems of small-scale farmers on the Altiplano. Since that time the Project has been redirecting its agricultural research work towards its intended clientele. One indicator of this effort is the increasing proportion of its research which is carried out within the target communities.

This section intends to consider the nature of the analysis and interpretation undertaken by the Project in linking the technical research results to farming systems on the altiplano. Factors such as the following are important:

- The extent to which results meet producers' need for stability;
- Whether or not results are consistent with producers' attitudes toward risk;
- Producers' ability to adopt higher-cost technology given their restricted resources;
- Whether or not a package of changes makes sense if only part of it is adopted;
- How well a specific pieces of technology fit into the existing production system;
- How well the innovation meets non-economic objectives or fits into the pattern of non-agricultural economic activities.

In order to assess analysis and interpretation within these aspects of the FSR approach, the team reviewed the analysis and conclusions of 50 experiments contained in the CIPA Annual Reports for

1986 and 1987. Of these, approximately two-thirds were PISA-funded trials in 1986 and 1987 and one-third were funded from other sources in 1987.

The consideration earlier in this chapter that PISA has not yet developed a comprehensive FSR approach remains valid regarding analysis and interpretation. Most experiments which display some FSR analytical insight do so at a very modest level. The analysis and interpretation of approximately one-quarter of PISA-funded 1986 research showed some evidence of FSR perspectives. In 1987 this figure was closer to 40 percent. Among 1987 research Projects sponsored by other sources the figure was closer to 20 percent, suggesting that many researchers remain to be convinced about the validity of the FSR approach.

Economic analysis within PISA is largely confined to cost-of-production studies on the revolving seed funds within Project communities. PISA staff have gathered high-quality data on labour, tractor and other variable costs as well as physical levels of labour input and production. These data are used to calculate average indicators such as an index of profitability, cost per kg. of product, amount of gross income generated per Inti and per unit of labour, and units of product per unit of labour. These averages are then compared with similar indicators calculated from test plots. The methodology appears to have a number of limitations including omission of some cost items such as those relating to land rent and interest on investment and the treatment of results when no crop was harvested (e.g. entire potato plots killed by frost).

In the latter case it is useful to examine Table D-19 from PISA's Resultados del Plan de Trabajo Anual, 1986-1987. Of 11 varietal plots of potatoes monitored during the 1986-87 season within the Nuñamarca revolving seed fund, six produced no product and another produced only 95.83kg. When the indicators are calculated those plots which produced no crop are omitted in most cases while the plot that produced 95.83kg (i.e. almost no crop) is included. The logic of this practice is not immediately apparent especially when one considers that crop failures are a reasonably common occurrence under altiplano conditions. Consider, for example, how the indicators would change if plots had produced 100kg of potatoes each instead of zero (assuming for simplicity, that costs did not change and that the price received for the potatoes was 4.3 Intis/kg). Table 2.8 gives original and new values for the five indicators.

*Table 2.8. Original and calculated values for five economic indicators, 11 varietal plots, Puno, 1986-87*

	Index of Profitability	Cost per Kg.	Gross Income per Inti of Labour	Gross Income per Jornal	Kg. Product per jornal
Original	.26	30.08	2.08	62.98	3.84
New	.27	45.99	1.56	47.13	10.39

*Source: PISA, Resultados del Plan de Trabajo Anual, 1986-87.*

The profitability index does not change much since the zero observations were included originally and the replacement of two zeros by two very low plot indices has little influence. Thereafter, additional net observations reflecting poor crop yields are incorporated in each index resulting in substantial changes. Any index which behaves this way should be considered highly unreliable.

Apart from these technical concerns there is the serious issue of the usefulness of single-point averages rather than marginal analyses for making agricultural production decisions. Although the plots are probably managed according to specific recommendations, many inputs are variable and optimal levels of inputs will depend on product and input prices, risk functions of producers,

physical production relationships, etc. It is possible that the data currently being gathered could be analyzed in this fashion, or that plot designs and management could be modified to generate appropriate data and enhance the usefulness of the analysis. These alternatives should be seriously examined.

Up to the present, economic analysis of PISA research has been limited basically to the revolving seed funds. The Project needs to develop firm plans for the economic analysis of experimental results including adjusting experimental designs to generate marginal response information (data already available from soil tests based on plant response to fertilizer should lend themselves to marginal analysis). Additional micro-economic themes which appear to be important for the Project are analysis of risk and uncertainty, and capital allocation/investment (see section 3.4). Partial budgeting should be useful in PISA experimental work, and CIPA's recent move toward producing extension data on high, intermediate and traditional levels of technology should be considered by the Project.

At the aggregate or macro level the Project has the potential to shift supply curves in some commodities which could result in falling prices. While there may be opportunities to produce products for which the Project staff feel there should be a strong demand (e.g. processed potato products or high quality seed), the demand may be more apparent than real. The team was informed of examples in the region of commodity prices falling in response to increasing supplies. The Project should be investigating these macro-economic issues as well. The market issues raised by the LARO Liaison Officer in his August, 1987, macroeconomic working paper merit careful response; their acceptance, qualification or rejection should be based on documented analysis, rather than on opinion or intuition.

## **2.7 Reporting**

The results of research activities carried out by PISA are reported in two main documents: the annual report of PISA and the annual report of CIPA. Other reports put out by PISA include:

- a) Quarterly general progress reports.
- b) Occasional technical reports including results of appraisals.
- c) Staff final reports (exceptionally).

The PISA and CIPA annual reports are the key documents in understanding progress in research. The PISA report covers the August- July period, whereas CIPA reports on a calendar year basis. The CIPA report includes research funded by sources other than PISA, and generally gives a more detailed summary of research results and conclusions than for the same experiments covered by the PISA report. The format of the two PISA annual reports (1985-86 and 1986-87) has been quite different, the 1986-87 report attempting to be more interpretative. It should be noted that the experimental summaries in the CIPA annual reports represent the only formal written description of the research conducted by CIPA.

As reporting instruments, the team finds both the PISA and CIPA documents to be inadequate. For instance, the PISA 1986-87 report essentially summarized the PISA-funded research described in the CIPA 1987 report (though given the different publication dates this may not have been a direct relationship). As the CIPA report is, in itself, a summary, the PISA report is extremely general. Where the latter reported any quantitative experimental results the lack of statistical inference anywhere in the report reduced the effectiveness and accuracy of the interpretation. Due to the fact that there is no direct link between, on one hand, the community appraisals and other data collection, and on the other, the research being conducted, the team is concerned about the large number of inferences made. The team also notes the general lack of economic analysis in any of the production trials.

The team believes that research reporting must be more detailed, more interpretative and that much stronger bases are required (e.g. joint agronomic and economic analyses) before inferences are made. The team stresses that good reporting is as important as good experimental design. Over time, a report is the only evidence that certain activities were carried out; the value of the information depends largely on the depth and quality of the report.

In other sections of this report, the team has reviewed research scope, experimental methods, analysis and interpretation. In general, the team feels that research results do not yet elucidate major elements of Andean production systems. As a consequence, their value as input to the extension process is open to question. The team believes that current PISA and CIPA reports do not provide a major source of information for training of extension trainers. (See Section 5.4.4 for further comments on Project reporting).

### 2.8 Staff Issues

The team is concerned that a cohesive interdisciplinary research team does not yet exist. The institutional context has been examined in Section 5.2. The way the Project has developed has been a result of difficulty in integration of objectives and approaches to the CIPA institutional framework, and the difficulty in finding staff. PISA exists largely outside this framework, even though a National Director, three full-time counterparts and several partial counterparts have been nominated or collaborate.

Different reasons have been given for the Project's difficulty in retaining staff; differences in personality and economic pressures are most commonly quoted. The team noted that about 50% of the Project's direct-hired staff are newly contracted since 1 January 1988, giving them little time either to have an impact on the Project or to improve their own conceptual understanding of the Project's objectives. Table 2.9 indicates the staff who have worked, or work, for the Project since its inception.

Table 2.9. PISA staff, 1985-88

Name	Field	85	86	87	88
M. Tapia	Director/Adviser PNCA	_____	_____	_____	_____
J. Reynoso	Co-Director	_____	_____	_____	_____
A. Lescano	Livestock research	_____	_____	_____	_____
O. Blanco	Crop research	_____	_____	_____	_____
L. Jimenez	Social promotion	_____	_____	_____	_____
J. Amado	Communication	_____	_____	_____	_____
R. Valdivia	Crop research	_____	_____	_____	_____
A. Vasquez	Surveys/training	_____	_____	_____	_____
I. Fernandes	Social promotion	_____	_____	_____	_____
A. Cruz	Computation	_____	_____	_____	_____
J. Infantes	Livestock research	_____	_____	_____	_____
F. Amachi	Livestock research	_____	_____	_____	_____
R. Davila	Human nutrition	_____	_____	_____	_____
G. Gongora	WID	_____	_____	_____	_____
H. Munoz	Human nutrition	_____	_____	_____	_____
R. Revilla	Livestock research	_____	_____	_____	_____
A. Salis	Surveys/economics	_____	_____	_____	_____
L. Lescano	Crop research/integration	_____	_____	_____	_____

Source: PISA staff.

In order to achieve effective FSR, the diverse disciplines of the Project staff (PISA and CIPA) require careful integration. This can only come about by continuous joint planning and execution of interdisciplinary research activities. The evaluation team notes some inconsistencies in individual perspectives that will make this integration difficult. However, the team is more concerned that there is no single on-site staff member with the breadth of FSR understanding and experience to act as a catalyst in the integration process. Even though the Project has just hired two persons at a relatively senior level, the evaluation team considers that the functions identified for this staff do not provide the key to the development of FSR.

It is noted that, both in correspondence to the Project Leader from IDRC (dated 7 December 1987), and in a PISA Ayuda Memoria (dated 9 February 1988), the hiring of a senior FSR scientist full-time is a continuous theme. In the latter document, the Project Leader suggested that the present team be left to work until the next meeting of the Project Steering Committee (August 1988), at which time progress would be evaluated. It is the view of the evaluation team a) that this is postponing a major decision until an inappropriate time in the sequence of planning activities, and b) that the Steering Committee requires impartial advice on this particular topic. The team recognizes that, even if the decision were taken now to fill such a position, it would be difficult to do so soon enough for the incumbent to provide significant input to the 1988-89 planning process. It is the team's view that this position should have been filled before now.

The team also feels that, despite having hired a variety of relatively low-level staff with social science background over the past two and a half years, the Project is lacking a senior social scientist with the breadth and depth of experience a) to review, analyze and distill the wealth of relevant social-anthropological studies of Andean societies, and bring them to bear on the work of the Project, and b) to provide the Project team with a framework for studying and understanding relevant social and cultural aspects of agriculture, and agricultural and rural development.

The team notes that consultants have been hired on occasion to provide specific input to the Project team. Only one consultant appears to have left a written report, making it difficult to determine the nature of the services provided.

## **2.9 Training**

### **2.9.1 Background**

Training, both for staff (CIPA as well as PISA) and villagers, has received considerable attention, both in terms of quantity (coverage, numbers of activities) and variety of subject matter. The Team, however, has some reservations about the overall planning, quality, monitoring and evaluation of Project training.

The POP refers to training as one of the five basic components of the Project, and outlines four training activities, covering MSc training for INIAA staff, workshops and other courses for INIAA staff, scholarships for local university students to complete Project-related thesis research, and farmer training (for at least 15 farmer-leaders on a quarterly basis). The Inception Report expands somewhat on this statement of training plans (and subdivides the original budget line "farmers' training" into "farmers' training" and "technicians' training", the latter line being used to cover all staff training except attendance at conferences.)

The definition of "training activity" on the Project is quite broad, covering everything from "visitas" (of Project technicians) to formally organized courses in experimental stations, media broadcasts and attendance at international seminars.

Planning of training activities results from a combination of PISA/CIPA staff proposals, some ideas from the "sondeos", and some villager suggestions. There appears, however, to be no overall

training strategy explicitly linking needs analyses and output from present and past research activities to a phased, progressive training plan (see comment below on staff training needs analysis). Each of the components may well be valuable in itself, but there is little indication as to whether or how they cohere to contribute to overall Project goals. The Team is unaware of any set of criteria established to determine which training proposals are approved for implementation (the first Annual Report p. 101-2, refers to a comprehensive training system being drawn up with CIPA, but this in fact was never completed). Neither was the Team able to discover evidence of systematic evaluation of the impact of various training activities.

Further, while such training activities as nutrition and community organization are probably critical to overall village development, the Team questions whether these are proper foci of an INIAA-managed Project such as PISA (see Section 5.3 for a further discussion of this point.)

This analysis would also suggest questioning the wisdom of pursuing such a volume of training activities in Year I: the first year might have been better spend on training needs analyses and program development, with implementation beginning in Year II.

For most of 1986, the rural development specialist was in charge of both village descriptive studies and training, but since his withdrawal from PISA there has been no Project professional in charge of training. The Project also works with CESPAC, the Ministry of Agriculture's centre for audiovisual training materials development, on various training activities.

According to LARO-generated budget figures of December 1987, based on the POP budget and projected to June 1988, only some \$16,700 of a total budget figure of \$76,700 will have been spent on villager and staff training by the end of Year III, leaving a balance of \$60,000.

## **2.9.2 Training of Villagers**

The first and second Annual Report as well as the Report of March 1988 give some basic data on Project-supported training activities for villagers. In the 1985/86 year, some 2300 villagers participated in 31 training activities, ranging from production and storage to nutrition and community organization. In the 1986/87 year, training activities were recorded in terms of numbers of "events", an event being defined as one technique taught on one location (e.g. a demonstration plot). Thus, of visita-type events, 8464 involved crop production (39,160 participants) and 390 involved livestock (11,700 participants). Other types of activities (discussions, demonstrations, seminars and courses) involved some 11,100 participants. Women predominated slightly over men, though in crop and livestock production activities the male-female ratio was reported as 5:3. While this data gives only a superficial indication of the quality of female participation in training activities, it does indicate that definite attention has been given by the Project to women's involvement. In both years crop-related activities predominated heavily over livestock training.

## **2.9.3 Staff and Other Training**

### **2.9.3.1 Graduate degree training**

The POP determined that seven INIAA staff members would be trained at the MSc level in the fields of rural development (2), plant breeding (2), animal production/pastures (1) and agroecology (1). How these numbers and fields were arrived at is not clear. It is also rather surprising that no specific emphasis was placed on Farming Systems Research, where lack of capacity in this focus would seem to have been one of the justifications for the Project.

To date, one CIPA staff member is pursuing a doctorate in agronomy/genetics (due to return in mid-1988), one is pursuing an MSc in animal production, one an MSc in agronomy, and one an MSc

in rural development/economics. The Project also partially funded the MSc training in rural development of the current National Director of PISA.

The Project has required that returning graduates serve two years in Puno for every year spent in studies. It has also required that theses deal with Project-related activities. Both these measures should ensure that PISA and CIPA benefit to a fair degree from the investment incurred.

Budget figures from LARO indicate that by the end of Year III, some \$44,000 of the budgeted \$186,200 for graduate training will remain. The Co-Director of PISA has indicated that remaining funds may be sufficient for only one more MSc candidate, and that a CIPA staff member would be sent for a degree in rural development.

### **2.9.3.2 Other staff training**

The first Annual Report records 10 training activities involving 350 participants (PISA and CIPA staff) in such subjects as agricultural production, extension, planning and evaluation. In the second year of the Project, 15 events involved 500 participants in courses dealing with extension, rural development, planning techniques, food and nutrition, and others. Of these, 305 participants were CIPA staff; the Project appears to have made serious efforts to involve CIPA in training activities from the early stages. A number of these activities have involved short courses elsewhere in Peru or outside the country.

The training section of the 1986-87 Annual Plan includes the results of a CIPA training needs analysis carried out in conjunction with PISA and CORPUNO. One of the major technical problems noted was the lack of attention to practical livestock training. A long list of training activities for all levels of staff, involving 6400 participants, was proposed, of which PISA was to fund 54%. The extent to which this list has been actually used to program training is not clear. It is not referred to in subsequent plans or reports, and once again, while a great variety of staff training is being done, with occasional references to FSR, the impression is left of little overall strategic planning in training. There also is little evaluation or follow-up of training activities.

In terms of support for Peruvian students' thesis research, five individuals have completed their theses on Project-related activities (livestock, agricultural technology, role of women) and received their degrees. Six more (nutrition 4, economics 2) have completed their research, two more are completing nutrition studies, while another one is about to begin. This results in a total of 14 out of the proposed 15. Of the original budget figure of \$108,000 for this item, some \$57,000 will remain at the end of year III.

In terms of short-term usefulness of these studies, it may be noted that one of the graduates continues to work for PISA as a field technician, three worked for various periods as data-collectors, and another is now the Project's nutritionist.

Finally, the Project considers attendance at various conferences and seminars as part of its training program (though funded from a separate budget line). Some 40 people participated in such activities in Year I, 10 in Year II, and 12 to date in Year III.

### **3. Research Output**

#### **3.1 Diagnostic Surveys**

##### **3.1.1 Background**

FSR has developed a generally accepted methodology comprising the following major stages:

1. Diagnosis or understanding of the situation.
2. Planning the research and other activities.
3. Conducting experiments.
4. Communication and diffusion of successful results.

Normally, the various stages should be carried out in the above order; nevertheless, sometimes actions falling within the last three stages may be carried out in parallel, once the diagnostic stage is completed. This may occur where tested solutions already exist to overcome certain problems or constraints, and can be adapted to the situation at hand.

The consensus among FSR practitioners, however, is that all four stages are essential. Within this context, the diagnostic stage is crucial, for it forms the base of all future activity. An incorrect or deficient diagnosis can destroy project objectives or at least considerably delay their achievement.

FSR-type Projects, including PISA, use both "static" and "dynamic" (diachronic) data-gathering techniques. "Static" techniques are both formal (based on statistical samples and using prestructured questionnaires) and informal (using no statistical design or structured questionnaires). The commonly used "sondeo" technique belongs to the informal type, and is intended to supply basic, preliminary information on which to base a program of agricultural research. It normally requires other, more specific surveys to complement it.

Diachronic data collection, on the other hand, refers to the systematic collection of data over a period of time; the data generally concerns particular activities or events that take place over time and which are recorded at roughly the time in which they occur. This type of data collection is known on PISA as "characterization".

##### **3.1.2. Initial Surveys**

Fairly soon after Project inception, pilot communities were chosen, a research program for the coming year was negotiated with CIPA, and support for the experimental stations was planned. According to FSR methodology, however, what should have happened after the initial selection of communities was to proceed with the diagnostic activities. Further, the POP states clearly that the first months of the Project should have been spent obtaining the information necessary for orienting Project activities (including a review and updating of previous studies and research results).

The team realizes that the Project began in 1985 at the point when the cropping season was just about to start; it is in just such circumstances that rapid appraisal methods are invaluable. However, the first systematic investigative activities were not reported until November 1985, i.e. five months after Project inception. They took the form of formal surveys (not appraisals); this methodological error has been compounded by the fact that to date, 29 months later, the information produced has still not been processed, and is probably no longer of much utility.



### 3.1.3. Appraisals

A year into the Project, appraisals were initiated to obtain information on production systems and other aspects of the communities where the Project was working (8 in total). In the opinion of some of the few Project staff who participated in this exercise and who are still with the Project, the experience was quite positive, in the sense of achieving in a relatively short time some understanding of key aspects of the communities and their production systems.

At present reports on the appraisals are available for 7 of the 10 Project communities; why the others have not been completed is not clear. All of these reports give a good general description of the communities with information on many aspects; however, they do not define priorities among the problems and constraints encountered particularly as regards agriculture. What is lacking is clear information on what are the most serious problems and constraints to production, which are the crops or subsystems most affected, and what strategies (if any) are used by producers to minimize these.

Another important factor which limits the utility of the appraisals is the lack of description of the common technologies used in the principal systems. Such information as agricultural practices and levels of inputs used is fundamental to the planning of any field-level experiments, as a control "treatment" or basis of comparison.

One of the basic objectives of appraisal methodology is interdisciplinary interaction among its implementors, the aim being to obtain an interchange of various partial viewpoints and understandings in order to arrive at a more integrated picture of the situation. In this connection, the participation of Project leaders (i.e. those who make the final decisions) is critical. In the case of the PISA appraisals, however, the Project leaders appear not to have participated.

### 3.1.4. Diachronic Surveys

This phase of diagnostic methodology is used to define the extent, limits, forms, volumes and interactions in agricultural systems under study; it is the quantitative phase of diagnosis. In PISA this work began in November 1986 in three communities. Table 3.1 indicates the date at which PISA began its involvement in each community and the dates at which the appraisals and the diachronic surveys were initiated.

*Table 3.1. Dates of data collection in Pilot Communities*

COMMUNITY	Inception of PISA activity	Inception of "Sondeo	Inception of Diachronic Surveys
Apopata	August 1985	June 1986	November 1986
Kunurana Bajo	August 1985	June 1986	January 1987
Luquina Grande	August 1985	June 1986	February 1987
Jiscuani	September 1985	June 1986	November 1986
Llallahua	October 1985	June 1986	June 1987
Urac Ayllu	December 1985	—	January 1987
Puna Ayllu	December 1985	—	January 1987
Carata	June 1986	—	November 1986
Anccaca	November 1986	November 1986	January 1987
Santa Maria	November 1986	June 1987	August 1987

*Source: PISA staff.*

Normally in an FSR Project, the diagnostic phase is initiated with a appraisal, followed immediately by certain types of agricultural research, while at the same time proceeding with more in-depth diagnostic work (through formal studies directed at particular aspects, or through "dynamic" or diachronic surveys, or a combination of both). As can be seen from the table above, with the exception of the case of one village diachronic surveying has not been properly timed. This, together with the similar poor timing of the appraisals, seems to have been a critical factor in the methodological errors the Project has made in planning its agricultural research and in the conduct of experiments.

In the experience of the Team with other FSR Projects, diachronic surveying is commonly limited to productive processes. In the case of PISA it is noteworthy that the Project has expended great efforts to collect data over a much wider range of activities than is normally done. In this sense, the Project may be seen to be breaking new ground. However such a large-scale data collection activity requires much energy and sustainability. According to information obtained by the Team, in most cases there has been significant turnover in village-level data collection staff; in one case there have been five different people responsible for this activity, with attendant lack of continuity.

The Team, in the short time it was in the region, was not able to determine whether significant social differentiation really exists in the pilot communities. The fact of having taken a sample of 10 families in each community divided in three strata based on possession of land and animals, is not necessarily an indication that there are in fact three distinct social classes in the community. It is quite possible, for example, that for purposes of research into agricultural production constraints and solutions, the whole community might be treated as a unit (i.e. it is quite possible for a whole village to be a recommendation domain). In any case, there is some doubt concerning the representativity of the samples selected, which may be clarified during the analysis by the use of statistical tests.

Various problems with the type and manner of data collection in the diachronic surveys have been noted both by the Team and by the recently appointed Project member in charge of this activity (who has already begun to take steps to improve the situation). Certain topics, for example those dealing with nutrition, water resources and medical activities, are too complicated for this type of data collection and should be left to specialists in the respective fields. Some variables are not measured frequently enough.

In other cases, it is not clear that data is being recorded from the peasants' point of view, using indigenous concepts and measures. The Project also has inadequate experience in methodologies for recording relevant livestock data.

The most basic problem of all with this data collection activity, however, is the overwhelming lack of analysis of the data and its systematic use in the planning, follow-up and evaluation of agricultural research activities. This despite the fact that in some communities the activity has been in progress for more than 16 months. Even assuming that capable field personnel could be retained for adequate periods in the villages, it may be the case that the Project is simply being too ambitious in the scope of data collection it is attempting. Clearly, it is not developing a very replicable model of data collection and analysis, even though it may well eventually produce useful results for the Puno area itself.

In any case, it is the opinion of the Team that if FSR consists of agricultural research activities based on the realities of peasant production systems, PISA at this point has not yet fulfilled the requirements that would classify it as an FSR Project.

### 3.2. Field crop research

As indicated in Section 2.1, PISA research focusses largely on Andean crops. By 1987-88, PISA staff indicated that 66% of all studies being carried out concentrated on one of four principal Andean crops, potato, quinoa, cañihua or barley (Table 3.2). The majority of all studies have a strong emphasis on plant breeding or selection, with relatively little emphasis on agronomic management or other production aspects.

During the course of the Project, the location of experimental work has changed from being largely on-station to largely on-farm, though experimental objectives are generally unchanged. The team found it difficult to determine the precise number, and, occasionally, purpose, of experiments undertaken, due to differences in reporting between workplans and annual reports, including between PISA and CIPA annual reports. Some experiments appear to have arisen spontaneously, outside the annual planning exercise. The generic term 'experiment' also tends to include such activities as observation plots, and biomass determinations in natural pastures. Table 3.2 indicates the areas of concentration of experimental work conducted by CIPA and PISA staff since 1984-85. PISA funding began in 1985-86. Numbers in Table 3.2 indicate experimental topics rather than experiments executed, as some experiments were conducted in more than one location.

From Table 3.2 it can be seen that the presence of PISA funding in 1985-86 brought about a significant increase in numbers of research topics compared with 1984-85. In subsequent years this number has declined, though other funding sources have become more significant. Cereals formed a major part of PISA-funded work in 1985-86, but this area is now almost totally supported by other sources. It should be noted that 1985-86 was an exceptionally wet year, with many experiments being lost to flooding, especially at the Illpa experimental station. Experiments conducted between 1984 and 1988 are listed in Appendix 4.

Experimental work is largely driven by guidelines laid down by the National Programs (there are four relating to field crops on the altiplano: cereals, legumes, potato, Andean crops). In general, planning is conducted at the experimental station level, with responsibility passing to one of the field researchers (CIPA counterparts to PISA) if an experiment is to be conducted in a community. Ample mention has been made elsewhere of lack of feedback from community studies (both short and long-term) into research development and design.

*Table 3.2. Emphasis of experimental work in crops conducted since 1984-85, CIPA, Puno*

	Breeding/Agrometry selection	Protection	Agromet <sup>1/</sup> soils	Water/ <sup>1/</sup>	Other
<b>1984-85</b>					
Potato <sup>2/</sup>	7	2			
Spring wheat	4				
Barley	3				
Triticale	1				
Quinoa	2				
Cañihua	1				
Oats	1				
Habas	1				
Occa	1				
Izafino	1				
Olluco	1				
Tarhui	1				
Pastures/forage	2	1			
	<b>Total 29</b>				

Table 3.2 (cont'd)

	Breeding/Agromet selection	Agromet <sup>1/</sup> soils	Water/ <sup>1/</sup>	Other
<b>1985-86</b>				
Potato	10 (1) <sup>3/</sup>	2	6	2
Habas	2 (1)			
Tarhui	1			
Quinoa	3	(1)		
Cañihua	1			
Occa	1			
Olluco	1			
Izaño	1			
Winter wheat	5	5	1	1
Spring wheat	9	1		1
Barley	3	1		2
Triticale	2			
'Systems'		1		
Pastures/forage	(2)	1		
<b>Total 63 (5)</b>				
<b>1986-87</b>				
Potato	6 (1)	1 (1)		
Cereals	(1)	1		
Habas	1 (2)	(1)		
Cañihua	2 (1)	(1)		
Quinoa	5			
Occa	2			
Izaño	1			
Olluco	2			
'Systems'		2		
Pastures/forage	(3)	(5)		
<b>Total 27 (16)</b>				
<b>1987-88</b>				
Potato	6 (4)	(2)	1 (6)	2 (1)
Spring wheat	(1)	1		
Winter wheat	1 (4)	(2)		
Barley	1 (3)	(1)		
Oats	2			
Habas	2 (2)			(1)
Quinoa	5	1	2	
Cañihua	2			
Tarhui	1 (1)			
Olluco	2			
Occa	2			
Izaño	1			1
Andean germplasm	1			
Post-production				1
Pastures/forage	(1)	3 (8)		
'Systems'		(3)		
<b>Total 38 (43)</b>				

<sup>1/</sup> Support departments that conducted research on specific crops/topics.

<sup>2/</sup> Order as presented in CIPA Annual Reports.

<sup>3/</sup> Other experimental work funded (1985 onwards) from non-PISA sources.

In general terms, research staff take technology to the communities (e.g. improved varieties, fertilizer recommendations) rather than develop technology on-site with producers. In the few cases where some attempts have been made to tailor this technology at the farm level, e.g. fertilizer studies, analysis and interpretation of the results does not go far enough, or is not rigorous enough, to allow appropriate conclusions to be drawn. In the 1986-87 PISA Annual Report, which briefly reviewed experimental work done on potatoes between 1972 and 1986, of 32 fertilizer trials conducted, not one had an economic analysis. Discussion in the present report (Section 2.4.2) has highlighted the loss of information through incomplete analyses and lack of statistical rigour. In Section 3.4, attention is also drawn to both conceptual and mechanical deficiencies in much of the design and interpretation that is done.

The team feels that it is extremely unfortunate that basic information from the rapid appraisals and diachronic surveys is not being used in establishing field crop research priorities. This is needed by CIPA in order to balance the emphases of the National Programs. Only when these are compared will it be seen whether the National Programs address issues pertinent to the small farmer; nowhere is this more critical than in relation to the Andean Crops program.

The team notes that cereal work is a minor focus of this Project, in direct contrast to the previous phase. This appears to be a result of the Andean-crop emphasis brought to PISA from PISCA, and a lack of cropping- systems analysis to determine the relative merits of different crops in these systems. CIPA has a continuing interest in cereals work, believing that wheat has an untapped potential in agriculture on the altiplano; to this end funding from other sources is being used to continue this work. The team also notes that canola has been dropped completely from the research program. Given the stage which research in both canola and cereals had reached in the previous phase, the team believes the loss of sustained effort in these two crops to be unfortunate; it cannot be justified from appraisal or survey results from the communities. The team notes that canola, as an oilseed crop, does not fit logically into any of the National Programs.

The team believes that research development and design must be consolidated at the community level in order for field-crop research to have an impact on cropping systems and technology. It is believed that this will necessitate a swing away from the major concentration on plant breeding and selection towards more fundamental on-farm agronomic studies aimed at across-year cropping patterns and rotations, and the strategies for these used by the campesino. Single-crop work in isolation has little value unless it supports solutions to specific constraints identified in the larger cropping-system framework. The team also believes that as much of the systems approach as possible must be built into the 1988-89 planning cycle; CIPA has already prepared and submitted to PISA a list of about 200 experiments developed on National Program lines (see also Appendix 4). PISA staff should be using the village survey data to establish research criteria for the 1988-89 program prior to considering the CIPA list.

### **3.3 Livestock Research**

The area of livestock research is the one in which the team has most difficulty in relating research objectives, plans and activities to the reality of production on the altiplano. Initial 1985-86 Project activities in this area concentrated on support to experimental stations, including funding to the stations of La Raya and Chuquibambilla, for either the reactivation or continuation of animal production modules, the enclosure of pasture areas to quantify biomass production, and the establishment of areas of cultivated forages for supplementary feeding. A first-year community activity was defined as 'genetic improvement of sheep in the communities'; the remaining community activities included the execution of animal health plans, and the establishment of observation plots of improved forages.

The 1986-87 Work Plan presents a significantly modified picture of research plans (Table 3.3) and community activities (Table 3.4). While there is still emphasis on animal production modules,

the majority of studies are now linked to native and improved forages. The 1986-87 PISA Annual Report is notable for the absence of any mention of results relating to the animal production modules, the results reported, both on-station and in communities, being related to forage production. Not only does the 1987-88 Work Plan not mention continuing work with the production modules, but it also introduces two major themes, the study of 'oconales' and lakeside fattening systems (Table 3.5).

The team finds the conceptual development and continuity in livestock research quite unsatisfactory. While the team recognizes that livestock research is only one of the dozen or so National Programs executed by CIPA, and that therefore institutional capacity is slight and, moreover, oriented towards forage production, the Project has not demonstrated any capacity to strengthen the livestock focus, nor to achieve the majority of objectives set for itself in each work plan. The team does not believe that continual emphasis on data collection in the on-station production modules advances general knowledge on local animal production, mainly because each station is an island with its own management characteristics. These modules bear no known relationship to campesino animal management, and little extrapolation can therefore be made. It is with relief that the team notes that the modules do not appear in the 1987-88 work plan, indicating that no more funds will be channelled in this direction.

Apart from the work being done with cultivated forages the team believes that little of the pasture work will have practical applicability. Many communities practice the closure method. Forage production data on closure represent a regeneration phase rather than estimates of forage availability on opening to grazing. Much of the native pasture data is of little use without the complementary animal production data. The animal is a better indicator of integrated productivity of a pasture association than is a dry matter estimate. The latter should be done as a complement to the animal study. The Project's concern that campesino stocking rates are three times as high as they should be (calculated on the basis of sustainability of dry matter production under grazing), needs to be interpreted on a broader basis, i.e. what is the rationale for such a strategy? Why is the campesino more interested in numbers than in individual animal production?

*Table 3.3 1986-87 PISA Livestock Research Work Plan Summary*

Activity/Area	Location
1. Feeding	
– Observation garden of native forages species	Chuquibambilla
– Seed production of native Andean forages	Illpa
– Collection, evaluation and selection of native clovers	Illpa
– Evaluation of native pastures in closures	Chuquibambilla La Banda Illpa Apopata
– Collection of exotic grasses and legumes	Illpa
– Evaluation of growth rates and management of pastures	Illpa
– Use of Rock Phosphate in improving cultivated pastures	Illpa
– Improvement of natural pastures in communities	Unspecified
– Management of Ankaria	Apopata

*Table 3.3 1986-87 PISA Livestock Research Work Plan Summary (Cont.)*

<b>2. Production of pastures and forages</b>		
– Production of forage oats		Illpa
– Alfalfa production		Illpa
– Improvement of native pastures through legume introduction		Illpa
<b>3. Production</b>		
– Native sheep production modules		Illpa
– Alpaca production module in cultivated forages		Illpa
– Community dairy production module		Chuquibambilla
– Community cheese production module		Chuquibambilla
<b>4. Breeding</b>		
– Evaluation of genetic improvement of sheep in communities through introduced rams		Unspecified
<b>5. Health</b>		
– Parasitological study in sheep, cattle and alpaca in communities		Communities
– Study of epididimitis in 200 sheep		Chuquibambilla

*Source: PISA 1986-87 Work Plan*

*Table 3.4. Community-level livestock objectives*

**Feeding**

Improve animal feeding by establishing improved forages, and improved use of by-products.

**Health**

Decrease level of endo and ectoparasitic infection through prevention and control measures.

**Breeding**

Improve the genetic base of community animal populations through distribution of male sheep, cattle and alpaca by providing AI and breeding services, and through distribution of guinea pig breeding stock.

*Source: PISA 1986-87 Work Plan.*

The high turnover in Project staff is undoubtedly a factor in the discontinuity in research activities. However, the long-term nature of community-level animal-production research requires that research Projects be designed to overcome such difficulties. The team believes that livestock research must be refocussed towards the animal as a production unit in the Andean farming system. This requires a specific methodology and a multi-year focus. The team believes that the Project should be taking advantage of its membership in RISPAL to explore possible methodologies and sources of technical assistance to support livestock production research. The team understands that the Project is not collaborating actively in RISPAL.

*Table 3.5. 1987-88 PISA Livestock Research Work Plan Summary*

Activity/Area	Location
1. Bibliographic review	
2. Feeding	
– Native pasture studies with closures	Chuqibambilla La Banda Illpa Apopata
– Specific study of native forage 'tola'	Apopata Quinsachata
3. Study of oconales	
– Physiographic peculiarities	Quinsachata Apopata Kunurana Bajo
4. Fattening system	
– Lakeside fattening system	Carata
5. Improvement and management of pastures	Kunurana Bajo Llallahua Ñuñamarca Santa Maria Jiscuani

*Source: PISA 1987-88 Work Plan.*

Under this livestock section, the team also wishes to discuss the issue of the **granja de cuyes** (guinea-pig farm). From the Project point of view the GC is a support service to the communities operated from an experimental station. The purpose is to provide breeding stock to communities by maintaining an active on-station reproduction program. The team believes it appropriate to review this activity in this section because of the active participation of the Director of the National Livestock Program in its initiation and establishment, and the similarity the GC bears to on-station production modules mentioned above.

The GC infrastructure was established as part of the PISA support for CIPA infrastructural development in 1985-86. The current Director of the National Livestock Program played a major part in the design of the farm. At maximum capacity it was intended to house 1,200 breeding animals.



The team has not found any substantiating documentation describing the rationale for the GC. Due to the ambitious nature of the design, only about half of the GC is now being used to house guinea pigs, the remainder being converted into office space for PISA staff. Animals are being sold both for breeding and consumption. The team observed some guinea pigs in the communities (e.g. Llallahua) which had been distributed by the Project, and found that some mortality had occurred in the distributed animals. Farmers expressed their concern for the lack of technical assistance in support of this activity. It cannot be determined if the nutritional objectives of this activity are being met.

The team understands that the GC has been the direct responsibility of CIPA since its beginning. However, much of the decision making appears to rest in PISA hands, even though the Project's National Director is now nominally responsible for the unit. The team doubts that the GC is self supporting through sales, even though this is a primary aim, and believes that the GC is another example of PISA being over extended in terms of the community support that it tries to provide, and the amount of researcher-time that is required for administration. In livestock research terms, the GC exhibits all the limitations of the on-station animal production modules.

### **3.4 Systems Research**

#### **3.4.1 General**

Because of the importance of the systems concept, the team has endeavoured to assess the extent to which the Project has a systems focus, and what the systems research output might be. Many of the Project documents talk about the systems focus, and to some extent discuss the importance of the systems approach. Much emphasis has been placed on the importance of the appraisals and longer-term data collection in the definition of research priorities, though there is little evidence of any direct connection. Under Section 2.2 the question of scope and focus of research has been considered, the principal conclusion being that FSR is not being carried out; a rudimentary examination of CIPA documents has suggested that some analysis and interpretation incorporates FSR concepts (Section 2.6).

The team believes that the Project is confusing terminology and approach. FSR has been discussed in Section 2.2, including the types of trials that one might expect to find in true FSR. There is some danger in trying to be specific about this, because of the range of disciplines and approaches that can be brought to FSR. However, the team believes that the following observations can be made:

1. A production system should not be confused with technology components. For instance, the work with camellones is described by the Project as production systems research (Results of 1986-87 program, PISA). In section 3.4.2 detailed consideration is given by the team to this work; however, it is clear that the main emphasis is on the technology of production of potato on raised beds, and that whatever experiments are conducted, are being planned annually with no on-going connection between them, and without any consideration given to the longer-term rotation of crops. In the same sense, the post-harvest study mentioned under "production systems" in the same report refers to a component of the production process, and in itself is not a production system. In fact, it was not clear to the team why the latter study would be included under such a section.

2. The Project tries to account for different production systems by selecting communities in different agroecological zones which correspond to principal approaches to Andean agriculture. The team accepts that there are major differences between these communities, and that, in the majority, they are representative of the region in which they are found. The team is concerned, however, that the fact that communities appear different does not necessarily mean that all aspects of the production system are different, or that there are not common strategies adopted by communities

in the different zones. The Project is hypothesizing that the communities are different; the Project should be testing this hypothesis through FSR.

3. The team believes that the Project is attempting to do far too much in the initial years. Thus PISA is providing services (either directly or through convenios) and technical assistance at the same time as it is trying to characterize the communities and develop an effective research approach. This range of activity appears to be connected partly to the wish not to leave any aspect of community needs uncovered, but also to an inherent misconception that a systems approach must include all such areas and activities. While the team commends the Project personnel for its dedication to the communities, and the extent to which they have involved the communities in decision making, the team believes that the extent of these activities impedes an effective development of FSR, and, as a consequence, a better understanding of Andean farming systems, a true systems output.

In an attempt to be constructive in its review of some of the major aspects of Andean technology being evaluated by the Project, the team presents the following analysis of the **camellones** study. Such comments would apply at the conceptual level to many other Andean technologies.

**3.4.2 Camellones**

The early focus of the Project on camellones represents PISA's first attempt to evaluate what is seen as a specific Andean technology. The camellon is understood variously as being a frost-avoidance strategy, a means of combatting flooding, or a way of providing supplementary irrigation. Over a number of years the probability is high that this technology may achieve one or more of these goals.

Two sets of data have been reported, for the 85-86 and 86-87 seasons, where potato production principally, though other crops also, has been evaluated on camellones. The evaluation team has selected this set of experiments to highlight some of the deficiencies occurring in PISA in terms of the analysis and interpretation of results, and the superficial consideration being given to the longer-term aspects of the rehabilitation of camellones. As the experimental results are reported in more detail in the CIPA Annual Reports for 1986 and 1987 than in the PISA 1986-87 Annual Report the former data are used for the first part of the discussion.

**3.4.2.1 Production**

Table 3.6 indicates mean potato yield over 27 varieties grown on camellones with a north-south or east-west orientation in 1985-86. These results indicate a highly significant effect of camellon orientation on mean potato yield, though given the experimental design used it is not possible to tell from the analysis presented whether the appropriate mean squares were used in the test of significance.

*Table 3.6. Mean yield (kg/Ha) for 27 varieties of potato grown on camellones, Illpa 1985-86*

Orientation	Yield (kg/Ha)
North-South	13,374 b
East-West	27,700 a

*Source: CIPA Annual Report 1986*

Table 3.7 indicates the results obtained for a smaller trial in the following year.

*Table 3.7. Mean yield (kg/Ha) of sweet and bitter potatoes grown on camellones compared with normal cultivation, Illpa 1986-87*

Orientation	Type	Yield (kg/Ha)
North-South	bitter	16,134 a
	sweet	4,518 b
East-West	bitter	11,678 a
	sweet	2,020 b
Control	bitter	4,166 c
	sweet	375 c

*Source: CIPA Annual Report 1987.*

The 1987 report contains no interpretation of these results, nor any comparison of them with the results obtained in 1985-86. Given the emphasis put on this particular technology in PISA, this lack of interpretation is surprising. Of equal concern is the summary of this experiment reported in the PISA 1986-87 report which notes that the North- South orientation results in 51% higher yields than the East-West orientation.

Examination of Table 3.7 shows that even though N-S yields were on average, 51% higher than E-W yields, there was no significant difference for orientation within potato types. Significant differences existed only for sweet versus bitter potatoes, and production on camellones versus the control. The '51%' conclusion in the PISA report is in direct contrast to the superiority of the E-W orientation found in 1985-86 (yet no comparison is made), and, given the absence of significant differences between E-W and N-S treatments in 1986-87, is an improper conclusion to which to attach any weight.

These Tables hide another element of the analysis that is extremely important. Of the total area of land rehabilitated (13.4 Ha), only about half (6.68 Ha) was cultivable. As a result, the yield figures for camellones reported in Table 3.7 are about twice as high as they should be. If they are recalculated on the basis of the total area, they would appear as in Table 3.8.

From this table it is clear that the increase in production due to the camellones is marginal, and probably statistically insignificant. The significant difference over the control in Table 3.7 is a result of the way in which the data were analysed, hiding the fact that rehabilitation of camellones effectively reduces the area that can be seeded. Table 3.6 should be similarly corrected.

*Table 3.8. Recalculated mean potato yields, for camellones compared with normal cultivation, Illpa 1986-87*

Orientation	Type	Yield (kg/Ha)
North-South	bitter	8,067
	sweet	2,259
East-West	bitter	5,839
	sweet	1,010
Control	bitter	4,166
	sweet	375

### 3.4.2.2 Economic Analysis

The objectives of the study related to supporting the physical reconstruction, increasing crop yields and improving incomes and nutritional levels of the local population. As indicated earlier 13.4ha were renovated resulting in 6.68ha of tillable area. Potatoes were planted on the camellones and also on a combination of other sites (slopes, terraces and small fields) to provide a comparison. The result reported can be summarized as follows:

#### Inputs:

- 16,209 Kg of seed potatoes (3 varieties) purchased at a cost of 75,545 Intis to plant both camellones and comparison plots: 10,527 kg. planted on camellones, 2,737 kg. on comparison plots and 2,551 kg. wasted or given away;\*
- reconstruction required 10,226 days worked at a cost of 238,572 Intis (US\$ 11,927);
- 463 individuals worked on the reconstruction receiving an average of 515 Intis per person;
- average cost of days worked per gross hectare rebuilt is reported as 18,346 Intis;\*

\* There appear to be mathematical inconsistencies at each of these points in the report.

#### Outputs:

- 54,094 kg. of potatoes were harvested from the camellones; total yields and average yields per hectare were reported for each variety;
- 4382 kg. of the potatoes were used to create a community revolving seed fund; 6739 kg. went to the PISA-COTESU revolving seed fund; 42,973 kg were distributed among participants in the Project;
- the comparison plots were frozen and produced nothing.

The study provides very little information that would assist extension workers or producers to decide on the merits of such a Project. In particular since capital is scarce in Altiplano communities it is surprising that there is no reference to the long-term nature of the investment, and the need to consider changes in income over a long time period which the investment in camellones would generate. Similarly there is no assessment of change in risk levels associated with conversion to camellones when this is said to be an important advantage of this technology.

If one assumes that capital is a scarce resource within the local farming system it would be more appropriate to try to estimate the increase in net income which the land will produce as a result of investing in camellones compared to its original form, and also examine other strategies which might make the land more productive. Would it be possible, for example, to improve crop or forage production on the land at a lower level of investment and, hence, at lower risk? Such an analysis should also try to assess the long-term market prospects for the alternative products to avoid investing in an activity where prices will likely decline substantially (vegetable production, for example, may appear to be a lucrative activity but over-production can quickly undermine prices and erase profits).

The following analysis suggests a framework within which the investment in camellones might be analyzed.

The objective is to estimate the change in the flow of net income derived over time from the land as a result of reconstructing camellones and consider this as the "interest" on the investment cost.

## 1. Original use of land – e.g. forage production

Year 1   Year 2   . . . .   Year n

A/1 Gross Income  
Price x Quantity

B/1 Variable Costs eg:  
– livestock purchases  
– forage seed, fertilizer  
– labour  
– machinery etc.

C/1 Fixed Costs e.g.:  
– land taxes  
– interest on machinery  
– operating capital  
– capital depreciation, etc.

D/1 Net Income (A/1 – B/1 – C/1)

## 2. Use of Camellones – e.g. Andean crop rotation

A/2 Gross Income  
Price x Quantity

B/1 Variable Cost e.g:  
– potato, quinoa, etc. seed  
– fertilizer, chemicals,  
– containers  
– labour  
– machinery  
– maintenance of camellones etc.

C/1 Fixed Costs e.g:  
– land taxes  
– interest on machinery  
– operating capital  
– capital depreciation, etc.

D/2 Net Income (A/2 – B/2 – C/2)

Change in Net Income (D/1 – D/2)

The change in net income, as indicated above represents the interest on the investment in rebuilding the camellones. If the money for the Project has been borrowed, this increased income has to be used to pay the interest on the loan (if any). In order to calculate the real rate of return on the investment the income and expense estimates will have to be deflated to bring them to a common base (i.e. the period in which the investment in camellones was made). They can then be discounted to calculate the return on the investment.

Remembering that capital is a scarce resource it would be useful to perform similar calculations concerning other activities in which a capital investment might generate an additional flow of income to see what rate of return might result. As mentioned earlier these alternatives might be agricultural (e.g. increasing forage production with improved new varieties) or non-agricultural, such as building a small factory to process farm products or produce other goods.

This illustration represents a simplified analysis of a camellones Project but would serve as a starting framework for other capital investment Projects such as terraces. A number of explanatory notes are in order:

1. The time period during which to calculate changes in income would be the duration of the loan or the length of time the investors feel is appropriate to amortize the capital.

2. Annual yield estimates should account for possible variations, especially due to climate. This might be done by:

- Using long-run average yields as a constant throughout the period.
- Using random risk factors to simulate actual yield conditions at the Project location.
- Testing the risk implications of two or three poor years in succession at the beginning, middle and end of the time period e.g. Could the investors withstand two years in a row with expenses but no income from the Project?
- In addition the analysis could test the feasibility and willingness to establish an insurance fund from annual profits to protect against bad years.

3. Where prices are concerned historical variability should be considered along with the tendency for real prices of agricultural products to decline in the long-run.

### **3.5 Social Science**

One of the principal characteristics of FSR that distinguishes it from more traditional agricultural research is the high degree of incorporation of social sciences into the whole research process. This is based on the fact that it is individuals and groups who make critical decisions concerning whether, when and to what extent to use the various other factors of production. Further, just as climate and soils are not homogeneous across zones, so to do human societies exhibit variability in social structure and culture both within and between regions. It is the interaction among social, cultural, economic, climatic and edaphic factors that determines agricultural production systems. An adequate understanding of this interaction is essential to the process of determining feasible options for introducing improvements to these systems.

The degree of integration of social science research in FSR may vary according to the type of society and the nature of agricultural systems under investigation. Nevertheless, it is quite surprising that the basic document of this FSR Project, the POP, makes no reference to the social sciences and includes no specialist in this field in its proposed list of staff. It is a credit to the Project, then, that it did recognize the need for such a component under the very difficult conditions that exist in the Puno region, and that it has, at various points, recruited social science assistance.

Nevertheless, the participation of the social sciences on the Project has been fairly marginal to the whole process of farming systems research. Two sociologists were employed by the Project for relatively short periods at different times in the earlier stages, but their work had a somewhat narrow focus related mainly to social development activities. Currently the Project employs an anthropologist, who is mainly involved in the study of the role of women though she also collaborates to some extent with some of the biological scientists. Neither of these social scientists, while performing their tasks competently, appears to have had the depth of experience and breadth of vision to bring to bear the full powers of social science research (and the wealth of studies of Andean societies conducted over the past decades) on PISA's farming systems research.

A great deal of sociological information is in fact being collected, via the diachronic surveys (and previously in the appraisals). Once again, the Project has lacked a person with sufficient capability to analyze this information and integrate it into the planning of agricultural research. To date, then, the determining factors in the design of experiments have been largely biological.

The Team is aware of little effort having been made to analyze previous studies done in the area (e.g. Montoya and Channer's case studies of five Puno farming families in the late 1970's, which showed that improving crop production was of little interest to local farmers, who were much more interested in improving livestock production for cash income). Further, questions exist as to the relevance of some of the information being collected (e.g. is ethnicity a significant local sociocultural factor or not?). Also, data collected to date is almost entirely quantitative; a whole range of qualitative data, particularly dealing with peasants' concepts and values, is not being recorded. Fortunately, the newly-appointed Project member responsible for these surveys is aware of these deficiencies and is attempting to deal with them.

A further problem the Team has noticed is the lack of an agreed-upon simple set of development indicators that can be used to give some indications of Project impact (or of the impact of particular components). This is clearly an urgent need at this point if the Project and its sponsors intend to do any evaluation of impact at some future point. The whole question of who the beneficiaries of each Project activity are is one that is not being adequately addressed, either. This need will become even more critical once the Project enters a phase of adaptation, diffusion and adoption of new technologies.

As mentioned earlier, Project field workers appear to have a good degree of sensitivity to sociocultural factors involved in their work in the communities; in part, their training must account for this. Little of the rest of the training activities sponsored by the Project, however, such as that directed to CIPA staff, appears to have dealt with social science issues that are relevant to FSR.

### **3.6 Linkage Between On-Station and On-Farm Research**

Early PISA research was conducted largely on research stations and the shifting emphasis toward on-farm research was mainly a relocation of station activities without a significant shift toward understanding and focusing on the Andean farming systems in the Project communities. It was suggested earlier (Section 2.6) that this appears to be changing. Discussions with Project staff also suggest that the farm-station research link is starting to take root among a growing number of PISA and CIPA staff. Examples were cited (e.g. the Andina potato variety's failure to produce acceptably without fertilizer) where on-farm trials and farmers' reactions had caused researchers to reconsider their findings and recommendations.

Although the change is difficult to measure, on-farm research is said to be gaining support at research management levels as well. This is apparently fostered in part by increasing local autonomy in planning research to meet the particular needs of the different regions. The farm-station linkage would be strengthened if the general outlines of a long-term research program were

planned for a 5-10 year period so that the linkage could be targeted as a mechanism in the FSR process. Unfortunately PISA and CIPA research programming has not yet developed this long-run perspective.

### **3.7 Adoption by Producers**

The March 1988 report, *Avances del Proyecto PISA en Puno*, indicates that producers are adopting new technologies which the Project has brought to the various communities. Field visits made by the team confirmed that campesinos are indeed trying new technologies. In one community for instance, a farmer's plot of alfalfa interplanted with barley had attracted a great deal of interest on the part of other members of the community. Many were planning to try the technique during the 1988-89 season as a means of establishing alfalfa to increase forage production while at the same time having the advantage of barley as a nurse crop and the possibility of harvesting a barley crop as well.

In the context of Andean farming systems, however, it seems both premature and methodologically incorrect to consider that many farmers are adopting new technology when it has been tried by them for only a relatively short period. One or two years' results are not long enough to produce evidence regarding long-term suitability to their conditions of climatic and geographic variability combined with social and economic aspects of the local farming systems. In the case mentioned above, questions regarding the proper management of alfalfa had not yet been addressed. Given the lack of fencing in the area there may well be cases of cattle or sheep bloating and dying from uncontrolled grazing. A few campesinos losing a significant proportion of their capital could quickly dampen the enthusiasm for alfalfa and reverse the adoption process.

At another community trial involving barley varieties and a fertilizer level recommended by the experiment station, the farmers were asked whether they would try the new technology the following season. One of the community women answered "Yes, but less fertilizer". The response suggested that the experiment might have produced more useful information and greater campesino willingness to try new technology if it had demonstrated the results of differing fertilizer level ranging from zero to technical recommendations.

In summary it is too early to know much about the adoption of new technology resulting from the PISA Project. A number of suggestions can be made, however, which should enhance both the adoption process and PISA's understanding of it:

- Make sure the farming system is well understood and that the technology should fit the system reasonably well in order to minimize future problems.
- Continue the community experimental stage of technology development testing long enough to explore a substantial amount of the variability within the system and region.
- Where possible, explore incremental technology in such a way that campesinos can see the potential results of partial or gradual adoption.
- Monitor producers who have "adopted" to learn how they are progressing with the technology and to help adjust it if required.



## **4. Community Activities**

### **4.1 Agricultural Extension**

#### **4.1.1 General**

Agricultural extension is an educative process aimed at increasing agricultural production and/or productivity, as a means of improving the lives of agricultural producers. This process involves a great variety of activities and services, two of the most important being technical assistance and communication or transfer of technology. Technical assistance refers to the provision of a service to solve a particular production problem, requested by or of implicit or explicit necessity to the producer. Technology transfer is the promotion and diffusion of a technological change or the utilization of a new technology which has proven advantages over the traditional technology. In this regard, FSR is based on full farmer participation and self-management via a constant two-way process of communication.

At the outset of the Project, PISA attempted to coordinate the activities of the extension service of the then INIPA, and to support it technically and financially. Nevertheless, despite the fact that the Project had little to offer at the time in terms of extension, there existed a sharp contrast in focus and strategy between PISA and the extension service. Since the early 1980's, INIPA had adopted the World Bank-promoted Training and Visit system. PISA felt this to be a top-down approach not suited to the participatory action focus or strategy, and through its field personnel initiated its own type of extension activities. In order to achieve this, it had to carry out a strong program of staff training, which in the Team's opinion has been satisfactory.

In the recent restructuring of INIPA, and its change to INIAA, the responsibility for agricultural extension was returned to the Ministry of Agriculture. In Puno, the Team explored the implications of this for producers on the altiplano. In this particular case, it appears that the Ministry, through its local office, will operate extension services through Rural Development Centres across the Department. As the Team understands it, an RDC is an extension agency (rather than a unit of infrastructure) which will provide services through sectoral units (crop production, livestock production, water resources and irrigation, forests and wildlife, commerce and agro-industry, business management). The term 'sector' is also used to describe the geographical subdivisions (72) of the regional RDCs (12) in the Department.

At the time of the mission, the transfer of extension to the Ministry had not officially been completed, and there was uncertainty in CIPA as to how the transfer would be effected. CIPA would retain responsibility for extension training, the first step of the perceived process of technology transfer.

The Team notes that CORPUNO expects to take over extension responsibilities at some time in the future, linking this to the 'microregion' development strategy currently being implemented. In this sense, the RDCs in Puno may be transient features, as no clear strategy was outlined to the Team by CORPUNO.

#### **4.1.2 Technical Assistance**

The most notable case of technical assistance to the communities under the extension program has been in the field of animal health (prevention and cure). According to information received by the Team, producer demand for this service increased significantly between the second and third years of the Project. In this regard, the Project provides free of charge only the technical advice of the field personnel and farmer training: through a rotating fund set up with a Project loan, producers pay all other costs. Another important extension activity in the livestock area is the provision of improved breeding stock. The Team, however, has serious reservations

about this strategy and its effects. For example, a genetic change increasing yield potential will automatically require increased nutritional inputs, yet there is no evidence as yet to show that availability of sources of animal feed has been increased. The whole peasant rationality of animal production, the adaptation of current systems to the environment, and the interplay of all the various factors involved (i.e. a systems approach) need to be better understood before promoting particular changes in one factor in the system.

In crop production, the most important extension activity has been in seed potato production. Here, too, the Team has some strong reservations. The focus to date has been on "improved" varieties, which however have not undergone proper testing under an FSR approach. For example, it was shown that the Andina variety produces higher yields per unit of area, but the form of evaluation used contains basic biases. "Healthy" seed (with little or no presence of viruses or other pathogens) was compared with native varieties, which obviously did not have this advantage. The question remains, therefore, whether the Andina variety has a higher yield potential, or simply produced higher yields because in this case the seed was virus-free? What would the results be after several cycles under producer-managed conditions? Besides yield, does this variety satisfy other community requirements such as flavor, amount of fuel required for cooking, and market demand and price? It would seem that such questions have to be answered before such an extension activity is undertaken. Indeed, the whole seed potato program needs to be redefined and based on the results of solid FSR research.

#### **4.1.3 Transfer of Technology**

The Project is undertaking many activities in the area of technology transfer. In a number of cases, it is not at all clear whether the action in question is research or technology transfer, due to the approach and methodology adopted. The Team believes that such cases tend to be neither

Among the range of activities observed, one which appears to have high potential is storage of seed potatoes under diffused light. Producers interviewed were quite clear as to the advantages of this system. Nevertheless a reorientation in strategy would seem to be called for. What is important in the beginning is to inculcate the principle, and not necessarily to introduce particular storage structures. At the individual (family) level, the principle could be adapted and implemented according to resources available, for example by storing the seed on the ground, with any insulating material and under a roof, but with indirect light. At the same time, there needs to be a farmer-managed research program, beginning with positive or negative selection of native varieties, comparing this seed stock with non-selected control varieties and subdividing the research into such treatments as:

- traditionally selected seed with traditional storage
- traditionally selected seed with storage under diffused light
- seed selected from superior plants with traditional storage

Improved varieties could be included provided they share the same levels of "healthiness" with the other varieties selected.

#### **4.1.4 Media Outreach**

The activities of PISA encompass both public relations concerning the Project and the extension of information to Project communities and to the total rural population in the Department of Puno. Public relations activities include sending press notices concerning Project information and events to newspapers in Arequipa and Lima and to the television program "Agrovision" on Channel 5, a private channel broadcast throughout the country. "Agrovision" and the Puno

television channel also receive brief technical pieces of interest to small and medium-sized producers.

The main "extension" vehicle used by the information office is "Mundo Agrario", a 20-minute radio program broadcast at 5:30 a.m. Monday through Friday to the entire Department of Puno on the state radio network, Radio Nacional. The program follows an INIAA calendar of themes which is based on the progression of activities through the annual production cycle. Agricultural topics account for approximately 60% of the themes while "social" topics (e.g. health, nutrition, laws relating to rural communities, group formation, etc.) make up the balance. The specific broadcasts are developed to suit local conditions in consultation with PISA/INIAA staff who are knowledgeable about the subject matter. PISA produces the Monday-to-Wednesday broadcast tapes while INIAA takes responsibility for Thursday and Friday. The PISA broadcasts also contain news of local community events, which are compiled with the assistance of "correspondents" in six Project communities.

The Team was informed that community "sondeos" indicate many families listen to "Mundo Agrario"; however no studies have been undertaken to try to determine its impact. Radio Nacional currently charges PISA I./500 per month for carrying the program but apparently proposes to raise this fee to I./13,000. The Team finds this difficult to understand since Radio Nacional is a state network and Project objectives are highly supportive of national priorities concerning Andean rural development.

As far as the Team knows, broadcast material is entirely in Spanish, and not in the local Runasimi/Quechua and Aymara languages. If this is so, it obviously limits the portion of the population who can directly benefit from the programs.

## **4.2 Support Services, including Rotating Funds**

### **4.2.1 Support Services**

The POP states that four main types of support services should be provided to communities under PISA:

1. High quality seed, especially wheat, barley, quinoa, faba beans and lupin.
2. Establishment of a soil analysis service.
3. Study and development of tools appropriate to local conditions.
4. The supply of written material to farmers in their own languages, as well as presentation of market information and technical advice on local radio stations.

#### **4.2.1.1 Provision of Quality Seed**

Work has been undertaken in this field during the three agricultural seasons to date. CIPA is in charge of the management of this activity, which serves not only PISA farmers but all farmers within CIPA's jurisdiction, including those served by other Projects. In Table 4.1 volumes of seed produced and amounts supplied to PISA are detailed. The major effort has been concentrated on potato, considered the most important crop; nevertheless, quantities managed by PISA are quite low.

Apart from this collaborative work with CIPA, the Project is promoting the idea of seed production units (particularly for potato) within the communities themselves, in three forms: communal, individual with supervision, and individual without supervision. What is not clear is whether what is being promoted is simply a supply of better quality seed or whether other technical/managerial aspects are being promoted as well. The Team observed in these seed production

units that different levels and types of fertilizers and different spacing and planting densities were being used (without any previous research). These seed production units are being financed through the Project's rotating funds.

*Table 4.1. Volume of seed production (mt)*

Crop	Total CIPA Production		Amount Supplied to PISA	
	85-86	86-87	85-86	86-87
Potato (sweet)	466	182	30.0	14.0
Potato (bitter)	27	61	11.0	9.0
Barley	474	35	9.0	1.0
Quinoa	7	12	0.01	0.3
Faba bean	13	22	0.6	0.3
Winter wheat	32	20	0.1	0.06
Spring wheat	15	9	0.3	0.03
Oats	—	26	—	1.0
Cañihua	—	12	—	0.13

*Source: PISA staff.*

#### **4.2.1.2 Soil Analysis**

As a part of the diachronic descriptive process, soil samples have been taken from all communities. To date these have not been analyzed. It does not appear that a soil analysis service is being systematically provided to community producers, though it should be noted that, during the previous phase, a reasonably effective service was provided to larger-scale producers.

#### **4.2.1.3 Appropriate Tools**

The Project is not undertaking any activities in the development of appropriate farm implements, though is encouraging the dissemination of implements originating from other Projects (specifically Herrandina). The Team notes that, during the final years of the previous phase, much effort was dedicated to the development of appropriate technology, implements (e.g. animal-drawn harrows) being field-tested. According to CIPA staff, this material is all in storage. The Team believes it unfortunate that continuity in the development and validation process has been lost.

#### **4.2.1.4 Written and Broadcast Material**

The broadcasting program has been reviewed in Section 4.1.4. Some technical or informational notes have also been written for newspapers and specialized publications. Although few in number, some technical brochures have also been put out. As mentioned elsewhere, however, none of this communication activity (except in the case of one brochure) has utilized local (indigenous) languages. The Team was unable to review the content and presentation of this material though has doubts concerning the appropriateness of any recommendations contained therein, as it appears unlikely that these could have been previously validated at the community level.

#### 4.2.2 Revolving Funds

Within the PISA Project revolving seed funds exist at both community and commercial levels. In addition, other types of revolving funds have been established at the community level. These funds share the common objective of increasing the rate of adoption of improved technology but also have other separate objectives and different operating mechanisms.

At the community level, revolving funds for each of agricultural inputs (seed, fertilizer, chemicals), livestock supplies and equipment and basic human medicines now exist in all 10 Project communities, having been started with initial contributions from PISA. As well as helping to introduce new practices they also improve access to basic supplies, provide credit in some cases and provide a focus for the development of community mechanisms and individual managerial and related skills.

Community agricultural funds lend seed obtained from the commercial fund to community members who undertake to repay the loan when the harvest has been completed. Sweet and bitter potatoes make up the largest volumes of seed loaned but grains and Andean crop seeds are also loaned. Table 4.2 shows the quantity of seeds distributed in PISA communities by the revolving funds in the last three crop years.

*Table 4.2. Seed Distributed by Revolving Funds in PISA Communities (kg)*

	1985-86	1986-87	1987-88
Potato sweet	6,000	54,667	24,478
Potato bitter	3,900	14,084	12,962
Wheat	-	344	29
Barley	-	1,230	575
Beans	18	918	-
Oca	-	67	-
Quinoa	32	45	98
Cañihua	-	51	60
Oats	-	1,128	-
Alfalfa	-	90	-

*Source: Informe del Fondo Rotatorio en Comunidades Campesinas, Campañas Agrícolas 1985-86, 1986-87, 1987-88.*

The contraction of seed loans between 1986-87 and 1987-88 is due in part to the poor 1986-87 harvest in some communities, as a result of which some borrowers were unable and/or unwilling to pay back their loans. Rather than risk increasing their debt they decided not to borrow from the funds in 1987-88. Because of the poor 1986-87 results, and to inadequate explanation and/or understanding of how the funds should operate, seed recovery dropped to approximately 50 per cent from 90 per cent in 1985-86. Recovery of fertilizer and chemical loans under the agricultural funds were approximately one-third in 1985. In 1986-87 these recoveries declined to less than 25 per cent.

As a result of these early difficulties, PISA staff visited Project communities to explain how the funds should function and to sign agreements with community leaders and members concerning repayment of arrears. At the same time, Project management realized that technicians in the communities were too busy to give the revolving funds adequate supervision and increased the level of headquarters monitoring.

Livestock funds lend common animal medications and supply the equipment for administering them. Increased control of these funds has improved loan recovery rates, though the Team observed one case (Kunurana) where the livestock fund had been completely drawn down, and also has linked stocking and lending of medicines more closely to community treatment programs for various diseases or pest. Most of these treatment programs are operated by the technicians and costs should be recovered when the medicines are administered.

The revolving funds for human health supplies operate essentially on a cash rather than credit basis but prices may be lowered if villages are unable to pay the full amount. In general however, prices charged by the funds for goods that must be repaid in cash are adjusted to allow for inflation during the length of the loan.

In addition to these three types of funds, four communities have revolving funds for small community grocery stores and community workshops. In these cases PISA provided half of the initial capital while the communities provide the remainder, usually from a government source to which the community has access.

Project staff are gradually shifting the responsibility for management of these local revolving funds to committees within the communities. Training at the present time is more ad hoc than programmed depending on the readiness of the various communities for training. The Team feels that PISA should have a specific set of objectives relating to development of community structures and training of officials and committees both as guides to follow and as a basis for evaluating progress and results so that experiences can be transferred to other areas.

The Project plans to prepare a study of the results of these community funds at the end of the 1987-88 crop season. It is to be presented to the annual meeting of the Project Steering Committee and will focus on agronomic, economic and social impacts of the funds.

The Team has a number of concerns regarding the funds. All of them carry some degree of Project subsidization either in their on-going operation or financially in terms of making up unrecovered capital losses. There seem to be no firm plans for the funds to become self-sufficient when Project support is withdrawn. In general the funds seem to have been implemented without an integrated set of objectives, goals, operating plans and criteria. The latter are basic to the successful execution of most new ventures and should serve as examples to the campesinos for other community or private undertakings.

Finally, the Team is concerned with the choice of "public" versus private solutions to provide goods and services in the communities since the former often flourish only as long as government support is available. Campesino "native" entrepreneurial spirit and the opportunities it offers are often overlooked. Developing this resource can lead sometimes to more durable and more rapid economic progress.

After the 1985-86 crop year the original revolving seed fund (created in 1985) was divided into the community agricultural fund described above and the commercial seed fund. The commercial fund is a joint creation of PISA and INIAA/Puno and is directed by a six-member Executive Committee composed of representatives of INIAA/Puno, SENASE and PISA. The National Director of PISA is chairman of this Committee. As currently structured the maximum annual seed production area is approximately 280ha. Available INIAA land, equipment, etc. establishes the technical limit.

The results obtained during the 1985-86 season encouraged the expansion of area planted for seed production in 1986-87 from 172ha in 1985-86 to 269ha in 1986-87, but poor growing conditions in the second year reduced yields in many crops. A total of 252ha of seed crops (including sweet and bitter potato, beans, quinoa, tarhui, olluco, ca-nihua, oats, barley, and winter and spring wheat) were planted for the 1987-88 season. Oat, barley and bean areas increased steadily through the

three periods but planting of other crops tended to be more erratic raising questions about the production planning process.

The commercial fund acquires its seed inputs from INIAA experimental stations in the Department and multiplies this seed at the "basic" and "registered" levels before distributing it to "certified" seed producers who multiply the seed for sale to producers of food crops. From its profits, the commercial fund reimburses INIAA for the operating costs of this phase of seed sanitation and multiplication (the pre-basic work) and has also provided funds for capital repairs related to seed production on the stations. The initial success of the revolving seed fund in its first year and the high prices and income resulting from poor yields during the second year have raised the idea within INIAA of using the revolving fund- research station link to generate income for funding station research in other parts of the country.

A recent paper by the LARO Liason Officer (Estrada, 1988, Fondo Rotatorio de Semilla, CIPA XXI - PISA) raises a number of management questions concerning the operation of the commercial fund. He points out that factors such as purchaser credit policies, financial management, inflation, market conditions, etc. can have a great deal more influence on the long-run fortunes of the seed fund than purely technical factors and observes that public officials often don't function successfully as businessmen despite their professional and scientific expertise. This paper was prepared at the request of Project officials to assist in their management of the fund. The Team believes that Project and seed-fund officials should analyze this paper carefully and respond in written form to illustrate their understanding of the underlying issues and the appropriate action.

Commercial-fund and CORPUNO officials have been exploring possibilities for expanding the commercial fund as a joint venture toward a possible target of 700-800ha of registered seed production. This would circumvent current INIAA resource limitations, and encourage seed production in various CORPUNO micro-regions. The Team advises against such expansion until the issues raised in the above paper are thoroughly studied and, in particular, market analyses indicate the sales levels and price ranges that might be expected for the seeds that would be produced. Project officials should remember that very high prices in one crop-year can be followed by very low prices thereafter and that unless there is an effective demand seed production can quickly exceed what the market will absorb.

One report (Avances del Proyecto PISA en Puno, primera versión) indicates that "management of the fund is being placed on an entrepreneurial footing in order to continue its operation in the coming years". The Team is uncertain what this means but would accept the following evidence:

- Critical analysis of seed markets to identify effective demand;
- A clear statement of business objectives and goals together with a long-term plan to achieve them and a contingency assesment of the risk (including prices) that are involved;
- A capital depreciation and allowance plan;
- A set of financial management guidelines relating to inflation, credit, uses of financial reserves, etc.
- The presence of one or two successful businessman on the Executive Committee to bring valuable managerial and entrepreneurial experience.

Finally, the Team agreed with the LARO Liaison Officer that information gathered by the funds (both commercial and communal) should be analyzed to determine what impact they are having on contributing to the development of the altiplano through technological improvement and other means.

### **4.3 Involvement of Local Organizations**

By a recent law, each rural community has had to create formal organizational structures, composed of an administrative council, a supervisory/security council, and various specialized committees dealing with particular productive activities and service functions. Members of these committees are democratically elected. The structure is uniform across ethnic and agroecological lines.

While clearly there exist in each village indigenous forms of social organization, formed around labor processes, use of land and water, and the like, the Project to date has worked mainly with the newly created formal organizations, providing some training and strengthening their ability to take on more of the decision-making in regard to Project-sponsored activities. The Team has noted a relatively high level of success in this regard in various communities, and certainly endorses the strategy: in the end, the Project should only play the role of a catalyst in the identification, discussion and solution of problems, whereas actions planned and undertaken to solve the problems should be entirely the responsibility of the community. The Team was not aware of any local NGOs operating in Project communities; activities of other Projects and organizations in Project communities are mentioned in Section 4.5 below.

### **4.4 Gender Issues**

The area of gender issues is one, the Team feels, which has received a fair degree of attention in PISA, though this has not always been adequately reported on. Much more can, and very likely will be, done in the remaining years of the Project. It is to the credit of the Directors of the Project that they have both an understanding of the issues involved and positive attitudes favoring appropriate actions to be taken.

The importance of the agricultural and other roles of women in the Puno area has been clear since the early "sondeos" (in fact, a review of sociocultural literature on the Andes, or even reports from earlier Projects in the region, would have left no doubt in this regard). In the early stages, the Project supported two local university students' thesis research on the subject, and a preliminary study on the role of women was carried out by a local consultant. Currently, a female anthropologist hired by the Project is devoting herself almost entirely to furthering this study; the recently appointed Project specialist in charge of the diachronic studies is now directly involved in supervising this work. A month prior to the Team's visit to Puno, the Project was also visited by a CIDA-nominated WID consultant, who reviewed the issue, wrote a draft report, and assisted the staff involved to more sharply delineate the study in progress. The final report of her visit, which was well received by the Project, will doubtless help ensure that PISA continues to invest appropriate amounts of energy in the subject.

One point which deserves increased attention is the routine disaggregation of Project-related data on a gender-basis. Some such data is being recorded in the diachronic surveys, but there are many areas where this is not being done. (In terms of training activities, some types but not all differentiate in their records on the gender of participants.)

As is the case with much of the other study and research work being carried out by the Project, in the case of gender issues, too, there has been little explicit link made between any research results obtained and programming of Project activities. While sensitivity to the issue, as mentioned above, is relatively high among senior Project staff, this varies among lower-level and field staff. There is a certain tendency, particularly among the technical researchers (and principally those from CIPA) to work mainly with males in the villages. There has, however, been much training activity, both agricultural and non-agricultural, involving women participants (see Section 2.9, Training.).



#### **4.5 Other Community Activities and Issues**

Much of the positive impact of the Project has centered on a variety of community development activities largely promoted and facilitated but not necessarily implemented directly by the Project.

Within the villages, the Project supports and works through various committees dealing with agriculture, livestock, commercial activity, reforestation, health, nutrition, carpentry, blacksmithing, sports, kindergartens, and mothers' groups. The Project attempts to improve the organizational capability of these committees so that they can make better use of existing services; one of the Project's common strategies is the establishment of committee-run rotating funds. At the same time, PISA has worked out agreements with organizations and agencies outside the villages to provide Project communities with specific services. These are listed below:

a. IPSS (Instituto Peruano de Seguridad Social, a health agency): the Project provides travel costs for a Team of doctors, dentists and support staff to visit the communities once every two months. Within the villages, PISA supports the relevant committees, provides training in basic health, and has set up with small loans rotating health funds for the purchase of basic medicines. The Project is attempting to keep computerized records of these visits, treatments prescribed, etc., something that the Team feels goes beyond the Project's focus.

b. ONAA (Oficina Nacional de Apoyo Alimentario, a national agency dealing with food and nutrition): the Project has collaborated with ONAA to obtain food supplies to exchange for community labor for infrastructure development, handicraft production or other productive activities. PISA has developed a strategy whereby these food supplies are not simply divided out to participants in proportion to the amount of labor supplied. Rather, members of village committees volunteer their time to cook the food supplies in school kitchens and supply lunch to preschool and school-age children. The Project's nutritionist is actively involved in this activity, and provides nutritional advice to villagers. (In addition, PISA is involved in promoting community vegetable gardens to provide a wider variety of nutritious foods than are commonly grown in the villages. PISA provides seeds and advice.)

c. Instituto Nacional de Planificación (National Planning Agency) and UNICEF: PISA has arranged through these agencies for the donation of equipment for communal kitchens, carpentry and blacksmith shops, and health posts.

d. CESPAC (Centro de Servicios de Pedagogía Audiovisual, the Ministry of Agriculture's audiovisual training center): PISA has sent community leaders to be trained.

e. COTESU (Cooperación Técnica Suiza, Swiss Technical Cooperation): PISA staff have been trained in the reconstruction of raised fields (waru-warú, camellones).

f. CENFOR (Centro Nacional de Forestal y Fauna, National Forestry and Wildlife Center): CENFOR has cooperated with PISA in the introduction of improved stoves and in reforestation activities. PISA has also paid for training of village leaders and technical staff by CENFOR.

g. Various universities, in particular the Universidad Nacional del Altiplano in Puno (Postgraduate School), the Universidad Agraria La Molina (national agricultural university in Lima), the Universidad del Pacífico and the Universidad de San Marcos. This cooperation has involved student training in Project-related activities, and support for undergraduate and graduate theses. The activity of broadest scope is the collaboration with the Universidad de San Marcos on a community nutrition study, which is apparently gathering types of information hitherto unrecorded in the country. It is expected that this information will help orient Project activities in the field of nutrition.

One of the important community activities supported by the Project has been the reconstruction of raised fields (camellones), particularly in Carata. Villagers interviewed were clear as to the advantages of this indigenous but abandoned system (increased fertility and a microclimate that reduces the likelihood of frosts). Nevertheless, they wished to be paid by the Project for their labor expended in this reconstruction effort.

The Project has also supplied funds, some materials and advice for the construction of community centers, which house a wide variety of functions including committee offices and living accommodations for Project field workers.

Three major problems arise with this range of community development activities, worthy as they are in their own regard:

1. There does not appear to be any systematic planning of each individual activity, outlining goals, inputs, outputs, management systems, and the like. Thus, it is impossible, now or in the future, to make any serious attempt at monitoring and evaluation (including financial evaluation and beneficiary impact). Furthermore, these activities are not explicitly linked to overall Project planning.

2. The Project is not developing a replicable model of community development activity that can eventually be taken over and implemented over a wide area by the Peruvian government. Rather it is carrying out a series of piecemeal activities taking advantage of certain, perhaps temporary, resources such as other foreign-assisted Projects that happen to exist or be known to the Project. This is discussed further in Section 5.3.

3. The great variety of these activities is diluting the efforts and resources (particularly human resources) the Project should be spending on the generation and/or adaptation of improved agricultural technology that could be replicated and spread with much less effort and resources to a greater portion of the rural population.

## **5. Institutional**

### **5.1 Context of PISA Within the Andean Research Program**

INIAA divides its work among a number of Directorates- General, including Crops, Livestock, Forestry/Wildlife, and Agroindustry. Under the Directorate-General of Crops are to be found various commodity based research programs, including the National Program for Andean Crops (PNCA), the program to which PISA now belongs. At the time PISA began, the program covered livestock as well, and was known as the National Program for Andean Farming Systems (PNSAPA); this partial cross-sectoral structure was unfortunately reduced to a specifically crops focus in 1986, with the establishment of PNCA.

PNCA is currently headed by a director with a background in extension; in Lima there is also an assistant director and one other staff member. The PISA Project Leader acts as Adviser to the Program. At the national level, PNCA keeps statistical track of Andean crops, prioritizes and designs Andean cropping research, develops policy and prepares research output for change agents. In its main center at Santa Ana (central Sierra), subcenters in Puno, Cuzco, Ayacucho and Cajamarca, and in several other experimental stations to a lesser extent, it carries out research along seven lines: genetics, crop protection, crop management, technology trials, post-harvest activities, socioeconomic studies and seed production, as well as implementing training. Only in Puno are all seven lines of investigation being carried out in the one centre.

PNCA is said to be the only research program that works in village communities. The Advisor to the Program has suggested that "Community Development" be added to the title of the Program, but this has not occurred. The various foreign- assisted Projects he supervises, including PISA, are all involved in community development work (see Informe Resumido, section 3, for further details on the working of PNCA and its collaboration with other agencies and Projects).

PISA, despite its location within a program that focusses narrowly on crops, attempts to integrate elements of various other programs within it, with the apparent support of the respective program directors in INIAA. To the extent that this is so, it is despite the current structural arrangements of INIAA, and is apparently largely due to the personal initiative and relations of the Project Leader/PNCA Advisor. Section 5.2 pursues the issue of the institutionalization of aspects of PISA within PNCA and INIAA.

### **5.2 Institutional Development and Institutionalization**

#### **5.2.1 Background**

There has been a certain imprecision, and lack of agreement, among various parties as to what should, can or in reality does constitute institutional development or institutionlization in PISA. The treatment of this crucial aspect of PISA requires considerable further effort.

The POP, in the Logical Framework Analysis, describes the second Project goal as strengthening INIAA's "capability to carry out research and development activities in support of small farmers in Puno and serve as a model in other areas". It describes the Project purpose as developing "within INIAA methodologies for conducting FSR, ones appropriate for application in similar areas of the highlands". This statement is virtually the only mention of institutionalization in the POP, and is inadequate in terms of the importance of the subject and any suggestion of strategy for its implementation.

The IDRC Project Summary statement on the issue is even weaker, and shows little understanding of the complexity and necessity of institutionalization if the results of the Project are to be sustained and replicated. Paragraph 1 merely indicates that institution building (a "secondary

objective") will be achieved by intensive training of INIAA's technical staff. In general, IDRC appears (or appeared at the time) to take a modest, long-term view of the institutionalization of aspects of Projects such as PISA, especially in situations of institutional instability. LARO staff indicated to the Team that in the near to mid term, the most that could be expected was the adoption of a systems focus in the Ministry of Agriculture but not of the widespread application of the methodology and processes of FSR.

In a letter to CIDA (22/10/84), LARO Program Officers did stress the importance of the Project being an integral part of INIPA structure, and not existing separately from CIPA. In another letter to CIDA (18/4/86), LARO states that "The Project is institutionalized within INIPA as it is executed within its structure, organization and activities. Therefore, Project staff are members of INIPA, in spite of their different source of funding and salaries." This, the Team feels, is not an accurate representation of the reality. The Team also notes that the Project staff are not members of INIAA, but are hired by FUNDEAGRO.

The Inception Report is somewhat more specific, referring to the "institutionalization of PISA within CIPA XXI" as a process of gradual change in national institutions whereby the main objective of the Project is accepted as a goal of national agricultural policy. Again, little in the way of concrete methodology is detailed, as might be expected in a document that should refine a Project's objectives and methods, and outline a concrete workplan.

In sum, the various parties involved in PISA do not have an adequately clear agreement on what institutionalization entails, what can be institutionalized, and what strategies need to be put in place to achieve institutionalization if the fruits of the Project are to endure beyond the physical and temporal limits of PISA.

There are three main aspects of PISA that may be institutionalized:

- FSR philosophy and methodology
- FSR results from the Altiplano
- the multisectoral FSR and D community development model currently being attempted in PISA

This section deals with only the first two possibilities, the third being the subject of Chapter 4 and Section 5.3. Further, this section concentrates on INIAA and its local subsidiary, CIPA; other institutions such as CORPUNO are discussed elsewhere.

Finally, in addition to the institutionalization of particular aspects of the Project, one must also consider activities relating to overall institutional development of agencies such as INIAA, in order, a) that their activities such as PISA/FSR may be carried out in an efficient and effective manner, and b) that the results of these activities may have some degree of sustainability.

Further institutional development covers improvements in internal and external program and Project management, policy, coordination, decentralization, physical environment and a variety of other related aspects. Some of these are dealt with Section 5.4.

### **5.2.2 A Model of Institution Development and Institutionalization**

While the POP is silent on the issue, the Project Summary (paragraphs 10,11) suggests elements of a model (more properly called technology transfer than institutional building) whereby high-level Project staff would interact with INIAA's "young and inexperienced" (in FSR) local staff in order to increase their technical capability.

The Inception Report (3.5) indicates that indeed an early idea of the Project was to have much of the Project work executed by CIPA professionals and technicians from the start (with technical assistance from PISA experts). In reality, however, much of the early work of the Project was done by PISA staff (with some assistance from CIPA staff), a situation which is still far from being reversed today. The Inception Report, counting on an initial sharply reduced number of CIPA staff being assigned initially to the Project, planned on a gradual increase in CIPA staff involvement over the years, with CIPA taking over all extension work in Phase II (with only financial support from PISA).

### **5.2.3 Institutional Development in INIAA**

It is a little early in the life of the Project to make a detailed evaluation of any impact PISA may have had on INIAA (particularly given the state of research results to date; see Chapter 3), though given the change of PNSPA to PNCA, the Project would appear not to have defended the importance of livestock in Andean farming systems. Further, to make such an evaluation would have required visits to INIAA activities in other regions as well as much greater time with agency staff in Lima than the Team had at its disposal. Nevertheless, some comments can be made, based on a review of documents and discussions with PISA staff and members of the INIAA Evaluation Team.

There is said, by various Project and INIAA officials, to be a slowly evolving awareness and understanding of FSR within INIAA. The role of the Project Leader as Advisor to the National Program for Andean Crops and to three other Andean Projects has allowed him to promote the transfer of aspects of one Project to another. Similarly, the Project afforded the former Director of PNSAPA some training in FSR; this person is now in charge of livestock programs in INIAA. Other activities the Project has initiated are a series of publications, coordination with a variety of other relevant Projects and agencies, various training activities concerning Andean Crops and FSR, and participation in national and international seminars (see Informe Resumido, p. 4-6 for details). The Project Director also feels the importance of the Project's having arranged for senior agricultural officials to make field visits to rural areas, apparently not a common practice.

The Team noted, however, that certain key decision-makers in INIAA have only a very limited comprehension of the essence of FSR, still believing that on-station agricultural research has many technical solutions to current problems, and which are perfectly appropriate for direct application in farmers' fields.

Unfortunately for systems research, INIAA, despite having undergone a series of reorganizations in recent years, is still organized vertically into a number of national programs and directorates-general. There is to date no structural mechanism to promote the cross-disciplinary research that is at the core of FSR. Further, INIAA apparently does extremely little of its research in rural communities (PISA is one of its very few research activities directly carried out in villages). With the removal of extension services from INIAA, the agency's contact with the world of the producers may become even more restricted.

INIAA is currently attempting to develop an "institutional Project" that would involve various units of INIAA (and other relevant agencies) in a cross-sectoral program for Puno. However, unless certain policy and structural adjustments are made, or specific mechanisms designed, the Team (while supporting the above initiative) feels the prospects for long-term institutionalization of FSR methods and results are somewhat remote.

### **5.2.4 Institutional Development in CIPA XXI**

PISA has assisted the development, or at least functioning, of CIPA XXI and its subentities in a variety of ways. Infrastructure in experimental stations has been maintained or improved, equip-

ment has been purchased or repaired and indeed most of CIPA's experimental work in 1985/86 was funded by PISA. Training activities have involved a significant number of CIPA staff, including several at the post-graduate level (see Section 2.9), though it is clear that this has not gone nearly far enough in specific areas, particularly FSR and statistical methods.

Four or five CIPA staff have, at one time or another worked more or less full-time on PISA activities, while a number of others have had a greater or lesser degree of involvement; interest has been expressed by a number of other CIPA staff in having opportunities for participation. Two positive results of this involvement have been noted by a number of observers: CIPA has evidenced an increased interest in Andean crops, and a greater number of research staff are gaining exposure to on-farm research and rural conditions. It is equally clear, however, that FSR has not yet been adopted in toto as a CIPA research strategy (possibly because most of their activities are dictated by national programs).

PISA still appears to be an entity largely apart from CIPA (despite physical integration in one of the experimental substations). Senior CIPA staff tend to speak of the Project as a separate activity over which they have little influence or control. Joint programming of the totality of CIPA activities does not appear to take place to any degree: recently CIPA "submitted" a proposal list of experiments to PISA for possible funding - instead of all sides sitting down and carrying out programming exercises together. Surprisingly, too, PISA as an entity is able to sign agreements with other Projects and agencies.

Various factors can be adduced to explain this situation. CIPA has absolutely no involvement in the Project's finances. Its main formal linkage with the Project is through membership on the Steering Committee, which is not particularly active. Bureaucratic reasons - different working hours, different remuneration packages, high staff turnover - have also been mentioned as causes of this lack of integration, factors which the Team feels are as much symptoms as causes of the problem.

Two other structural factors mitigate against fuller institutionalization of FSR within CIPA. One is the fact that CIPA does not have positions available to hire certain types of professionals, such as social scientists, that are key to proper FSR. In terms of PISA's expansion phases, too, the recent split of extension services from CIPA/INIAA further complicates the whole issue of local replication and institutionalization of PISA's outputs; the Team feels this issue will have to be dealt with in the coming months.

Other aspects of this issue are dealt with under Section 5.4. In summary, the Team feels that the institutionalization process has not proceeded far enough on the local level and that without some radical changes, many of the potential benefits of PISA will be dissipated.

### **5.3 PISA in the Context of Regional Planning and Development**

PISA has the potential to contribute to, and to benefit from, overall development planning and implementation in the greater Puno area. Peru is in the process of decentralizing a greater portion of national government functions to a series of regional governments, which according to law should be in place by June of this year (the establishment of the Puno regional government has been slower than originally planned). In this context, the Development Corporation of Puno (CORPUNO), in existence for a number of years already, will likely continue to be the key development planning institution; one PISA staff member indicated that CORPUNO had been and would likely continue to be a fairly stable local institution.

CORPUNO not only prepares mid-term development strategies and policies (currently favoring rural development), but also channels significant national government funds to local agencies for the implementation of agreed-upon Projects (CIPA, for example, received some I/8 million this year; in

fact CIPA, and other local agencies, depend on CORPUNO and foreign funding for major activities, national funding from the relevant ministries being only adequate to pay routine expenditures).

CORPUNO further is in the process of setting up similar entities on the “micro-regional” level, though these are apparently still quite weak. In addition, CORPUNO is involved in the coordination of the large number of official and NGO assistance Projects in the department, estimated by one source to be over 90 in number.

PISA, in its current form, is engaged in a range of rural development activities beyond what is normally understood to be FSR. It also works cooperatively with a number of foreign-assisted and other Projects and agencies in the area in various rural development activities (see Chapter 4.1 and the list in the Informe Resumido, p. 3). In the medium term PISA intends to spread this approach throughout the Department. PISA officials have also been promoting the idea of an “institutional Project” for Puno, integrating a variety of national/local agricultural - rural development programs for more comprehensive development of the Department.

The Team feels that the intersectoral development model (“FSR and D”) currently being attempted by PISA cannot, and should not, for financial and institutional reasons, be replicated or expanded over wide areas by PISA itself, nor likely by the Ministry of Agriculture. On the other hand CORPUNO appears to offer one of the few local possibilities for the institutionalization, on some scale, of the integrated development approach PISA is promoting. PISA currently maintains some informal links with CORPUNO, and has had CORPUNO cooperation or input on at least a few activities, but no formal relations exist.

In addition to technical, regional-rural development reasons, budgetary reasons would also suggest closer links between CORPUNO and PISA (as a part of CIPA, of course). Currently PISA receives virtually no local (Peruvian) counterpart funds, beyond salaries of collaborating CIPA staff, whereas a formal agreement with CORPUNO would allow for this possibility and thereby encourage a greater degree of local adoption of the development model being pursued.

## **5.4 National Management of PISA**

### **5.4.1 Introduction**

Section 5.2 has dealt in part with the institutional setting of the Project. This section deals with aspects of internal Project management and administration, while also treating certain aspects of the relationship between PISA, CIPA and INIAA.

### **5.4.2. Management Structure**

The management structure of the Project appears overly elaborate, yet has certain flaws that detract from the present and future performance of PISA.

The Project has three manager/director-level positions: one, the Project Leader, split between duties in Lima and Puno; one, the Puno-based “Co-Director”, a PISA employee; and one, the Puno-based “National Director”, a CIPA staff member. The division of responsibilities between these three, and the necessity for three such positions, is not entirely clear.

The Project Leader, who is not a Peruvian civil servant, is funded by PISA via FUNDEAGRO (see Section 5.4.5) to be both Project Leader and advisor to the National Program for Andean Crops. His Lima-based work in the latter capacity has been discussed in Section 5.2; in his capacity as Project Leader, he has ultimate responsibility for all aspects of PISA. In Lima this involves liaison with other relevant Projects and agencies, with FUNDEAGRO and with IDRC. In addition, the Project Leader states that he spends up to 50% of his time in Puno, making 7-8 trips a year of 2 to

3 weeks' duration each. He views his involvement during these visits as chiefly in the field of programming and follow-up/monitoring. He provides guidance and technical advice to various Project staff and CIPA counterparts during 2-3 day stays in the various Project communities. He also, however, is involved in administrative issues and decisions. He reviews and questions Project accounts before they are submitted to FUNDEAGRO.

The "Co-Director" is basically the Project administrator/manager. He runs the day-to-day affairs of the Project, deals with locally-hired staff contracts and most personnel issues, and prepares accounts for submission to the Project Leader. Though he does not officially have the function, he states that he commonly has to act as de facto "local Project Leader". An experienced administrator, he also provides some technical input into the Project; he was originally expected to function as the Project's agricultural economist as well, but the administrative aspect has taken full-time attention. He is not paid from the Co-Director line of the budget, but rather from the Economist line (the Puno administrator line is currently being used to cover clerical assistance). Team feels that the general day-to-day administration of the Project in Puno is of reasonably high quality, a tribute in part to the skills and lengthy experience of the Co-Director.

The position of the National Director is somewhat anomalous, and rather weak, compared to the two previously-mentioned positions. Not mentioned in the original Project documents, it first appears in the Inception Report; none of these early documents, however, gives any space to job descriptions. The National Director, as a CIPA staff member, provides liaison between CIPA and PISA, reporting once a week to the CIPA Director. His other function is mainly technical, providing a variety of input to the Project particularly as regards the work of the CIPA counterparts and other participating staff. In fact, the Project Leader conceives of the National Director's role as chiefly technical, and would like to see this role enhanced. Yet despite his title, the National Director is not routinely involved in all Project decisions, and has no involvement in financial matters.

In sum, the division of responsibilities is not completely clear-cut, there appears to be an over-elaboration of positions, the role of CIPA in the Project is weak (as discussed elsewhere), and one cannot really speak of decentralization with the Lima-based Project Leader dividing his time equally between Lima and Puno. And yet, despite this over elaboration, the Project still lacks a locally-based senior technical specialist capable of guiding the scientific part of the Project on a continuous basis.

In an attempt to "rationalize" this situation, the National Director has recently (6/3/88) submitted to the Director of CIPA a draft of an organizational and management manual (Manual de Organizaci'on y Funciones). The basic thrust of this proposal would seem to be to bring PISA more directly into the CIPA structure, with the National Director directing the Project on CIPA's behalf (and reporting to Lima through the head of CIPA). The Co-Director would continue to deal with internal administration, while the Project Leader would play an advisory role while continuing to pursue his Lima-based duties.

This proposal has some merit and deserves consideration. It does not deal, however, with how the Project would assign responsibilities when various senior positions are unfilled, nor does it deal with the position currently filled by the new economist. Finally, it is not really a management manual since it does not deal in enough detail with day-to-day administrative guidelines and procedures.

The POP also proposes a Steering Committee for the Project. Like many Steering Committees for development Projects, however, the PISA Steering Committee appears to be of little benefit to the Project. LARO, in a letter to INIAA of 7/12/87, proposes a smaller Technical Committee, composed of the three Project manager-directors, the CIPA Director, the senior PISA technical (systems) specialist, and an IDRC representative. This committee would meet once in two months to review progress and make key decisions. The Steering Committee would remain in existence to provide advice during annual planning sessions.



The Team understands that, during the visit to Puno of the INIAA Technical Director at the time of the mission, certain administrative changes were effected to bring CIPA more directly into PISA management. Details of this need to be confirmed by LARO in writing.

**5.4.3 Staffing Issues**

The major issue as regards staffing (dealt with also under section 2.8 and elsewhere) has been the Project's inability to obtain and retain properly qualified staff at all levels. Village-based data-collectors have had the highest rate of turnover, with currently only 4 of 10 positions filled; turnover of field technicians has also been high, though at present all positions are filled. In three cases, diachronic data is currently being gathered by the field technicians. Serious staffing gaps exist at higher levels of the Project, including that of the systems specialist.

It is not possible to examine all the reasons for this situation. However salary levels and amenities may not have been set high enough to attract people to live in Puno or in rural villages. (In at least one village, personal security is a factor, and indeed much praise is due to staff who relocate to, and remain in, isolated rural communities.) Competition from the plethora of other foreign-assisted Projects has been another factor. The current practice (apparently in accordance with a regulation that governs institutions like FUNDEAGRO) of only issuing yearly contracts must be a disincentive as well. Further, personality and philosophical differences between staff have been mentioned as factors.

The Project has put a number of incentives in place, including the provision of housing for field staff in the community centers. Clearly these have been inadequate, and/or the search for suitable staff has not been wide enough. With the recent exception of the new economist, whose contract with FUNDEAGRO to date still has not been formalized, the Project has also followed a policy of hiring only Peruvian nationals, who may be in short supply in certain fields.

It is also felt necessary to point out here the very large gap in salaries between the higher and lower levels of the current Project pay scale.

**5.4.4. Reporting and Communications**

Reporting systems in PISA have been reasonably good, but there is room for significant improvement.

Field staff write monthly activity reports to the PISA Puno office, while the Puno office compiles brief activity reports for Lima as well. In addition, when the Project Leader is not in Puno, he communicates with the Co-Director on an average of twice weekly by phone, or makes use of the recently installed radio system.

The Project also prepares quarterly progress reports, which have appeared with a variety of names and on a somewhat irregular basis. Quarterly Reports exist for these periods:

July - Nov. 1985	Jan. - Mar. 1987
July - Sept. 1986	Aug. - Nov. 1987
Oct. - Dec. 1986	

Some of the gaps were filled by Annual Reports. No Quarterly Report for 1988 has yet appeared. The Quarterly Reports have shown some improvement in quality over time, but do not devote much space to management issues nor to analyses of progress. The main lack, however, is any outline of the forthcoming quarter's work plans and a comparison of the past quarter's progress with original

plans. The reports, then, would seem to function more as a record of activities than as a management tool (this is related to the general lack of quarterly work planning mentioned elsewhere).

The Quarterly Reports are sent to LARO, despite the stipulation, totally inadequate in the Team's opinion, that only a one-page letter is required of INIAA on Project progress on a quarterly basis. LARO has indicated that it does not rely on these Quarterly Reports nor consider them useful for their purposes.

In addition to various ad hoc reports, the Project has also produced two Annual Reports, for 1985/86 and 1986/87, the former being of higher quality than the latter. Again, insufficient evaluation, particularly of non-experimental work, is to be found in these annual reports. The first Annual Report, while devoting three pages and five tables to management issues, mentions no problems in this field.

A further problem in the reporting system is the general lack of minutes or records of meetings, particularly of the monthly Project meetings.

In terms of downward reporting and communication, particularly to the village level, there appears to be little in a formalized sense. The Team was told, however, that subsequent to the annual planning meetings in Puno, which involve village representatives, the final work plans are reported back to the villages. There is no sense, however, that the Project is formally responsible to the village communities, which the Team feels to be a proper dimension of FSR activities.

The Team would like to point out here the generally good use of computers (two) in Project reporting and recording.

#### **5.4.5. Financial Issues**

The Recipient-administered portion of the Project's funds are handled not via the Ministry of Agriculture nor the Peruvian Treasury, but via a third party, a legally established foundation with close connections to the agriculture sector, and headed by a former INIAA Director General.

Despite the ongoing changes in this funding mechanism (from SRM to FUNSIPA to FUNDEAGRO), and its lack of speed in reporting, PISA in Puno complains of little current difficulty in the flow of funds. While FUNDEAGRO processes Project accounts manually, PISA has begun to use its computers to streamline parts of its financial system. The major problem at this stage is that the Co-Director is unable to monitor expenditures against the Project Budget since he does not know the changing dollar-inti conversion rates that FUNDEAGRO uses.

It is the point of view of the head of FUNDEAGRO that recent changes in name, structure and scope of the Foundation will have no negative influence on its functions, and that it is basically a continuation of the old organization. The Team was present at a meeting with FUNDEAGRO where the nature of the recipient-administered funds were questioned (essentially was FUNDEAGRO or INIAA the recipient?), and is concerned that such interventions by FUNDEAGRO could have implications in the local disbursement process. The Team notes that IDRC is still considering the possibility of change in the funding channel, alternative institutions (e.g. CIP, IICA) being investigated. The Team further notes that all direct-hired PISA staff are, in fact, employees of FUNDEAGRO (not INIAA); this will complicate any such change. Meetings were held during the mission between LARO and FUNDEAGRO to resolve some of the outstanding issues.

#### **5.4.6. National Contributions to PISA**

According to the Plan of Operations, Peru's financial contribution to the Project would consist chiefly of salaries of counterpart staff, use of buildings, and a publications unit. To date, the contribution has been rather less than originally calculated, since the list of INIAA staff acting as Project "counterparts" is much reduced from the original list (and PISA has had to supplement their salaries). Adequate office space has been provided, though PISA has made improvements, and has repaired inoperative machinery. No special Publications Unit has been set up, PISA instead making use of existing INIAA printing facilities. Other than this, however, the national government has not provided any special counterpart budget for the Project.

### **5.5 IDRC's Technical and Management Input**

#### **5.5.1 Background**

It is clear that IDRC was chosen as "executing agency" for PISA because of its acknowledged experience in FSR and in agricultural development in the Andean region. Yet it is strange that basic Project documents such as the POP, the Inception Report, and even to a large degree the IDRC Project Summary, do not deal in any detail with the content and method(s) of delivery of managerial or technical inputs from IDRC (in subsequent Project documents there is little reference to IDRC at all). This is particularly strange since the size of the Project represented a quantum leap for IDRC Projects and therefore would seem to have merited at least an examination of IDRC's management strategy.

In terms of technical input, the POP mentions that LARO will provide TORs for the Inception Report, for baseline data gathering, and for updating the farming systems study. LARO would also participate in bimonthly technical meetings. The IDRC Project Summary indicates that its technical input would largely come from the possible adaptation and adoption of research results from other Andean Projects and exchange of information via PISA's participation in the Andean Crops and the Animal Production Systems (RISPAL) Networks.

In terms of management input, in addition to channelling funds (and directly administering the part of the budget designated for graduate training and one or two other activities), the main activity specified in the POP is approving the selection of senior Project staff. In addition, a Liaison Officer, whose actual functions were not spelled out in early Project documents, was provided to link IDRC and the Project more closely than would have been possible if IDRC had to rely only on the two Program Officers assigned to PISA.

#### **5.5.2 IDRC Support**

##### **5.5.2.1 Role of Program Officers**

LARO has assigned its two specialist Program Officers in crops and livestock to monitor and administer PISA, both having experience in FSR. For much of the period to date, one or the other of these two officers has been on year-long study leave. Plans were made to compensate for the absence of these two POs, particularly through the use of short-term consultants, but this has not fully materialized. The Livestock PO acknowledged to the Team that their absences have had some negative impact on Project progress. Each of them has a portfolio of some 20 Projects; PISA is the largest and most time-consuming. Few of the other Projects involve any community development work on the lines that PISA is pursuing.

Significant input from LARO POs began in the design stage of the Project. Currently, the livestock specialist states that some 20 - 30% of his time is devoted to PISA (perhaps in part because

of the absence of the other program officer?). He visits the Project from time to time (IDRC sources say the norm for such visits is at least two per year), analyzes Project reports and comments on these and other findings and writes follow-up letters to Project officials with recommendations for necessary improvements. This technical input is also provided at times of regular and ad hoc meetings and during informal contacts, including at conferences and workshops. Formal TORs for the Inception Report, the updating of farming systems studies and baseline data gathering (as mentioned above) were never drawn up, but LARO officers have provided technical input into these activities in other ways. Similarly, they provide management advice as well. A complete list of communications regarding technical inputs can be found in Appendix 6.

In technical terms, recently LARO has urged PISA to focus more of its work on farmers' fields and on farmers' expressed problems, to improve work on forage crops, to analyze the feasibility of the community development centers, and to pay attention to agroindustry possibilities. The Team is not aware at this time, however, of much evidence of direct inputs to the Project from other IDRC Projects (Andean Crops II, South American Camelids, Pasture Management II, Andean Crop Processing) or the two networks mentioned above. It is known, however, that direct mutual benefit from involvement in RISPAL, the livestock network, has been minimal.

In administrative terms, PO's have played a helpful and active role in the recruitment and approval process for senior Project staff; they have helped search for and contact appropriate (Peruvian) candidates outside the country and have placed some pressure on INIAA to fill certain vacancies, notably the systems specialist. Similarly, they have helped locate non-Peruvian short-term consultants. Recently, LARO staff have made useful recommendations concerning the setting up of a Technical Committee (see section 5.4) and have made various suggestions concerning financial arrangements. Some comments are made in the last part of this section concerning the effectiveness of some of LARO's inputs or actions.

#### **5.5.2.2 Role of the Liaison Officer**

IDRC's Liaison Officer, an experienced Colombian with agricultural, economics and managerial background, was hired in June 1986. His terms of service require him to divide his time between PISA and other IDRC Projects on a 70:30 basis, but in fact he estimates that his time spent on PISA is well in excess of 70%.

The Liaison Officer sees his role as being basically technical, but in fact he has provided substantial managerial as well as technical and methodological assistance to the Project. In addition to direct contact, some of this input is relayed in aides-memoires, some via letters from the program officers, and some in position papers. Recent technical analyses have involved general macroeconomic factors the Project should be concerned with, and the functioning of the revolving funds. He has also provided a great deal of assistance in computerization, helping to design formats for the diachronic village databases, for example. He takes copies of all Project databases and other computerized material back to Bogota for future use by others and for possible analysis (which latter activity he admits to having done relatively little of to date.)

The Liaison Officer basically monitors the Project (or at least a range of its activities) on behalf of IDRC; as stated elsewhere, IDRC apparently does not place much reliance on written reports emanating from PISA. The Liaison Officer also checks PISA's accounts in some detail; a good part of his managerial function has dealt with financial issues.

The Team, while noting the very positive concrete contributions the Liaison Officer has made to PISA, is not certain that his technical inputs are always fully utilized by the Project. Part of this may be due to the relative brevity of his visits to Peru (1 - 2 weeks each), but likely also to the difficult task he is attempting, of raising broader and deeper issues with which the Project should

be concerning itself. He is also very conscious of the fact that he is not a PISA Team member, but an outsider.

The Team also feels that LARO, to a certain extent, and via the Liaison Officer, is contributing to a "bypass" management approach to the Project, by relying on this person for most of its information and monitoring needs, rather than insisting on adequate and timely reporting from the Peruvian institution in which the Project is located.

### 5.5.2.3 Financial Management

In addition to the activities of the Liaison Officer in financial control mentioned above, the LARO Regional Controller and the Deputy Controller have played an important role, both in terms of audit and in assisting in the development of an efficient mechanism for channelling funds to PISA (this same mechanism is used for a number of other IDRC Projects in Peru, which doubtless explains the high level of attention the FUNDEAGRO issue has received from LARO.)

The POP stipulates that Project finances will be audited by the Regional Controller at least annually; this has been done twice to date (in addition to a separate financial "review"). As stated elsewhere, CIDA has professed itself satisfied with IDRC's management of the finances of PISA. (It was not in this Team's mandate to conduct a review of Project finances.)

Table 5.1 shows disbursements made by CIDA to IDRC since the beginning of the Project. A total of \$1,997,961 is recorded as having been disbursed to date. Table 5.2 indicates disbursements by IDRC to the recipient of the recipient-administered portion of the Contribution. The difference in the totals of Tables 5.1 and 5.2 should represent the portion retained by IDRC for administration by the Centre, but, due to differences in accounting systems, amounts disbursed by CIDA to IDRC do not always correspond to amounts requested by the latter. Data supplied to the Team by IDRC indicated the receipt of a total of \$1,710,595 as of 20 January, 1988.

Calculated on the basis of receipts to date, and compared to expected expenditures to the end of the third year of the Project (five-year plan), the recipient has utilized only 57% of its self-administered budget.

*Table 5.1. CIDA Disbursements to IDRC (Can\$)*

Date of request	Amount disbursed	Cumulative total
18/07/85	500,000	500,000
17/12/85	500,000	1,000,000
06/05/86	154,664	1,154,664
02/10/86	39,624	1,194,288
19/02/87	327,087	1,521,375
25/06/87	76,114	1,597,489
25/09/87	146,653	1,744,142
23/10/87	126,849	1,870,991
05/02/88	126,970	1,997,961

*Source: CIDA files.*

*Table 5.2. IDRC Disbursements to INIPA/FUNSIPA (Can\$)*

Date of disbursement	Amount disbursed	Cumulative total	Exchange rate (I/C\$)
06/85	345,000	345,000	9.9
12/85	345,000	690,000	12.5
05/86	100,000	790,000	12.7
10/86	50,000	840,000	12.6
11/86	80,000	920,000	13.4
01/87	65,000	985,000	14.6
02/87	70,000	1,055,000	14.9
05/87	70,000	1,125,000	17.0
05/87	93,467	1,218,467	18.1
08/87	39,690	1,258,157	27.7
09/87	92,402	1,350,559	27.9
11/87	90,000	1,440,559	n.a.

*Source: LARO, Bogotá.*

#### **5.5.2.4 Reporting and Information Flow**

Reporting by IDRC to CIDA on Project progress has been of some concern to CIDA. Initial difficulties over IDRC's adherence to CIDA's quarterly financial reporting requirements were solved after some time, and appear not to be an issue. In addition, however, the POP also stipulates semi-annual progress reports from LARO to CIDA, a frequency the Team feels quite appropriate for a Project of this size and complexity (INIAA also prepares quarterly reports for LARO which directly or indirectly usually reach CIDA as well, after some time.)

The first progress report was not written until the spring of 1987 (a year and a half after Project start-up, though about six months after submission of the Inception Report) covering the period October 1986 - March 1987; it was received at IDRC headquarters in June 1987 but by some oversight was not sent on to CIDA until December. The second progress report, dated December 1987, formally covers the period April - September 1987, and was not received by CIDA until late March 1988. The third report, theoretically due April 1988, apparently has not been written yet.

The Team feels that timely preparation and delivery of these reports (though one PO has commented that it is not IDRC's habit to prepare regular reports on its Projects) would go a long way to alleviating CIDA's unease at its felt lack of information flow. The reports place little extra burden on IDRC since they are prepared by the Liaison Officer.

The two reports in question are reasonably thorough and analytical (the first being fairly positive in tone, the second rather more negative). Significant problems are pointed out, and some work planning is included. However, the reports do not detail IDRC/LARO's specific activities or inputs into the Project, which is a serious gap. Nor do they present any detailed analysis of research results. Further, while the first report includes barcharts depicting achievements to date on each Project activity, this is omitted in the second.

As mentioned, some of the large quantity of PISA-generated material finds its way to CIDA headquarters; CIDA wishes to maintain a complete file of all such information, for purposes of monitoring and evaluation and for use by other interested parties. It has expressed the wish, however, that this material be transmitted via LARO accompanied by some evaluative commentary by LARO POs.

Finally, while the POP specifies that the Canadian Embassy in Lima receive only copies of LARO's progress reports, the Embassy officer responsible for PISA feels he needs a greater flow of information if he is to perform his function properly. In particular, it is felt that regular debriefings by LARO officials, including the Liaison Officer, both before and after visits to PISA would be most helpful; these apparently do not take place routinely at the moment.

#### **5.5.2.5. IDRC's Management Approach**

IDRC prides itself on a relatively decentralized, "hands-off" management style that relies on national institutions and individuals to manage funded research with minimal outside intervention (other than some technical advice). An expressed aspect of this approach is to allow for the strengthening of institutional capacity (more appropriately, research capacity) through learning from error. IDRC has also, however, recognized early on that PISA requires a more interventionist stance because of (a) the size and complexity of the Project, which among other things aims at creating a systemic change in research processes, and (b) the high degree of institutional instability in Peru in general and in the host institution in particular.

As indicated in an earlier section, and as recognized by at least one of the LARO POs, however, the question is far more complex and difficult than originally anticipated by IDRC. (The Team also feels that the traditional limited IDRC involvement in institutional development is inadequate to a Project of PISA's nature and scope.)

Both the Liaison Officer and the Program Officers have detected, analyzed, and made known to the Peruvian authorities a great variety of basic technical and managerial problems with PISA. Further, they have made detailed suggestions concerning their alleviation, some of which have been acted upon. The Team believes, however, that this strategy is inadequate when compared to the magnitude of the basic problems still being faced today, and calls for a re-examination of IDRC's role in, and management of, Projects of the scale and nature of PISA. The following example demonstrates the dilemma:

In correspondence dealing with refining drafts of basic Project documents, e.g. the POP, LARO POs insisted on editorial revisions giving equal emphasis to livestock in Project goals and activities.

In late 1985 and early 1986, the Livestock PO (trip report 1/86) noted a lack of knowledge on PISA concerning prevailing livestock production systems, and mentioned discussions with the Project Leader to overcome imbalances in research focus (in favor of crops over livestock).

In March 1986, both POs again made reference to the imbalance in experiments (161 crop experiments vs. 14 animal), as well as deficient research design (e.g. inadequate numbers of replications), while still commenting that the Project was making satisfactory, even "remarkable" progress. They pointed out that animal production research modules should be carried out in the villages, and not on experimental stations.

In November 1987, the Livestock PO (trip report 4/87) is still mentioning weak research design, and in a follow-up letter to the Project Leader mentions the almost complete lack of animal production research. (Further, he states that "in general many of the activities seem action-oriented without a careful consideration of the real needs and farmers' expectations.")

In the main, these problems still persist today, three years after Project initiation. The Team believes that mechanisms for corrective action need review if such basic problems, noted so early

in the cycle, continue at the level they do for such a long period of time without significant changes being effected.

A major quality control mechanism IDRC uses is peer review of research. Unfortunately this does not appear to have been brought into play as far as PISA is concerned (review by POs, and occasionally short-term consultants, excepted). In any case, the process of peer review may well be too slow and awkward to be effective in stimulating course corrections as rapidly as they may be needed on a Project such as PISA.

IDRC is also permitted by the basic Project documents to withhold funds, but apparently only for reasons of nonpresentation of adequate financial reports. IDRC also relies on negotiations for Project extensions as a corrective mechanism. In any event, to date IDRC appears not to have, or else not to have exercised, options to deal with situations of the degree of gravity encountered in PISA.

#### **5.5.2.6. Other considerations**

The Team considers that IDRC (as discussed also in section 5.2) is taking only a partial or piecemeal approach to the whole issue of institutional development and program/project management in the INIAA/CIPA/PISA case. Peru indeed currently suffers a great many financial and institutional constraints, and IDRC is a relatively small player in this context. Yet the Team feels that inadequate attention to these issues (or bypassing them) can jeopardize the long-term impact of Projects like PISA.

Fortunately IDRC is rethinking, and hopefully broadening, its approach to institutional development; the October 1987 discussion paper entitled "Approaches to Strengthening Research Institutions" is a very positive indication of this trend.

LARO staff, in retrospect, now feel that a different strategy might have been better used in establishing PISA in Peru. In the first place, setting up a small IDRC sub-office in Lima would probably have helped avoid a lot of difficulties with financial management experienced with the various third-party agencies set up specifically for the purpose. Moreover, the direct hiring by IDRC of a full-time on-site advisor to the Project, something not normally done by IDRC, would now appear to have been justified, given the factors of size, scope, complexity and difficult structural conditions.

The experience of PISA in relation to these various aspects of the delivery of technical, managerial and financial assistance can be usefully borne in mind by CIDA and IDRC not only in correcting the future course of the Project itself but in the design of further cooperative ventures. It is an appropriate time to consider alternative models.

### **5.6 CIDA Management of PISA**

#### **5.6.1. Background**

CIDA's responsibilities in the management of the PISA Project are outlined in the POP (pp. 15-17); these are fairly standard and general in nature. CIDA's main "interface" in PISA management is with IDRC, though via monitoring trips, participation in the Steering Committee, and some receipt of documents directly from PISA, it also comes into direct contact with the Project. CIDA's relationships with IDRC vis-a-vis PISA are outlined in a special contribution agreement as well as in the POP (and include IDRC's reporting requirements to CIDA).



The comments that follow deal largely with technical and managerial issues; financial issues are not currently seen to be a major concern on this Project. CIDA has worked out satisfactory arrangements with IDRC regarding disbursement of and reporting on the contribution funds, and has seen no reason to conduct its own audit of Project financial management.

#### **5.6.2. CIDA's Monitoring and Evaluation of Project Progress**

CIDA monitors PISA via the standard procedures of document review, site visits, informal communication, and special monitoring consultancies. The latter, two in number to date, are discussed below (the POP does not specifically provide for an independent monitoring consultant as on other large Projects; presumably CIDA felt IDRC would provide adequate monitoring). Flow of documentary information is also discussed below; the Team finds few formal CIDA responses to this material.

The CIDA Principal Resource Officer has made five visits to PISA since its inception (the latest in conjunction with this Evaluation), while the CIDA Project Team Leader has made four such visits. Some of these visits were timed to coincide with annual meetings of the Project. While this level of Project monitoring by CIDA may seem somewhat high, CIDA officials believe this has been necessary, due to felt concerns regarding information flow and the apparent inability to obtain answers to their technical concerns in any other way.

Unfortunately, detailed trip reports (other than the standard reporting telexes) do not appear to exist, nor are there formal records of meetings (e.g. the Annual Steering Committee meetings).

In terms of evaluation, the Team believes that the present evaluation should have been carried out earlier.

#### **5.6.3. The Role of the Embassy**

The POP (p.15) outlines the responsibilities of the CIDA representative in the Canadian Embassy in Lima in terms of monitoring and administrative support (e.g. to visiting missions). There is some lack of clarity, however, both in the POP and in the mind of the Post officer concerning the degree to which he should involve himself in the monitoring function.

The CIDA Post officer has made two trips to the Project, one in 1986 and one in conjunction with this Evaluation; he estimates this Project takes up only some 2% of his time. Not a technical specialist, his main interests are in the management of the Project and in political and economic conditions that may influence the Project. He feels a lack of regular information flow (including debriefing by the IDRC Liaison Officer and the Program Officers on their working visits). In fact, the POP (p.23) leaves the Post in a very weak position as far as information flow is concerned. The Post officer is thus unable to make a useful contribution to the Project.

#### **5.6.4. Technical Support**

Given the lack of meeting minutes and detailed trip reports, it has been rather difficult to trace where CIDA has attempted to provide technical advice and "course correction" to the Project. Nevertheless, correspondence indicates, as one would expect, that at the time of IDRC Project design, CIDA raised substantive issues with IDRC for clarification (e.g. CIDA to LARO, 3/10/84, questioning why there was no sociologist in the Project proposal — a position that strangely was not subsequently included in the POP, either). CIDA also rejected the original Inception Report as being technically inadequate and requested an improved version from IDRC.

In the last eight months, as well, CIDA has sent two technical specialists to review certain aspects of the Project. An agricultural economist, reviewed Project documentation, commenting on the quality of FSR work and other issues, partly as input into the design of this Evaluation. His report has been distributed in English and Spanish to the parties involved.

In addition, a rural sociologist and WID expert from the University of Guelph, visited the Project in February to review the status of WID activity on PISA. Her report, to date in draft and not translated into Spanish, has also been distributed to Project staff along with useful selections from the relevant literature. While in Puno, the consultant also became directly involved in providing input into a review and improvement of the WID study being initiated; many positive comments were received by the Team on her visit.

#### **5.6.5. Management Support**

Project correspondence in the early stages also indicates some concerns of CIDA's regarding IDRC and PISA management of the Project. Some of this stemmed perhaps from a lack of familiarity with IDRC's management policies and systems, which IDRC attempted to clarify to CIDA's satisfaction (e.g. Hallam to Samn'e, 10/6/85). Even prior to this, CIDA was quite concerned about plans for on-site Project management, and raised the idea that Canadian, or at least more direct IDRC, presence might be necessary in the Project's early stages (MacGillivray to LaPorte, 7/3/85). This idea was not pursued.

CIDA has long felt an inadequate and irregular flow of information emanating from IDRC on Project progress. This has both qualitative (content) and quantitative (frequency) aspects, and has led to a certain feeling in CIDA that IDRC has not managed the Project closely enough. Comments on the previous Section (5.5) indicate that this view is not without some basis, since (a) the required progress reports have been few and late, (b) they have not contained adequate information describing what IDRC's inputs into the Project have been, and (c) there have in fact been, in the Team's view, certain weaknesses in IDRC's monitoring and technical guidance.

The issue of inadequate information flow has been raised by the the first consultant above in his report, but other than this, it is not clear what actions CIDA has taken to overcome what it feels is a major impediment to the fulfilment of its own responsibilities. The Team believes CIDA has been inconsistent in responding to both correspondence and issues in this Project.

## **6. Conclusions and Recommendations**

### **6.1 Principal Conclusions**

In these conclusions, the Team wishes to address the principal objectives of the Project, and the extent to which their realization is supporting achievement of the Project's goals.

1. The Team believes that the Project has achieved little in terms of developing crop and animal production systems suited to the Project communities. The Team acknowledges that PISA has established strong links with the pilot communities, and that a large number of beneficial support and development activities are being carried out. The Team commends the vigor and dedication shown by research and technical staff in this regard.

The Team believes that the principal limitation in developing appropriate crop and animal systems lies in the Project's failure to implement an FSR approach, with the resulting consequence that the research component of the Project is traditionally-oriented, with little improvement in the elucidation and understanding of the main Andean farming systems.

The Team attributes this lack of progress to (a) PISA's inability to attract and retain experienced staff, (b) the general lack of integration between CIPA and PISA in research planning and development, and (c) lack of experience in FSR methodology and its application.

The Team wishes to note that the national political and socio-economic climate has not been conducive to the implementation of a Project of this nature at this time, and that this has impinged upon the Project largely through institutional constraints. These have been significant at times, especially in terms of restructuring and work-stoppages.

2. The Team believes that the Project faces three constraints in the development of effective FSR methodologies suited to the Altiplano:

(a) that the short-term nature of planning does not allow for the development of a longer-term focus of research on the priority elements of Andean farming systems. The Team believes that annual planning should be carried out in the framework of a 3 - 5 year FSR plan.

(b) that even where the PISA Team has adopted appropriate FSR steps (appraisal, diachronic data collection, on-farm research, diffusion), there has been no formal process by which PISA activities integrate these steps. In fact, most are totally discrete activities. This is partly due to discontinuity in staffing, but is also characteristic of the separate PISA and CIPA planning processes.

(c) that no full-time on-site staff member has the experience necessary to guide FSR development, including research methods, in the Andean context. The Team also wishes to draw attention to the importance of a nexus between agricultural and social sciences, including economics, in FSR under small-farmer conditions, and the still embryonic nature of this in PISA. The Team believes that a more realistic balance between these areas must be achieved.

3. In agricultural terms, the Project is heavily biased towards Andean crop (including potato) production, a largely subsistence activity. This follows closely the focus of the IICA-IDRC-PISCA Project. Little of the work on cereals and intermediate technology carried out in the previous phase of the CIDA Project has been subsumed by PISA. The Project has had great difficulty in establishing effective livestock-oriented research. Due to the importance of livestock in income generation, the Team believes that this area must be strengthened considerably.

4. While there is some evidence of an increasing understanding in PISA/CIPA staff of FSR concepts, capability in experimental planning, design, implementation, analysis and interpretation is still at

a very basic level, with much information being lost or distorted through simple omissions or errors in these areas. The Team believes that improvement in FSR can only come about through in-service training provided by an experienced full-time FSR scientist. However, the Team believes that assistance is also necessary in the areas of livestock production, social sciences and agricultural economics for the overall development of research capacity.

5. The Team believes that the Project is attempting to carry out too many activities in the communities. While Project staff indicate that many of these activities come under the heading of research, the Team notes that there is no systematic approach to their planning and implementation, nor to the collection and analysis of data which would allow lessons to be learned from these activities. These activities demand significant amounts of PISA staff time. The Team notes that some of the agreements established with other agencies also require significant amounts of PISA staff time in their implementation; this further reduces the time allocated to key research activities.

6. The Team believes that the Project requires a more systematic approach to both research and support activities including training. This is partly a function of improved longer-term and annual planning, but also of a clearer prioritization of community needs. The latter should come from improved analysis of the appraisals and other surveys. With the modifications to Project technical direction, which the Team believes would come about with the IDRC-proposed Technical Committee, the Team feels that significant gains would occur in the scope and continuity of research.

7. The Team believes that one of the principal functions of PISA is to establish FSR capability in CIPA and INIAA. PISA should therefore be emphasizing planning and technical assistance approaches which lead towards the institutionalization and sustainability of FSR. The Team recognizes the constraints inherent in the current commodity focus of INIAA's main programs, but believes that the Project Leader should develop and provide national-level policy support to INIAA in a rationalization of institutional approaches to FSR. The Team notes with regret the recent change of PNSAPA to PNCA, signifying a reduction in emphasis on the principal component in income-generation in Andean farming systems, livestock.

8. The Team believes that PISA is a Project sufficiently different in magnitude and complexity from IDRC Projects generally for a re-examination of IDRC's monitoring and technical guidance mechanisms to be warranted. The Team recognizes that the hiring of a Liaison Officer is intended to support IDRC monitoring, and that this person has provided valuable support to both IDRC Program Officers and the Project itself. The Team feels that the Project has not given due regard to the input provided by the Liaison Officer, thus reducing his effectiveness, and the effectiveness generally of technical guidance from IDRC. For different reasons, the Program Officers have provided less technical support than would normally be the case, and where substitute input was expected this appears not to have been very effective. The Team notes that the Project is not required to make changes recommended by IDRC, nor does it contain mechanisms to guarantee such changes. Through the Technical Committee mentioned above, or by an alternative mechanism, the Team believes that the Project should be more responsive to technical recommendations made by IDRC and others.

9. The Team believes that the CIDA/IDRC interface could have been more effective in communicating Project progress, and in exploring issues of mutual concern. The Team notes that IDRC does not operate in the way that normal CIDA executing agent would be expected to do (especially in relation to assertive Project management, and reporting), and that the different *modus operandi* has resulted in some concerns as to the role and effectiveness of IDRC in the Project. The Team believes that CIDA could have been more responsive in pursuing the issues perceived to have been concern, and thus in resolving them sooner.

10. Finally, the Team concludes that the Project is not at the point where it can undertake the Stage II described in the Inception Report. As indicated above, the Team believes that the Project must make a serious attempt to redefine research priorities and action. It therefore considers that at least

three more years of FSR will be required to achieve a significant advance in technology development and validation. (The Team notes that FSR must be an on-going process, continually re-examining past achievements and improving technology. In this sense, the Project will not have "finished" an FSR phase, but hopefully will have arrived at the point where significant advances have been achieved, appropriate for extension. The Team believes that the discrete stages mentioned in the Inception Report will be technology-based rather than calendar periods, so that diffusion in one area may be occurring while another may be still in a research phase.)

## **6.2 Recommendations**

### **6.2.1. Agricultural Research**

1. The Project should not follow the same course in funding the CIPA annual work program as it has in previous years. The Team recommends that funding should be available only for that research which meets some FSR criteria or which answers some of the fundamental questions of importance in Andean agriculture. Some appropriate criteria might be:

- a) joint or interdisciplinary responsibilities in design and execution;
- b) clear statement of downstream effects or linkages that will also be studied;
- c) emphasis on farmer-identified priorities and farmer management of experiments, including choice of some of the treatments;
- d) trials that are carried out over space and time under farm conditions;
- e) trials intended to explore how to introduce new crops, e.g. winter wheat, into established cropping patterns;
- f) research which follows on from analysis of appraisals and diachronic data collection, and which focusses on identified priorities;
- g) research which combines biological and social science objectives;
- h) research which restores the balance and emphasis between crop and animal production, and which considers the interdependencies that exist.

2. The Team also recommends that the Project conduct the following studies, in order to satisfy some untested hypotheses or strengthen the basis for other research activities:

a) Determine whether there is a quantifiable benefit to producing virus-free potatoes compared to the native virus-infected varieties. Benefit could include assessment of frost-resistance and other parameters. Much of the potato work supported by the Project rests on this untested hypothesis.

b) On the basis of the diachronic databases, the Project should be evaluating growth rates and other production indices of the major livestock classes in each community. The number of observations appears to be sufficient to test the hypothesis of difference in growth rates as a result of the differences in the characteristics of the production system in each community, e.g. extensive grazing vs. grazing plus supplementary feeding, etc., in order to be able to determine strategies appropriate to specific community or production conditions.

c) The Project should also initiate a program of macro-economic research to determine potential markets for, and supply-impacts of, increased altiplano agricultural production. The Project should respond to the macro-issues raised in papers prepared by the LARO Liaison Officer.

3. The Team recommends that research staff should dedicate more of their time to reviewing and analyzing the data collected in appraisals and diachronic surveys, and to building experimental hypotheses on this data. This should be a component of the planning process for the 1988/89 season.

4. The Project should reduce the number of communities in which it is working. The Team believes that the communities of Urac Ayllu and Puna Ayllu have been dropped from the sample, but that the community of Isla is to be added. The Team recommends that Isla not be included, and that the core of eight communities remain the number in which the Project works. When a community is

dropped from the sample, a concerted effort should be made to analyse the data collected and report the findings.

### **6.2.2. Social Science and Economic Research**

1. The Project should redress the balance between social and agricultural sciences in its research program, as is appropriate to FSR. This will first of all require improved staffing (see below, Staffing).

Further, as with biological research, the sociocultural and economic information currently being collected needs to be analyzed. The Team also supports the initiative of the new economist to review the suitability of the types of data being collected and to modify it accordingly. The Team also commends the latter's intention to have the Project collect qualitative as well as quantitative data, since the former is largely missing to date. On the other hand, Project staff should review the volume of data collected, and where possible in the interests of easy replicability of the process, reduce this volume.

In the interests of economical replicability, as well, the Project should experiment in one or two communities with having villagers instead of "caracterizadores" act as data collectors.

2. The Team observes that the Project is paying considerable attention to the issue of women in development, including via the special study of the role of women in Andean farming systems. It recommends that this concern become an integral part of the design and implementation of farming systems research and all related activities. Proper gender-disaggregated records must be kept on all such activities. Female collaborators for research and other activities should be chosen at least in proportion to their level of involvement in each field.

3. The Project further needs to improve its capacity in the field of economic analysis, and requires the services of an agricultural economist (see below, Staffing). In addition, PISA and INIAA economists should integrate and coordinate their efforts.

4. Project staff must also draw up a simple set of development indicators by which to monitor and evaluate Project impact in various areas. Particular attention needs to be paid to beneficiary analysis. If this is not worked out now, ex post evaluation of PISA impact is going to prove extremely difficult if not impossible.

### **6.2.3. Community Development and Support Activities**

1. The Team recommends strongly that the Project reduce its emphasis on supporting or complementary community development activities, particularly those not foreseen in the original Project documents, in order to concentrate resources on the core farming systems research. (See also Section 6.2.6, Recommendation 5.)

2. In this connection, the Team also recommends that the remaining community development and support activities be treated as research activities as well. Each activity should have a proper, detailed planning document outlining inputs and expected outputs. Adequate monitoring and evaluation of each activity should take place, and be reported upon, in order to assess its benefits and the need for modifications.

3. With respect to the revolving funds at the community level, the Project should:

- prepare a set of objectives, targets and plans for the self-sufficiency of these funds including training of community officials to assume full responsibility;

- explore possibilities for individual entrepreneurship as an alternative to community action;
- assess the impact and viability of the funds.

4. With respect to the commercial seed fund the Project should:

- analyze and respond to the concerns raised in the recent paper by the IDRC Liaison Officer (especially with respect to markets and financial aspects of fund management;
- place the fund on a more business-like basis including adding business experience to the Executive Committee;
- not expand fund activities until fund operations are strengthened and more market information is available (i.e. not for several years at least).

#### 6.2.4. Training

1. Overall programming of training, and its linkages to research outputs and other aspects of the Project, needs to be improved, as does planning of individual activities and their reporting, evaluation and follow-up. Standard formats for planning training activities should also be drawn up, as should a list of criteria for screening training proposals.

These aspects of training will require considerable extra work, possibly the services of a professional training manager/planner, and may well involve a reduction in quantity and scope of training. In line with the general recommendation to reduce the scope of community development activities, training activities funded by the Project should concentrate more on agricultural development and less on other community development activities.

If the Project draws up and implements a training plan with its own technical staff, the Team recommends that input from a qualified training expert be sought on a regular basis to assist in program formulation, in the technical design of training activities, and in proper management procedures such as adequate monitoring and impact evaluation. The Team believes that it is not always sufficient to rely on experts in particular technical fields, no matter how highly qualified, to be competent trainers and training managers, and, in addition, perform their other duties satisfactorily.

2. If FSR is to have any future life within INIAA/CIPA, more attention needs to be given to training in this field. Any further post-graduate training should focus on FSR, and intensive training for more local CIPA/PISA staff should be given by highly qualified practitioners, if possible in Puno. Project officials should ensure that training in FSR includes sociological analysis as well as biological. The Project believes that the Social Science and other divisions of the International Potato Center (CIP) could be of much assistance here.

Further, the Project should arrange, now that new senior officials are in place in INIAA, for short, intensive education in the nature and implications of FSR for these individuals. This should probably be arranged in a center of FSR excellence outside Peru. This activity should greatly support the longer-term institutionalization of FSR within the Ministry of Agriculture.

Other important fields for improvement in staff capability through training include economic analysis and statistical methods.

3. The substantial unused training funds, as reported in Section 2.9, could be reallocated to funding the training specialist the Team proposes for the Project. (See below, Section 6.2.5, Recommendation 3.)

### 6.2.5. Staffing

1. The Team believes that a coherent plan for technical assistance to the Project is essential for substantial improvements to occur in the remaining years of the current phase. The Team believes that the elements of the plan should be as follows:

a) The hiring of two senior FSR scientists, one with agricultural background, and the other with social science background. These two persons would have principal responsibility for the technical development of FSR within the Project, and the support of approaches to its institutionalization within INIAA. The Team views these as full-time positions, which would preferably be filled for them to have input to 1988/89 planning. Should this not be immediately possible, it is urgent that the Project hire at least a short-term agricultural scientist and a socioeconomics expert for the next several months to assist in improving analysis of current data and planning of the 1988/89 season.

b) The hiring of a senior livestock scientist, to support the development of small-farm livestock production research within the Project. This person would also provide support to developing livestock research capability in INIAA, and, if appropriate, to developing links with other Peruvian agencies with similar responsibilities. Similar comments noted in a) above, regarding input to 1988/89 planning apply here. The potential for support from RISPAL should also be examined, in terms of the needs defined above.

c) The hiring of an agricultural economist (with FSR experience) to work with the FSR specialists, Project and INIAA economists and scientists, to provide in-service assistance and training in the following areas:

- analysis and interpretation of community characterization data particularly with a view to understanding risk functions;
- planning a program of economic analysis of semillero (seed-production) and experimental results including design, analysis, interpretation with emphasis on marginal techniques such as partial budgeting and production-function relationships;
- analysis of the markets for agricultural products from the region;
- analysis of capital development Projects (e.g. construction of terraces) to determine their pay-off with and without outside support.

d) The Team also recommends that a senior applied social scientist with Andean research experience be contracted for a period of 4 months to review, analyze and present the relevant conclusions of the immense volume of social science research carried out in the Andes over the past decades. This would supplement the rather superficial understanding of the relevance of sociocultural aspects of Andean societies current on the Project, and assist in improving the quality of research and action. This work would supplement that of the fulltime senior FSR social scientist recommended for the Project, and would involve some travel to major centers of Latin American research in North America.

e) The hiring of a well-qualified training specialist for the remaining period of the Project. This person's major tasks would include training needs analysis, programming and planning, and establishing proper monitoring, evaluation and follow-up systems. This person would work as an advisor to CIPA and PISA staff, developing planning and training skills in counterparts who would be responsible for this essential component of PISA/CIPA activities. A qualified Peruvian would be a suitable candidate. (See recommendation 1, section 6.2.4. above).

2. The Team recognizes that this staffing plan could impose a heavy financial burden on the Project. The Team recommends that LARO, with PISA/INIAA staff, immediately review the Project budget in the light of the recommendations of this report (especially re staffing, and the retention of the



original five-year time-frame), and make necessary changes, where necessary with CIDA approval. In view of the proposed staff additions recommended here, it may be necessary to deploy contingency funds.

3. All senior staff contracted by the Project should in fact work as advisors to CIPA, such that the major part of Project work is carried out by counterpart staff of PISA. In this connection, the hiring of non- Peruvian expert staff for the Project, where Peruvian staff are not available, should be pursued vigorously; it is the upgrading of capabilities of Peruvian civil servants, whether by nationals or expatriates, that is the key to ensuring long-term impact of the Project.

#### **6.2.6. Institutionalization and Institutional Development**

1. INIAA (with IDRC and CIDA) must first clarify their policy on the relative importance of institution-building and institutionalization as regards PISA. Further, decisions must be taken as to what is expected to be institutionalized in the short and medium term (and at which levels): FSR methodology, FSR results applicable to highland areas, and/or the FSR and D (development) approach currently pursued by the Project.

The Team suggests that only FSR methodology and some results can feasibly be expected to be institutionalized in the near and mid-term, given financial, structural and other realities. Depending on the results of this policy decision, INIAA will have to consider certain institutional modifications to allow for the efficient incorporation of FSR methodology (e.g. mechanisms for cross-sectoral research, opening up positions for currently unincorporated subject-matter specialists such as social scientists, etc.).

2. Measures need to be taken to further bring PISA into the CIPA structure. This will first of all require a return to the original model proposed for the Project: PISA expert staff should act as advisors to CIPA staff, who will carry out the bulk of the Project's work. Other measures are also needed to increase CIPA's "ownership" of the Project by way of formal mechanisms for directing the Project, within the guidelines set down in the major Project documents (see Management, below).

3. Once policy and structural issues have been decided upon, a realistic timetable with particular goals and actions should be drawn up for the achievement of adequate institutionalization. These should be reported upon in some detail in quarterly and annual reports (i.e. as of equal importance to research activities), and reviewed and adjusted as part of annual workplan programming.

4. In the achievement of institutionalization of FSR methods in CIPA, FSR must come to be seen as a routine part of CIPA's activities. It should not be necessary, therefore, to institute any special incentives to encourage staff to participate in FSR activities, other than compensation for extended periods spent away from place of residence in isolated villages.

5. The Project has been a stimulus to intersectoral rural-regional development activities in Puno; while the Team recommends that the Project itself sharply reduce its own activities in this field in order to concentrate on the core of its research work, it is also felt that local emphasis on intersectoral rural-regional development should be encouraged. CORPUNO is the local agency which has the responsibility in this regard, and it may be mutually advantageous to consider the possibilities for closer, more formal ties between PISA and CORPUNO.

Such a linkage would in the first place encourage PISA's input into local regional-rural development planning and policy. The Project would benefit, too, from input into its own planning. Further, a formal link would appear to be the only way for PISA/CIPA to obtain national government (counterpart) budget support for Project activities; this should be encouraged to support the longer-term sustainability of Project-derived initiatives as CIDA support diminishes and phases out. In this connection, membership of CORPUNO on the proposed limited Technical Committee for PISA should be encouraged.

(The only other possibility the Team knows of for institutionalizing the development approach referred to here is the recently created INDCC (national institute of community development) of the Ministry of the Presidency. This, however, appears to be a longer-term solution. The two possibilities, however, are not mutually exclusive.)

#### **6.2.7. PISA Management**

1. The “three director-manager” situation needs to be rationalized, based on the most efficient means to achieve Project goals including closer incorporation of the Project within CIPA/INIAA.
2. The recent draft organization and management manual should be revised to take into account Recommendation 1, as well as to provide full job descriptions of all Project personnel and counterpart staff, and to describe administrative procedures in full. The Project may wish to contract some professional management advice to develop a high quality manual.
3. The Team supports the recommendation of LARO to constitute a limited Technical Committee to review Project progress on a bi-monthly basis and to take major decisions. The Team would suggest giving consideration to having CORPUNO representation on the committee.
4. Improvements should be made in the reporting system in terms of timeliness and content. For quarterly reports, the latter should add management issues as well as a comparison of work planned and achieved in the quarter in question, and an updated work plan for the upcoming quarter.

The process of holding Project meetings also needs to be improved. One suggestion would be to establish a committee to plan and to record significant output of these meetings, something which is lacking at the moment.

Further, the Project should be careful to put dates on all Project documents.

Finally, the Project should see that copies of all major Project documents be routinely sent to the Canadian Embassy in Lima to enable the CIDA Project Officer to efficiently perform his monitoring and assistance functions.

5. In terms of accounting and budgeting, arrangements should be made for FUNDEAGRO to supply PISA/Puno with up-to-date exchange rates so that expenditures may be monitored locally against budget on a continuous basis. For this, assistance should be provided immediately to the Puno office to computerize the whole accounting/budgeting process.
6. To ensure continuity of staffing at the village-level, the Project should consider a better remuneration package. One suggestion would be to institute a “hardship” or “isolation” allowance as a supplement to basic salary.

#### **6.2.8. The Role of IDRC**

1. IDRC should consider strengthening and broadening its policy and practices concerning institutional and management development in research agencies such as INIAA, in line with the recent IDRC discussion paper on the subject. Management assistance solely to achieve immediate Project goals is inadequate to ensure long-term Project impact and sustainability of results.

Based on the results of this reorientation, a broader range of measures, activities and assistance could be worked out for the specific case of the PISA Project and the institution in which it is located.

This becomes even more crucial if all parties are to consider a five-year extension of PISA (see Section 6.2.10 below).

2. As a small example of how IDRC could play a helpful role in this connection, LARO should insist on receiving timely quarterly reports from INIAA that both meets LARO's information needs and serve the Project's recording, managing and planning functions better. LARO may further have to tie preparation of adequate reports to financial disbursements.

3. Similarly, LARO should take a few simple measures to improve its own reporting to CIDA (both for CIDA's own purposes and for the general good of the Project). These steps consist of (a) ensuring that reports are prepared on time and transmitted on time; (b) ensuring that the reports detail IDRC's inputs into and management of the Project; and (c) seeing that the reports use a standard format (e.g. bar charts) for at least certain sections such that actual progress can be seen at a glance in comparison with planned progress and progress in the previous 6 months.

Further, to ensure an adequate flow of information, LARO's Program Officers and the Liaison Officer should routinely debrief the Canadian Embassy in Lima (and CIDA officials in Hull when visiting Ottawa) during working trips.

4. IDRC/LARO should review its policies as regards the degree to which it expects its technical and managerial recommendations to be implemented, and what strategies it has available in cases of serious non-compliance.

5. Once the Project Technical Committee, and some of the senior staff, are in place on PISA, the role of the Liaison Officer should be reviewed. Improved reporting by PISA should reduce his monitoring functions to a fair degree, and some of should be reviewed. Improved reporting by PISA should reduce his monitoring functions to a fair degree, and some of the technical and managerial assistance he provides will become redundant.

On the other hand, in the case of the current Liaison Officer, his undoubted technical and managerial abilities could be deployed to better advantage, especially in periods in which key senior Project staff are lacking. One way to achieve this would be to increase the period of time he is required to spend in Puno.

6. In view of Team concerns regarding the inadequate quality of social science investigation on the Project, and in relation to LARO's new emphasis on interdisciplinary (interdivisional) research activities, the Team suggests that LARO explore the possibilities of incorporating some involvement of the Social Science Division into the Project. Interdivisional arrangements on CIDA-assisted IDRC Projects already have precedents, e.g. the BAIF Project in India.

### **6.2.9 The Role of CIDA**

1. CIDA should clarify with IDRC the latter's approach to technical guidance of Projects, and the negotiating mechanisms available to improve the quality of Project implementation.

2. To ensure that real or perceived "gaps" in communication do not occur or persist, CIDA should consider initiating quarterly informal meetings with their IDRC colleagues to review the progress of PISA. This would also be an opportunity to exchange information about each other's activities in the Andean region, in agricultural research, in policy development, etc. The forum could also be widened to include other CIDA-IDRC Projects in order to exchange information and work to overcome common problems. The IDRC coordinator at CIDA might usefully be involved here.

3. CIDA should respond formally to IDRC's progress reports, if it wishes to see any improvements in them.

4. CIDA should consider requesting IDRC to link their semiannual progress reports with the relevant quarterly financial report so that explicit comparisons can be made between financial and substantive progress. To date these reports appear to be handled separately.

5. The role of the Embassy CIDA representative should be enhanced, for example by ensuring that he receive all relevant PISA/LARO reports and by means of an annual visit to the Project in conjunction with one of the LARO staff visits.

#### **6.2.10. The Question of Project Extension**

1. The Project is completing the third year of its five-year span. The Team recommends that the Project retain its five-year structure, and that a second evaluation be conducted during the 1989-90 growing season to determine the extent to which changes have been made and progress achieved in the areas described above. (Two planning cycles and one and a half growing seasons will have passed since the current evaluation.) If the second evaluation is positive, the Team believes a further five-year phase would be appropriate (see recommendation 2 below).

2. The Team recognizes that retaining the five-year framework limits certain long-term staffing strategies recommended under Section 6.2.5. The Team recommends that LARO communicate to CIDA as soon as possible the budgetary implications of the staffing plan (or variants of it), so that management decisions can be made in the immediate future on funding. This will also allow decisions on the probable planning steps (including the second evaluation) for a subsequent phase. If budget permits, the Team recognizes that there may be a case for an extension of the present phase, but that this will depend on progress in addressing research issues, and a re-examination of the original rationale for the request for an extension.

3. The Team believes that the following issues should form the basis for the next evaluation. These issues address research process rather than research output, the Team recognizing the long-term nature of research in such a marginal environment. This list is not intended to be exhaustive, and the framework for the next evaluation may contain other pertinent issues. The Team also recognizes that, depending on the planning process underway at the time, a review that is less exhaustive than that contained in this document may well respond to the future needs of the Project.

a) Use of appraisal and survey findings in research development, including community participation in interpretation.

b) Interdisciplinary approaches to research, including emphasis on social science and economic objectives.

c) The balance of research between the major production activities, and, specifically, the approach to addressing small-farm livestock production.

d) Systems research, and the linkages between agricultural activities, within and between years.

e) Research planning, and the development of a longer-term joint planning framework between PISA and CIPA.

f) Linkage between PISA and other Andean research Projects, or networks with similar research objectives.

g) PISA input to the institutionalization of FSR in INIAA.

h) Rationale and coherence of technical assistance (short and long-term) to the Project.

i) Changes in the institutional context of the Project since the previous evaluation.

**Appendix 1. Issues and Indicators**

## **Appendix 1**

### **Evaluation Issues and Indicators**

#### **1. Farming Systems Research Approach and Methodology**

##### **1.1 Planning**

Has the project utilized experience from elsewhere in the development of its FSR methodology?

- Literature reviews
- Published articles citing relevant references
- IDRC experience

To what extent is the research approach multi-disciplinary?

- Range of disciplines involved in the research
- Evidence of multi-disciplinary involvement in experimental design and implementation
- Multi-disciplinary statements of objectives
- Scheduled team meetings
- Group analysis of data

How have the characterization surveys been used to identify problems, causes and constraints?

- Sample selection
- Written analysis of surveys, with conclusions
- Quantitative identification of constraints
- Statistical inference from survey questionnaires

How have socio-economic studies been used to refine the findings of the characterization surveys?

- Social and economic constraints and priorities
- Marketing conditions
- Availability of credit and inputs
- Opportunity cost of labour
- Seasonality of supply and demand

Do planned experiments reflect the importance of both crop and animal enterprises (and their interaction) to the local population?

- Contribution of crop and animal systems to regional productivity
- Relative concentration of project on individual crop or animal products
- Identification of important enterprise linkages

Do the experimental variables being studied reflect major constraints to production?

- Major constraints or problems per farming system
- Principal variables being studied
- Potential impact of 'variable' on productivity or economic welfare

- Prioritized list of variables
- Hypotheses formulated
- Input from communities

Does the planning process screen problems and constraints to arrive at the most important limiting factors?

Does the experimentation program reflect a set of priorities with regard to the most important problems and the most promising solutions?

Is community experience, opinion and resources reflected in the design of experiments?

- Records of meetings, including minutes
- Survey results and analysis
- Interviews by evaluation team

Has the research design taken account of the different contributions of family members, especially women, to farm and off-farm activities?

- Labour studies
- Interviews in the field
- Value-adding activities

Is there continuity in design of successive experiments?

- Experimental design based on written appreciation of previous work
- Multiple year experimentation with increasing elucidation of variable under study
- Evolution of experimentation from exploration to verification

Has the Project team taken care to establish appropriate statistical methods in experimental design and analysis?

- Statistical designs in use
- Specific analytical needs
- Theoretical validity of experimental design, including hypothesis testing
- Statistical background of staff and use of exterior expertise

Has the project established guidelines or indicators against which they can measure their progress toward objectives and thus prepare for future evaluations?

## **1.2 Implementation**

How are experimental sites being selected?

- Location of sites
- Identification and selection processes used, including stratification
- Representativity
- Security of tenure for experimental purposes

What types of experiments are being conducted and their rationale?

- Replicated field trials

- Observation plots
- Flock observations
- Multiple location studies

What information is being gathered and how?

- Production and marketing data
- Environmental data
- Livestock growth rates, mortality, etc.
- Measurement methods
- Surveys, case studies or informal observations
- Cross-section or longitudinal studies

How often is each experiment being visited by the research team?

- Contact with managers of experiment
- Frequency of visits
- Technician or scientist
- Purpose of visit
- Reporting of visit observations and conclusions

What difficulties in implementation are being encountered?

- Poor timing
- Loss of material
- Security of personnel
- Climatic or soil problems
- Lack of community interest or involvement

With the program currently being implemented what are forecast for the budget balances of the main programming and administrative activities during the balance of the project?

- Budgets in the POP and Inception Report
- Accounting reports in Puno and in LARO

What responsibilities are being assigned to, and are accepted by, collaborating farmers?

- Maintenance of plots
- Application of experimental treatments
- Record keeping

What is the duration of the experiments, and what is the frequency of data collection?

- Single growing season versus multi-year
- Single versus multiple animal production cycles
- Start and finish observations
- Regular recording for growth curves, disease build-up

### **1.3 Analysis/Feedback/Reporting**

How is data and other information being analyzed?



- Hand tabulation and analysis
- Computerized from coded sheets
- Analysis of results beyond first consideration
- Scheduled meetings

To what extent are experimental results being written up and discussed or synthesized?

- Evidence of written report for each experiment or survey conducted
- Composition of reports, including degree of detail
- Discussion meetings and presentations
- Review by all team members

What types of conclusions are being drawn?

- Statement of findings of statistical significance
- Inference to farming system from experimental results
- Linkage to conceptual basis of program

What analytical methods are being used?

- Non-statistical and modelling
- Analysis of variance, including interactions
- Regression analysis
- Non-parametric analysis
- Hypothesis testing

Is the producer involved in the interpretation of results?

- Record of meetings, including results
- Producer knowledge of experimental results
- Evidence of spontaneous adoption of technology

What reports are being produced?

- Project Technical Reports
- In-house reports
- Scientific articles
- Extension bulletins or pamphlets

## **2. Research Output**

What information has the Project produced on the main farming systems in each of the agroecological zones?

- Species characteristics
- Types of rotation
- Cultivation practices
- Linkage between enterprises (especially crop and animal)
- Social consequences
- Economic status
- Resource availability
- Marketing channels
- Decision making processes

Have baseline data been compiled for use in later project evaluations?

- Database
- Reports

What information has the Project produced on the climatic and other constraints to production of each major agricultural (crop or animal) commodity?

- Minimum temperature
- Minimum frost-free period
- Frost tolerance
- Maximum rain-free period (drought tolerance)
- Soil type
- Nutritional needs

To what aspects of farming systems, crops and/or animal production do the results obtained to date refer?

- Species or activity
- Biological productivity
- Economic outcome
- Social consequence
- Resource use or organization
- External factors

To what extent are the experimental results being obtained on-farm and on-station comparable?

- Study of same variables in both locations
- Similar treatment ranges
- Concurrent in time and agroecological zone
- Management input

Do on-farm results confirm the trends being established under on-station conditions?

- Sufficient data (within/across years) to establish trends
- Coefficients of variability within acceptable limits
- On-farm results from several locations

Has the Project yielded experimental results that confirm the development of technology superior to that used by farmers?

- On-farm results of improved technology
- Regional pre-project standard
- Expected and measured returns to adoption of improved technology
- Opinion of farmers
- Rate of adoption

To what extent does the improved technology alter the economic return and risk to the farmer, or the biological stability of the system?

- Cash flow
- Partial budget and risk analysis

- Evidence of long term productivity and stability
- Availability of new or additional inputs
- Effect on the ecosystem

### **3. Women in Development**

Do the characterization studies give enough detail about women's activities and importance in Andean farming systems?

- Labour supply profiles
- Marketing practices
- Off-farm activities

How well are women's issues included in research planning?

- A specialist on the team
- Part of investigation program
- Reports
- Interviews in villages

Are research and analysis making specific reference to women's contributions in farm labour and management?

- Reports
- Discussions of analysis
- Constraints analysis
- Screening of proposed solutions

### **4. Non-Research Activities**

How much emphasis is put on extension and support services relative to research activities?

- According to the POP and to the Inception Report
- According to budget
- Actual expenditures of money and time

Who are the beneficiaries of the community and commercial revolving funds?

- Baseline data
- Records
- Minutes of community meeting
- Interviews

How do extension and support services contribute to project's objectives?

- According to POP and Inception Report
- According to research team and to CIPA XXI
- According to farmers

How will the non-research activities be funded and continued at the end of the project?

- INIAA reports

- Policy statements from development agencies

## **5. Training**

How does training contribute to better research capacity and to accomplishment of project goals?

- Post-graduate studies
- Technician training
- National or international seminars or conferences, especially on FSR
- Courses or workshops in communities
- Exchange of staff
- Farmer training

## **6. Institutionalization**

What does "institutionalization" mean to PISA, the executing agent and to the Donor?

- POP
- Project Summary
- Inception Report
- Interviews at INIAA, IDRC and CIDA

To what extent is PISA integral to the Programa Nacional de Sistemas Agropecuarios Andinos (PNSPA)?

- Core project
- Joint seminars or workshops
- Source of concepts or expertise
- Staff linkages with other projects

What is the probability that INIAA will be able to absorb PISA at the end of the project?

- Budget relative to that of CIPA XXI
- Staff contractual arrangements
- Long-term commitment to Andean research through PNSPA

How are PISA's approach, results and recommendations being disseminated to other researchers and to policy makers?

- Formal agreements
- Internal reporting structure of INIAA
- Reports or other publications
- Seminars and workshops
- Joint research programs
- Exchange of staff

## **7. Canadian Executing Agent (CEA)**

What is IDRC's view of its role as executing agent?

- Interviews
- Policy statements or mandate

- Experience in other projects

What assistance is being provided by, or through, IDRC?

- Staffing advice
- Programming
- Technical advice or specialist services
- Research and resource management

What project management system has been established by IDRC at LARO (Bogota), and what are the contributions/inputs of the program and liaison officers?

- Design and operation of technical aspects of program
- Financial control and administration
- Bogota/Lima/Puno linkages
- Analysis and reports of project's progress

What guidelines has CIDA provided to IDRC with respect to project execution and to what extent has IDRC complied with these?

- Contract
- POP
- Memoranda/aide-mémoire/minutes of meeting
- Reports
- Joint visits to project
- Informal communications

## **8. CIDA Management**

Has CIDA conducted the operational and financial aspects of project management in a timely and effective manner?

- POP
- Memoranda and other documentation

Has the CIDA Project Team operated to provide the necessary operational guidance to the CEA in the execution of its duties?

- Reporting
- Feedback
- Communication with CEA

Has CIDA interfered with CEA by making excessive demands on them or on the project?

## **9. The CIDA-IDRC Model**

How did the collaboration between IDRC and CIDA in the project design stage evolve?

- Minutes of Meetings
- Reports
- Joint travel to site
- Informal communications

How were responsibilities for each party decided upon?

- POP
- Letters or memoranda
- Meetings

How can each party be kept abreast of project progress?

What means or channels exist or can be proposed so that the three parties can better contribute to the planning and evaluation processes?

**Appendix 2. Terms of Reference**

## **Appendix 2**

### **Team Members' Terms of Reference**

#### **1. Farming Systems Specialist**

This person, who will also act as team leader, will have principal responsibility for assessing both the conceptual basis of, and practical approach to, the farming systems research being carried out under PISA. This will include:

- a) An analysis of project objectives, and the project components developed to achieve them.
- b) An assessment of the literature/database being used in research development.
- c) An analysis of the planning approach.
- d) An assessment of research priorities, as specified by the PISA team.
- e) A review of experimental methodology, particularly as it applies to community and on-farm research activities.
- f) A review of results obtained to date, identifying both the strengths and the weaknesses of the data.
- g) An assessment of both the analytical and reporting stages of the experimental work, including feedback of results into research planning.
- h) An assessment of the degree of disciplinary integration in research development and execution.
- i) An assessment of the areas of weakness in technical capability, with training or technical-support recommendations aimed at strengthening such areas.
- j) Focussing the other members of the evaluation team on aspects of importance in strengthening FSR.
- k) Integrating the reports and recommendations of the other members of the evaluation team into a single strategy for strengthening PISA.
- l) An assessment of the managerial and technical guidance being provided by, and through, IDRC.

This person will also review the appropriateness of the research strategy and approach given the various production environments on the Altiplano. This will include:

- a) A review of the climatic, edaphic, topographical and other information pertinent to agroecology available to the PISA team.
- b) An assessment of the stratification strategy being used by PISA in research design.



- c) A review of the results obtained to date and their analysis in relation to the stratification of research sites.
- d) The determination of areas of agroecological information still lacking, and recommendations for strategies for collection and analysis.
- e) An outline of approaches to improving current linkages between FSR and the underlying agroecological conditions of the region.

## **2. Anthropologist and Institutional Development Specialist**

The person covering this area will be responsible for assessing the activities that are more related to community research organization, infrastructure and support services provided to them by the project. The particular issues or subjects falling under this heading are:

- a) A review of the sociology content of the research approach followed by the project.
- b) The effectiveness of the current approach to reveal the sociological constraints to adoption of new techniques or new varieties.
- c) The extent to which women's contribution to the labour force and to marketing and other management decision-making is taken into account.
- d) The role of community infrastructure and services to the research process and to the project's objectives.
- e) The feasibility of extending the approach developed in the pilot villages to a much wider area.
- f) Community and farm family decision-making and how they are understood and incorporated into extension strategies.

Responsibilities in the area of Institutional Development will include:

- a) The context of PISA within CIPA XXI in Puno, and the linkages between the project and other CIPA programs and the implications for the project of the recent creation of INIAA.
- b) The contribution of PISA to the Programa Nacional de Sistemas Agropecuarios Andinos (PNSPA), and the linkage between PISA and other projects within the PNSPA.
- c) The approach to project management in Puno, including national contributions of staff and financial support.
- d) The provision of managerial and technical guidance by, and through, the IDRC.
- e) The project management system established by the IDRC and LARO, Bogota, and the contributions of the program and liaison officers.
- f) The financial and project management systems established at INIAA, Lima.

### **3. Agricultural Economist**

This person will have responsibility for reviewing the economics research conducted as part of FSR in the project. The particular areas of review include:

- a) The extent to which agricultural economics is represented on the project team and integrated into research planning.
- b) The economic analysis of conditions facing farmers and their output, at both the micro and macro levels.
- c) The use of techniques, like modelling and partial budget analysis, to screen proposed changes in farmers' practices.
- d) The extent to which research priorities are ranked in accordance with economic conditions that influence the availability of inputs and marketable outlets for surplus produce.
- e) The effective opportunity cost of labour and effective value of animal or crop by-products that could be used as alternatives to more expensive inputs.
- f) The use of sensitivity analysis and other measures to estimate the long run stability of proposed changes in farming systems and the level of risk farmers would be exposed to.

This person will also cover the area of analytical methods and experimental design, which includes:

- a) The extent to which analytical methods are taken into account in research design.
- b) The extent to which experimental design and analytical methods are appropriate to the hypotheses being tested, and to the type and accuracy of data obtained.
- c) A review of the type of data obtained and recommendations as to the most appropriate methods of analysis, according to the frequency and accuracy of data collection.
- d) A review of the analytical approaches being taken in general and the use, in different situations, of the analysis of variance, regression analysis, non-parametric statistics, non-statistical inference or other approaches.
- e) The development of a simple manual to document the use of specific analytical methods or statistical tests which could be of particular use to the PISA team.
- f) Support to both the team leader and the agroecologist in the discussion and review of methodology used in, or developed by, the project.

**Appendix 3. Persons interviewed, documents consulted,  
communities visited, and team itinerary**

### **Appendix 3.**

#### **Persons interviewed, documents consulted, communities visited, and team itinerary**

##### **Persons interviewed**

##### **CIDA**

E. Doe, Project Team Leader  
I. MacGillivray, Principal Resource Officer  
  
G. Lessard, Director General, Natural Resources  
G. Grenier, Chief, Agriculture Sector, Natural Resources  
  
M. Domaschio, Post Officer

##### **IDRC, Ottawa**

G. Spenjian, Deputy Director, AFNS  
G. Hawtin, Associate Director, CAPS  
M. Beaussart, Operations Officer  
E. Rathgeber, Senior Program Officer,

##### **IDRC, Bogotá**

F. Chaparro, Regional Director  
H. Li Pun, Program Officer  
R. D. Estrada, Liaison Officer

##### **INIAA, Lima**

A. Chavez, Technical Director  
A. Farly, Research Director  
G. Ayala, Human Nutrition  
E. Chavez, Director, PNCA  
T. Palomino, Division of Technical Cooperation

##### **CIPA, Puno**

J. Ramirez, Director  
A. Canahua, PISA National Director  
V. Huanco, Research Director  
H. Quispe, Research Staff  
S. Marca, “  
R. Ponce, “  
J. Choque, “  
M. Banegas, “  
V. Apaza “

##### **FUNSIPA/FUNDEAGRO**

L. Pacora, Director

## **CIP**

J. Valle Riestra, Deputy Director General  
C. Vittorrelli, Operations Manager  
D. Horton, Sociologist

## **La Molina**

E. Malpartida, Systems Agronomist, Pastures

## **PISA**

M. Tapia, Leader  
J. Reynoso, Co-Director  
A. Salis, Economist  
L. Lescano, Agronomist  
R. Revilla, Animal Scientist  
H. Muñoz, Nutritionist  
G. Gongora, Anthropologist  
A. Cruz, Computer operator  
F. Torres, Revolving Funds  
G. Bolaños, Revolving Funds

Village Technical Staff/ Data Collectors

## **CORPUNO**

V. Valderrama, Director General  
Staff

## **UNTA**

F. Caseda, Director Postgraduate School, Agricultural Sciences

## **Ministry of Agriculture, Puno**

W.J. Mercado Z., Director, Unidad Agraria

## **Team Itinerary and Communities visited**

21-25 March	Evaluation Workplan preparation, Hull
02 April	Departure for Bogotá
03-04 April	IDRC, Bogotá
05 April	Departure for Lima
06-08 April	Lima <ul style="list-style-type: none"><li>- Embassy</li><li>- INIAA</li><li>- FUNDEAGRO</li><li>- CIP</li><li>- La Molina</li></ul>
09-11 April	Travel to Puno
12 April-06 May	Puno <ul style="list-style-type: none"><li>- CIPA</li><li>- CORPUNO</li><li>- Min. Agr.</li><li>- UNTA</li><li>- Communities<ul style="list-style-type: none"><li>- Llallahua</li><li>- Kunurana B.</li><li>- Santa Maria</li><li>- Jiscuani</li><li>- Apopata</li><li>- Carata</li><li>- Anccacca</li></ul></li><li>- Stations<ul style="list-style-type: none"><li>- Salcedo</li><li>- Tahuaco</li><li>- Illpa</li><li>- Chuquibambilla</li></ul></li></ul>
07-08 May	Travel to Lima
09-10 May	Lima <ul style="list-style-type: none"><li>- Embassy</li><li>- INIAA</li></ul>
11-12 May	Departures for Canada

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## **Appendix 4. IICA Evaluation Conclusions**

Es importante y conveniente señalar que muchos de los profesionales que están trabajando tanto en el Cusco como en Puno, tienen una experiencia adquirida realmente valiosa, sobre todo, con conocimientos obtenidos en base al trabajo directo con el comunero; y por esta razón es urgente y prioritario que el proyecto planifique, como parte de la responsabilidad de trabajo, ahora, la obligación de que escriban informes técnicos, manuales o instructivos de estas experiencias o nuevos conocimientos, previendo los fondos necesarios para su edición y difusión.

#### IV CONCLUSIONES Y RECOMENDACIONES

La Misión de Evaluación desea dejar claro que las Conclusiones y Recomendaciones que efectúa, son el resultado de las observaciones a nivel de campo, de las entrevistas y reuniones de diverso tipo llevadas a cabo en su recorrido y de la revisión de los documentos puestos a su alcance, tanto en la Oficina del IICA en Lima, y por los propios PISCA en su propia sede.

La Misión reconoce que no ha sido posible revisar otra documentación disponible en la sede de la Coordinación General del Proyecto debido a limitaciones de tiempo.

##### 1. Sobre la continuación del Proyecto,

###### - Conclusiones

1.1 El Proyecto ha tenido un avance notable, alcanzando un grado de evolución según el siguiente orden descendente: Puno, Cusco, Arequipa. Sin embargo, en ningún caso se ha alcanzado el nivel de desarrollo suficiente ni el grado de cumplimiento de sus objetivos que asegure su estabilidad futura.

1.2 Se considera que la experiencia adquirida en el proyecto, tanto individual como institucional, en lo que se refiere a agricultura andina y su relación con las comunidades andinas es única y debe ser capitalizada y difundida a todos los sectores relacionados con el desarrollo agropecuario de los andes altos.

1.3 El impacto del Proyecto a nivel de las instituciones firmantes de los Convenios que lo respaldan, es altamente positivo.

A nivel de las Universidades participantes ha permitido la inclusión en su curricula de la enseñanza en materia de sistemas andinos de producción y la capacitación de profesores y estudiantes, además de facilitar trabajo de tesis de grado.

A nivel del CIID ha motivado el apoyo financiero continuo, y en el IICA, ha incrementado la capacidad técnica del personal asignado al Proyecto.

A nivel de instituciones nacionales, en INIPA, ha constituido la base para el diseño del Programa Nacional de Sistemas Andinos de Producción Agropecuaria, recientemente creado.

En general, su contribución al conocimiento de los sistemas andinos de producción, así como al desarrollo de las comunidades participantes, constituyen base importante para el diseño de programas similares de alcance nacional.

1.4 Por consiguiente, el Proyecto debe continuar dentro de una etapa de desfase, de por lo menos un año más (año 1986), preferiblemente con miras a su institucionalización en el Organismo Nacional INIPA.

#### - Recomendaciones

1.1 Que el IICA, con apoyo del CIID inicie gestiones ante el INIPA, para que el proyecto, en su integridad sea absorbido dentro del Programa Nacional de Sistemas Andinos de Producción Agropecuaria, recientemente creado; poniendo a su disposición todos los resultados y logros hasta ahora obtenidos para su utilización como experiencia fundamental para las acciones a ser ahí diseñadas.

1.2 Que el IICA inicie el proceso de negociación ante el CIID, para la utilización de los fondos remanentes al término del Convenio (diciembre 1985), para asegurar el inicio de la etapa de desfase de los PISCA's Cusco y Arequipa.

El PISCA/Puno, aparentemente tiene asegurada la financiación de una nueva fase a partir de enero de 1986 con fondos del CIID, dentro del Programa Nacional antes mencionado.

1.3 Que el Proyecto, en lo que resta de su duración intensifique sus nexos con el INIPA, a través de los CIPA's respectivos, a fin de asegurar una adecuada institucionalización.

1.4 Que el IICA, ante el inminente alejamiento del actual Coordinador General, inicie el proceso de asegurar la contratación de un sustituto, con calificación técnica adecuada, hasta u completa terminación del convenio.

## 2. Sobre los objetivos del Proyecto

#### - Conclusiones

2.1 Los objetivos del Proyecto, en general, son apropiados. Sin embargo, se observa que en su implementación se ha puesto un mayor énfasis a acciones de promoción y aplicación de tecnología con miras a acelerar un proceso de desarrollo más integral de las comunidades, disminuyendo su intensidad en aspectos de la investigación agropecuaria propiamente dicha.

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- Recomendación

2.1 Es conveniente que la Coordinación General efectue una revisión del enfoque real del proyecto, a fin de hacer un replanteo de sus objetivos y metas en concordancia con la realidad de sus acciones y en relación directa con las prioridades a ser establecidas en los campos agropecuarios y socio-económicos.

3. Sobre estrategias del Proyecto

- Conclusiones

3.1 La selección de las comunidades participantes, así como la metodología diseñada para su caracterización inicial parecen ser apropiadas, dentro de las restricciones fisiográficas y ecológicas propias de cada una de las regiones políticas seleccionadas.

3.2 La implementación de acciones no son concordantes en su totalidad con los objetivos del Proyecto, puesto que predominan aquellas que tienden a un enfoque desarrollista antes que a los de investigación propiamente dichas, como se especifica en los documentos iniciales.

3.3 De las acciones realizadas, hay un claro predominio de aquellas que están enfocadas al campo netamente agrícola y pecuario, sobre las de tipo socio-económico, y más propiamente dicho sobre la problemática de las comunidades, su organización y desarrollo, problemas, necesidades, estrategias para el trabajo en comunidades, etc.

3.4 Hace falta afinar la metodología utilizada en aspectos específicos que constituyen base fundamental del trabajo en las comunidades, por ejemplo, la definición de Zonas Homogéneas de Producción, que aparentemente no permite hacer comparaciones entre los PISCA's.

3.5 La documentación revisada no refleja en su real magnitud todo lo que el Proyecto ha realizado hasta el presente, tampoco resalta el esfuerzo, interés y mística de trabajo de los equipos técnicos responsables en cada PISCA.

3.6 Es considerable el número de actividades de investigación, promoción y capacitación realizados hasta el presente, sin embargo, no se identifica con claridad una convergencia hacia metas concretas de tipo anual o de mayor plazo.

3.7 Hay un evidente desbalance entre actividades de tipo netamente agropecuario con relación a las de tipo socio económico, hecho que induce a pensar en la necesidad de conformar equipos interdisciplinarios de acción a nivel de campo, además de aquellos de naturaleza agrónoma.

3.8 Principalmente en los PISCA's Cusco y Puno fue evidente el acúmulo de datos e información de actividades realizadas y que precisan ser analizadas e interpretadas para su difusión dentro y fuera de los PISCA's

3.9 No fue posible dimensionar el grado de utilización de los resultados hasta ahora obtenidos a nivel de PISCA's y de otras instituciones del sector.

3.10 Es evidente el predominio de estudios de campo a nivel de componentes aislados de los sistemas agrícolas y no necesariamente de los sistemas como un conjunto de dichos componentes interrelacionados entre sí y el medio ambiente que los rodea. No fue posible dimensionar el alcance de estudios de los sistemas tradicionales, que constituyen la base para el diseño de sistemas alternativos.

3.11 Es evidente, en el PISCA/Arequipa la necesidad de solucionar, a corto plazo, la falta de un vehículo propio del proyecto que permita una atención oportuna y adecuada de las actividades de campo, así como de contratar un técnico residente en la comunidad.

3.12 La situación futura del PISCA/Arequipa es algo incierta, por la proximidad de la terminación del Convenio IICA/CIID y el poco alcance que ha tenido su avance, por lo que es importante un mayor apoyo que garantice sus intentos de lograr ayuda financiera adicional de fuentes diversas.

#### - Recomendaciones

3.1 Es necesario que la Coordinación General, profundice en su Guía Metodológica todos los pasos que conlleven a la selección adecuada de comunidades participantes en este tipo de proyectos.

3.2 La Coordinación General debe hacer un reajuste de los objetivos del proyecto a fin de evitar la divergencia de las actividades diseñadas.

3.3 - 3.7 En lo posible, deben conformarse equipos técnicos interdisciplinarios para la realización de acciones de equipo, que incluyan especialistas en las ciencias sociales, con el propósito de que los estudios cubran también aspectos de la problemática social de la comunidad.

3.4 En la Guía Metodológica debe profundizarse las normas tendientes a la uniformización de técnicas que permitan realizar estudios comparativos entre comunidades, regiones y subregiones; por ejemplo, determinaciones de ZHP; estudios de riego, entre otros.

3.5 - 3.8 - 3.9 La Coordinación General del Proyecto debe establecer guías y normas concretas para la preparación de documentos que expresen la real magnitud de los trabajos realizados.

A su vez deben existir normas de calidad para el caso de material escrito a ser publicado para su difusión al exterior de los PISCA's.

3.6 El Proyecto debe tener un marco referencial de actividades a realizar acorde con sus objetivos y metas, de tipo anual y de largo plazo, de manera que estudios de instituciones afines al proyecto o ajenas al mismo sean igualmente concordantes con dichos objetivos y metas, antes que acciones aisladas.

3.10 Es necesario intensificar la capacitación de los equipos técnicos en materia de sistemas de producción, principalmente en aspectos de manejo de campo e interpretación y análisis de información.

3.11 La Coordinación General del Proyecto debe activar trámites para conseguir la transferencia del vehículo que dispone en Lima al PISCA/Arequipa, así como para la contratación del técnico residente en la comunidad de Coporaque.

3.12 El PISCA/Arequipa debe intensificar esfuerzos para obtener fondos adicionales de fuentes externas con miras a asegurar su continuidad más allá de la etapa de desfase a ser programada.

#### 4. Sobre asignación de Recursos

##### - Conclusiones

4.1 Los recursos aprobados por el CIID son aparentemente suficientes para llevar al proyecto hasta la conclusión del Convenio actual. Sin embargo, restan aún actividades por realizar y se requerirá de un plazo adicional para cumplirlas dentro de una etapa adecuada de desfase.

##### - Recomendaciones

4.1 Que el IICA inicie la negociación ante el CIID, a fin de conseguir la aprobación respectiva para la continuación del Convenio actual por un plazo adicional de un año (1986), a fin de cumplir a satisfacción las actividades del periodo de desfase del proyecto.

##### - Conclusiones

4.2 La ejecución de actividades en el curso de la 2da. fase no ha estado acorde con lo programado. Tuvo una evolución lenta y progresiva, habiendo llegado a su cúspide en lo que va del presente año. Esta evolución se refleja en el ritmo de gastos ocurrido hasta ahora.

\_\_\_\_\_ Efectuada la proyección de posibles gastos al 31 de diciembre de 1985, ~~habrá~~ un remanente estimado de Cn.\$ 89,354.06.

- Recomendación

4.2 Que el IICA negocie con el CIID la utilización de este remanente durante el año 1986, año de desfase del proyecto, reestructurando el Operativo correspondiente.

- Conclusiones

4.3 El Calendario de entrega de fondos por el CIID, en su inicio fue acorde con el Convenio, las siguientes entregas están por debajo de lo pactado.

- Recomendación

4.3 Que el IICA gestione ante el CIID el cumplimiento de las próximas entregas.

- Conclusiones

4.4 Aparentemente el proceso de rendición de cuentas por parte del IICA a través de sus diferentes instancias ha sido lento, lo cual, posiblemente ocasionó la demora en los reembolsos por parte del CIID.

- Recomendación

4.4 Para los saldos y acciones consiguientes debe existir una mayor agilización en la formulación y tramitación de rendición de cuentas por parte del IICA.

- Conclusiones

4.5 El equipo adquirido por cada uno de los PISCA's aparentemente ha sido apropiada para el tipo de trabajo a ejecutarse, con excepción del PISCA/Arequipa, para el cual no se hizo ninguna adquisición.

- Recomendación

4.5 ~~El~~ IICA debe efectuar, antes de la terminación del Convenio, una constatación, según inventario, de todo el equipo adquirido por el proyecto, a fin de realizar la concertación subsecuente de las partes respecto al destino que debe darse a dicho equipo al término del convenio.

Por otro lado, el Proyecto debería adquirir el equipo indispensable para el PISCA/Arequipa, incluyendo un vehículo de doble tracción, con los fondos remanentes al 31 de diciembre de 1985, previa negociación con el CIID.

## 5. Sobre la Organización del Proyecto

### - Conclusiones

5.1 El esquema organizativo de los PISCA's fue prioritariamente de tipo radial, en que cada PISCA depende administrativa y técnicamente del Coordinador General del Proyecto con poca interacción entre los PISCA's.

### - Recomendación

5.1 En lo que resta del periodo del Convenio, debe intensificarse una acción de coordinación más reticular, entre PISCA's y a nivel nacional.

### - Conclusiones

5.2 Aparentemente y por mejores oportunidades laborales, a corto plazo se espera la renuncia del Coordinador General y del Especialista en Economía Agrícola, dejando un vacío que debe ser llenado con la premura del caso.

### - Recomendación

5.2 De ser evidente las renunciaciones indicadas, el IICA deberá contratar un nuevo Coordinador General, a fin de dirigir y coordinar las tareas que se impongan al Proyecto en adelante.

Se considera que la plaza del Especialista en Economía Agrícola debería darse por concluida a la renuncia del funcionario y transferir los recursos asignados para sueldos a operaciones directas para solventar las acciones a ser programadas.

### - Conclusiones

5.3 Aparentemente, las Universidades no cumplieron a cabalidad su compromiso de asignación de profesionales (profesores) en el número que explicita el Convenio.

### - Recomendación

5.3 Sería menester que el IICA revise con las Universidades el aspecto antes mencionado, a fin de posibilitar el cumplimiento de los objetivos estipulados en el proyecto.

### - Conclusiones

5.4 Aparentemente los contactos formales IICA-CIID no han sido lo suficientemente frecuentes como para armonizar acciones conducentes a una mayor eficiencia de conducción del proyecto. Los contactos han sido más del tipo personal entre el representante del CIID y el Coordinador General del Proyecto.



Recomendación

5.4 Se recomienda que además de la fluidez del contacto personal antes indicado, se mantenga mayor frecuencia de intercambio técnico y administrativo vía canales institucionales.

- Conclusiones

5.5 Las Universidades participantes en el Proyecto han jugado un rol de importancia en todo el desarrollo del mismo, por la motivación impartida y mantenida en todo el equipo técnico bajo su coordinación, así como a nivel de comunidades. A su vez, el impacto del proyecto dentro de la institución ha sido altamente positivo a nivel del profesorado y de estudiantes de las facultades de Agronomía.

- Recomendación

5.5 Las Universidades participantes, deberán mantener el liderazgo adquirido, fruto de un gran esfuerzo y dedicación, mientras se mantiene la vigencia del Convenio actual.

Previo a la terminación de este Convenio, la Coordinación General, debería iniciar un proceso de mayor acercamiento con el INIPA, con miras a lograr la continuidad de la participación de las Universidades dentro del Programa Nacional recién creado.

Por otro lado, las Universidades, deberían continuar e intensificar esfuerzos para lograr fondos externos que permitan dinamizar las acciones programadas bajo el actual Convenio.

- Conclusiones

5.6 El esquema organizativo ha permitido ejecutar los trabajos en forma exitosa, en cuya tarea ha tenido la concurrencia de todos y cada uno de los participantes frente a sus responsabilidades.

- Recomendación

5.6 Que a la finalización del Proyecto se de reconocimiento formal a todos y cada uno de los participantes del proyecto (tanto dadores como receptores).

Sobre la vinculación con otras instituciones

- Conclusiones

6.1 Es notorio el esfuerzo realizado por los PISCA's Cusco y Puno en vincularse con otras instituciones nacionales y foráneas. En el caso de Puno, sus relaciones con CORDEPU, CEDECO e INIPA, han sido

- Recomendaciones

6.1 Tanto PISCA/Cusco como Arequipa deben reforzar sus nexos con INIPA y comprometer su participación tanto en la investigación como en transferencia de tecnología.

6.2 El número de organismos internacionales presentes en las diferentes subregiones, es considerable. Muchos de ellos ya participan en el Proyecto o pueden hacerlo en breve plazo. En tal caso, el proyecto debería ser el mecanismo de coordinación y canalización de dicha participación, a fin de evitar pérdida de esfuerzos y hacer un mejor uso de los recursos disponibles.

**Appendix 5. PISA Technical Publications**

## ARCHIVO TECNICO PROYECTO P I S A

ANTECEDENTES 1983-1985

EJERCICIOS 1985-1987

1\_

- "PROYECTO INVESTIGACION Y PRODUCCION DE CEREALES INTEGRADOS A CULTIVOS ANDINOS". FASE II

Embajada de Canadá. Lima-Perú. Noviembre 1983. 7 p.

El Addendum aclara la ubicación del proyecto dentro de los Programas Nacionales estableciendo las relaciones técnicas normativas con el CIPA XV-XXI. El Dr. Alfredo Montes nombra al Ing. Flaminio Villavicencio como Coordinador del proyecto.

2\_

- Características del Convenio entre el proyecto "INVESTIGACION Y DESARROLLO DE LOS SISTEMAS AGRICOLAS DEL ALTIPLANO" INIPA/CIID Y LA UNIVERSIDAD NACIONAL TECNICA DEL ALTIPLANO.

Mario Tapia. Lima-Perú. Mayo de 1984. 3p.

Sugiere el apoyo económico a la Escuela de Graduados en Desarrollo Agrícola de la UNA de Puno, como componente del futuro proyecto ACDI-CIID.

3\_

- "PROYECTO INVESTIGACION Y PRODUCCION DE CEREALES INTEGRADOS A CULTIVOS ANDINOS".

INIPA. Lima-Perú. Mayo de 1984. 35 p.

Constituye la solicitud de Cooperación Técnica al Gobierno de Canadá por el INIPA, en este sentido se sugiere el apoyo a los Programas Nacionales que se ejecutan en el CIPA XV. El proyecto concentra su acción en la investigación en cereales y colza, aunque incluye algunos otros cultivos como quinua y cañihua.

4\_

Proyecto:

Investigación, Producción y Desarrollo en los Sistemas de Producción Agropecuaria de Puno.

Versión inicial, presentada por el INIPA al CIID-ACDI. 1985. 45p.

5\_

Sugerencias para la Administración del Proyecto PISA.  
Mario Renault. 1985. 13 p.

Incluye la planificación del trabajo así como la organización del sistema de control y la evaluación.

- 6\_ Resumen de trabajos de investigación. (TESIS) realizada en el PISCA. Julio, 1985.

Resume las investigaciones en las comunidades campesinas de Luquina Grande y Camacani; así como en la E.E.A. Camacani. Son 34 investigaciones y se menciona el diagnóstico técnico agropecuario de las dos comunidades.

- 7\_ -INFORME TECNICO Nº 4 DIAGNOSTICO AGROPECUARIO DEL DISTRITO DE SAN LORENZO DE QUINTI-PROVINCIA DE HUAROCHIRI.

Mario Tapia y otros. Agosto de 1985. 98 p.

Es un informe de prácticas de los estudiantes graduados de la UNA La Molina. Constituye un resumen de las acciones efectuadas en el área de trabajo y fue presentado a las autoridades de Huarochiri como una contribución de la Universidad y el proyecto en su labor de capacitación y difusión del enfoque de sistemas.

- 8\_ -DIAGNOSTICO AGROPECUARIO DEL DISTRITO DE HUAROCHIRI-CURSO: SISTEMAS DE PRODUCCION AGRICOLA.

Mario Tapia y otros. Agosto de 1985. 80 p.

Es el borrador del informe a publicarse como parte del curso sobre Sistemas de Producción.

- 9\_ Estudio de las acciones de investigación, extensión y promoción pecuaria, en el ámbito de la sub-sede del CIPA XV-Puno. Enrique Moya. Set, 1985. 65 p.

Producto de una consultoría de 3 meses, se presenta las propuestas de investigación, extensión y fomento en el área ganadera para pequeños, medianos y comunidades campesinas.

- 10\_ Plan of Operation (POP)  
Andean Farming Systems.  
Annex to IDRC-CIDA Contribution Agreement.  
(Project 730/12150) Set. 1985.

Incluye una descripción del proyecto, organización, las responsabilidades y roles del CIID-ACDI y del INIPA. los sistemas de información y la evaluación. Anexo con el presupuesto. Participación de la mujer en los sistemas agropecuarios.

- 11\_ -INFORME SUSCINTO DE AVANCE DE ACCIONES DE LAS ACTIVIDADES PROGRAMADAS.  
Lidia Jimenes y otros. Puno-Perú. Setiembre de 1985. 11 p.

Se informa sobre las visitas iniciales y selección de comunidades campesinas así como las relaciones con las estaciones experimentales.

- 12\_ - MANUAL DE ORGANIZACION Y FUNCIONES DEL PISA  
Equipo Técnico. Setiembre de 1985.

Es un documento interno que a nivel del INIPA debía ser discutido, con el objeto de orientar el funcionamiento del Proyecto.

En su versión del año 1987, se definen mejor las responsabilidades de los técnicos.

- 13\_ -ESTUDIO SOBRE MEZCLAS VEGETALES DE CULTIVOS ANDINOS Y POSIBLES USOS INDUSTRIALES PARA CONSUMO HUMANO.

Nancy Cárdenas. Lima-Perú. Octubre de 1985. 146 p.

Se revisa la investigación efectuada en la UNA sobre la preparación de mezclas vegetales con los cultivos andinos.

- 14\_ -INFORME TECNICO, JULIO-NOVIEMBRE, 1985.

Personal PISA. Puno-Perú. Noviembre de 1985. 37 p.

Es una relación de las actividades desarrolladas durante los cuatro primeros meses del proyecto e incluye:

a) Investigación en Estaciones Experimentales. b) Investigación en campos de los productores. c) Desarrollo de servicios agropecuarios. d) Capacitación. e) Organización del proyecto. f) Relaciones Institucionales. g) Modificaciones presupuestales.

- 15\_ -PRIMER CURSO TALLER DE SISTEMAS AGROPECUARIOS Y CULTIVOS ANDINOS.  
INIPA-Cajamarca, 26 al 29-11- 1985. 2 p.

Se incluye el programa y algunos trabajos del curso.

- 16\_ - Experimentos agrícolas instalados en las Comunidades Campesinas Proyecto PISA.  
Oscar Blanco, Oct-Dic. 1985, 9 p.

Es un listado y las características de los ensayos instalados en el primer año del proyecto.

- 17\_ Racionalización del mantenimiento del Equipo Agrícola. CIPA XXI-Puno.  
Felix Tapia. Dic, 1985

Señala los planteamientos técnicos para el mantenimiento de los 13 tractores de las estaciones experimentales de Salcedo, Tahuaco, Illpa y Chuquibambilla, con el fin de apoyar la campaña de semilleros. (dos copias).

- 18\_ -INFORME FINAL DEL PERIODO AGOSTO 1985-ENERO 1986. PRESENTADO AL ING. JORGE REINOSO REINOSO, CO-DIRECTOR DEL PISA.

Lidia Jimenez. Enero de 1986. 12 p.

Es una descripción de las acciones de la Socióloga Lidia Jimenez Zamalloa en la selección de comunidades y el inicio de las encuestas estáticas. Se presentan algunas sugerencias que incluyen el estudio nutricional y la investigación en la comercialización de proyectos agrícolas.

- 19\_ -CARACTERIZACION Y CAPACIDAD DE CARGA. INFORME TECNICO Nº5.

Luis Oscanova y otros. Enero 1986. 54 p.

Incluye apéndice y fotografías.

Presenta un estudio al detalle de las condiciones de los pastizales en las Estaciones Experimentales y CIPA Puno con dedicación ganadera, sugiriéndose las alternativas para su mejoramiento.

- 20\_ - Informe Técnico, Agrícola de Selección e Investigación en Comunidades Campesinas.  
Oscar Blanco. Feb. 1986, 15 p.

Se indica la selección de comunidades, su caracterización, así como la experimentación en Estaciones Experimentales. (Campaña 1985/86).

- 21\_ - Historical and Technical Review of the CIDA, Colza and Cereals Projects. Puno.  
N. Thomas, febrero, 1986 33 p.

No es una evaluación del proyecto "Colza-Cereales". Es una descripción del desarrollo e implementación del proyecto desde su inicio. Se incide mucho sobre las lecciones que se aprendieron: (En Inglés).

22.- Guía Metodológica para la caracterización de la Agricultura Andina.  
Mario E. Tapia. Feb. 1986. 114 p.

Se describe la experiencia del Proyecto PISCA (1980-1985), que sirvió de base para la redacción del proyecto de propuesta para el CIID-ACDI-INIPA que diera origen al proyecto PISA.

Se describen los resultados obtenidos en 9 comunidades campesinas del Área de Arequipa, Ayacucho, Cusco y Puno.

23.- INFORMACION BASICA SOBRE LOS SISTEMAS AGROPECUARIOS EN PUNO.

Alberto Lescano. Abril 1986. 50 p. apróx.

Incluye una serie de artículos e información básica sobre la producción y productividad ganadera en Puno.

24.- INFORME DEL VIAJE A LA CIUDAD DE DAVID-PANAMA PARA PARTICIPAR EN EL ENTRENAMIENTO SOBRE LA METODOLOGIA DE INVESTIGACION EN SISTEMAS DE PRODUCCION ANIMAL, DIAGNOSTICO DINAMICO Y EVALUACION DE ALTERNATIVAS TECNOLOGICAS EN FINCAS.

Alberto Lescano y Luis Abarca. Mayo 1986. 17 p.

Describe los temas tratados en el Curso sobre Metodología e Investigación en Sistemas de Producción Animal.

25.- INFORME TECNICO ANUAL. INFORME Nº 6 Agosto 1985-Junio 1986. 145 p.

Describe las acciones efectuadas en el proyecto hasta julio 1986, resaltándose los resultados ya obtenidos.

26.- TRIGO DE INVIERNO.

Rolando Ponce, Vidal Apaza y Mariano Banegas. Junio 1986. 24p.

Es una copia fotostática del informe preparado sobre los resultados de investigación en trigo de invierno, durante 9 años no se publicó por la falta de estudio económico e interpretación durante los años de investigación. Devuelto el original al Ing. Jorge Reinoso para que lo entregue al Ing. Rolando Ponce M.



## 27. -AVANCES DE INVESTIGACION SOBRE CUYES EN EL PERU."

Oscar Arroyo. Informe Técnico N° 7 - Julio 1986. 331 p.

Es una revisión detallada de la investigación, origen, anatomía, nutrición, manejo y economía de la producción de cuyes en el Perú.

## 28. -CONVENIO DE COOPERACION ENTRE EL IPSS Y EL PISA.

Jorge Reinoso y otros. Agosto 1986. 2 p.

Es el documento convenio con el fin de dar asistencia médica a las comunidades campesinas donde se realiza el proyecto.

## 29. -PROYECTOS DE INVESTIGACION POR LINEAS ESPECIFICAS SUGERIDAS PARA LA SEDE REGIONAL DEL CIPA XV-PUNO.

Enrique Moya Bendezú. Agosto de 1986. 32 p.

Es un informe sobre los proyectos de línea específicos que se deben efectuar en los pastos nativos y cultivados del Altiplano, y producción animal como producto de una asesoría de corta duración financiada por la Misión Carolina del Norte.

## 30. - Propuesta programa operativo. 1986/1987 Agosto 1986. Puno. 145 p.

Contiene la programación de todas las acciones del PISA para el año 1986/87 y que fueran discutidas en Puno. La propuesta fue modificada y dio origen a que se preparara la propuesta reajustada.

## 31. -LOS CULTIVOS ANDINOS SUBEXLOTADOS DE VALOR NUTRICIONAL EN EL PERU.

Mario Tapia. Setiembre 1986. 20 p.

Constituye la ponencia presentada en la reunión efectuada en Chile sobre cultivos subexplotados de valor nutricional en el Perú, indicándose los obstáculos para su promoción, así como los beneficios en caso de difundir su utilización.

## 31.A. - INFORME TRIMESTRAL Técnicos PISA Julio-Setiembre de 1986

Contiene las acciones efectuadas en ese período en el proyecto PISA.

- ✓ 32. - Conceptos y Metodología del Enfoque de Sistemas.  
Varios Oct, 1986.

→ Un conjunto de artículos referentes al tema de Investigación de la parcela del campesino.

33. - El Proyecto PISA  
Mario E. Tapia y Jorge Reinoso 5 p. Nov. 1986.

Es un resumen de divulgación periodística (Revista páginas escritas) que presenta las características del proyecto y sus objetivos. (17 copias).

34. - Propuesta de Programación Reajustada  
Proyecto PISA (1986-1992)  
(Inception Report) Nov. 1986 22p.

Incluye una propuesta de modificación del proyecto que va de 5 años a 7 años con tres fases diferentes.

1 Investigación en comunidades seleccionadas

2 Ampliación a comunidades vecinas

3 Institucionalización del método a nivel regional (En Inglés y traducción en Español).

35. - Proyecto de Investigación: "PARTICIPACION DE LA MUJER CAMPESINA EN LA ECONOMIA DE MINIFUNDIO".

Beatriz Montoya, Noviembre 1986. 35 p.

Es la segunda versión sobre el estudio de la Mujer Campesina en las comunidades del proyecto. Incluye justificación del proyecto, ámbito, requerimientos, así como la guía temática y los cuestionarios corregidos. Tiene un anexo con la guía temática sobre la participación de la Mujer.

36. - Informe Técnico de las Actividades en el Proyecto PISA. 51 p.  
Alberto Lescano. Nov. 1986.

Es una relación de los trabajos efectuados por el Ing. Lescano de Julio 1985 - Noviembre 1986.

37.

-DIAGNOSTICO DE LA COMUNIDAD DE QUISHUARA.

María Fernández y otros. Noviembre 1986. 102 p.

Describe el sistema de producción en una comunidad ganadera del departamento de Puno, es un trabajo cooperativo entre el proyecto PISA y el proyecto Rumiantes Menores. Este diagnóstico no fue publicado.

38.

-INFORME TECNICO ANUAL 1986. INFORME Nº 9. Diciembre 1986. 45 p.

Presenta un resumen de la investigación en cultivos andinos y desarrollo comunal en las cuatro sub-sedes del PNSAPA (Cajamarca, Huancayo, Cusco, Puno).

39.

- Caracterización de los Sistemas Andinos: Sondeo, Metodología y Resultados de Cinco Comunidades Campesinas del Altiplano.

Arturo Vásquez. et. al. Dic, 1986.

Presenta los resultados obtenidos en visitas de 4 a 5 días en cada comunidad (5) como primera aproximación de sus características. En cada una se hace el énfasis a: ubicación; tenencia de tierra; producción pecuaria; agrícola, alimentación, salud, educación, mano de obra, migración, infraestructura; organización y economía.

✓ 40.

.- INFORME DE AVANCE DEL PROYECTO PISA

Equipo PISA. Octubre-Diciembre de 1986.

Presenta los resultados sobre información previa, caracterización, investigación agropecuaria en comunidades campesinas y estaciones experimentales, así como el avance en los servicios de apoyo.

41.

.- Información Resultados Experimentales sobre la reconstrucción de Camellones.

Edmundo Vilca Enero 1987.

Mariano Vanegas

Son informes sobre los ensayos en Illpa y Huata. (De grabaciones).

- 42.- Estudio Alimentario Nutricional y Otros.  
Ricardo Dávila. Feb. 1987, 8 p.

Es un avance del estudio de la dieta, su origen y relación con la producción agrícola.

- 43.- Informe de Avance Proyecto de Apoyo Comunal para la Rehabilitación de Camellones  
Ignacio Garaycochea. Feb. 1987, 10 p.

Se presentan cuadros de jornales para la reconstrucción de 13.5 Ha. de Camellones y las variedades de papa utilizadas.

- 44.- SEMINARIO INTERNACIONAL SOBRE AGRICULTURA Y RECURSOS FITOGENETICOS EN CONDICIONES DE MONTAÑA. Kathmandu-Nepal.

Mario Tapia - Febrero 1987. 16 p.

Es el informe de asistencia al seminario en Nepal, señalándose las características de la agricultura de dicho país, similitudes con la agricultura andina y posibilidad de intercambio genético.

- 45.- Consultoría realizada en el proyecto de Investigación y Sistemas Agropecuarios Andinos. (PISA)  
Julio Valladolid, Marzo, 1987. 34 p.

Resume una corta consultoría de 14 días en Puno que sugiere las características de un plan de investigación y Desarrollo - Agrícola.

- ✓ 45A.- INFORME TRIMESTRAL PROYECTO PISA  
Técnicos Proyecto Enero-Mayo de 1987

Contiene las acciones efectuadas en ese período por los técnicos del PISA.

- 46.- RESUMEN SOBRE NUTRICION HUMANA EN LOS ANDES.

Mercedes Castillo. Abril 1987. 25 p.

Resume investigaciones hechas sobre alimentación y consumo de alimentos en la sierra. Es una labor complementaria en calidad de becaria del proyecto.

47. -SEMINARIO TALLER "DESARROLLO RURAL Y USO CUIDADOSO DE LOS RECURSOS NATURALES EN LA SIERRA DEL PERU". (Achoma-Arequipa-Perú)

María A. Salas. Abril 1987. 108n p.

Es el informe final del seminario en el que se participó con el fin de integrar acciones con instituciones públicas y no gubernamentales.

48. -ORGANIZACION DEL SISTEMA DE INVESTIGACION Y GENERACION DE TECNOLOGIA EN EL ALTIPLANO DE PUNO.

Mario Tapia y otros. Mayo 1987. 26 p.

Detalla la organización de la investigación en las Estaciones Experimentales y en las Comunidades Campesinas Piloto a pedido de la Jefatura del INIPA y como responsabilidad de integrar las acciones con otras instituciones para el desarrollo del Altiplano de Puno.

49. - Caracterización de los Sistemas Andinos. SONDEO. Comunidad Campesina de Santa María.

Arturo Vásquez, et. al. Junio, 1987. 150 p.

Es una caracterización de la Comunidad Campesina de Santa María, con la participación de los alumnos de la Escuela de Graduados de la UNA. Es un convenio con el PISA.

50. -CURSO TALLER SOBRE LA INVESTIGACION Y PROGRAMACION DE ACTIVIDADES PARA LA PROMOCION DE LOS CULTIVOS ANDINOS. PUNO. CUSCO.

Técnicos del PNCA. Julio 1987. 26 p.

Detalla el programa llevado a cabo en dicho curso indicándose los resultados con las diferentes variedades de cultivos andinos disponibles hasta la fecha. Se establece la programación de semilleros, básicos de semilla certificada y registrada, así como las necesidades de cultivos andinos con una lista de conclusiones y recomendaciones.

# 51. -INFORME DE RUBEN DARIO ESTRADA

Rubén Darío Estrada. Julio 1987. 145 p. apróx.

Incluye varios informes así como el primer borrador sobre potencial de adopción tecnológica en las comunidades campesinas de Puno, basada en la información de los archivos del proyecto PISA. Finalmente se hace un comentario a la organización del sistema de investigación y generación de tecnologías en el Altiplano de Puno.

# 52. - PROGRAMA REUNION ANUAL PROYECTO PISA

Equipo proyecto PISA. Agosto de 1987.

Incluye la presentación y la relación de exposiciones que se efectuaron del 03 al 06 de agosto. El 07 se tuvo que viajar a Lima para entrevistar a los directos del INIPA.

# 53. - Resultados de Investigación Agrícola en cinco Comunidades Campesinas (Campaña 1986/87)

Equipo CIPA-PISA Agosto, 1987.

Se presentan los resultados en papa dulce, papa amarga, cereales como cebada, trigo invernal y de primavera habas, quinua, kañiwa.

# 54. -ANALISIS DE LA INFORMACION DE CARACTERIZACION DE LAS COMUNIDADES

Mario Tapia y otros. Agosto 1987. 4 p.

Presenta la información y relaciones que se deben utilizar para la caracterización de las comunidades campesinas, indicándose el número de archivo que está almacenado en la computadora.

# 55. - PLANTA PROTOTIPO PARA EL PROCESAMIENTO DE CULTIVOS ANDINOS

Irene Flores. Octubre de 1986.

Contiene ingeniería del proyecto, análisis económico y la organización para instalar una planta que procese los cultivos andinos.

56. -CURSO DE ACTUALIZACION SOBRE "AVANCES TECNICOS EN EL MANEJO, PRODUCCION, UTILIZACION Y CONSERVACION DE LOS CULTIVOS ANDINOS". INVESTIGACIONES EN POST-COSECHA.

Oscar Gómez Gómez. Agosto 1987. 18 p.

Se presentan los resultados sobre investigación post cosecha analizados en el curso sobre Fomento de los Cultivos Andinos en Puno.

57. -PROGRAMA DE DESARROLLO AGROPECUARIO PARA LA SIERRA.  
PADI-FIDA. Agosto 1987. 25 p.

Constituye el informe para el desarrollo en la sierra en base a resultados del proyecto PISA y su posible expansión con el financiamiento del FIDA.

58. Resultados del Plan de Trabajo Anual 1986/1987.  
Equipo del PISA, Agosto, 1987. 135 p.

Resumen todos los trabajos efectuados en el segundo año del proyecto y fue presentado en la reñual anual en Puno (4 copias).

✓ 59. Plan de Trabajo Anual 1987/1988.  
Equipo del PISA, Agosto, 1987. 51 p.

Presenta las acciones que se deben ejecutar en 1987/1988 (3 copias)

✓ 60. -INFORME FINAL ROBERTO VALDIVIA.

Roberto Valdivia. Setiembre 1987. 10 p.

Es un informe técnico de la labor efectuada por el Ing. Roberto Valdivia con sugerencias para la continuación de labores en el área de cultivos.

61. -EVALUACION BIOLOGICA DE UNA MEZCLA VEGETAL A PARTIR DE QUINUA, KIWICHA Y TARWI.

Rosa Maria Tiburcio Alva y Luis A. Rivera Morales. Octubre 1987. 21p.

Presenta los resultados en digestibilidad y valor PER de las mezclas con quinoa, kiwicha y tarwi.

62. -LOS SISTEMAS AGROPECUARIOS ANDINOS EN COMUNIDADES CAMPESINAS- CARACTERISTICAS DE LOS SISTEMAS ANDINOS COMUNALES.

Jorge Reinoso - Octubre 1987 7 p.

Presenta las características básicas de los sistemas andinos comunales. Es un documento preliminar sin publicarse.

63. -SUGERENCIAS A LA ORGANIZACION DE LA EMPRESA COMUNAL GANADERA CUNURANA BAJO.

Jorge Infantas y otros. Octubre 1987. 27 p.

Presenta un plan de trabajo en el área cedida a la Comunidad Ganadera Cucurana Bajo en la reestructuración de tierras de Puno.

64. -NOTAS DE ENTENDIMIENTO ENTRE EL PROYECTO PISA Y EL PROYECTO DE TECNOLOGIA DEL CEPJA.

PISA-CEPIA. Octubre 1987. 8 p.

Es una carta de entendimiento entre los dos proyectos a fin de recuperar la tecnología tradicional campesina. Se promueve una reunión de líderes campesinos, para el año 1987.



# 65 - POTENCIAL PRODUCTIVO AGROPECUARIO EN LA SIERRA Y SUS COMPONENTES PARA EL DESARROLLO. BASES PARA UNA POLITICA TECNOLÓGICA

Mario E., Tapia, Julio 1987 22 p.

Ponencia presentada a la reunión de la C.C.T.A. sobre zonas agroecológicas, modificaciones de los componentes del medio y las bases para una tecnología apropiada en la sierra.

# 66 - PLAN DE EVALUACION DEL PPROYECTO PISA

Personal ACDI, Rubén D. Estrada, Agosto 1987.

Incluye la propuesta del ACDI (en inglés) y su traducción a la evaluación de la mitad del proyecto, así como la propuesta de R.D.Estrada.

# 67 - PLAN DE DESARROLLO 1986-1987 - COMUNIDAD DE KINURANA BAJO-PROYECTO INIPPA-CIID-ACDI (PISA-CIPA XV)

Personal PISA Set, 1987 24 pp.

Comprende el diagnóstico estático de la Comunidad Campesina Kunurana, con la identificación de las alternativas de solución.

# 68 - PLAN DE INVESTIGACION AGRICOLA EN COMUNIDADES CAMPESINAS

Personal PISA Nov. 1987 14 p.

Incluye los objetivos y justificación de los ensayos agrícolas en las comunidades campesinas.

# 69 - CARACTERISTICAS CLIMATICAS DEL ALTIPLANO PERUANO (PERIODO AGOSTO-NOVIEMBRE 1987)

Mariano Banegas; Jacinto Churata Nov. 1987.

Considera la temperatura y precipitación de 12 estaciones, durante 20 años.

# 70 - SISTEMATIZACION Y PLAN DE INFORMES DE LOS DATOS REGISTRADOS POR EL PISA, PARA UNA PLANIFICACION DEL DESARROLLO AGRARIO.

Ricardo Claverías Nov. 1987.

Propone los elementos y categorías para un proceso de sistematización de la información. PPropone 9 temas, Socio-economía y Etnografía, organización social, organización de la producción, economía Planificación, PPprotección recursos, Racionalidad, Comunidad-Microregión, Alimentación Nutrición.

**71 - DIAGNOSTICO DE LOS RECURSOS NATURALES Y CAPACIDAD DE CARGA DE LOS PASTIZALES EN CINCO COMUNIDADES CAMPESINAS DEL DEPARTAMENTO DE PUNO.**

Luis Oscanoa y Mario Tapia Dic. 1987 (2 cop.)

Presenta la evaluación de los recursos y pastizales en 5 comunidades. Incluida la carga adecuada y la actual.

**72 - ARCHIVOS DE CARACTERIZACION**

Personal PISA Dic. 87

Es la versión actualizada de los archivos de caracterización '38)

**73 - EVALUACION ECONOMICA DEL ENGORDE TRADICIONAL DE GANADO VACUNO DEL AREA CIRCUNLACUSTRE DE PPPUNO.**

Fredy Mujica Dic. 87.

Describe el sistema de engorde en la Comunidad Campesina de Maqueracota con cuadros sobre el incremento de pepso. En 120 días, 84 kgs. y en 180 días, 111 kg.

**74 - PROYECTO DE FACTIBILIDAD DEL FIDA PARA EL FORTALECIMIENTO DE LA EXTENSION AGRICOLA EN LA SIERRA DEL PERU.**

Personal FIDA

Define un proyecto para crear un sistema de extensión comunal que siga las ppropuestas del PPlan Sierra y en la cual el pproyecto PISCA y PISA aportaron importantes experiencias.

**75 - INFORME SEMINARIO TALLER "DISEÑO DE LA INVESTIGACION AGROPECUARIA EN COMUNIDADES CAMPESINAS".**

PISA-CEPIA. Puno Set. 1987 (2 copias)

Es el informe del taller con líderes campesinos y técnicos que se llevó a cabo en Agosto 1987. Incluye conclusiones y las fichas de campesinos.

**76 - REGLAMENTO INTERNO DE LA COMUNIDAD CAMPESINA DE PUNA AYLLU DISTRITO DE CUYO CUYO PROVINCIA DE SANDIA DEPARTAMENTO DE PUNO.**

Puno 1988 Enero

Es un modelo de reglamento para el ordenamiento de la comunidad.

**77 - SONDEO DE LAS COMUNIDADES CAMPESINA DE PUNO Y URAC AYLLU.**

Lucio Torres et.al. Puno, Enero 88.

Son dos documentos con los sondeos efectuados en estas comunidades del área de Puno y Urac Ayllu.

- 78 - INFORME FINAL ESPECIALISTA EN DESARROLLO RURAL Y CAPACITACION  
Arturo Vasquez Puno, Dic. 87.

Menciona las metas alcanzadas y las sugerencias para la continuación del proyecto.

- 79 - INFORME DEL PROYECTO: MEJORAMIENTO DE CULTIVOS PARA PEQUEÑOS  
AGRICULTORES" - U.AUSTRAL. CHILE.  
Mario Tapia. Lima, Enero 1988. 20 p.

**Appendix 6. IDRC Communications regarding Technical Aspects**

ANDEAN FARMING SYSTEMS (PERU) 3-P-84-0193

COMMUNICATIONS REGARDING TECHNICAL ASPECTS

<u>Date</u>	<u>Addressee</u>	<u>Topic</u>
April 18/86	Mario Tapia	Technical reports preparation/presentation Diagnostic, methodology (sampling, statistics) Projections' results.
April 25/85	Mario Tapia	Balance of activities : research & development, design, methodology, component's research, farming systems studies.
Oct.15/86	Mario Tapia	Posibility of producing potatoe true seed.
Oct.15/86	Mario Tapia	Inception report (first draft)
Feb. 3/87	Lander Pacora	Revolving fund : technical and administrative aspects.
April 7/87	Mario Tapia	Dispersion of the project, attending the administration of other projects.
April 8/87	Mario Tapia	Management of the Soils laboratory and its support to research.
April 9/87	Mario Tapia	Job description - project staff
April 10/87	Gustavo Cuentas	Revolving fund : scientif and administrative management.
May 11/87	Mario Tapia	Recommendations on annual report preparation. Project's annual meeting.
Dec. 4/87	Mario Tapia	Request for implementing annual report (August/87). For IDRC this report was only an advance.
Dec. 7/87	Mario Tapia	Technical observations on the development of the project. Balance between research and extension, development and research design. Role of the community centers. Project staff.
Feb. 3/87	Mario Tapia	Comments - Meeting held in Bogotá. Discussion on technical aspects, present status of information analysis. Evaluation of activities.

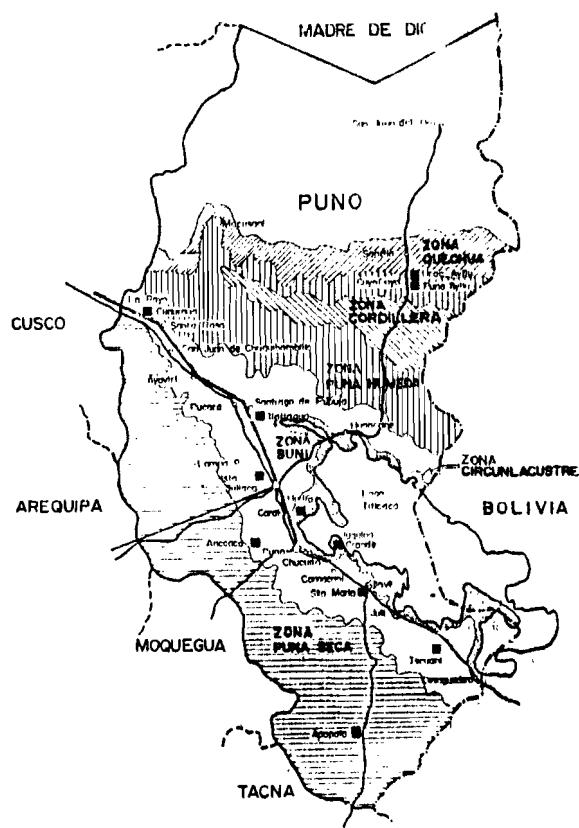
<u>Date</u>	<u>Addressee</u>	<u>Topic</u>
August/87	Mario Tapia	Comments - Technical report 1986
March 5/87	Mario Tapia	Comments - Technical report Oct-Dec/86
May 29/87	Mario Tapia	Ideas for the project evaluation
June 5/87	Mario Tapia	Comments - Meeting with Mario Tapia. Discussion on technical and administrative aspects.
June 15/87	Jorge Reinoso	Comments - Meeting with J. Reinoso. Technical and administrative aspects. Analysis of the information. Weakness - technical staff, revolving fund.
July 7/87	Mario Tapia	Paper on Adoption potential in the Puno communities.
Sept. 18/87	Mario Tapia	Comments - Meeting with Jorge Reinoso, Alipio Canahua. Technical and administrative aspects, analysis of the information - staff.
March 25/87	Mario Tapia	Seed revolving fund. CIPA XXI-PISA. Technical and administrative aspects regarding development of the fund.
June 19/87	Mario Tapia	M. Tapia's dedication to the project, avoiding efforts in other projects especially in Rimanacuy.

In addition twelve travel reports (RDE/NM/HLP), many financial analyzes and follow-up letters have been prepared. Also we have sent to Canada the inception report and two status reports. These communications do not represented all the discussions, negotiations and recommendations we have provided informally.

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OPERATIONAL REVIEW  
OF  
THE ANDEAN FARMING SYSTEMS PROJECT  
PUNO, PERU

May-June 1990



FINAL REPORT  
October 1990

Prepared for CIDA by

Neil Thomas  
Ralph Cotterill  
Victor Torres

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### Authors' Note

Readers should distinguish between the Review Team and the PISA team. Generally the former is capitalized, whereas the latter is not.

## Executive Summary

An Operational Review Team visited the Andean Farming System Project in Puno, Peru, in late May 1990. Executed by INIAA, and administered for CIDA by IDRC, this Project began its current phase in 1985. CIDA has provided development assistance to this region since 1973.

The objectives of the review were:

1. To assess and report on the Project's performance since the mid-term evaluation, both in relation to recommendations that emerged from the evaluation process and to other changes that may have subsequently taken place.
2. To propose to CIDA a framework to help CIDA decide whether to commit funds to a Phase II.
3. To make recommendations to strengthen and consolidate Project's progress.

The Team found a Project considerably stronger in staff and research approach compared to the time of the mid-term evaluation. Of particular importance was the degree to which systems concepts had been developed, and were being implemented at the community level.

## General Findings

### 1. Project performance

- i) Evaluation recommendations. As a result of decisive action by IDRC and INIAA, the project now has a resident team of extremely high quality. Practically all of the recommendations made in 1988 have been adopted. IDRC's ongoing support continues to strengthen project activities. There is an increasing emphasis on livestock research and a clearer overall focus on technologies which can improve beneficiaries' incomes.
- ii) Farming Systems Research. The PISA team has refined FSR methodology to the point where a logical and consistent process is being followed in the five collaborating communities. During the 1990/91 farming season, the PISA team will be testing at least one technology alternative in each community. Technology development and testing will continue for the remainder of this Phase. The reviewers are concerned that the new timeframe for testing and validation defined by the team extends the point when a wider clientele for technology alternatives could be considered far into an uncertain future. The reviewers believe that the project should already be investigating possible dissemination mechanisms, and be drawing in the agencies or human resources necessary to develop these activities.

- iii) Beneficiaries. The project continues its focus on assisting marginal rural communities.
- iv) Institutionalization in INIAA. While most of the period between 1988 and the present has been taken up with strengthening the PISA team and improving FSR methodology, there has also been progress in institutionalizing FSR capability in INIAA at the regional level.
- v) Local conditions. The region continues to go through periods of drastic climatic effects and institutional change. Both have had an impact on the project, and will continue to do so. Current uncertainty over political and institutional developments in the region will have to be closely monitored during the remainder of this Phase, as the Review Team was unable to determine with any degree of confidence the outcome of current change.
- vi) Diffusion. Due to the extreme marginality of the production environment of the altiplano, technology testing will be a long process. Little diffusion, other than spontaneous adoption within collaborating communities, will occur during this Phase. A future Phase will be necessary to continue testing and transfer processes, as well as to develop diffusion methods appropriate to such conditions. The probability of greater regional responsibility for agricultural extension will require additional emphasis on linkages between the project and the appropriate agencies.
- vii) National institutional climate. With the national elections incomplete at the time of the mission, there was little to indicate what policies INIAA might be following nationally in the near future. Currently, there is a trend to decentralize, with Puno becoming one of seven future principal centres. INIAA continues to maintain a strong commodity focus in its programs, with the likelihood that most resources will continue to be directed toward other, more favorable, production areas. Support for the project is strong, though rests principally on the understanding that key individuals have of the difficulty of working in such an environment. This must be maintained for meaningful change in the region and assurance of continuity for a second phase.

## 2. Perspectives on Phase II

The rural/agricultural peoples of the altiplano continue to need assistance to improve their quality of life and agriculture will be an important source of food, fibre and income in the region into the foreseeable future. The Review Team concludes that the project has potential to provide development assistance to the rural communities of the altiplano. While the PISA team and INIAA

staff are still identifying and solving problems with respect to applying and extending the FSR methodology, the Review Team feels that the two-year extension will serve to consolidate their experience and establish a sound basis for expanding the thrust to other areas where it would be relevant.

The Review Team views the PISA research team as a powerful resource which has the potential to contribute to Peru's agricultural and rural development well beyond the confines of the current project. INIAA increasingly recognizes the contribution that the project is making to assisting marginal agriculture in the region and to agricultural research activities in general.

IDRC demonstrates relatively unique capacity among Canadian organizations to execute a project of this nature, size and complexity. Working relationships which have evolved between INIAA, IDRC and CIDA seem to meet the needs of the project and the project continues to be consistent with the overall objectives of these organizations.

CIDA's criteria for deciding on funding a second phase should include continued development and consolidation of current, positive experience in the project over the coming months.

#### Recommendations

- i) The Team supports the acceptance of IDRC's proposal for a two-year extension of the project. The Team cautions that it is difficult to make precise budget forecasts in the current economic climate, and that funds may run out before a logical 31 July 1992 termination date.
- ii) That CIDA continue funding the project into a further Phase for which planning should begin almost immediately.
- iii) CIDA should monitor both project performance and forward planning through the two-year extension period.
- iv) The project should investigate possible technology dissemination mechanisms, and draw in the agencies or human resources necessary for development these activities.

## 1. Background

CIDA has supported a development programme on the Altiplano of Peru since the early 1970s. The programme began as a result of Peruvian interest in the production of edible oils, and, specifically, the development of such capacity in a region seen to offer extensive potential for temperate oilseeds under mechanized production. Both Peru and Canada have, in the intervening period, passed through a period of learning, with the result that the Altiplano is now understood to be a marginal environment that has been mastered by agricultural traditions that have developed over centuries. Neither the transfer of technology, nor the development of production alternatives in situ, has proven to be a simple process.

The current phase of this programme, the Andean Farming Systems Project (more commonly described by its Spanish acronym, PISA) began in 1985. The Peruvian recipient is INIAA, the National Institute for Agricultural and Agroindustrial Research, and the project is administered for CIDA by IDRC. IDRC involvement was sought due to the Centre's expertise and mandate in the support of research development in LDCs. IDRC and INIAA jointly developed the project plan for the current phase. While earlier phases also had a research emphasis, the current phase is the first to adopt farming-systems methodology, the approach considered necessary for agriculture in traditional mixed-farming communities in such regions.

An evaluation of the current phase was conducted in 1988 by a team of consultants. The recommendations of the team were wide-ranging, due to an assessment that the project would not meet its overall goal, as neither staff quality nor research methodology were adequate. Knowing that the five-year life of the project would end in 1990, the team proposed a subsequent evaluation for early 1990, to determine whether the recommendations had been adopted, and whether a further phase of the project could be justified. This subsequent evaluation was also considered necessary to respond to IDRC's request for a project extension (made prior to 1988), justified on the grounds that a significant portion of PISA funds would be unspent by 1990, and that the project would require a further two years to begin wider-scale diffusion of technologies developed prior to 1990 (it was posited that such diffusion could be funded with these unspent funds).

This report covers the operational review substituted for the proposed 1990 evaluation. In September 1989 IDRC made a further formal request to CIDA for a project extension. This was accompanied by a proposal outlining the purpose and content of the extension. Two of the consultants from the 1988 team were tasked with the review, and were joined by a third person from INIAA. The terms of reference of the CIDA Team are contained in Appendix 1.

## 2. Objectives and Methodology

The objectives of the review were defined as follows:

- i) To assess and report on the project's performance since the mid-term evaluation, both in relation to recommendations that emerged from the evaluation process and to other changes that may have subsequently taken place.
- ii) To propose to CIDA a framework to help CIDA decide whether to commit funds to a Phase II.
- iii) To make recommendations to strengthen and consolidate the project's progress.

Even though the 1988 evaluation team proposed some major changes, it was clear that, if these recommendations were adopted, the project in 1990 still would not be at a point where alternative technologies would be ready for wider-scale transfer on the altiplano. It is not proposed to detail here the specific reasons for this (the reader is referred to the 1988 report for a broader treatment of this issue), other than to say that farming-systems research (FSR) in a marginal environment is a long-term process requiring careful and extended on-farm testing and validation of such technologies. Of more immediate importance is the fact that the project, in 1988, was in a position where there was no guarantee that such technologies could be developed. Thus the original proposal to repeat an evaluation in 1990 was predicated on the need to look at those elements of the project, specifically the research process, which would require strengthening if successful research results were to be achieved. This review, then, considers research process, not research results, though where the latter are considered significant, and relevant to the discussion, they may be mentioned.

The Team's terms of reference (Appendix 1) were presented in the form of an issues framework, and the reader is referred to these in interpreting the discussion that follows.

During the current review, the Team used an interview and group discussion approach to elucidate the major issues. Prior to the mission, the Team interviewed project staff at both CIDA and IDRC in Canada. In Lima, the Team held discussions with the Post, INIAA La Molina, and the IDRC Liaison Officer. In Puno, the Team spent a week in consultation with the PISA project team, and met with INIAA staff, regional sectoral and security organizations. One day was used to visit one of the collaborating communities, to interview participating producers and to review changes since the 1988 evaluation. Debriefing meetings were held at the Post, INIAA La Molina, and CIDA Hull.

## 3. Political and socio-economic context

At the time of the review, Peru was passing through a transition period towards a new government. Uncertainty as to who would form the next

government was resulting in equal uncertainty as to the institutional consequences of the change.

The country's economic situation appeared to be worsening. There had been a significant loss in value of the inti against the US\$ in the preceding weeks, and the policies of the leading political contenders were not showing any clear strategies towards resolving the continual decline. Such problems have major consequences on resource-poor peoples in marginal areas. Also, economic problems of this nature have made project budget forecasting extremely difficult, even though the project maintains its funds in a dollar account.

At the time of the review, there was considerable confidence, both at the national and regional levels, that the subversive activities of the Sendero Luminoso were in decline, though it should be noted that the project now works in communities considered to lie outside the geographic focus of this group and were activities to increase it still would not be likely that the project would be affected. However, sporadic incidents still occur in Puno, one tragic incident involving staff from La Molina happening in the northern part during the review.

There were some major regional changes occurring at the time of the review, specifically that of the creation of a regional government encompassing Puno, Moquega and Tacna. The region is now known as 'Jose Carlos Mariategui'. This government has specific interests in gaining control of national entities active regionally, and, in the case of INIAA, has now taken formal possession (though not yet operationally) of the El Salcedo Station. The uncertainty of how a regional government would be able to fund and operate such facilities left the Review Team unable to determine what might be the outcome of such change over the next year. As a result, the Team felt it important for the project to maintain a watching brief, advising both IDRC and CIDA of changes as they occur.

#### 4. INIAA

INIAA, el Instituto Nacional para la Investigacion Agricola e Agroindustrial, is similarly passing through a difficult period. With the process of regionalization of government is a parallel process of institutional devolvement. Thus there are now some seven regional research institutions, which still comprise the original human and physical resources of INIAA. To the Review Team it appeared that this devolution was a gradual process, with much of the programming and funding still depending on the national body.

The national economic crisis has had an impact on INIAA, with major budget constraints occurring in 1989. Somehow, the Institute has managed to avert some of the budget impact on its programmes, though this cannot be expected to last. Donors such as CIDA, and ongoing projects such as PISA, become seen as more important funding sources at such times, leading to inevitable questions about priorities in, and sustainability of, the Institute's programmes.

Apart from regionalization, there is some restructuring of INIAA in process. One of the important changes is the creation of a stable Board of Directors, whose function will be to appoint the Institute's senior staff.

## 5. The Project

### 5.1 Progress since 1988

The Team found the project much changed since the 1988 evaluation. This is principally due to the hiring of persons to fill senior research positions. As this followed the main recommendation of the evaluation report, the Team was pleased to note the very high quality of staff that INIAA and IDRC have been able to attract to the project. Both institutions are commended for the effort that has been put into this aspect, especially the rapidity with which some staff were found. At the time of the evaluation, it was felt that up to a year would be needed to fill these positions, but some personnel were contracted in under six months. The Team notes the change in project leadership, and is impressed with the skills and dedication of the new leader.

At the time of the evaluation it was considered that progress in research would be very difficult unless these staff improvements were brought about. In general terms, the benefit from the staff changes is clearly evident, both in the quality of the work being undertaken, and in the developing linkages with the INIAA regional staff, essential to the ultimate institutionalization of FSR. This bears out the basis for the 1988 recommendations, and the Team notes the apparent irony of requiring a substantial team of highly-qualified staff when developing alternative technologies for marginal production systems.

It is not proposed to review all the recommendations made in 1988 to see the degree to which each has been adopted. The Team is satisfied that the majority has been implemented, and that the benefits are already apparent. One specific recommendation, that of a training adviser, was not implemented, but it is clear to the Team that PISA staff are already involved in a wide variety of training activities, and that the training function of the project is not being prejudiced.

### 5.2 Research

PISA is a farming-systems research project. The science of FSR has developed to a point where there is a well-defined methodology requiring the definition of production problems through discourse with the producer, and the involvement of the same in the testing and validation of production alternatives.

In 1988, while this process was understood, there was a marked incoherence in activities which belied the project team's belief that it was involved in FSR. Thus, surveys had not been interpreted, diagnostic processes had not been used in establishing research



priorities, longer-term characterization was not seen, in itself, as a research process. The word 'system' was generally misused.

The current team has had approximately one year of working together. In that time, the research process has been reviewed, and re-established as a coherent set of activities, based on a defined community-level strategy. While the current PISA team is essentially following the same methodological steps described by earlier staff, a continuum in information generation and analysis now exists which was absent before.

The PISA team complimented an earlier member, Dr Annette Salis, on her efforts to interpret the mass of characterization data that had accumulated, the analysis of which was essential to a rapid understanding of community and productive processes. In this last year, the team has dedicated much of its effort to analyzing past research activities (retracing as much as 10 years of experimentation). This has resulted in the elucidation and understanding of the major weaknesses in INIAA research capacity, as well the refining of activities begun in the earlier stages of PISA. This review has shown that the technologies being developed in various program lines are still not adapted to the particular conditions of the region.

The PISA team appears to be at a point where it is now comfortable with the project goal, and with the development of research activities that should achieve this goal. The reviewers note that there has been a subtle shift in the project's principal objective. Whereas before it read 'to increase the production and productivity of small and medium-sized farmers in seven communities representative of Puno's four agroecological zones', discussion with the PISA team evinced an objective statement relating to improving overall welfare, especially income generation. The 1988 evaluation team pointed out the dichotomy existing between crop and livestock production in the region, the former being principally a subsistence activity, the latter offering the principal means to income generation. The PISA team now has much better balance between crop and livestock research staff, and is able to address this dichotomy more effectively. It is clear that the integrated nature (at the community-level, even if not within each family) of Andean farming requires equitable emphasis of these areas; however, with increasing climatic rigour, both zonally and in annual variation, livestock do and will play an increasingly important part in the campesino strategy of income generation and food security. Thus the reviewers believe that the emphasis given by the team to the project's principal objective is appropriate, though caution against an unilateral rewriting of the Plan of Operations.

The reviewers understand that, during the next production season, at least one technology alternative will be tested in each of the project's five communities. These alternatives are currently being reviewed prior to selection of those considered most appropriate. Certain FSR steps, e.g. ex-ante analysis, remained to be done at the time of the review. Thus, there was some uncertainty as to which

alternatives would be proposed. Presentations made by the PISA team demonstrated considerable differences in the types of alternative being proposed by the different staff (each community is the responsibility of different members of the PISA team). The reviewers felt that there was still some disciplinary integration necessary in the generation and analysis of these alternatives. However, the reviewers were impressed with some of the background analysis that had been done in generating proposals for certain communities.

The reviewers note the very strong emphasis put, by PISA team members, on the amount of time necessary to test and validate alternatives. PISA team members were unanimous in their belief that at least five years would be necessary to be certain that the alternatives were validated and adapted. Again the reviewers note that this differs with the time estimate originally suggested for this part of the FSR process. The reviewers are concerned that the new timeframe extends the point when a wider clientele for technology alternatives could be considered far into an uncertain future. While the concern of the team is understandable, the reviewers believe a more flexible concept is required, where a process of spontaneous/supported adoption is fostered through interaction between communities. The reviewers believe that the project should already be investigating possible dissemination mechanisms, and be drawing in the agencies or human resources necessary to develop these activities.

### 5.3 Community Activities

The project continues to maintain technicians and community researchers [caracterizadoras] in the five project communities but their work is now focused more directly on supporting agricultural research activities than on developing social and physical infrastructure. This shift in emphasis arises in part because the substantial thrust toward these activities in the early stages of the project created a base which current activities can utilize. It also reflects the current PISA team's sharing of concerns raised in the 1988 evaluation and the Team's own perspectives on appropriate development assistance, e.g.:

- the project should utilize a research-for-development approach so that all project activities contribute to a better understanding of how to assist the rural poor;
- participating villagers should demonstrate a commitment to project activities out of their own long-term self-interest; and
- approaches and results should be potentially replicable in other poor Andean communities.

Project staff are now placing much more emphasis on ~~analyzing and understanding the socio-economic dimensions of family and community life as a basis for solving problems related to production and income-generating activities.~~ They expect target individuals and communities to ~~contribute a larger share of resources to project activities rather than depending on the donation of resources from project funds to~~

stimulate participation. In terms of both learning about the development process on the Altiplano and establishing precedents which can be utilized in other limited-resource communities, both of these changes enhance the project's likelihood of making a lasting contribution to Peruvian development.

This retreat from the give-away approach has reduced project participation by some community members but has not ended community development activities. Mothers' Clubs and some Revolving Funds continue to function. Terraces are being reconstructed. Residents of Santa Maria, for example, have recently initiated two construction projects in response to community consensus on priority needs. A village kitchen/dining hall is almost completed and work has begun on a chapel to be used for community religious ceremonies. In both cases, labour and materials were provided entirely by community members whose pride of accomplishment was evident as they conducted the Team on a guided tour.

#### 5.4 Institutionalization of Research Capacity

Until this last year, PISA has been viewed by INIAA principally as a source of funding for its own experimental programme. As a result, each year, at the time of preparation of the Operational Plan for the coming year, a list of experiments has been forwarded to PISA with the request that they be funded from PISA funds. Normally, this list covers most programme areas, but does not attempt to prioritize or justify the work proposed. When other funding sources are available, similar requests are made elsewhere.

One of the main accomplishments of the PISA team this year has been to stimulate INIAA staff to see PISA not only as a funding source, but also as a source of technical assistance. This has been a fundamental objective from the beginning, but for various reasons, previous staff were unable to achieve significant progress. The present team is regularly consulted by INIAA staff.

In order to improve research priorities, the Project Director has encouraged the preparation of a Plan Quinquenal (a five-year plan). This emerged from a meeting of external consultants held in Puno in 1989, after which a review was conducted of local research needs. The objective is to channel research development along these specific lines, and to reduce the frequency with which researchers return with funding requests. Thus, funding would be made available for four to five lines of research for five year periods. Proposals would be judged by their quality, and would be compared for their appropriateness to established priorities. The process would be competitive. Table 4.1 indicates the prioritization of research areas and lines that has come from this process. Of note is that the general type of work conducted by INIAA staff falls in the fifth category. IDRC has pledged to support the Plan Quinquenal beyond the scope of the present phase, were CIDA to decide not to fund a subsequent phase. The reviewers find this approach commendable, and compliment both the Project Director and IDRC on the

TABLE 4.1

**PRIORIZACION DE AREAS Y LINEAS PARA EL PLAN  
QUINQUENAL DE INVESTIGACION AGROPECUARIA PARA EL  
ALTIPLANO**

AREAS PRIORITARIAS LINEAS PRIORITARIAS	PRIORIDAD		PLAZOS		
	AREA	LINEA	C	M	L
<b>A. MINIMIZACION DE RIESGO CLIMATICO</b>	<b>1</b>				
A. PREDICCION CLIMATICA		4		X	
B. SELECCION RESISTENCIA HELADAS		5			X
C. PRATICA AGRONOMICAS, FISICAS DE PROTECCION CONTRA HELADAS		1		X	
D. MANEJO DE AGUA EN PEQUENOS PROYECTOS FAMILIARES/COMUNALES		2		X	
E. PASTOS CULTIVADOS/RESIDUOS COMO SUPLEMENTO A PASTOS NATURALES		3		X	
<b>1. SOSTENIBILIDAD DE LOS SISTEMAS DE PRODUCCION</b>	<b>3</b>				
A. MANEJO/CONSERVACION FERTILIDAD SUELOS		2			X
B. ROTACIONES/SISTEMAS EN TIEMPO		1			X
C. PREVENCION DE EROSION		3			X
D. MANEJO/RECUPERACION PRADERAS NATURALES		4			X
E. MODELOS DE PRODUCCION		5		X	
<b>C. RECURSOS GENETICOS</b>	<b>4</b>				
A. IDENTIFICACION, PRESERVACION Y EVALUACION DE RECURSOS BOTANICOS		1			X
B. IDENTIFICACION, PRESERVACION Y EVALUACION DE RECURSOS PECUARIOS		1			X
<b>D. PRODUCCION AGROPECUARIA</b>	<b>5</b>				
<b>D1. Agricola</b>					
A. FITOMEJORAMIENTO		5			X
B. PROTECCION VEGETAL		3	X		
C. FERTILIZACION		4	X		
D. SISTEMAS/CULTIVOS ASOCIADOS		1		X	
E. PRACTICAS AGRONOMICAS		1	X		
F. POST COSECHA		1		X	
G. MODELOS DE PRODUCCION		2		X	
<b>D2. Pecuaria</b>					
A. ALIMENTACION/USO/CONSERVACION RESIDUOS DE COSECHA		1		X	
B. PASTOS CULTIVADOS		1			X
C. SANIDAD		3	X		
D. ALOJAMIENTO/PROTECCION CLIMATICA DE CRIAS		4		X	
E. MANEJO		5	X		
F. POST COSECHA/TRANSFORMACION		5		X	
G. MEJORAMIENTO GENETICO		6			X
H. MODELOS DE PRODUCCION		2		X	
<b>E. INTENSIFICACION/DIVERSIFICACION DE LA PRODUCCION AGROPECUARIA</b>	<b>2</b>				
A. MERCADOS POTENCIALES PARA PRODUCTOS DE INTENSIFICACION/DIVERSIFICACION LOCALES Y EXTERNOS		1		X	
B. PRODUCCION DE HORTALIZAS		1	X		
C. PRODUCCION DE LEGUMBRES		1	X		
D. CULTIVOS HIDROPONICOS/BAJO COBERTURA/HUERTOS FAMILIARES		2		X	
F. AVICULTURA/CUYICULTURA FAMILIAR		3	X		
H. INVESTIGACION EN METODOS DE EXTENSION		4		X	

DURACION DE ENSAYOS: C CORTO ANUAL, M MEDIANO DOS A TRES AÑOS  
L LARGO CUATRO A CINCO AÑOS

vision they have brought to strengthening the research process.

The Extension Proposal indicates a transfer of authority to INIAA of assignation of research priorities (though it is not clear to the reviewers how this fits with the Plan Quinquenal), training and support services, leaving PISA to continue with diachronic surveys and alternatives testing. IDRC would provide constant supervision. While the reviewers support the gradual transfer of such responsibility to INIAA, some of the experience so far (e.g. actual responses to training, past counterpart linkages) shows that this will be a slow, perhaps difficult, process. The current institutional environment in Puno will further hamper such efforts. However, the effort must be made. As one of the Review Team has suggested, there is a need for a better counterpart relationship in the activities which PISA undertakes; this could lead to a better understanding than currently exists in INIAA of the need for integrated approaches to research in campesino communities. Institutionalization of FSR will be particularly difficult if INIAA continues to manage most of its research along single-crop-programme lines.

#### 6. Proposed Extension to 1992

In general terms, the proposed extension to 1992 aims to complete those elements of this phase of the project that have been delayed by the necessity of re-establishing the project team. While the earlier years of this phase have provided a useful foundation for the current team's activities, there was still much that needed to be done once a higher-quality team was established.

The proposal may be broadly divided into seven parts, illustrated on page 11 of the proposal, 'Marco Logico de la Extension PISA'. The proposal was reviewed in detail with PISA, IDRC and INIAA staff. The Review Team believes that the proposal is sound.

Key to an effective implementation of the extension is the establishment of the Plan Quinquenal. This creates the mechanism whereby research priorities can be established, and, by providing funds over a longer term, by showing the importance of the longer-term focus in research under these conditions. Technical assistance is a key component of these activities, and is built into the process, whether from the PISA team, or from external sources.

Clearly the constraints encountered in the training and follow-on activities must be addressed. The unwillingness of INIAA staff to apply the results of a training programme has several causes, some of which lie outside the scope of this project, but there is obvious need for criteria in selection of trainees in order to minimize such consequences. (The Review Team notes that had a training adviser been appointed, some of these issues might have been addressed before now, though is cognizant of the exogenous forces involved). The Project Director has clear ideas on who should be targeted for training, and it can be expected that he will follow through with his approach. The

Review Team supports his conclusions.

Of the FSR elements requiring particular attention over the next two years, the Review Team again supports the Project Director in his emphasis on ex-ante analysis. The PISA team needs to be able to demonstrate that it understands the technologies that it is dealing with, and that it has the methods necessary to conduct comparative analyses. This, more than anything, may help to convince INIAA counterparts of the value of the project's approach, and their need of better research skills.

The Review Team believes that not enough emphasis is being put on the rotational seed funds as both institutional and community-level mechanisms for research, technology transfer, disseminating improved material, and, in the case of the institutional/commercial fund, generating revenue. The main concern at present is that of monitoring, there being a general uncertainty as to what is actually happening with the producers, and a lack of quantitative data. The Team notes that the rotational funds will fall under the Plan Quinquenal in the future.

Two studies will provide important bases for future activities. The first, 'Agricultural Development Possibilities for the Altiplano', should be completed this year, and will be an essential step in providing input to any subsequent phase. The second, 'Economic Evaluation of Agricultural Research in Puno', will provide essential input to the implementation of the Plan Quinquenal, and will add to the process first begun by the Project Liaison Officer earlier in the project. These studies are programmed as activities of the Project during the extension period.

In the context of the country's economic position, and the difficulty that this engenders in any sort of financial planning, the Review Team is concerned about the possibility of the remaining funds not being sufficient to meet the needs of the project over the next two years. As a result of this, the Team believes that, while the two-year extension is underway, there is an urgent need for planning for future activities to commence, so that all institutions involved are aware of the resources that will be required towards the end of CIDA's 1991/92 financial year. The Project Co-Director's financial statements should be interpreted in a forward-planning context on a continual basis to provide the principal input to this process.

## 7. CIDA Program Strategy for Peru

CIDA has scheduled an agriculture sector review of Peru for late 1990 to be followed by a country program review early in 1991. These studies will establish a basis for CIDA programming in Peru over the next five years by providing a comprehensive picture of Peru's current situation and priority needs together with a review of Canadian assistance efforts and the activities and plans of other major donors. While the scope of this operational review was limited to the human and institutional context of the Puno region, the Team concludes that the

FSR approach of the project working through a Peruvian agricultural institution continues to be an appropriate mechanism to assist the poor agricultural/rural peoples of the Altiplano.

The general consensus from Team discussions is that a significant proportion of the region's rural population will depend on agriculture as an important source of food, fibre and income into the foreseeable future. In addition, science-based efforts to understand and improve the individual and collective production and living systems of the region appear to offer better potential results for the rural poor than previous CIDA efforts [development of canola and cereal production] or INIAA's centrally directed single-commodity research programs. These latter approaches lack sensitivity to the range of risk-minimizing strategies and complex system interactions which have evolved in response to difficult and unpredictable agro-ecological conditions on the Altiplano. And because the scientific methodology and capacity within PISA have been significantly strengthened [apart from improvements in the FSR approach], the project has begun to strengthen other INIAA research activities and contribute to university agricultural/rural programs.

At a more general level, the project has the potential to teach valuable lessons regarding agricultural and rural development in Latin America where these activities are notoriously difficult. It also provides an excellent opportunity for IDRC and CIDA to gain experience co-operating on a major project which is well suited to their complementary mandates. Finally, the project is broadly consistent with key principles and priorities of Canada's ODA Charter. Based on this assessment, the Team feels that the PISA project with its farming-systems-research focus should fit well within the next phase of CIDA's Peru programming and could offer opportunities for providing broader assistance to Peruvian agricultural development.

#### 8. IDRC Perspectives Concerning A Second Phase

The Centre's perspectives concerning participation in a second phase of the PISA project ultimately will be provided by its Board of Directors which must approve such a commitment. The following section comprises insights gained by the Team in discussions with LARO and headquarters staff and the Team's own perspectives in the context of its familiarity with Centre aims and objectives.

IDRC staff expressed satisfaction at the transformation of both project team and performance over the last two years and optimism at the prospects for developing improved Andean technology from the current approach. ~~They were also pleased by the working relations~~ which have evolved with Peruvian institutions and the fact that PISA staff have been able to assist INIAA scientists to strengthen some research projects outside the scope of the project. Barring major unforeseen changes in the project or its environment over the two-year extension, IDRC staff should be expected to support a second phase.

In addition to the points mentioned above, the Team suggests a number of factors which may strengthen IDRC interest in a second phase:

- the project should reinforce the Centre's acknowledged strength in FSR;
- it is both larger and more long-term than most IDRC projects and, as such, it offers insights into:
  - the broad scope of research intervention often required to improve the well-being of the rural poor,
  - the iterative nature of the research-for-development process and
  - the activities which translate research findings into development results;
- its rotational seed funds may provide useful general lessons in disseminating the results of plant breeding research;
- as mentioned earlier, it adds to Centre experience working with CIDA and should lead to other projects where a joint initiative would be productive; and
- it may offer a means to strengthen Peru's agricultural research capacity in a broader sense and to influence agricultural research/development in other countries of the region.

While research activities to develop improved farming systems for the Altiplano will continue to require substantial effort, a second phase will pay increasing attention to dissemination and related issues which transform research findings into widely adopted technology and development results. The Team observes that these are often weak links in the overall agricultural and rural development processes.

In this context, the project provides IDRC with insights and research opportunities in both the purely technical aspects of the research-development continuum as well as the "institutionalization" dimension where difficulties frequently occur. Improved understanding of this complex and challenging process should be valuable both to IDRC from its upstream, research-for-development perspective and to CIDA from its downstream, development practitioner position.

The Team encourages IDRC to give favourable consideration to a second phase and would be pleased to discuss the matter further with Centre staff if this would be helpful.

#### 9. Project Management By IDRC And CIDA

Management of the project by IDRC in the two years since the 1988 evaluation has been critical to the progress which has occurred during this period. A major change was the replacement of the project leader by an individual with substantial experience in institutional co-operation, team building, and research leadership.

While the previous leader's acknowledged enthusiasm and expertise relating to the agricultural and socio-cultural dimensions of the

has this been done?  
- so that research results are disseminated to the rural poor in an accessible manner?



Altiplano was removed from the project, a number of compensating steps were taken by IDRC to mitigate this loss. At the outset, the incoming and outgoing project leaders had several months of overlapping assignment to assure operational continuity. In addition, several senior PISA positions which became vacant were filled with individuals from the region who brought to the team significant knowledge and experience of the Sierra.

Another important action by IDRC was to request the former project leader to write a book on the agricultural systems of the Altiplano focusing on the potential for their development along ecologically acceptable lines. This provides an excellent opportunity to record and share lessons from his own wide experience relating to Andean systems as well as from the early stages of the PISA project. A draft table of contents for the book contains a section on the socio-economic viability of ecologically sensitive development. The Team supports this thrust since much concern for sustainability often pays little attention to the day-to-day production and consumption realities of marginalized communities.

In addition to substantial efforts to rebuild the project team, IDRC has located its Project Liaison Officer in Lima where project contact can be more easily maintained and has begun to require more specific counterpart commitment in return for project support. In the latter case, for example, stipends were offered to local INIAA staff taking part in training activities to improve their research skills. These were suspended when participants declined to complete their obligations under the program. Similarly, the project has become increasingly selective about the INIAA research it will fund in terms of both methodology and applicability to Altiplano problems.

Where CIDA's management is concerned, no significant changes or problems were observed. The Agency's participation in periodic project meetings and in evaluation/reconnaissance activities is seen positively by project staff. If the two-headed nature of Canada's institutional involvement creates problems, these are minor. Rather, project staff remarked on the flexibility which they enjoy in operating the PISA project compared to the rigidity of some other donors.

The Team was accompanied during most of its visit to the project by a member of the Embassy staff from Lima. This interest in the project was welcomed by all sides. The presence of the Project Liaison Officer in Lima should ensure that all relevant documents are copied in timely fashion to the Embassy and regular contact with the project is maintained.

Communication between IDRC and CIDA concerning PISA takes place primarily at project meetings in Peru and through transmission of quarterly status and semi-annual progress reports. The 1988 evaluation recommended initiation of informal, quarterly meetings between the two organizations to review project and related issues. The Team feels that this practice would still be useful, particularly as

deliberations concerning a second phase get under way.

## 10. Conclusions

### 10.1 Project performance:

- i) Evaluation recommendations. As a result of decisive action by IDRC and INIAA, the project now has a resident team of extremely high quality (it is worth noting that at least three of the members are of Puneñan origin, all but one of the team are Peruvian). Practically all of the recommendations made in 1988 have been adopted. In global terms the team and project are functioning well. IDRC's ongoing support continues to strengthen project activities. The Team notes and supports the increasing emphasis on livestock research and clearer overall focus on technologies which can improve beneficiaries' incomes.
- ii) FSR. The PISA team has refined FSR methodology to the point where a logical and consistent process is being followed in the five collaborating communities. During the 1990/91 farming season, the PISA team will be testing at least one technology alternative in each community. Technology development and testing will continue for the remainder of this Phase. PISA team members were unanimous in their belief that at least five years would be necessary to be certain that the alternatives were validated and adapted. The reviewers note that this differs with the time estimate originally suggested for this part of the FSR process. The reviewers are concerned that the new timeframe extends the point when a wider clientele for technology alternatives could be considered far into an uncertain future. The reviewers believe that the project should already be investigating possible dissemination mechanisms, and be drawing in the agencies or human resources necessary to develop these activities.
- iii) Beneficiaries. The project continues its focus on assisting marginal rural communities. There has been a noticeable shift away from project donation of individual or community resources toward the view that participants must be willing to make significant contributions of their own resources. While this has caused some decline in the nominal level of participation, the Team feels that results will be more meaningful for beneficiaries and more likely to be transferrable to other communities.
- iv) Institutionalization in INIAA. While most of the period between 1988 and the present has been taken up with strengthening the PISA team and improving FSR methodology, there has also been progress in institutionalizing FSR capability in INIAA at the regional level. Through a process of review and consultation, PISA members have provided support to INIAA research programs, with the result that INIAA staff have witnessed the value of the PISA approach. This has brought about a more spontaneous acceptance of PISA team input by INIAA staff.

- v) Local conditions. The region continues to go through periods of drastic climatic effects and institutional change. Both have had an impact on the project, and will continue to do so. Current uncertainty over political and institutional developments in the region will have to be closely monitored during the remainder of this Phase, as the Team was unable to determine with any degree of confidence the outcome of current change.
- vi) Diffusion. Due to the extreme marginality of the production environment of the altiplano, technology testing will be a long process (reference to earlier CIDA experience with canola and cereals is appropriate here - such efforts largely failed due to lack of appreciation for the need for such testing and adaptation). Little diffusion, other than spontaneous adoption within collaborating communities, will occur during this Phase. A future Phase will be necessary to continue testing and transfer processes, as well as to develop diffusion methods appropriate to such conditions. The probability of greater regional responsibility for agricultural extension will require additional emphasis on linkages between the project and the appropriate agencies.
- vii) National institutional climate. With the national elections incomplete at the time of the mission, there was little to indicate what policies INIAA might be following nationally in the near future. Currently, there is a trend to decentralize, with, for instance, Puno becoming one of seven future principal centres. INIAA continues to maintain a strong commodity focus in its programs, with the likelihood that most resources will continue to be directed toward more favorable production areas. Support for the project is strong, though rests principally in the understanding that key individuals have of the difficulty of working in such an environment. This must be maintained for meaningful change in the region and assurance of continuity for a second phase.

## 10.2 Perspectives on Phase II:

The rural/agricultural peoples of the altiplano continue to need assistance to improve their quality of life and agriculture will be an important source of food, fibre and income in the region into the foreseeable future. The Team concludes that the FSR approach of the current project team has potential to provide development assistance to the rural communities of the altiplano. While the PISA team and INIAA staff are still identifying and solving problems with respect to applying and extending the FSR methodology, the Team feels that the two-year extension will serve to consolidate their experience and establish a sound basis for expanding the thrust to other areas where it would be relevant. This represents a distinctly more optimistic assessment than either the conclusions reached during the 1988 PISA evaluation or the results of earlier CIDA efforts in the Puno area.

The Team also observes that the members of the current project team at all levels demonstrate high individual levels of professional capacity, potential and commitment. Furthermore, the project team as a group displays a remarkably productive symbiosis or group chemistry. The Team views this group as a powerful resource which has the potential to contribute to Peru's agricultural and rural development well beyond the confines of the current project.

In addition, while some institutional dimensions are uncertain, as noted earlier, positive experience has been gained. INIAA increasingly recognizes the contribution that the project is making to assisting marginal agriculture in the region and to agricultural research activities in general. IDRC demonstrates relatively unique capacity among Canadian organizations to execute a project of this nature, size and complexity. Working relationships which have evolved between INIAA, IDRC and CIDA seem to meet the needs of the project and the project continues to be consistent with the overall objectives of these organizations.

CIDA's criteria for deciding on funding a second phase should include continued development and consolidation of current, positive experience in the project over the coming months. More specifically, they would include:

- reasonable physical security in proposed project area[s];
- CEA and Peruvian institutional structures which assure sound project delivery and expanding national capacity to deliver FSR methods and results to the country's rural poor; and
- positive prospects for continued availability of good project staff.

## 11. Recommendations

- i) The Team supports the acceptance of IDRC's proposal for a two-year extension of the project. Due to the effects that continual inflation and devaluation have on disbursements, the Team cautions that it is difficult to make precise budget forecasts, and that funds may run out before a logical 31 July 1992 termination date (current forecasts suggest that funds are adequate until March 1992). The July termination date is proposed to allow orderly completion of the 1991/92 agricultural season.
- ii) That CIDA continue funding the project into a further Phase for which planning should begin almost immediately. This planning should explore the possibilities of expanding the application of FSR methods to reach larger numbers of development clients and of retaining a maximum of the current PISA team as a central resource to strengthen Peruvian agricultural research in general. The Team feels that it is important for senior officials representing INIAA, IDRC and CIDA to agree in principle as soon as possible on the future of the project and to communicate such agreement to project staff so that they may be encouraged to plan

for their continued involvement.

- iii) CIDA should monitor both project performance and forward planning through the two-year extension period. The Team cautions that the concept of significant technology alternatives ready for mass diffusion at the beginning of a further phase is dangerous, and that a gradual progression from testing to transfer is a more appropriate scenario for a further five years.
- iv) The project should start investigating possible technology dissemination mechanisms, and draw in the agencies or human resources necessary to develop these activities.

Operational Review of Andean Farming Systems Project1. Introduction

The Andean Farming Systems Project, or PISA (the Spanish acronym), has been in operation since 1985. PISA is a collaboration between Peru's official agricultural representatives, the International Development Research Centre (IDRC) and CIDA. IDRC was chosen as Canadian executing agent in recognition of its experience in farming systems research (FSR) and its ability to oversee the project's operations from its office in Bogota, Colombia.

The project represents a concerted attempt to conduct farm and station level research in the Andean highlands, where most of the farmers are poverty stricken and subject to extreme climatic conditions. In contrast to previous CIDA projects, and many funded by other donors, PISA has a long term perspective. The original agreement settled on a five year termination but there was an implicit understanding among partners that five years was barely sufficient to understand the problems and to propose, test and extend viable solutions.

The early years of the project were characterized by slow progress, caused, in part, by the difficulty in hiring researchers to work in Puno department. A mid-project evaluation team consisting of independent consultants, drawn up in consultation with Peruvian officials and IDRC, reviewed the project's operations in March and April, 1988. As a result of this exhaustive evaluation, the CEA has recruited a team of well-qualified scientists, with a mandate to develop a more focused approach to the project's (research and extension) objectives.

All of the current team of PISA researchers have been working together since January 1989. Their efforts have been concentrated on consolidating valuable information from existing studies and developing realistic workplans for the remainder of

the project's life (scheduled to expire in May 1990). The team presented outlines of their workplans at a seminar in Lima, July 10-14, 1989, organized by the CEA. Six weeks later, the team provided more detail at the annual steering committee meeting in Lima, attended by senior agricultural officials involved with the project, IDRC representatives, CIDA's Pro from Hull and two CIDA reps from the Embassy.

Discussions about the future of the project have led all partners to agree that the project's objectives will not be met by the scheduled expiry date. Furthermore, significant unspent funds will remain in the project in May 1990. Consequently, IDRC will propose an extension of the project for two years and, according to preliminary estimates, this extension will require negligible, if any, additional financial support from CIDA.

If the extension proposal is accepted by CIDA, an end of project review, planned for May 1990, would be inappropriate. However, there are good reasons to conduct, in June 1990, an operational review, involving two members of the mid-term evaluation: first, CIDA would be able to evaluate PISA's progress toward the very specific recommendations set out by the mid-term evaluation; second, the review team would assess the feasibility of a phase II for the project (i.e., beyond the extension period and with new funds).

## 2. Objectives

An operational review of PISA would have three specific objectives, namely:

- a) To assess, and report on, the project's performance since the mid-term evaluation, both in relation to recommendations that emerged from the evaluation process and to other changes that may have subsequently taken place.
- b) To propose to CIDA a framework (with appropriate issues and questions) to help CIDA decide whether to commit funds to a Phase II.

- c) To make recommendations to strengthen and consolidate the project's progress.

### 3. Scope of Work

The idea of a review of PISA in the first half of 1990 is the result of extensive discussions among CIDA, IDRC and PISA staff, especially during visits to the project by the PRO in April and August, 1989. Project and CEA staff consider such an event to be a valuable means of ensuring that the project is on the right track. All partners agree that within a two week visit to the project, two consultants who know the project well would be able to achieve their objectives.

In order for the operational review to be as productive as possible, the reviewers will need to base their enquiries on a framework of issues and questions. Appendix A is a preliminary draft of this framework and will be sent to CIDA (PRO and Peru desk), IDRC (Bogota office) and PISA staff (Lima and Puno) for comments and revision.

The basis for the framework is the mid-term evaluation report, taking into account the current economic and social situation in Peru.

The assignment involves three parts: a briefing period in Canada in which the consultants will study project and related documents; a two-week visit to Lima and the project site, co-ordinated by project staff; and debriefing and report writing, on return to Canada. For the Peru portion there is already a consensus that May 1990 is the most advantageous time, given scheduled elections in the immediately preceding months. While in Lima, the team will meet IDRC - LARO staff, Ministry of Agriculture officials and Canadian Embassy personnel.

### 4. Professional Resources

The operational review will consist of two Canadian consultants, both of whom were members of the mid-term evaluation. The team leader will be Neil Thomas, an agronomist, who will be responsible for reporting to CIDA. Ralph Cotterill,



an agricultural economist, will be the second team member.

The duties and responsibilities of each of the two members will be defined in briefings at CIDA and the team will present a brief workplan, prior to their departure.

As in the mid-term evaluation the team may be asked to collaborate with a representative of Peru's Ministry of Agriculture. The Canadian team may, at its discretion and recognizing its budget limits, support some of the representative's travel costs.

5. Schedule of Activities and Time Required

Activities		Days
		(per consultant)
a)	Meet with PRO and Peru Desk to orient the assignment	1
b)	Collect and study documents relevant to the project's recent performance, and prepare workplan	3
c)	Travel to and from Peru	2
d)	Conduct operational review of project, liaise with Peruvian officials, researchers and embassy staff	12
e)	Debrief CIDA and prepare draft report	10
f)	Revise draft report and present to CIDA	2
Total (per consultant)		<u>30</u>

Appendix A  
Framework For Operational Review

A. Theme: Current Environment for the PISA Project

- a) Issue: General Peruvian Conditions
  - i) Is the project's raison d'etre still valid?
  - ii) Is there sufficient support from Peruvian institutions to achieve objectives?
  - iii) What are the consequences of country's economic and terrorist crises?
- b) Issue: CIDA's Programming Perspectives
  - i) What is impact on project of CIDA budget constraints?
  - ii) What are the programming priorities in Peru?
- c) Issue: Prospects for Project's Environment
  - i) What will be necessary changes in workplans, activities and scale of operations?
  - ii) What are forecast to be unavoidable effects on administration and staffing?
  - iii) What will be effects of institutional changes currently underway?

B. Theme: Current Status of the Project

- a) Issue: Perceptions Regarding Mid-term Evaluation
  - i) Is it accepted by all as reasonable reference point?
  - ii) Have factors changed to put its findings in doubt?
- b) Issue: Changes in Project Since Mid-term Evaluation
  - i) Has the overall quality of the project changed since the evaluation?
  - ii) What changes in project objectives?
  - iii) What changes in project organization?
  - iv) What changes in project staffing?
  - v) What changes in project training?
- c) Issue: Changes in Research Activities
  - i) How has research been improved?
  - ii) Is there a change in research focus?
  - iii) Is scope of activities an efficient means to meeting objectives?
- d) Issue: Changes in Community Development Activities
  - i) Are they replicable?
  - ii) Are they treated as research?

- e) Issue: Roles of CEA and CIDA
  - i) Have management and administration activities responded to evaluation findings?
  - ii) What other changes have been effected by CEA and CIDA?

C. Theme: Outlook for Project

- a) Issue: CIDA's strategy for Peru
  - i) What are CIDA's objectives for agricultural development?
  - ii) How does continued support for PISA meet objectives?
- b) Issue: Extension of two years
  - i) Should objectives be revised?
  - ii) What are realistic expectations in terms of output?
  - iii) Are there sufficient financial and human resources to achieve objectives?
  - iv) What implications are there for CEA and CIDA?
  - v) Are there activities that would be planned differently if there were no Phase II?
- c) Issue: Proposal for Phase II
  - i) What are perceived to be agricultural needs for 1992 and beyond in the highlands?
  - ii) Is project a good vehicle to meet these needs?
  - iii) What are current trends regarding agricultural/rural institutional setting in the region?
  - iv) What are pre-conditions or assumptions to warrant phase II for project?

Appendix 2. Itinerary

Date	Place	Contact
18 May	IDRC Ottawa	G. Hawtin
22 May	Departure for Peru	
23 May	Arrival in Peru	
24 May	INIAA La Molina Post, Lima	A. Chavez, M. Holle E. Doe, J. Layne
25 May	Lima-Arequipa Meeting with Project Director	M. Holle
26 May	Arequipa-Puno Meeting with Project Director	M. Holle, J. Reinoso
27 May	Meeting with PISA team	
28 May	PISA team Regional Police Command Representative of Sector Agropecuario	
29 May	PISA team	
30 May	PISA team Regional Military Command Regional Political Representative	
31 May	Field Trip to Santa Maria	
01 June	PISA team wrap-up meetings	
02 June	Departure Puno-Arequipa Meeting with INIAA Director Tecnico	A. Chavez
03 June	Arequipa-Lima	
07 June	Debriefing meetings La Molina Debriefing CIDA Post	H. Li Pun, J. Risi, M. Holle, D. Martinez E. Doe, J. Layne
08 June	Return to Canada	

MAYO DE 1990

APPENDIX 3

DE ING. VICTOR TORRES CORNEJO A DR. NEIL THOMAS

## CONTEXTO POLITICO-SOCIO-ECONOMICO

### A. NIVEL NACIONAL

En lo político, el Perú está viviendo una etapa de tránsito hacia un nuevo gobierno, el mismo que iniciará su administración el 28 de julio; esta situación crea inevitablemente un clima de expectativa respecto de los grandes lineamientos de política nacional en particular del Sector Agrario y la Cooperación Técnica Internacional y sus prioridades.

En lo social, el fenómeno subversivo, pese a los grandes esfuerzos realizados para controlarlo, con su presencia activa en determinadas zonas del país, significa un factor limitante para la realización de ciertas actividades. Sin embargo, cabe resaltar los resultados exitosos obtenidos durante las últimas semanas, que permiten ver con cierto optimismo el control de la situación. Se espera, asimismo, que el cambio de gobierno influya positivamente en el control de la subversión.

En lo económico, cobra relevancia el fenómeno inflacionario que vive el país, cuyas implicancias se reflejan fundamentalmente en los estratos más bajos de la población.

Este marco de referencia, político, social y económico, en perspectivas para los próximos cinco años, se espera mejore sustancialmente en base a las políticas y estrategias que implemente el nuevo gobierno.

### B. NIVEL REGIONAL

De 1988 a la fecha, en lo político, Puno forma parte ahora, junto con los departamentos costeros de Moquegua y Tacna, la Región "José Carlos Mariategui", dentro del marco del proceso de regionalización del país. Esto implica que, desde Noviembre de 1989 cuenta con un gobierno regional elegido, de tendencia socialista, cuya Asamblea Regional, como máximo organismo de gobierno, ya está en funcionamiento.

Esta región, en su estructura, además de la Secretaría de Asuntos Productivos y Extractivos cuenta con un Instituto Regional de Investigación Agraria, como órgano desconcentrado del gobierno regional.

En lo social, cabe remarcar la relativa disminución del movimiento subversivo, ahora localizado en la Zona Nor-oriental del departamento de Puno y con casi nula actividad en la Zona Sur y Circunlacustre (area de operación del proyecto) como consecuencia de una labor cada vez mas efectiva por parte de las instituciones responsables.

En lo económico, resulta relevante en este periodo los efectos de la fuerte sequía que ha soportado la región Sierra Sur del país, y en particular el departamento de Puno, lo cual unido a heladas y granizadas, han determinado que la actividad agropecuaria sea declarada en emergencia, con la consecuente secuela de pérdidas para los productores y desabastecimiento de productos de primera necesidad.

La perspectiva hacia el futuro permite esperar una participación más activa de las instituciones regionales en la definición de políticas y estrategias adecuadas para impulsar su desarrollo; lo cual debe coadyuvar en la estabilización social y económica de la región. Se percibe optimismo respecto del futuro de la región, pero al mismo tiempo se tiene conciencia que el cambio será consecuencia de mucho esfuerzo y trabajo a través de un proceso en el tiempo.

## II.- EL INIAA

Mediante Decreto Legislativo Nº 565, del 04-04-90, el Gobierno promulga la nueva Ley Orgánica del Sector Agrario, en estrecha concordancia con la Ley de Bases de la Regionalización Nº 24650 y de las Leyes Orgánicas de creación de las regiones. El artículo 24 del mencionado D.L. 565, ratifica al INIAA el encargo de planificar y ejecutar la investigación agropecuaria, forestal y de fauna, agroindustrial y de eficiencia del uso de agua y suelo, concertando dicha investigación con los gobiernos regionales, otros organismos del estado y entidades del sector privado. Asimismo realiza la transferencia de tecnología a los productores agrarios a través de los gobiernos regionales y los proveedores de asistencia técnica del sector privado.

Para el éxito del proceso, la generación y transferencia de tecnología, el INIAA requiere de la interrelación de un conjunto de instituciones y de la creación de un ambiente de política económica favorable a la tecnificación. En este conjunto, el INIAA, por ley, pero principalmente por las condiciones específicas del país juega un rol líder, demandando información básica y recursos científicos a las fuentes nacionales y del exterior y avanzando en la investigación adaptativa y la transferencia de tecnología hasta la parcela del agricultor.

Para cumplir con su objetivo, el Sistema INIAA tiene establecido una firme relación con los Centros Internacionales especializados para la agricultura (CIP, CIMMYT, CIAT, IRRI, etc.) y con numerosos organismos multilaterales y bilaterales de cooperación técnica y financiera. Estos vínculos de cooperación internacional aportan al país a través del INIAA recursos invalorable que han facilitado alcanzar importantes logros.

El proceso de regionalización debe enriquecer la perspectiva de este sistema y significar una nueva opción para su consolidación. En consecuencia debe servir al objetivo de reactivar rápidamente el agro nacional vía el incremento de la productividad.

En concordancia con la responsabilidad que le asigna la nueva Ley Orgánica del Sector Agrario, el INIAA, mediante Decreto Supremo, está procediendo a adecuar su organización y funciones, redimensionándose a una escala que preserva lo esencial para la investigación aplicada y que lo vincula estrechamente con la operación de los otros componentes del sistema

La red de estaciones experimentales de este INIAA redimensionado se reduce de 32 a 15, las restantes serán transferidas a los gobiernos regionales para que sean conducidas por sus respectivas Secretarías de Asuntos Productivos en coordinación con las Universidades locales o entidades de los productores agropecuarios.

A fin de asegurar que la operación del INIAA cuente con el consenso y apoyo de las entidades nacionales y regionales que conforman el sistema, el INIAA a nivel nacional será regido por un Consejo Directivo y las Estaciones Regionales contarán con un Consejo Regional de Investigación con carácter consultivo. En sus respectivos niveles, participarían en los Consejos del INIAA los sectores productivos, académicos y oficiales, mediante una representación balanceada, dirigida a asegurar el financiamiento, coordinación interinstitucional y eficiencia en la Gestión técnica y administrativa.

Las Estaciones Experimentales que conforman el Sistema INIAA continuarán su trabajo en red para los diferentes programas de investigación a nivel nacional.

Los sistemas regionales deben ser los encargados de conducir las actividades de investigación adaptativa agropecuaria y transferencia de tecnología en el ámbito de las diferentes regiones, y estarían conformados por las Estaciones del INIAA, las Estaciones transferidas, las Universidades regionales e instituciones públicas y privadas que realizan áreas de investigación. Las Universidades deberán evolucionar para realizar crecientemente su rol en la investigación básica, buscando cierta especialización en relación a las condiciones regionales y en el contexto del sistema universitario.

### III.- LA INSTITUCIONALIZACION

Dado las características propias de la actividad agropecuaria en las comunidades de la zona altiplánica del Perú, asumiendo al mismo tiempo que la gran mayoría de los productores agropecuarios están en dichas comunidades, se considera que es indispensable tener en cuenta que tanto la parcela individual del Comunero como el terreno comunal constituyen o forman parte de un sistema socio-económico-productivo; en consecuencia la definición de alternativas tecnológicas para mejorar sus niveles de productividad y producción deben realizarse en este contexto.

Se aprecia un gran avance por parte del proyecto en la tarea de caracterizar los sistemas de producción de las comunidades involucradas, se puede considerar que ya se cuenta con un diagnóstico integral de las mismas. Por otro lado, el equipo de especialistas del Proyecto ha desarrollado una metodología de investigación en sistemas de producción agropecuaria que se considera una respuesta adecuada de las características de las actividad en el altiplano peruano y que sería conveniente institucionalizarla.

Para lograr que la filosofía del Proyecto y su metodología de investigación en sistemas perdure y se adopte en la Sierra del Perú, el proyecto debe seguir en proceso gradual que involucre al INIAA, la Universidad y el Gobierno Regional.

El INIAA, en tanto contraparte en el proyecto, comparte los esfuerzos que se realizan en este sentido; en consecuencia se considera que la filosofía de trabajo del proyecto, en principio, debe ser incorporada en el Plan de Mediano plazo de la Estación Experimental Illpa-Puno. Igualmente, las actividades de investigación en sistemas del proyecto deben ser incorporadas en los planes operativos de las Estaciones Experimentales en las próximas campañas, lo cual permitiría que la Estación Experimental designe técnicos de contraparte para cada proyecto, los mismos que participarían tanto en la planificación como en la ejecución de los mismos. En sucesivas campañas la experiencia Illpa-Puno sería extrapolada a otras Estaciones Experimentales de la Sierra del Perú.

A través de la Universidad Técnica del Altiplano, el esfuerzo institucionalizador se concentraría en forjar una corriente investigativa con enfoque de sistemas, mediante la promoción de trabajos de tesis con alumnos de los últimos ciclos de las carreras afines.

Con el gobierno regional, el proyecto debería trabajar los aspectos de difusión de las tecnologías que vayan siendo validadas; para esto puede valerse del sistema de extensión y fomento.

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