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CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) – PART I

Report Symbol U-447

1. PROJECT TITLE	2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
Basic Foods Production and Marketing	511-0451	USAID/Bolivia

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 81-8

☒ REGULAR EVALUATION ☐ SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY 1975	B. Final Obligation Expected FY 1982	C. Final Input Delivery FY 1982	A. Total $ 6,900,000 B. U.S. $ 6,900,000	From (month/yr.) 8/79 To (month/yr.) 10/80 Date of Evaluation Review 8/21/81

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1.* CID/IBTA technicians should continue collecting germ plasm in order to expand the germ plasm bank and allow for continued work on variety classification as to chromosome count and resistance to potato cyst nematode.	Robert Thurston (USAID/RD)	Continuing.
2.* USAID/B should jointly review with MACA the agricultural data requirements necessary for sector planning and management, particularly that information relating to small farmer input use (i.e. fertilizer, agricultural equipment) and production caracteristics (i.e. new technology adoption, land area being used for productive purposes). Based on this review, sector data priorities and an action plan for obtaining the above stated information should be formulated and implemented.	Robert Thurston (USAID/RD)	8-9/81
3.* USAID/B/IBTA/MACA and CID should jointly discuss and review the capability and plans of IBTA to fully assume the essential research (e.g. potato research) currently being supported by CID technicians.	Robert Thurston (USAID/RD)	8/81
4.* USAID/B/MACA/IBTA should start discussions to find the means (financial) to complete the facilities at Toralapa station which were initiated under terminated loan 511-T-053	Robert Thurston (USAID/RD)	8/81

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- ☐ Project Paper
- ☐ Financial Plan
- ☐ Logical Framework
- ☐ Project Agreement
- ☒ Implementation Plan e.g., CPI Network
- ☐ PIO/T
- ☐ PIO/C
- ☐ PIO/P
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. ☐ Continue Project Without Change
- B. ☐ Change Project Design and/or ☐ Change Implementation Plan
- C. ☐ Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

Kevin Kelly (Chief of DR) (in draft)
Jaime Vizcarra Cuéllar (DPE-Evaluation Team Coordinator)
Roberto Leon de Vivero (DPE)
Jorge Calvo (RD Agronomist)
Robert Thurston (Project Manager)
Howard R. Handler (DPE Officer) (in substance)

12. Mission/AID/W Office Director Approval

Signature: Thomas L. Geiger
Typed Name: Acting Director
Date: 8/21/81

AID 1330-15 (3/78)

A. List decisions and/or unresolved issues: cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g. airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
5.* USAID/IBTA/MACA and CID should start to review and identify the critical constraints (i.e. insufficient analysis/interpretation of existing research data, IBTA publication preparation system) and the means for making existing information available to small farmers and institutions carrying out production extension programs.	Robert Thurston (USAID/RD)	9-10/81
<u>Subsequent Actions (10/80 - 6/81)</u>		
* In terms of subsequent actions, USAID/B's ability to directly and meaningfully deal with the above recommendations has been restricted since USAID/B has been only able to suggest solutions but not help implement (fund) them under current political and funding constraints. Further, USAID/B has considered finishing the Toralapa buildings and helping MACA to improve its data system under the proposed reprogramming of Loan 059, once USAID/B is in position to negotiate this reprogramming and to disburse funds.		

13. SUMMARY:

The Basic Foods Production and Marketing Project was established as a companion grant to the Mission's Agriculture Sector I Loan (511-T-053). The basic purpose of the grant was to provide technical assistance to develop improved technologies and to extend them to the small farm sector in the intermountain valleys of central Bolivia and the eastern agricultural lands. These activities are directed towards complementing the ones being financed under the loan -- a project designed to strengthen research and extension services, finance small farm credit, and provide improved access to inputs and markets.

Although GOB counterpart relations and numbers are less than ideal, the project has been successful in achieving outputs, improving agricultural research and developing needed new technologies. Nevertheless, the currently deficient GOB extension service will continue to minimize the desired impact of providing the new technologies developed by the grant to the small farmer target group.

Due to budget restrictions resulting from the July 1980 coup, the level of effort programmed under the long-term technical assistance contract with the Consortium for International Development (CID) was reduced. Its overall effect has resulted in a concentrated research effort mainly in the intermountain valleys (Cochabamba).

14. EVALUATION METHODOLOGY:

This is a routine, annual evaluation conducted by the Mission staff. The data used for this evaluation was based primarily on 1) project documentation and reports, and 2) personal observations in the project site.

The report was prepared by the Mission Evaluation Team composed by Rural Development Division agronomist (RD) Jorge Calvo, Development Resources Division Chief (DR) Kevin Kelly, and Development Planning and Evaluation Division (DPE) economist Jaime Vizcarra Cuéllar (team coordinator). Additional inputs were received from the RD agronomist Gary Alex on external factors which affected project implementation, from Robert Thurston (RD Chief), and from project related monitoring staff.

15. EXTERNAL FACTORS:

Three unplanned factors influenced project progress: a) the GOB weak financial situation; b) the continually unstable Bolivian political situation; and c) the reduced AID grant funding levels.

a) GOB financial situation: During 1975-1980 the GOB faced an economic crisis directly affecting the implementation of the project. This situation resulted in: 1) a reduction in the GOB's counterpart funding required to adequately support the Instituto Boliviano de Tecnología Agropecuaria's (IBTA) research efforts; 2) a reduction in counterpart technicians hired by IBTA to work with the technical assistance team financed under the project (CID); and 3) the untimely payment of IBTA salaries.

b) Unstable political situation: The frequent political changes during the period affected: 1) job security of GOB personnel, resulting in the loss of qualified technicians; and 2) technician morale.

c) Reduced AID grant funding: In early 1980, AID/W imposed a reduced grant funding level on USAID/B requiring AID/Ministry of Agriculture and Rural Affairs (MACA)/CID to negotiate a reduced CID team level

from 11 to 7 members for the final two years of the project. The overall effect of the reduction has been positive in that CID has: 1) eliminated marginal activities and concentrated research assistance efforts in Cochabamba, thus increasing the effectiveness of the CID team relative to inputs of technician time; and 2) increased its focus on small farmer problems. As a result the project has limited its research activities to two (San Benito and Toralapa) rather than three experimental stations.

16. INPUTS:

16.1 Grant Project Inputs

Grant funds have been used almost exclusively to finance long-term technical assistance and a limited amount of commodities necessary to support the activities of the technical assistance team. Most of the equipment and material required by the overall project, as well as the complementary short-term technical assistance, has been financed by the companion loan.

A host country contract for the provision of long-term technical assistance was signed by MACA and CID in 1975 providing services for 7 years, until June 1982. Utilizing a team of 11 advisors, the following general scope of work was agreed upon:

- Provide assistance with research activities at the San Simón (Cochabamba) and Gabriel René Moreno (Santa Cruz) Universities;
- Provide assistance with research activities at experimental stations in Santa Cruz, Cochabamba, Chuquisaca and Potosí.
- Provide assistance to IBTA to integrate research results with the extension system; and

- Provide limited teaching services at San Simón and Gabriel René Moreno (later expanded to include guidance for graduate students field work and thesis preparation).

The 11-person technical assistance team was composed as follows:

A. In Santa Cruz

- Soil and water management advisor.
- Agronomist (basic grains).

B. In Cochabamba

- Agronomist (planning/management of Toralapa research station; potato research).
- Agronomist (cereals).
- Agronomist (potatoes).
- Agronomist (off-station research and technology demonstration)
- Agricultural economist.

C. In La Paz

- Agricultural extension advisor.
- Agricultural economist (planning).
- Agricultural research advisor (deputy chief of party, counterpart to IBTA's director of research).
- Chief of Party (counterpart to executive director of IBTA).

Although the contract experienced initial delays in identifying personnel and posting them in country, advisors have generally been placed in accordance with the implementation plan. By 1977 (the second year of the contract) a total of 9 members were in country (the maximum in country at any time).

Since the contract began, a total of 20 different advisors have worked in Bolivia. Table I provides the composition of the team by position and Table II demonstrates that field positions have been filled for 486 months out of an authorized 560 months (87%). Only two positions were vacant for any extended period of time. The first was the agricultural research advisor position which was vacant from October 1978 until February 1980 due to CID personnel constraints. The position was at the point of being filled in November 1979, when the Natusch coup prevented the selected individual from arriving at post. The second position was the agricultural extension advisor which was vacant from January to November 1978 due to recruitment difficulties experienced by CID.

In December 1978, USAID informed CID that because of decreased allocations from AID/W, a 60% CID reduction was being considered. In response, CID/USU (Utah State University) reported that they were prepared to negotiate a lower budget level, but that a 60% cut could result in termination of the contract. As a result, CID/USAID/MACA negotiated a new budget allowing for 7 person contract, eliminating the extension-irrigation agronomist and the agricultural research advisor from the contract, who where phased out on May 15 and September 30, 1980, respectively.

16.2 Loan Project Inputs

The other major inputs for this project come from Loan T-053 which included the provision of short-term advisors for periods ranging from 2 weeks to 3 months to address specialized problems (e.g. soil sciences, entomology, pathology, marketing, and extension). A total of 20 short-

term advisors have been provided since 1978. MACA approved all short-term consultants and was generally satisfied with the services rendered. These brief inputs have contributed to the project, complementing the efforts of the long-term technicians.

Other complementary loan inputs to this project include: 1) support of the experimental station facility development at Saavedra, San Benito, Toralapa and Chinoli (e.g. the construction of dormitories, auditoriums, laboratories, greenhouses and machine shops); 2) construction of a large regional MACA office and laboratory complex in Cochabamba; and 3) provision of modern shop equipment for each station, and laboratory equipment and supplies to equip the soils laboratories located in La Paz, Cochabamba and Santa Cruz.

Facility development of the San Benito, Saavedra and Chinoli experimental stations have been completed. The buildings at the Toralapa station and the MACA complex in Cochabamba were 82% and 80% completed, respectively, on 9/22/80 (Loan TDD).

17. OUTPUTS:

The output targets listed in the logical framework for 1980 have generally been reached as shown in the following table:

1. Technology Development

	1980 Target	1980 Achieved	Cumm. Total Target	Cumm. Total Achieved
a) Research studies	24	35	120	240
b) Joint studies with university	4	5	20	45
c) Thesis projects	4	40	20	81
d) Improved curriculum studies	2	1	6	3

	1980 Target	1980 Achieved	Cumm. Total Target	Cumm. Total Achieved
e) Improved courses	4	2	12	5
f) Division of Research and University personnel trained:				
1) M.S.	4	1	24	24
2) Ph. D.	-	-	2	2
3) In-service training	40	35	200	116
4) Short-term courses	20	15	100	50
g) Students trained	240	123	1,200	183
2. Technology Extension				
a) Field demonstrations	8	36	40	182
b) Short courses	30	5	150	20
c) Research bulletins	48	47	240	117
d) Department of Extension personnel trained:				
1) M.S.	2	0	7	34
2) Ph. D.	-	0	2	0
3) In-service training	40	12	200	52
4) Short-term courses	20	2	80	22

The above outputs were verified by the evaluation team through first hand observations, as well as CID semi-annual administrative and progress reports. According to the observations and the reports, research studies, thesis projects and field demonstrations greatly surpassed output targets during 1979-1980. These accomplishments were attributable to: 1) the CID team composition of experienced technicians able to observe and diagnose complex problems as well as being able to relate to their MACA counterparts in accomplishing research studies and field demonstrations; and 2) the demand for agricultural research in Bolivia albeit at the expense of extension, which creates a favorable working environment for knowledgeable technicians. This situation has been encouraging in areas of thesis research, where CID scientists have been able to play a major role in directing student research and efforts.

In contrast with the above, output accomplishments in the human resource development area (e.g. short courses, in-service training, students trained) has been extremely limited. This situation was due to: 1) a lack of GOB resources, and 2) the frequent closing of universities due to political considerations. One specific result was that MACA could not enlarge its technical staff for lack of resources, consequently loosing an opportunity to expand its technical capability through in-service training with the CID staff.

18. PURPOSE:

The project has two purposes as described and analyzed in Sections 1 and 2 below:

1. Technology Development. "To develop improved technologies for use by the small farm sector of the intermountain valleys of Central Bolivia and the eastern agricultural lands."

Objectively verifiable indicators:

a) "A set of improved technologies that resolve basic production problems in the target areas and specific recommendations for adopting these at the farm level in target areas."

As a result of the intensive research, CID/IBTA technicians are in a position to make substantive recommendations to assist the small farmer based on the progress achieved in the areas described below:

Germ plasm.

A significant amount of germ plasm was added to the Bolivian Germ Plasm Bank by the CID/IBTA technicians. Native germ plasm can be useful for the improvement of food crops. Further, germ plasm from the regular germ plasm bank was maintained in two locations during the last season instead of one, in order to convert more varieties to botanical seeds to avoid loss from virus contamination. "Becarios" (students preparing their theses)

classified 75 previously unclassified varieties as to chromosome count and resistance to potato cyst nematode. In view of the success to date, it is recommended that the germ plasm bank be expanded with new collections to be made by CID scientists in cooperation with IBTA technicians, and that continued work in classification in terms of chromosome number and resistance to certain diseases be carried out in order to identify the most important varieties for the Bolivian breeding program.

Wheat production.

Wheat experiments for 1979-1980 showed that under present conditions, high technology inputs into wheat production are probably a losing proposition with the exception of utilizing a high yielding adapted variety of seed. Grain yields are very low compared to other world wheat producing areas, and the cost of required inputs (e.g. fertilizers, herbicides and insecticides) to produce higher yields is prohibitive. Preliminary recommendations indicate that using normal farmer practices with improved varieties give the best net return, but the highest yields were produced with fertilizers.

Barley and oats.

Barley and oat experiments showed that further research will be helpful in improving varieties and in identifying the most effective chemical control of yellow rust.

Corn, rice, soybeans and peanuts.

Investigative work in these crops have resulted in seed increases with an average of two to three new varieties selected for each of the above

mentioned grains. Further, in the Santa Cruz area studies show that soil fertility levels are usually adequate for rice, corn, peanuts and soybeans. No significant responses to fertilizer were recorded in the 1979/1980 season.

Cropping systems.

Preliminary results show that a continuous cropping system can be profitable and there is good evidence that soil fertility decline under continuous cropping is slow or negligible with good management.

Insect Control.

Entomological studies on T. Limbatriventris (stink bug which damages rice stem and whose saliva is toxic) were started in 1979-1980 where aritificial populations were grown on rice in variety densities and results showed that increasing number of insects cause increasing damage. In addition, grasshopper population control with the use of chemicals in rice is being studied, as well as chemical controls for insects in soybeans and peanuts. As an activity separate from insect control studies, insects are continually being collected, prepared, identified, and placed in the National Insect Museum in Cochabamba.

b) "Three regional agricultural research stations located in the target areas staffed with 10 trained Bolivians planning, executing and managing research programs, relevant to specific programs."

A total of 5 M.S. trained Bolivians are assigned to the experimental stations in the target areas. The three agricultural experiment stations in the target area (Saavedra, Toralapa and San Benito) were staffed as

follows at the time this evaluation took place: 1) the Saavedra station (Santa Cruz) - 6 technicians trained to the engineer level (two of these technicians have M. S. degrees); the San Benito station - a director (an M. S. level technicians with subsequent training at CIMMYT) and an additional 11 trained technicians; and 2) at Toralapa - a station manager (having a M. S. degree) and 5 additional technicians trained to the engineer level (one of these has a M. S. degree).

The investigative work has been limited to the following areas in the three agricultural research stations: 1) the Saavedra station - corn, soybean, rice, peanuts, and studies on continuous cropping; 2) the Toralapa station - potato and use of fertilizers; and 3) the San Benito station - wheat, barley and oats. The main results are discussed in Section 18.1.a.

c) "The MACA research division with four trained Bolivians, identifying critical problem areas requiring research as evidenced by the number and type of problems proposed for research."

The head office of IBTA in La Paz has 4 trained personnel. In 1979 IBTA requested that CID supply a counterpart for the IBTA head office which was filled in June 1980 by Dr. David Thomas. At the time of the evaluation, however, a lack of priority was being given to expedite project matters related to AID activities by the IBTA director, as a result of the constrained AID-GOB relations during the delicate political period following the July 1980 coup.

d) "Two universities involved in researching critical regional production problems and offering expanded agricultural programs more directly related to Bolivian requirements."

The two universities located in the target areas - Universidad Mayor de San Simón (UMSS) in Cocnabamba and Universidad Gabriel René Moreno (UGRM) in Santa Cruz - have been involved in limited reasearch during 1979-1980 (see Section 17 - Outputs). Their direct participation with IBTA and CID has been less than expected due to the fact that both universities have been closed for political reasons since the July 1980 coup.

University participation through the CID "beca" program (a type of assistance to help students develop a thesis for formal graduation) has been much more successful than anticipated (see Section 17 - Outputs). This activity represents the total CID input into the University programs, with every CID technician advising a number of students. Since CID technicians are either the thesis directors or members of the student thesis advisory committee, the CID impact on the university has been indirect but significant. Some of the impact is measured in changes in faculty attitude toward student theses emphasis vis-a-vis the importance of new methods in agricultural research and experimentation.

Formal course work assistance by CID scientists in the universities has been minimal. A laboratory course in plant pathology was organized and attempts made to present it during two semesters at UMSS and a course in entomology was presented at UGRM. Nevertheless, irregular class meetings attributed to student strikes and closing of the universities for political reasons resulted in very little success.

The CID-University interaction reached a high point on February 28, 1980 when a day-long seminar was conducted at "La Tamborada" (Cochabamba).

At the seminar, which was attended by an estimated 100 students and most of the university agronomy faculty members, 26 CID staff and other "becarios" reported on interim and final theses results.

At UGRM, the agronomy faculty operates a research/demonstration farm called "Vallecito". Some of the CID "becarios" have been assigned to this faculty to expedite the work being conducted at the farm. "Vallecito" is used for both university student training and for providing short courses to campesinos. Through this system, UGRM is gradually asserting itself as a leader in the development of agricultural activities in Santa Cruz.

2. Technology Extension: "To extend to small farm operators in target areas the improved technologies and more modern practices."

Objectively verifiable indicators:

a) "Central MACA extension service staffed with four trained extension programmers, developing and planning and executing improved extension programs."

The Central Office of IBTA extension currently has a staff of 4 professionals --the director of extension (M.S.), the director of communications and 2 assistants (the latter 3 have engineer degrees).

In January 1980, the position of the extension specialist was moved to La Paz to work directly with the IBTA Director of Extension and the Extension Administrative Office. This position was terminated on May 15, 1980 as a result of the reduction in the total CID personnel agreed upon by MACA/USAID/CID in February 1980.

Reviews and evaluations were prepared and submitted to IBTA by CID advisors in order to determine the changes required in a new effort to improve the extension system. A project to be funded by USAID/B was to be initiated in 1980, but due to the July 1980 coup, activities have been frozen until the political scenario improves.

Because of some personnel and organizational problems, the CID extension effort has not been efficient. This has resulted despite the fact that the previous CID Chief of Party recommended that MACA needed to improve its concepts of an effective extension program --extension agents must be placed on an equal professional status with his research equivalents in terms of training and salary; and the extensionist must be recognized and accepted as an indispensable member of the complete professional agricultural teams.

b) "Three extension centers located in the target areas (Cochabamba, Chuquisaca and Santa Cruz) staffed with 40 additional trained agents and 10 subject matter specialists, planning, executing and managing regional extension programs."

The construction of the three agriculture service centers shows the following degree of completion: Santa Cruz, 100%; Cochabamba, 95%; and Chuquisaca, 10%. Construction plans indicate that Cochabamba will be fully operational by the end of 1981 and Chuquisaca by 1982. At the time of this evaluation, a total of 40 extension agents (8 in Santa Cruz, 12 in Chuquisaca, 8 in Potosí, and 12 in Cochabamba) were engaged in the target area.

c) "MACA Extension Division extend results of research studies to at least 20% of farmers in target areas or 6,500 farmers by 1979."

The CID party Chief estimates that each of the extension agents are contacting approximately 100 farmers. During 1978-1979, 3,700 farmers were reached with new technology methods tested by the project and it is estimated that during 1979-1980 an additional 4,000 farmers were reached with extension activities in the target area (40 agents x 100 farmers).

d) "Recommended technologies actually accepted by at least 60% of the farmers in target areas or 16,500 farmers by 1979."

Throughout the potato growing areas of Bolivia, new technology methods tested by the project are being adapted spontaneously. Examples include: 1) the application of Temik, a toxic chemical and systematic insecticide found to be effective against certain nematodes at potato planting time; and 2) the hand-operated back pack sprayer foliage application of fungicides and insecticides either alone or in combination. Thus, there are clear indications that Bolivia's small farmers are interested in new technology and are willing that demonstration trials be carried out on their farms.

It is estimated that approximately 15% of the farmers in the project areas are accepting and adapting recommended technologies. It is recommended that an appropriate survey be conducted to determine the actual number and the extent to which farmers are accepting new technology practices.

e) "Annual sales of fertilizers to small farmers in target areas increase by 300% by 1982."

There is no available data on this objectively verifiable indicator. It is recommended that an assessment of annual sales of fertilizers to small farmers be carried out by MACA, the institution of this project in charge of providing this input to farmers during the project's implementation.

f) "Distribution of improved seed by MACA among small farmers increase by 300% by 1982."

Progress made through the evaluation period in the areas of seed production and distribution are denoted in the following table:

PRODUCTION AND DISTRIBUTION OF SEEDS
(CWT)

Crop	1975/1976		1978/1979		% Increase/Decrease
	Prod.	Dist.	Prod.	Dist.	
Corn			2,700	2,000	
Hard corn	1,000	1,000	3,500	600	- 66.7%
Wheat	14,000	9,000	8,000	2,000	- 350.0%
Soybeans	5,000	5,000	16,000	16,000	+ 220.0%
Rice	300	300	3,000	2,800	+ 833.3%
Barley	-	50	2,000	1,700	+ 3,300.0%
Oats	100	100	100	100	-
Potatoes	2,500	2,500	5,600	7,000	+ 180.0%
Pasture	50	50	700	4,500	+ 8,900.0%
Total	22,950	18,000	41,600	36,700	Aver. + 1,859.0%
% Dist.	78.2%		88.2%		

SOURCE: MACA Seed Department, La Paz, 1980.

Comparing project inception (1976/1977) and latest available data (1978/1979) it is apparent that total average distribution of improved seeds has increased by 1,859% (more than 6 times the target by 1982). Wheat and hard corn have decreased by 350% and 66.7% respectively, because

of reduced interest in those crops due to their comparative quality. Soybean, rice, barley, potatoes and pasture seed distribution have increased impressively due to the quality and high demand for those products. Although there has been a clear increase in seed distribution, demand has not reached full capacity production level (50,000 CWT) because of: 1) the farmer's distrust of the seed program due to inadequate control and technology, and 2) the inadequate marketing policy and channels of distribution.

In all, distribution of improved seeds by MACA is reaching the small farmers in the project area to a greater extent than expected. This situation is contributing to increased production of basic food crops in the target areas, and consequently the small farmer's income.

g) "Purchase of modern agricultural equipment by small farmers in target areas increase by 100%, by 1982."

See e) above.

19. GOAL/SUB-GOAL

Sector Goal: "To increase per capita income and standard of living of rural people."

No data is available at the present time to determine the project's contribution towards the sector goal. A special survey should be carried out in 1982 to measure the project's impact on per capita income and share of production of the small farm sector.

Sub-Sector Goal: "Increased production and increased factor productivity of basic food crops and livestock production in the small farm sub-sector

of the intermountain valleys of Central Bolivia and the developing agricultural areas of the lowlands of Eastern Bolivia."

Objectively verifiable indicators:

a) "Production of key crops of the central valleys and lowlands increase" as follows:

Production of Key Crops of Central Valleys and Lowlands - Bolivia
(000 of Metric tons)

Crop	1971-73	1979	Target in 1982
Wheat	52.6	53.9	108.1
Corn	280.3	334.7	428.8
Barley	69.4	61.8	94.3
Rice	73.8	82.0	123.1
Soybeans	1.9	34.8	27.7
Peanuts	7.6	14.0	15.7
Potatoes	710.0	720.0	1,243.4
Yuca	240.3	224.0	379.2
Vegetables a/	191.5	184.8	236.9

a/ Sweetcorn, onions, tomatoes and green peas.

SOURCE: MACA Agricultural Statistics Department. La Paz, 1980.

In comparing the 1971-1973 to 1979 data, it can be observed that there have been 1) increases in the production of wheat, corn, rice, soybeans, peanuts and potatoes; and 2) decreases in barley, yuca and vegetables. It is worth noting that the increase of soybeans production has surpassed the 1982 target mainly due to the installation of oil processing plants in Santa Cruz and Villamontes, and favorable prices offered to the small farmer. Further, peanuts have shown the largest increase in its production, which is close to reaching the 1982 target.

b) "Yields of key crops increases" as follows:

Yields of Key Crops
(Kg/Hectare)

Crop	1973	1979	Target in 1982
Wheat	821	620	1,544
Corn	1,280	1,232	1,788
Barley	687	650	934
Rice	1,643	1,472	1,643
Soybeans	1,611	1,434	1,611
Peanuts	1,204	1,000	1,204
Potatoes	6,567	4,500	11,500
Yuca	13,109	19,000	13,109

SOURCE: MACA Agricultural Statistics Department, La Paz, 1980.

In general 1979 yields are lower than the ones in base year 1973. The only noticeable yield increases are for corn and yuca, with yuca exceeding the proposed 1982 target. This implies that, although the project has contributed to more increased production through increased land area in production, yield increase has not shown, in general, the expected increase due to lack of agricultural inputs (fertilizer, pesticides, herbicides).

Land Area in Production - Santa Cruz
(Hectares)

Crop	1971-73	1979-80	Annual Rate of Growth
Corn	47,800	83,000	3.25%
Rice	37,534	35,000	-3.63%
Soybean	1,350	35,000	46.18%
Yuca	10,355	14,148	4.41%

SOURCE: MACA Agricultural Statistics Department, La Paz, 1980

Data was only available for four crops in the Santa Cruz area. Additional data is necessary to compare land area in production with its verifiable indicators in the log frame. Nevertheless, the sample data favorably indicated that land area in production has increased for all crops

but rice. It is worth noting that the highest annual increase rate is for soybeans (46.18%), which is consistent with the results discussed regarding production of key crops (see Section 19.1). It is recommended that MACA collect data in land area cultivated and production for all of the crops utilized as objectively verifiable indicators in the total project area. This data would permit an evaluation of the impact in land area in production.

20. BENEFICIARIES:

The intended beneficiaries of this project are the approximately 200,000 small farmers in the target areas of Cochabamba, Chuquisaca and Santa Cruz. The small farmers living close to the experimental stations have benefitted to a greater extent from the improved technologies resulting in increased yields in corn, soybeans and rice. As previously discussed (see Section 18 Technology Extension 2c), it is estimated that around 8,000 farmers (4% of total small farmers) were reached with new technology since project inception.

Indirect beneficiaries are the IBTA technicians who are developing research and extension capabilities. In addition, 60 participants were trained (58 to the M.S. and 2 to the Ph. D level) for the IBTA/MACA research division and the three regional agricultural research stations; and 81 "becarios" from the two Universities received scholarships to prepare their theses under direct CID counselling (approximately 18 of these becarios reported their final theses reports.)

21. UNPLANNED EFFECTS:

The CID managed scholarship program to assist students (81) to prepare their theses has had a positive impact in changing faculty attitudes towards the importance of new methods in agricultural research and experimentation. This has been the most important CID input into the two universities involved in the project.

22. LESSONS LEARNED:

The project design did not place adequate emphasis on the time and effort required to implement technology extension activities. In order to insure that the new methodologies have the desired impact on the small farmer, it is essential that: 1) the extension program be well organized and adequately staffed, and 2) adequate GOB funding be available to retain and support the extensionists' activities in the field.

23. SPECIAL REMARKS:

None.

TABLE I

CID STAFFING BY POSITION

Position No.	Title	CID Staff	From	To	Total months in-country	Comments
1.	Chief of Party	Boyd Wennergren	July '75	Oct. '78	40	
		David James	Oct. '78	June '80	20	
		James Thomas	July '80	Present	4	
2.	Ag. Research & Extension Director	R. L. Smith	Sept. '75	June '77	22	Position discontinued Feb. '80
		David James	July '77	Oct. '78	16 1/	
			Oct. '78	Feb. '80	vacantt when discontinued	
3.	Ag. Extension Specialist-Cochabamba	Larry Bond	Jan. '76	Dec. '77	24	Position discontinued June '80
		Jose Santaella	Nov. '78	June '80	20	
4.	Ag. Economist (Planning)	Morris Whitaker	July '75	July '76	13 2/	Position discontinued June '78
		Allen LeBaron	Aug. '76	June '78	23	
5.	Agronomist - Toralapa	James Walker	Sept. '76	Dec. '78	28	
		Robert Kunkel	Jan. '79	Present	22	
6.	Cereal Agronomist-Pathologist	Ken Ellis	Oct. '75	Sept. '77	24	
		William Brown	Sept. '77	July '80	34	
		Victor Otazu	Approved (ETA Nov. '80)			
7.	Potato Breeder	Robert Hoopes	Sept. '78	Present	26	Authorized July '78
8.	Soil & Water Cereals Specialist	Thomas Stilwell	Dec. '78	Present	23	Authorized Oct. '78
9.	Ag. Economist (Marketing)-Cochabamba	Kendall Adams	Dec. '77	July '80	32	Authorized Sept. '77 Vacant (Oct. '80)
10.	Agronomist (Entomologist)	Max Long	July '75	June '76	12 2/	Discontinued in Sept. '80
		Charles Ward	Oct. '76	Sept. '78	24	
		Donald Foster	Jan. '79	Present	22	SCZ - Moved to CBB.
11.	Oilseeds, Irrigation, Cereals Agronomist	Warren Fisher	Nov. '75	Aug. '77	22	Discontinued in Nov. 15, 1980
		Don Kidman	Dec. '77	Present	35	
	Project Coordinator in U.S.A	Keith Allred	Aug. '75	Feb. '77	19	
		James Thomas	Feb. '77	June '80	41 3/	
		Keith Roberts	July '80	Present	4	

1/ Promoted to Party Chief Oct. '78

2/ Hold over from previous U.S.U. Contract

3/ Promoted to Party Chief July '80

TABLE II PERCENT STAFFING CID BOLIVIA CONTRACT

July 1975 thru October 1980

Position	Months authorized	Months filled	% staffed
1	64	64	100
2	56	38	68
3	60	44	73
4	36	36	100
5	64	50	78
6	64	58	91
7	28	26	93
8	25	23	92
9	35	32	91
10	64	58	91
11	64	57	89
TOTAL FIELD STAFF	560	486	87
COORDINATOR	64	64	100
TOTAL STAFF	624	550	88

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B. National Development Foundations

Field trips to the NDFs for the purpose of assessing the progress of:

1. The receptiveness of Solidarios' assistance as measured by the NDFs adaptation of administrative and technical tools provided for the implementation of new projects and to encourage growth of new ideas.

2. The promotional training to target groups for the optimum utilization of technical assistance and credit.

3. Staffing of office to provide technical assistance for the identification, development, and implementation of projects.

4. The increase of credit assistance for viable projects to low income groups with no access to the traditional banking institutions.

5. The installation of the accounting and financial system; effective utilization of Solidarios' procedures and manuals.

6. Growth of rotating fund portfolio: Sources of funds, placement and collection of sub-loans.

C. Evaluation Summary

1. Analysis of accomplishments and problems

2. Linkages with other country and donor programs

3. Recommendations.