

PD-AAM-222

FINAL REPORT

CID/BOLIVIA CONTRACT ON  
BASIC FOODS PRODUCTION AND MARKETING

Contract Number 053-007-HCC  
(Formerly GOB/AID 511-101 and 511-92)

December 1982



## TABLE OF CONTENTS

I.	Preface	
II.	Definitions	
III.	Summary . . . . .	1
IV.	Project Description . . . . .	4
	A. The Bolivia Setting . . . . .	4
	B. Project History . . . . .	5
V.	Project Contract . . . . .	8
	A. Project Objectives . . . . .	8
	B. Scope of Work . . . . .	9
	1. Long-Term Technical Advisors . . . . .	9
	2. Short-Term Advisory Services . . . . .	10
	3. Participant Training . . . . .	10
	4. Local Logistic Support . . . . .	11
	5. Commodities . . . . .	11
	6. In-Country Office Support . . . . .	12
	7. Campus Support . . . . .	12
VI.	Project Support Documents . . . . .	13
	A. Contract GOB/AID 511-92 . . . . .	13
	B. Contract GOB/AID 511-101 . . . . .	14
	C. Short-Term Advisory Services Contract . . . . .	16
	D. Project Relationships to USAID/Bolivia Ag. Sector I Program . . . . .	17
	E. CID Project Relationship to USAID/Bolivia Ag. Sector I Project . . . . .	18
VII.	Input Levels Attained . . . . .	20
	A. Long-Term Technical Advisors . . . . .	20
	B. Short-Term Advisory Services . . . . .	25
	C. Participant Training . . . . .	25
	D. Commodities and Local Logistics Support . . . . .	26
	E. CID In-Country Office Support . . . . .	27
	F. CID Campus Support . . . . .	27
	G. Total Input Costs . . . . .	28
	H. USAID/Bolivia Ag. Sector I Project . . . . .	28
VIII.	Output Levels Attained . . . . .	31
	A. Technology Development . . . . .	31

1.	Technical Programs Generated . . . . .	31
2.	Participant Training . . . . .	37
3.	University Relations . . . . .	39
B.	Technology Extension . . . . .	41
C.	Sectoral Management . . . . .	43
D.	Documentation . . . . .	45
IX.	Conclusions . . . . .	49
X.	Appendices . . . . .	51
A.	Financial Status of Active Projects Related to Agriculture by by USAID/Bolivia	
B.	CID Long-Term Technical Personnel	
C.	Short-Term Advisory Services Utilized on GOB/AID 511-96 Contract	
D.	CID Long-Term Bolivian Support Staff	
E.	Bolivian Counterparts, Their Training, and Change in Educational Status	
F.	Student Scholarship Recipients	
G.	CID/Bolivia Documents	
1.	Working Paper Series	
2.	Administrative Reports	
3.	Technical Reports	
H.	CID Budget	

## PREFACE

This final report is presented as the ultimate step in fulfilling the contract between the Consortium for International Development and the Government of Bolivia. Its purpose is to present the results and findings of the project; list the long and short-term Consortium staff, the Bolivian staff, and the Bolivian counterparts that served the project; students trained under the project; and itemize the documents that resulted from the efforts of all personnel involved with the project.

It is the feeling of the Consortium and Utah State University, as lead university in the effort, that a follow-up project should be initiated for the agricultural sector of Bolivia as soon as possible in order to minimize the dispersal of personnel trained and the materials that were generated through the project.

The Consortium wishes to acknowledge the support of the USAID/Bolivia Mission in the conducting of this project. The Instituto Boliviano Tecnologia Agropecuaria is also to be commended for its support of the project. The Consortium and its member universities look forward to the possibility of a continuing relationship with the Government of Bolivia in its future developmental efforts.

The substance of this document is excerpted from the End of Project Evaluation for the CID/Bolivia Contract on Basic Foods Production and Marketing, by Frank S. Conklin and David W. James, Consortium for International Development, October, 1982.

## DEFINITIONS

AID/Bolivia	AID Mission in Bolivia.
AID/W	Agency for International Development, Department of State, Washington, D.C.
ASAR	A large semi-private potato producing and marketing corporation involving several thousand farmers in upper Cochabamba valley.
CIAT/Santa Cruz	Centro Investigacion Agropecuaria Tropical or Tropical Agriculture Research Center, Santa Cruz, Bolivia.
CIAT	International Center for Tropical Agriculture at Palmira, Columbia. (Need to be cautious to avoid confusing with CIAT/Santa Cruz, Bolivia.)
CID	Consortium for International Development. A Tucson, Arizona-based consortium of eleven western universities.
CIMCA	Centro Investigacion Mejoramiento Cana de Azucar or Sugar Cane Improvement and Research Center, Santa Cruz, Bolivia.
CIMMYT	Centro de Investigacion de Mejoramiento de Maize y Trigo or International Corn and Wheat Improvement Center at El Batan, Mexico.
CIP	Centro Internacional de Papa or International Potato Center at Lima, Peru.
CONEPLAN	Consejo Nacional de Planificacion or National Planning Office in La Paz, Bolivia.
COP	Chief of Party
CORDECH	Corporacion Desarrollo de Chuquisaca
CORDECRUZ	Corporacion Desarrollo de Santa Cruz
CORDECO	Corporacion Desarrollo de Cochabamba
CORDETAR	Corporacion Desarrollo de Tarija
CORDEPAZ	Corporacion Desarrollo de La Paz
GOB	Government of Bolivia
IBTA	Instituto Boliviano Tecnologia Agropecuaria or Bolivian Institute of Agriculture.
INE	Instituto Nacional Estadisticas or National Institute of Statistics.

INTSOY	International Soybean Research Center, Illinois.
IRRI	International Rice Research Institute, Los Banos, Philippines.
LIC	Lesser Income Country.
MACA	Ministerio Asuntos Campesinos y Agropecuaria or Ministry of Peasant Affairs and Agriculture.
MICT	Ministry of Industry, Commerce and Tourism.
MPC	Ministerio de Planificacion y Coordinacion.
MOA	Ministry of Agriculture
OPS	Oficina de Planificacion Sectoral.
PP/Pro P	Project Paper
Pro Ag	Project Agreement
RDD	Rural Development Division of USAID Mission
UGM	Universidad Gabriel Moreno in Santa Cruz, Bolivia
UMBSS	Universidad Mayor Boliviano de San Simon (Cochabamba).
USU	Utah State University

## SUMMARY

The Basic Foods Production and Marketing Contract was between the Government of Bolivia (GOB) and the Consortium for International Development (CID). It was supported by grant and loan funds from USAID/Bolivia. It was the first host country contract for both GOB and USAID/Bolivia and only the second for CID. The project was for 7 years from July 1975 through June 1982. It was one of twenty AID/B projects funded during the 1970's which supported the agricultural sector of Bolivia. Utah State University (USU) served as the lead university for the Consortium. USU had provided technical assistance to the GOB between 1964-75 in an earlier, direct USAID contract.

The project purpose was to increase production of basic food crops and livestock products in a target area which included the intermountain areas of Central Bolivia and newly developing areas of the lowlands of Eastern Bolivia. The means for increasing food production was through capacity building in the Ministry of Agriculture and Campesino Affairs (MACA). The project was to (1) develop improved agricultural technologies, (2) extend the new technologies to small farm operators, and (3) develop a planning sector to generate and analyze data to improve agricultural policy decision making.

During the 7 year life of the contract, CID fielded 21 long-term advisors which filled 9 of 11 long-term positions specified. In addition, approximately 63 man months of short-term advisory services were provided under a separate AID/B contract with CID to support the project. Building construction at selected experiment stations and long-term participant training outside Bolivia were not funded under the contract.

CID demonstrated a strong capability to: (1) identify and field a competent and highly committed team of scientists within a relatively short period of time; (2) maintain and support a field team for the life of the project; and (3) establish, staff and support operating field offices with a high level of efficiency.

Major accomplishments under the contract by CID and host country personnel involved technology development in the field and its adoption by farmers. The contract created: (1) an expanded disciplinary research capacity at three experiment stations which now embrace potato breeding, soil fertility, entomology, pathology, and weed control; (2) expanded commodity research capacity to include soybeans and peanuts; (3) introduction of on-farm field testing; and (4) orientation toward systematic research and training for 35 technical counterparts from MACA and 96 students at two Bolivian universities.

Some farmer adoptions of technologies introduced as a result of the CID contract have been noted. They included: (1) adoption of the rust-resistant barley variety Promesa by 800 Tiraque Valley farmers, (2) adoption of the oat variety Texas by 15-20 percent of farmers in the Colomi area; (3) widespread but uncounted adoption of selected pesticides especially Temik, metasystox, antracol, benlate, and ridomil by Bolivia potato farmers; and (4) some limited adoption of IBTA-80 and KHOCH-80 barley varieties in Tiraque Valley to replace Promesa because of higher yields. If research continues it is expected that technology adoption breakthrough would occur in the next 3-5 years with: (1) frost resistant and late blight resistant potato seed stock; (2) improved application of pesticides for disease, insect, and weed control in potatoes, thus extending the length of the

growing season; (3) improved potato seed stock free from nematodes; and (4) improved cultural practices for greater soil moisture and nutrient retention.

## PROJECT DESCRIPTION

### The Bolivia Setting

Bolivia is a land richly endowed with resources of high agricultural production potential. Most of such potential remains highly underutilized except for some small areas in the Santa Cruz region. Bolivia is the fifth largest country in Latin America with a land area approximately the combined size of Texas and Oklahoma. This land base is divided into three distinctive geographic regions by two chains of the Andean Mountain Range. The western region bordering Chile and Peru is called the Altiplano and ranges from 12,000 to 14,000 feet above sea level. Traditional crops are potatoes, barley, quinoa, horse beans, and alfalfa. They are followed by three to ten years of fallow which takes place to rejuvenate the shallow soil. Frost can occur any time of the year. Sheep, llamas, and alpacas form an integral part of agricultural production. The central region is comprised of steep tropical and subtropical river valleys characterized by heavy rainfall and drier and colder high mountain valleys where elevations range from 5,000 to 12,000 feet. Wheat and corn intermingle with fruit and vegetable production. The eastern region is largely undeveloped tropical lowlands which contain some of the world's most extensive tropical forests and pastures.

Bolivia has one of the lowest per capita incomes, the highest percentage of its population in rural areas, the lowest nutritional intake levels, and the lowest agricultural productivity rate of any country in South America. The agricultural sector, with per capita income much lower than the national average, contains an estimated 58 percent of the population. Total population is unknown since no census has been taken since 1950.

Projection estimates suggest a 1980 population of 5.5 to 6.5 million people making Bolivia one of the least densely populated regions in Latin America. Small farmers represent 90 percent of the rural population or about 530,000 families.

The agricultural sector received limited attention until the 1950's and even since then has received low priority from the public sector. Much agricultural commerce is still outside the mainstream of the economy. The agricultural budget rose to eight percent of total government expenditures during the 1970's but has since fallen back to two percent as a consequence of the change in national government by the July 1980 coup. In contrast, public investment in transportation, communications, mining, petroleum, and defense account for more than 80 percent of total government expenditures.

The Bolivian economy depends heavily upon exports of minerals, mainly tin, for foreign exchange. A relatively small amount of petroleum and natural gas are exported. Minerals account for at least 80 percent of the value of exports with agricultural commodities accounting for little more than ten percent. The urban component of the economy relies heavily upon imports for consumer goods as well as light and heavy industrial equipment. In recent years, the economy has amassed a very large balance of payments deficit. Severe pressure from international banking sources led to a devaluation of the Bolivian peso in March 1982 and assurances that government salaries and hiring would be frozen for a year. At that time the value of the peso eroded from 25 to 75 pesos per \$1 U.S. By September 1982 the value slipped to 260 pesos per \$1 U.S.

### Project History

During the decades of the 1940's and 1950's, the agricultural sector was somewhat neglected by the GOB in providing public services.

Agricultural research and extension capability were extremely limited after the Servicio Agrícola Interamericano was discontinued. There were very few professionals and technicians in the physical and biological sciences directed to agriculture and most of those were poorly trained. Infrastructure was extremely limited, especially market access roads and communication. Primary education was not available to most rural people. There were only a few agriculturally oriented Bolivian social scientists. Wages were much lower than in corresponding professions. Health services were available mainly to urban dwellers. The consequence was an extremely low level of productivity and income in nearly all of Bolivia agriculture and continued divergence of income between rural and urban sectors aggravating an already highly skewed income distribution favoring the urban elite.

It is from this setting which the USAID Mission Director to Bolivia visited Utah State University in 1964 to explore contract possibilities for agricultural development in Bolivia. This led in 1965 to the signing of USAID/USU Agricultural Development Contract AID/La-319 in which 25 full-time staff members and 75 short-term consultants worked in Bolivia during the decade from 1965 to 1975. This was AID's first significant agricultural contract in Bolivia. Sheep production and marketing, alfalfa and grass production and wheat production improvement were major components. The regional focus in the first two components was upon the altiplano while wheat improvement was concentrated around Cochabamba and the tropical lowlands of Santa Cruz.

The project approach in agriculture was extension oriented. Known technology from the U.S. was used and adapted for Bolivian conditions. Agricultural institution building and institution strengthening were components of the contract. Major emphasis was upon training of

agricultural research and extension personnel and improvement of primary school education. The planning aspects to improve agricultural data gathering and analysis and agricultural sector planning were initiated in the contract. The primary school education project operated for 7 of the 10 years. Seminars were used to upgrade 10,000 Bolivian teachers. Nearly one-quarter million books and pamphlets were distributed to rural schools.

In 1974, economic analysis by USU contract technicians provided a major portion of the formal USAID/Bolivia agricultural sector assessment. This served as a major source document for future agricultural investment programs in Bolivia by USAID/Bolivia. The assessment concluded that development of Bolivia's agriculture was impeded by poor organizational structure, lack of qualified personnel, grossly inadequate budget, and little planning capacity within the Ministry of Agriculture. Further, lack of availability of agricultural credit, high cost of purchased inputs, inadequate government policies, and insufficient roads restrained agricultural production. On the basis of this, USAID/Bolivia developed a program strategy with a geographical and commodity focus to increase productivity and per capita income for small farmers. One project of the overall program was called the Basic Foods Production and Marketing Project. A Project Request for Proposal was sent out in January 1975. CID responded with a contract proposal in March 1975. A Project Agreement (PRO AG) between USAID/Bolivia and the Minister of Finance/GOB in which grant and loan funds were to be used for a contract was signed April 1975. CID, with Utah State University as the lead university, was awarded the contract in June 1975.

## PROJECT CONTRACT

### Project Objectives

The generalized goals of the Basic Foods Production and Marketing Contract GOB/AID 511-92 were two-fold. The first was to increase production of basic food crops and livestock products. The second goal was to increase resource productivity in the small farm sector. Both goals were to be confined to specific target groups. The Project Paper and the CID contract stated that the professional and technical services sought were to assist the GOB to achieve the following:

1. To develop improved agricultural technologies and more modern management practices germane to the small farm sector of the intermountain valleys of Central Bolivia and the newly developing agricultural areas of the lowlands of Eastern Bolivia (Technology Development).
2. To extend to small farm operators in the regions of interest the improved technologies and more modern production practices (Technology Extension).
3. To develop the capability of the Bolivian MACA (Ministry of Agriculture and Campesino Affairs) Offices of Economics and Statistics, Marketing, and Planning to generate basic data, analyze problems and opportunities, formulate and implement coordinated policies and programs for the sector, including improved organization and administration of public services (Sectorial Management).

These specific project objectives were intended to address and assist to overcome the following public service deficiencies in the agricultural sector as identified in the Project Paper:

1. Inadequate research and extension activities necessary to develop and deliver a technological base to support development of an increasingly productive agricultural sector.
2. Inadequate budget support for public services serving agriculture, and inadequate planning capacity in the Ministry of Agriculture.
3. Absence of well trained scientific and professional personnel in public agencies serving the sector.

4. Low skill levels in the rural labor force which limit its capacity for participating in the modernization process.
5. Limited availability and high cost of modern production inputs.
6. Lack of adequate credit resources to finance modern production inputs, and the absence of an effective system for distributing credit in the small farm sector.

The project was to focus primarily upon the initial two deficiencies. The last four deficiencies were to be addressed by other AID financed loan and grant projects totaling more than 50 million dollars through fiscal year 1977 and augmented by 30 million dollars from GOB as reported in the Mission's 1974 Proposed Assistance Program.

#### Scope of Work

The scope of technical services to be provided by CID in accordance with the contract was to assist the MACA to strengthen, improve, and coordinate: (1) agricultural research; (2) agricultural extension; (3) sector management; (4) other technical services such as soils, irrigation, and seeds; and (5) higher agricultural education at the university level.

#### Long-Term Technical Advisors

To implement the project CID was to provide eleven full-time advisors during the seven-year life of the project:

Chief of Party - La Paz  
National Agricultural Research Advisor - La Paz  
National Agricultural Extension Advisor - La Paz  
Agricultural Economist (Planning and Policy Analysis) - La Paz  
Agricultural Economist (Marketing and Statistics) - La Paz  
Agronomist (General) - Cochabamba  
Agronomist (Cereals) - Cochabamba  
Soil and Water Management Advisor - Cochabamba  
Agricultural Economist (Farm Management) - Cochabamba  
Agronomist (General) - Santa Cruz  
Agronomist (Oil Seeds) - Santa Cruz

Seven full-time staff were to be provided initially and the other team members added at times agreed upon by the MACA, CID, and USAID/Bolivia

The normal assignment for each advisor was to be a minimum of two years. Requirements for modification and/or additional services were to be identified and incorporated at each annual contract review and renewal period.

#### Short-Term Advisory Services

CID was to provide a number of short-term advisors (consultants) for periods of less than one year to provide backstopping support for the regular staff members and/or to address specific problems in related agricultural disciplines such as plant and soil science, pathology and entomology, economics, administrative reform, etc. Approximately 18 man-months of such services per year were anticipated in the initial funding period of the contract. Costs for the advisors were to be paid by the MACA with available loan funds from USAID/Bolivia and not from the CID contract. USAID/Bolivia implemented this phase through a separate Short-Term Advisory Services Contract with CID.

#### Participant Training

In addition to providing the MACA with assistance in design and conduct of formal in-service training courses through its resident personnel and loan-funded short-term advisors, CID was to be responsible for assisting in the development and implementation of a broad professional and technical manpower training program. This program would consist basically of short courses to upgrade technical specialties (3-4 months) and M.S. degree studies. Both third-country and U.S. institutions would be utilized in this activity with an estimated annual magnitude of 30 to

40 participants receiving short-term training and 10 to 15 participants in M.S. programs principally of agricultural economics, extension, soil, irrigation, plant and animal sciences. Institutional backstopping would be required to facilitate this training. Costs for the training program were to be paid by the MACA utilizing AID loan funds available for this purpose.

#### Local Logistic Support

The MACA agreed to provide CID with office space, office furniture, and transportation. CID would provide the balance, if needed, of its own office equipment and supplies, vehicles and transportation facilities, local administrative, secretarial, and translation services, and most in-country travel expenses with contract funds. The MACA would be responsible for official applications, correspondence, and documentation for the functioning of the program, including the processing and obtaining of such necessary documents for CID as automobile licenses, drivers' licenses, tax and duty exemptions, and any other documentation which may be required. The MACA would also obtain the necessary documentation to enable CID to be exempt from sales or other taxes on goods or services purchased in Bolivia for use under the Contract.

#### Commodities

CID was to be responsible for the procurement of a limited amount of imported commodities directly related to the performance of the contract, i.e., vehicles, office, demonstration and training equipment, and supplies, which were to be listed in the Plan of Work. Institutional backstopping by CID was to be provided for the purchase and delivery of those items to be utilized in carrying out the responsibilities of the advisory team.

In-Country Office Support

CID was to maintain a local office in La Paz for the purpose of administering contract funds and personnel. The office would be responsible for receiving and disbursing all local contract funds, maintaining an accounting system, and providing total administrative support. Offices with one secretary each also would be maintained in Cochabamba and Santa Cruz.

The in-country offices would be the responsibility of CID's Chief of Party with full managerial authority. Separate office space would be supplied by the MACA.

Campus Support

In addition to personnel required for CID general management in its home office, CID would supply a Project Campus Coordinator on the lead university campus for coordination and liaison, one secretary, and one month of on-campus departmental and college backstop at the appropriate university for each person year of staff in Bolivia.

## PROJECT SUPPORT DOCUMENTS

### Contract GOB/AID 511-92

The original Basic Foods Production and Marketing contract, GOB/AID 511-92, executed June 27, 1975, was for a two-year period beginning July 1, 1975 with an expression of intent to continue technical services for 7 years. It committed \$505,380 of USAID/Bolivia Grant Funds and \$97,180 counterpart funds from GOB through March 31, 1976.

Amendment Number 1 was executed September 8, 1975. It shifted housing allowance contribution from GOB counterpart funds to contract funds and furniture allowance contribution from contract funds to GOB counterpart funds.

Amendment Number 2 was executed January 1976. It increased USAID/Bolivia Grant Funds to \$699,555 and committed them through June 30, 1976.

Amendment Number 3 was executed February 17, 1976. It increased USAID/Bolivia Grant Funds to \$725,353, and extended the funding period through July 31, 1976.

Amendment Number 4 was executed April 1976. It increased USAID/Bolivia grant funds to \$1,190,416; GOB counterpart funds to \$192,430; and extended the funding period through December 31, 1976.

Amendment Number 5 was executed July 27, 1976. It provided housing allowance, annual salary calculation, and salary ceiling limitation adjustments.

Amendment Number 6 was executed January 26, 1977. It increased USAID/Bolivia grant funds to \$2,020,419, and extended the funding period to October 31, 1977.

Contract GOB/AID-511-101

In accordance with the 2 year limit of the original contract, a new contract, GOB/AID 511-101 was signed November 2, 1977. It was to be effective November 1, 1977 and continue for 1 year. Total USAID/Bolivia and GOB commitment from USAID Grant Funds was for \$1,079,803. The long-term positions were modified slightly. The two positions in La Paz for research and extension directors were combined to a single specialist position and an agricultural extension specialist position was added for Cochabamba.

Amendment Number 1 was executed February 27, 1978. It changed the effective starting date from November 1, 1977 to December 1, 1977.

Amendment Number 2 was executed April 17, 1978. It made explicit the exclusion of private vehicles from GOB taxation for CID long-term employees.

Amendment Number 3 was executive February 1, 1979. It extended the project to November 30, 1979, and expanded the joint USAID/Bolivia and GOB commitment to \$2,031,981. The word joint is underlined to emphasize that beyond this point in time no GOB counterpart funds above the original \$192,430 contribution were committed to the project. GOB fund contributions were deleted from all future contracts and contract amendments.

Amendment Number 4 was executed December 1, 1976. Several substantive contractual changes were involved. One identified the contractual representatives to be the Ministry of Agriculture and Campesino Affairs (MACA) for GOB and the Executive Director or Executive Secretary for CID. A second deleted the entire sectoral management thrust but apparently deleted only one of the two positions assigned to that program. Third, the COP's counterpart duties, previously confined to the Director General of Agriculture, were expanded to include the Executive Director of IBTA as well.

Fourth, the agricultural research and extension specialist in La Paz was to serve as counterpart to the IBTA Director of Research in La Paz and to the IBTA Regional Directors in Cochabamba and Santa Cruz. Fifth, a fourth agronomist was to be added to Cochabamba to conduct off-station research and technology demonstration.

Amendment Number 5 was executed November 27, 1979. The contract number was changed from GOB/AID 511-101 to 053-007-HCC. It extended the project funding to February 29, 1980, and expanded the joint USAID/Bolivia and MACA commitment to \$2,406,981. The contract period was expected to be 5 years, thus extending the project to June 30, 1982. The agricultural extension specialist in Cochabamba was shifted to La Paz to serve as counterpart to the national director of extension. The lead university campus backstopping component was deleted with short-term advisory services to be obtained from the Contract GOB/AID 511-96 referred to in the next section. The limit of one secretary each for Cochabamba and Santa Cruz offices was deleted.

Amendment Number 6 was executed February 5, 1980. The funding commitment through November 30, 1980 was increased to \$3,055,843. The agricultural extension specialist position in La Paz, the oilseed agronomist position, and the general agronomist position in Santa Cruz were abolished. An agronomist/entomologist position in Cochabamba was added.

Amendment Number 7 was executed September 15, 1980. It accommodated several minor administrative changes.

Amendment Number 8 was executed November 18, 1980. The funding commitment through July 31, 1981 was increased to \$3,668,555.

Amendment Number 9 was executed July 23, 1981. The funding period was extended to December 31, 1981, and the commitment increased to \$3,994,555.

Amendment Number 10 was executed December 14, 1981. The funding period was extended to June 30, 1982 and the commitment increased to \$4,468,555.

In combining both the GOB/AID 511-92 and 511-101 contracts for Basic Foods Production and Marketing, the total sum allocated for the seven year period was \$6,488,974 as shown in Appendix H.

#### Short-Term Advisory Services Contract

Funding for short-term advisory service identified in the Scope of Work section of the original GOB/AID 511-92 contract was not provided in the contract itself. A separate host country contract GOB/AID 511-96 was developed and signed March 1, 1976 with CID as the contractor to fund the short-term advisory services commitment. Its funding limit was \$362,930 for a period of 42 months (to August 22, 1979). GOB obtained its funding from the USAID Agricultural Sector Loan. In this contract, CID would provide up to 48 person months of short-term technical assistance as determined by the MACA in consultation with CID. Up to 12 person months in CY-76, 18 person months in CY-77, 12 person months in CY-78, and 6 person months in CY-79 were anticipated. All short-term advisors nominated by CID for work in Bolivia would require prior approval of the MACA with USAID/Bolivia concurrence. The advisors would provide services for periods normally of 2 weeks up to 3 months to support the MACA and other long-term CID contract technicians, or to address specific problems in relation to agricultural disciplines such as, but not limited to, plant and soils sciences, pathology and entomology, economics, marketing, irrigation, engineering, extension, administrative reform, etc., as found necessary by the MACA in consultation with CID.

Amendment Number 1 was executed February 1978. It clarified that CID overhead was excluded from the contract since it was highly complementary to the Basic Foods Production and Marketing Contract on which CID overhead was charged.

Amendment Number 2 was executed July 1, 1979. It extended the contract to September 30, 1980, allowed per diem allowances to be reimbursed at currently authorized USAID/Bolivia rates, and increased the funding level to \$403,930.

Amendment Number 3 was executed October 31, 1979. It identified the budget level limits for specified line items.

Amendment Number 4 was signed June 1, 1980. It increased the budget for consultants to \$453,930.

#### Project Relationships to USAID/Bolivia Agricultural Sector I Program

The Bolivian agricultural sector assessment prepared in 1974 led to the initiation of 20 projects by USAID/Bolivia with a total estimated cost of about \$243 million, of which USAID/Bolivia pledged to finance \$179 million. The projects were intended to help GOB overcome institutional limitations within the agricultural sector which ultimately were to lead to increases in real incomes and standards of living of the Bolivian small farmers. The major thrusts of the project were to expand land development of the human tropics and to initiate a public infrastructure focus which included the agricultural sector through improved roads and communications; village health and water sanitation; agricultural research, extension and credit; and agricultural price and policy analysis. A listing of the 20 projects, their budgeted obligations, and actual disbursements are presented as Appendix Table A. Note the Basic Foods Production and Marketing Project (511-0451) which was awarded to CID and budgeted for \$6.9 million. Note

also the Agricultural Sector I (511-T-053) loan project budgeted for \$14.85 million which is discussed in the following section.

As part of its obligation for institutionalizing agricultural research and extension, the GOB agreed to: (1) improve production incentives to farmers, (2) increase salaries of qualified personnel in the MACA, and (3) increase the budget support to the MACA as well as other agencies involved with the rural sector.

USAID/Bolivia, while a significant international donor, was not alone. By 1979 more than 45 international and domestic agencies were involved with agricultural research and extension programs in Bolivia.

#### CID Project Relationship to USAID/Bolivia Ag Sector I Project

The AID/Bolivia Agricultural Sector I Project was budgeted for \$14.85 million in the request submitted to AID/Washington by USAID/Bolivia in the "Bolivia Agriculture Sector I Loan Proposal," December 1974. Its components included an AID/Washington loan of \$9.2 million and GOB input of \$5.65 million equivalencies. The USAID/Bolivia and GOB contributions were to bolster GOB's long-term capability to strengthen the technology development, technology extension, and sectoral management components of MACA. Such goals were identical to those specified for CID's GOB/AID 511-92 contract.

The Auditor General, Latin America Area AID, Report "Audit Report 1-511-80-10 Agricultural Sector USAID/Bolivia" prepared September 1979 shows that as of September 30, 1979, USAID/Bolivia had disbursed to GOB \$7,172,966 dollars of the initial \$9,200,000 disbursement for loan capital to provide supervised production credit to farmers in the target area.

Linkage of the CID/Bolivia 511-92 contract and the USAID/Bolivia Agriculture Sector I Loan project were to be achieved through four components. The \$2.015 million equipment, materials, and vehicles component was to provide equipment for the three soils laboratories and vehicles for the three stations and La Paz. The \$1 million participant training component was to provide the participant training scholarships, the \$.565 million technical assistance component was to provide the short-term advisory services through the 511-096 contract, and the \$1.37 million construction and engineering component was to accommodate building construction programs at Cochabamba and the experiment stations at San Benito, Toralapa, Saavedra, and Chinoli.

## INPUT LEVELS ATTAINED

The level of inputs realized on the CID/Bolivia project are presented in this section. A summarized comparison of planned and actual project inputs is presented in the following table. The planned input levels were obtained from the Project Paper (PP) and the Agricultural Sector Loan Proposal. The actual input levels were obtained from CID Bolivia Project files. Detailed explanations follow in the text corresponding to components identified in the contract scope of work. The assigned responsibility and budget authority between USAID/Bolivia, GOB, and CID also are identified.

### Long-Term Technical Advisors

The PP called for 15 long-term technical advisors for a total of 85.5 person years. During the course of contract development and negotiation by USAID/Bolivia, three positions were assigned to a UNDP project in the target area and one position was deleted. The initial CID contract was written for 11 positions to provide 77 person years over the seven-year life of the project.

A listing of the CID long-term technical advisors and campus coordinators at USU assigned to the project, is presented in Appendix B. The positions staffed, duty tour length, site assignment and university affiliation are specified.

Eleven positions were specified in the contract until December, 1978. To that point USAID/Bolivia had authorized 10 positions. Why USAID/Bolivia did not authorize the eleventh position is not known. After December 1978, USAID/Bolivia authorized the same number of people as specified in the contract. In December 1978 one economist position in sector planning

was abolished by Amendment 4 of Contract GOB/AID 511-101. Three additional positions were abolished in February 1980 by Amendment 6. They were the agricultural research and extension director position in La Paz, the oilseed agronomist position in Santa Cruz, and the general agronomist position in Santa Cruz. This came about when AID/Bolivia reported budget monies available of only \$425,000/year which translated to only a four-person CID technical team in Bolivia. CID, and USU as the lead university, expressed unwillingness to field a technical team of less than seven long-term advisors. Then AID/B drew upon unallocated funds to permit a seven-person CID team to be authorized for the remainder of the contract at approximately \$800,000/year.

Actual CID staffing followed a somewhat different pattern than authorizations, as expected, because of time lags associated with candidate identification, selection, and relocation.

Staffing to a level of seven technicians occurred by the end of the first 14 months as per the initial plan of work and then increased to eight by mid-1976. The initial staffing process was expedited by shifting two people and support staff from the terminating USU contract to the CID contract from mid-summer through fall of 1975. This level was maintained until early 1979 when the project increased to nine technicians. This level was reduced to six when CID's program thrust at the Saavedra experiment station was closed out in mid-1980. The project operated with six technicians the last two years even though seven were authorized by AID/Bolivia.

Elimination of the four positions reduced CID's contractual obligation from 77 person years to 65 person years and 62 person years AID/Bolivia authorization. The project supplied 49.5 person years (594 person months)

Table 1. CID/Bolivia Project Inputs: A Comparison of Planned and Actual Outcomes.

<u>Planned Input Level</u>	<u>Actual Input Level</u>
<u>Long-term Technical Advisors</u>	
Oil Seed Agronomist (SC)	Oil Seed Agronomist (SC)
Crops Agronomist (SC)	Crops Agronomist (SC)
Swine & Beef L.S. Spec (SC)	UNDP
Mech & Irrig Agr Engineer (SC)	UNDP
Cereals Agronomist (CB)	General Agronomist (CB)
Crops Agronomist (CB)	Cereals Agronomist (CB)
Agr Prod'n & Res Econ (CB)	Agr Mktng Econ (CB)
Poultry & Dairy L.S. Spec (CB)	UNDP
Research Advisor (LP)	Research Advisor (LP)
Extension Advisor (LP)	Extension Advisor (LP)
Resettlement Advisor (SC)	Deleted
Agr Economist Planning (LP)	Agr Economist Planning (LP)
Agr Economist Data (LP)	Potato Breeder (CB)
Agr Economist Marketing (LP)	Soil & Water Advisor (CB)
Chief of Party (LP)	Chief of Party (LP)
 Total = 1026PM = 85.5 PY	 Total = 594PM = 49.5 PY

Short-term Advisors

3 PM in FY 1975 = \$ 15,000	
32 PM in FY 1976 = 160,000	
25 PM in FY 1977 = 125,000	
13 PM in FY 1978 = 65,000	
<u>73 PM</u> <u>\$365,000</u>	<u>56 PM</u> <u>\$453,930</u>

Participant Training

For all new participants from Agr. Sector Loan I - \$1,000,000                      No information.

For all participants in training status in 1975 - \$60,000.                      No information.

Commodities

FY 1975 = \$45,000                      None earmarked.  
 FY 1976 = \$20,000  
                     \$65,000  
 Additional monies if needed will be loan-funded.

Table 1. (Cont'd)

<u>Planned Input Level</u>	<u>Actual Input</u>
<u>Other Costs</u> (international) travel, per diem, excess baggage, transportation of HHE, transportation of POU, educational allowances, local travel, per diem, local hire of personnel:	
FY 1975 = \$ 550,000	
FY 1976 = 190,000	
FY 1977 = 241,000	
FY 1978 = 204,000	
FY 1979 = 260,000	
FY 1980 = 221,000	
FY 1982 = 413,000	
<u>\$2,079,000</u>	
<u>Total Costs</u>	
Long-term Advisors	\$3,438,000
Other costs	2,079,000
Commodities	65,000
Short term Advisors	365,000
Participant training	<u>1,060,000</u>
	<u>\$7,007,000</u>
	\$6,488,974
	453,930
	<u>USAID/B</u>
	<u>\$6,942,904</u>

of long-term technical personnel for a 76 percent utilization on the basis of contractual requirements and an 80 percent utilization based on AID/Bolivia authorization limits.

The 49.5 man years were staffed by 21 technicians, each serving an average of 2.4 years on assignment. The longest period of time served by a single technician was 44 months while the shortest was 11 months as a holdover from the earlier USU contract. Six technicians served three or more years. Eighteen, or 86 percent, of the 21 technicians were staffed from CID universities. One technician was staffed from a midwestern university, while two were private consultants. Twelve, or 57 percent, were from Utah State, the lead university. Of these 12, seven were tenured faculty.

Several adjustments in positions were approved and implemented either by contract amendment or CID policy decisions during the course of the project. The National Agricultural Research Advisor and the National Agricultural Extension Advisor in La Paz were combined in November 1977 to a single position called Research Extension Specialist. The unfilled Agricultural Economist for Marketing and Statistics position in La Paz was renamed to Potato Agronomist in November 1977 and assigned to the Toralapa station at Cochabamba. The unfilled agronomist position in Cochabamba was renamed to Potato Breeder in July 1978. The unfilled soil and water management advisor position identified as an Agricultural Marketing Economist in the PP, was renamed to Cereals Agronomist to conduct off-station research in December 1978. The unfilled Agricultural Economist in Farm Management position was renamed to Agricultural Marketing Economist in September 1977. The General Agronomist position at Santa Cruz was redefined to an Entomologist sometime in 1978 and moved to Cochabamba in September 1980 when the Saavedra station was closed out.

### Short-Term Advisory Services

The original loan request called for \$565,000 to support 113 person months of advisory services. The PP called for 73 person months of short-term advisors over a four-year period from 1975 through 1978 budgeted at \$365,000. Such services were negotiated in a separate contract GOB/AID 511-96 with CID in March 1976. The contract called for 48 person months over a period of 42 months under a funding limit of \$362,930. Later amendments increased funding limits to \$453,930 through September 30, 1980. The primary purpose of the contract was to expand the long-term CID technician support by providing funds for short-term advisors. Also, the contract provided a mechanism whereby advisors for more broadly defined needs could be provided.

A listing of the short-term technical advisors assigned to the project is presented in Appendix C. Also presented are the dates of assignment, man days in Bolivia, institutional affiliation, technical specialty, Bolivia assignment, and costs.

A total of 74 assignments were recorded. The number of actual advisors is slightly less as a few advisors were on assignment more than once. Of the 74 assignments, 51 (70 percent) were CID requested, while 23 (30 percent) were AID/Bolivia requested. Approximately 63 man months of advisory services were obtained of which 56.6 man months (90 percent) of total time allocation was CID project related. Available assignment and man month calculations provide a likely range of 70 to 90 percent advisory service assignments being CID project focused.

### Participant Training

The PP called for \$65,000 in 1975 to support all participants in training status at that time. An additional \$1,000,000 was to be provided

for all new participants as called for in the Agricultural Sector Loan Proposal.

A tentative stipulation in the proposal called for advanced degree training (25 MS and 5 PhD) outside Bolivia in the following disciplines: Agricultural Economics (8), Plant Science (12), Animal Science (6), and Agricultural Extension and Education (4). The funding remainder was for technical upgrading of personnel in-country through short-courses and on-the-job training. Participant training was USAID/Bolivia Ag. Sector Loan funded. CID had no direct or indirect control of this component.

The amount of money input actually expended for participant training throughout the seven year contract period is not known as accountability lies with USAID/Bolivia.

#### Commodities and Local Logistics Support

Several classes of commodities were to be required to support the activities of the technical team on the CID contract as specified on page 28 of the PP. They included: (1) vehicles and related equipment; (2) radio communication equipment for linking advisors in Santa Cruz, Cochabamba and Sucre with La Paz; (3) office equipment in each of the three regions; (4) equipment and supplies for research activities including experiment station tractors and attachments, seeds, fertilizers, pesticides, etc.; and (5) office supplies. The PP also identified that \$65,000 would be needed to fund the commodities. Additional monies, if needed, were to be loan funded. Commodities were treated very generally in the contract. Specific commodity listings were to be included in the initial plan of work.

Commodities ultimately were obtained by contract line item shifting and understaffing of technical personnel on the CID contract. No monies were

ever earmarked specifically for local logistics support. GOB provided office space in La Paz, Santa Cruz and Cochabamba. Crowded conditions and space conflicts led to the renting of a home in Cochabamba for the CID team in 1980.

#### CID In-Country Office Support

Offices were maintained and fully staffed in La Paz, Santa Cruz and Cochabamba. Long-term Bolivian support staff were provided at each office as specified in Appendix D. One administrative assistant, two secretaries, two driver/interpreters and a janitor staffed the La Paz office. Four secretaries, four driver/interpreters, and a janitor staffed the Cochabamba office. One secretary and two driver/interpreters staffed the Santa Cruz office. The average tour of duty was three years for all Bolivian Support Staff. Of the 30 hired, eight were employed for three months or less. These were probationary personnel who were not retained for performance reasons. In actuality, 22 long-term personnel were involved. Their average tour of duty was 48 months. Three Bolivians were employed for the entire 84 months of the project.

#### CID Campus Support

A full-time campus coordinator for the project was provided at the Utah State University campus throughout the project until October 1981. Through December 1981, the position was staffed on a half-time basis, then abolished after January 1, 1982. A full time secretary was provided for the campus coordinator. Technical backstopping support of one month per technical man year in the field was deleted after November 1979 with such support to be provided through the GOB/AID 511-96 Advisory Service Contract.

### Total Input Costs

The PP estimated total costs at slightly over seven million dollars, including participant training. By excluding participant training, which was provided by USAID/Bolivia, the project estimated costs were \$5,947,000 for 85.5 person years of long-term technicians and 73 person months of short-term advisors. This translates to 91.58 person years at an approximate projected cost per person year of \$65,000.

The actual project costs were \$6,942,904. This provided 49.5 person years of long-term technicians and 56 person months of short-term advisors. This translates to 54.17 person years at an actual cost of \$128,200 per person year.

### USAID/Bolivia Agriculture Sector I Project

The USAID/Bolivia Agriculture Sector I Loan Project was to provide four components to support the CID/Bolivia technical assistance contract. One was the one million dollar participant training component. The input level achieved was treated in an earlier section. A second was the \$565,000 short-term advisory services components treated also in an earlier section. The two remaining components are the: (1) equipment, material and vehicle component of \$2.015 million and the (2) construction and engineering component of \$1.37 million. The building construction was to provide regional agriculture service centers, one each at Cochabamba, Sucre (Chuquisaca) and Santa Cruz and facilities at the Chipirin, Chimoli, Saavedra, San Benito, and Toralapa experiment stations (p. 76 of Bolivia Agriculture Section I Loan Proposal). Each of the three regional service centers were to include offices for the regional director of MACA for research and extension, a soil office, laboratory, office for the National Community Development Service, regional conference areas and other offices. The Santa Cruz center was to

be expanded to provide more office space. There were no facilities existing at the other two centers and they would have to be completely built. Components of the station facilities are as follows:

Cochabamba

Toralapa Experiment Station: Adult education center with capacity for 30, quarters for four resident families, and one greenhouse.

San Benito Experiment Station: Adult education center with capacity for 60, combination laboratory, and machine shed.

Chipiriri Experiment Station: Quarters for four resident families, machinery shed, and combination laboratory.

Suine

Chimoli Experiment Station: Quarters for two resident families, machinery shed, and a laboratory - classroom - warehouse combination building.

Zudanez Extension Center: A combination seed processing center and extension office.

Santa Cruz

Saavedra Experiment Station: Quarters for four families, remodeling and expansion of existing office building, adult education center with capacity for 60, seed storage and processing center, and additions and modifications to an existing dairy barn and installation of equipment.

The vehicles component was estimated to require 89 conventional vehicles (54 jeeps, 16 pickup trucks, 12 trucks, 3 buses, and 4 mobile units). The equipment and materials were not listed specifically but were to include agriculture machinery and equipment, seed processing and bagging units, laboratory equipment and dairy related machinery.

USAID/Bolivia fully recognized the "extremely low human resource base in terms of numbers and training of existing staffs . . ." so four years were projected to carry out building construction as "MACA is not yet familiar with AID procurement and construction procedures . . ." (p. 85 of Bolivia Agriculture Sector I Loan Proposal). Building design was initiated in 1976 with construction projected for completion by October 1980.

Building construction was underway at some sites in 1978. Construction of facilities at Chimoli, Saavedra, and San Benito (except for a greenhouse) was completed by 1982. Facilities at Toralapa and the large center complex in Cochabamba each appear to be less than 50 percent completed. No work has been done on them for at least two years. Recent indications from USAID/Bolivia to Dr. Thomas, CID Chief of Party, are that work will resume when another 059 loan is reprogrammed after the U.S. State Department gives its approval to USAID/Bolivia. Progress toward completion of the Chipiriri Experiment Station and the Zudanez Extension Center are not known.

An estimated \$35-40,000 of equipment for each of the three soil laboratories was ordered by CID technicians, shipped, and delivered to the GOB. The equipment was identified for Toralapa, the regional service center at Cochabamba, and La Paz. Because of constraints resulting from Bolivia's financial condition, the equipment is now being used, but on a very limited basis.

## OUTPUT LEVELS ATTAINED

This section presents the output levels attained by the CID/Bolivia project. The results are presented for each of the three program areas (Technology Development, Technology Extension and Sectoral Management) over which CID had responsibility.

### Technology Development

Technical Programs Generated: The CID Contract called for research at four MACA experiment stations: Chimoli in Chuquisaca, Saavedra in Santa Cruz, and Toralapa and San Benito in Cochabamba provinces. The Chimoli station was eliminated in 1976 by mutual agreement between AID/Bolivia, GOB, and CID. The site is too remote. Technical accomplishments are discussed separately for each experiment station.

Saavedra: Saavedra is the Santa Cruz province headquarters for the CIAT-Bolivia research and extension center. Historically, research focused upon crops of greatest commercial value to the region which included corn, rice, and the oil crops of soybeans, peanut, and sunflower. Research on sugar cane, an important commercial crop in the area, was conducted by ASAR, a semi-private research organization.

The dominant research program in 1975 involved on-station variety improvement testing of corn and rice. CIMMYT provided support for corn while IRRI and CIAT-Colombia provided support for rice. Those international research centers contributed large numbers of varieties for testing as well as research methodology for design and evaluation.

The CID/Bolivia project: (1) strengthened crop variety improvement linkages for soybeans with INTSOY and for peanuts with University of Georgia; (2) introduced insect and weed control studies on the target crops; (3) initiated soil fertility studies on the station; and (4) initiated

farmer field testing with regional farmers evaluating the technical potential of the new technology. Agricultural research information generated by CID technicians and Bolivian counterparts is summarized as follows:

Fertilizer trials and soil tests both on and off the station show that soils of the region are rich in phosphorus and potassium. Nitrogen fertilizer needed for adequate crop response was quite moderate apparently due to the mineralization of organic residues from the subtropical forests native to the region. Farmer trials in the region were initiated to evaluate the long-term strength of native soil nitrogen reserves. Such trials were discontinued in 1981 before definitive information could be obtained. The trials continued one year after the CID team left, but CID supported the activity financially and supervision was by the COP.

2. A sprinkler irrigation system was designed, purchased, and installed by CID to irrigate 50 acres at Saavedra using T-053 loan funds to help in the evaluation of supplemental irrigation and produce foundation seed year round. Plans for the system were initiated in 1977 by AID/Bolivia upon request from MACA. The system was completed in early 1981 at a cost of approximately \$62,000. A feasibility study was conducted which supported the project. CID provided an irrigation agronomist. The technical feasibility of supplemental irrigation during the dry season was demonstrated on wheat, corn, and small fruits and vegetables. Supplemental irrigation during the dry season permits year round crop production. Irrigation-soil moisture studies showed that surface and subsurface drainage would improve crop production in some parts of the area. The irrigation system was not being used by CIAT personnel in 1982 due to lack of operating funds.
3. Availability of water from irrigation led to a technical evaluation of the production potential of multiple cropping of corn, rice, and soybeans using year-round irrigation. Termination of the project occurred before the potential of these practices could be determined.
4. Pest survey and identification procedures were employed to separate serious insect pests from those which caused minimal damage to crop production or were beneficial. Several serious insect pests were identified in corn, rice, and soybeans. Methods for their control were evaluated and the most effective insecticides recommended. Guidelines for insecticide application were made contingent upon insect population buildup and timely insecticide application.
5. Short-term advisors were used in the entomology program to:  
(a) assist in the pest surveys and identifications; (b) establish pheromone traps for insect population monitoring; and (c) pest control research on corn and rice. Advisors also were used to:

(1) identify rice and soybean research needs; (2) develop a plant quarantine system; (3) assess research on milk and meat production; and (4) design irrigation studies and irrigation system for the Saavedra station.

6. Weed control measures were evaluated, especially for the control of rogelia, a grassy annual weed that came from Africa as a contaminant of crop seeds.

Toralapa: Toralapa is the national center for potato research. In 1975, the Toralapa station had active on-station potato breeding, potato variety testing and soil fertility programs. Breeding emphasis was for nematode (Nacobus) and late blight (Phytophthora) resistance.

The CID/Bolivia project: (1) expanded the potato breeding and soil fertility programs; (2) initiated entomology and plant pathology research to identify and control serious plant pests and; (3) initiated on-farm field testing. Agricultural research information generated by CID technicians and Bolivian counterparts is summarized as follows:

1. Breeding lines from the U.S. and Europe were introduced to augment the existing germ plasm pool. Linkages with CIP-Peru were strengthened with CID providing frost resistant potato lines. Consumer preference and frost resistance were added as potato improvement goals in addition to disease and pest resistance which were being emphasized.
2. Soil fertility programs were expanded to essentially all potato growing areas of the country by means of production trials on more than 100 farms in seven climatic zones. This included two ecological sites in Cochabamba province, three in the Altiplano, one in Chimoli, and one in Tarija province. The farmer prepared the land, provided seed and some harvest labor, and provided the information for the farmer practice control plot.
3. Soil fertility research identified phosphorus as the most limiting plant nutrient in many potato growing areas of Bolivia. Potassium and sulfur deficiencies also were identified for some areas. Soil fertility studies showed large yield interactions between N, P, and K and between soil fertility and injury from frost, hail, insects, diseases, and soil water availability. Low soil phosphate levels precluded positive yield responses from N and K.
4. Agronomist research on potatoes showed that a mix of practices which include fertilizers, pesticides, and improved seed make it technically possible to multiply potato yields three to five-

fold, depending on soil moisture availability and rainfall distribution. Potato yield in Bolivia averages about 7T/Ha. Field trials consistently attained 21 T/Ha. The highest field trial yield attained was 57T/Ha where soil moisture was adequate throughout the year and a 120-80-80 #/Ha N-P-K fertilizer rate was used.

5. A number of potato disease pathogens were identified which have always been present but had not been recognized. They included the fungus diseases of early blight, powdery mildew, wart and rhizoctonia; bacterial diseases Erwinia and ring rot; viruses X and Y, leafroll, and moptop.
6. Six yield-reducing insect pests were identified along with six more which had occasional potential for yield reduction. Included were soil-borne, foliar, stem boring and potato storage insects.
7. Rates, methods, and times of application of insecticides for control of several below and above-ground insects were developed. Temik and curaterr were introduced as nematocides and insecticides. Curaterr, introduced recently, is not yet used widely even though it is more economical and less dangerous than temik.
8. Espergula was identified as a yield depressing weed throughout the potato producing areas of Bolivia. Weed control trials identified Sencor as an effective control for Espergula in early stages of growth. Whether farmer adoption will occur is not known since Espergula is widely used for livestock forage.
9. A number of fungicides were tested for control of early and late blight, which have a serious effect upon potato yield due to vine die-back. Benlate for early and Ridomil for late blight were identified as technically and cost effective fungicides. The marked increase in their usage by farmers supports the research findings.
10. Unclean seed was identified as the source of several bacterial, fungal, and virus diseases. Control of such diseases is perceived to depend largely upon clean seed. Chemical controls, which have yet to be initiated, are recommended as an integral component of a clean seed program.
11. Some \$100,000 of O53 loan funds were used to establish a soils diagnostic laboratory. Its purpose was to recommend fertilizers needed in the widely varying soil fertility levels among farms and regions.
12. Short-term advisors were used in the entomology and pathology program to identify and classify several insect pest and bacterial and fungal diseases.

San Benito: San Benito is the national center for small grains and deciduous fruit investigations. In 1975, MACA had both a strong grain variety testing program aided by CIMMYT and a fruit research program. Both programs continued in 1982.

The CID/Bolivia project strengthened the small grain (wheat, barley, and oats) improvement program as its primary target. Wheat was included at the request of both MACA and AID/Bolivia even though the earlier USU contract research indicated that wheat was not ordinarily produced by farmers because it was not as profitable as barley. Although research on small fruit was not a part of the original contract, CID provided a limited contribution at the request of MACA and concurrence of AID/Bolivia.

Agricultural research contributions generated by the CID technicians and Bolivian counterparts is summarized as follows:

1. A regional plant disease diagnostic laboratory and a national insect museum were established in 1978-79.
2. Crown gall disease of stone fruits and apples was identified and its spread attributed to the importation and subsequent transplanting of diseased root stocks from Argentina into production areas. Importation of clean planting stock from the U.S. and application of a bacterial inoculant control for infected plantings were initiated to eliminate the problem. Climate siting procedures were developed to identify proper locations for orchard establishment. Several important virus diseases of grapes were identified and guidelines for their control based largely on use of clean planting stocks were implemented.
3. An effective fungicide control was implemented and subsequently adopted by farmers to combat a new strain of yellow stripe fungus disease in barley which moved southward through the Andes from Colombia into Bolivia in 1978.
4. Off-station grains research in wheat, barley, and oats was initiated in 1979. It embodied technology adaptation research on farmer's fields, economic evaluation of the new technology for adoption potential, and an extension component for disseminating information on technology whose economic adoption potential is high. This aspect of the project was the only one which contained an economic evaluation of technical research.

Close working relationships were developed with the cooperating farmers. These farmers and their neighbors were close observers to all field activities. They saw and understood, in general, that the introduced technology provided higher yields. Where the technology was not only technically feasible but also economically superior to their own technology, they adopted the new technology. Several important results emerged;

- a. The San Benito station had several barley varieties under station test for resistance to yellow stripe fungus disease. The field testing made local farmers aware of those varieties performing best. The following year all farmers adopted the most resistant barley variety. Economic analysis identified the level of incremental gain associated with the new varieties which were adopted.
- b. The normal farmer practice is to fertilize potatoes heavily with barnyard manure and not to fertilize barley which follows potatoes in the normal rotation. It was found that the reason for such a practice is that the residual fertilizer carryover from potatoes is sufficient so fertilizing barley is not economical even though barley yields are increased from fertilizer.
- c. Economic analyses under the Utah contract indicated that it was not profitable for farmers to grow wheat. Nevertheless, AID and MACA encouraged wheat production to reduce importation of wheat from the U.S. under the PL480 program. Economic analysis by CID reconfirmed the earlier findings. Even though wheat is responsive to N and P, the high cash inputs for fertilizer and pesticides are not justified by the modest yield increases. The result is that the return to scarce capital resources is much higher in the crops the farmers are already growing, i.e., wheat has a comparative disadvantage so is not grown intensively.
- d. Results obtained on oats were similar to those obtained for barley concerning soil fertility and weed control problems. Oats, however, have not been susceptible to yellow stripe rust.
- e. Tordon herbicide applied at 50 gms/ha or Sencor selectively applied were found, as in potatoes, to be effective herbicides in small grains to control the annual grass Espergula.
- f. Mini-computer software packages were developed and tested with small grains to meet specific field research data and analysis needs for technical and economic evaluation.

5. Short-term advisors were used effectively for orchard sitings, crown gall disease control in deciduous fruit, potato research assessment, pest control in potatoes, pest surveys and identification, soil laboratory establishment and training, and grape disease origin and control.

Participant Training: Human resource development, through institution building, was an integral part of the project. The CID/Bolivia contract called for intensification and broadening of the on-going MACA program through in-service training courses for counterparts, short-courses of 3-4 months in selected technical specialties for 30-40 participants per year, and 10-15 M.S. candidates selected per year for overseas training. CID's budget responsibilities were limited to the in-service training of technical counterparts.

The responsibility for undertaking short courses and advanced degree training was held jointly by MACA and USAID/Bolivia. The participant training program was evaluated by the Auditor General in 1979 and upon their recommendation a more thorough evaluation was conducted in 1980 by Pierront and Aranibar. At the time of the report, 63 Bolivians had or were receiving formal training outside Bolivia. Approximately half of them were receiving degree-oriented programs at U.S. universities mostly at the M.S. level. This included two M.S. candidates from the Saavedra experiment station who were counterparts to the CID technicians and returned to Bolivia in 1980. A few were receiving B.S. level training. The other half were receiving short-term training of six weeks to six months at program sites in Mexico and Central America.

In-service training of the counterpart technicians was an important component of the CID contract. Appendix Table E shows that 35 counterparts received training during the seven-year term of the contract.

Counterpart training occurred in nine of the eleven designated technical positions. Those excluded were the agricultural production economics and agricultural marketing economics positions. CID was not able to provide a production/farm management economist so, by mutual consent, a marketing economist was substituted. In neither case were Bolivian counterparts available for training.

Most of the MACA technicians had very limited agricultural training or preparation to meet their assigned task when the CID contract was initiated. At that time there were 21 counterparts, of which seven (one-third) had advanced degrees or some training toward an advanced degree. The remaining 14 (two-thirds) were either egresados (needed to complete thesis for ingeniero agronomo degree) or ingeniero agronomos. By 1982 the number of Bolivian counterparts had risen to 25 with most of the increase occurring near the end of the project. An assessment of the CID/MACA counterpart relationship by James in 1978 indicated that the slow increase in counterpart numbers was because MACA was not able to respond to CID/Bolivia with increased staff and resource input because GOB did not provide additional funding for MACA to expand its program as specified in the Loan Proposal and Project Agreement signed by GOB and USAID/Bolivia. The net effect of the CID/Bolivia project was to dilute the efforts of on-going programs of existing MACA technicians by adding to their existing work load. Generally the CID technicians had fractional counterpart time sharing on specific projects with two to four MACA technicians. The average time dedicated to MACA/CID projects in 1978 was 0.6 man year per CID man year. A one-to-one relation existed in only one case. By 1982, the average ratio of MACA/CID technician time commitments was reduced to 0.3 man year/CID technician and ranged from .05 to 0.5 full-time equivalents. No one-to-one relationship existed.

CID/Bolivia's greatest educational contribution toward technical assistance for counterparts was in the expansion of MACA's research program in potato breeding, soil fertility, soil moisture management, plant pathology, entomology, and weed control technical components.

University Relations: The CID/Bolivia contract called for a limited collaborative effort with the university system in Bolivia to enhance linkage with the regional service centers by improving research coordination between the two entities. The main contract was to be with Universidad Mayor de San Simon (UMBSS) at Cochabamba, and Universidad Rene Gabriel Moreno (UGM) at Santa Cruz. Assistance was provided largely through a student scholarship program and some limited classroom instruction. Improved coordination between the centers and the universities was achieved only indirectly. Classroom instruction was sporadic since the universities were closed frequently for political and economic reasons. There was partial turnover of faculty and administrators three to five times during the period of the CID/Bolivia contract, and a complete turnover in 1980-81. During the contract, the schools were closed down completely for two years plus many weeks for shorter periods.

In 1977-78, several laboratory courses in plant pathology and entomology were presented by CID technicians. The most concentrated effort with classroom instruction was made in early 1982 when the CID entomologist replaced a UMBSS professor of biology who died during the semester. Several seminars and workshops on selected subjects including agricultural economics were presented.

The major university linkage came about through a student scholarship (beca) program initiated in 1975 with students from UMBSS and UGM, and

expanded in 1978. The program was not identified specifically in the contract. It started with a small budget from USAID and MACA counterpart funds then shifted to AID Loan Fund 511-059. The intent was to assist university students who had finished their course work requirements (egrasados) but lacked the thesis to qualify for the Ingeniero Agronomo degree and to bolster the weak counterpart component of the CID/Bolivia project. Notices were circulated at the universities seeking applicants. Qualification requirements for the beca (scholarship) were: (1) student course work was completed or would be completed within six months; (2) students were recommended by their faculty; (3) the beca holder would receive a stipend of \$b 4000 per month for a maximum of 12 months plus \$b 2000 for thesis preparation; and (4) students would work with CID technicians on on-going research programs or with other advisors acceptable to CID (e.g., British or Swiss Mission technicians, and/or members of the university faculty doing research) and use the accumulated research data in the thesis. Student response was hesitant initially but after eight months, was reversed to an explosion of applicants. By 1979 a ceiling of 40 students per year was imposed. As students completed their thesis or dropped out of the program they were replaced by others waiting in line. Despite problems of university closure and thesis topics changes, a total of 96 beca stipends were provided to well motivated students. By 1982, 47 becarios had completed their degree. It is expected that others will eventually finish their degree. No student was accepted into the program after October 1981. A complete listing of students including those who graduated are presented in Appendix F.

A highlight of the CID beca program was a thesis reporting conference held at UMBSS in early 1980. Concurrent sessions were held for a day and

a half wherein students reported their completed thesis results or presented data that were being incorporated into the thesis. The conference culminated in a round-table discussion by UMBSS faculty on how the faculty could expand and improve its research capability.

The large number of students involved in the beca program and their enthusiastic response to the training opportunity, helped to fill a substantial CID/MACA counterpart manpower gap through expansion of the work force needed to establish and maintain the field experiments.

Most of the becarios who received their degree and some who did not finish are known to be gainfully employed in official or commercial agricultural positions. The majority are working for regional development corporations because salary incentives there are higher than those with MACA. A few work for MACA and other government research institutions such as Sanidad Vegetal.

#### Technology Extension

The technology extension component of the CID/Bolivia project operated for the first 5-1/2 years of the contract. The contract called for one full-time extension technician. The position was abolished by Amendment 6 of contract GOB/AID 511-101 in February 1981. Two persons filled the position.

The first extensionist served as counterpart to the IBTA national director of extension in La Paz for the first two-three months. Because an effective working relationship did not develop, the CID extensionist was transferred to work with the directors of the regional MACA field offices in Cochabamba, Santa Cruz, Beni, Pando, and Chuquisaca provinces. He served in the Cochabamba office for the remainder of his tour.

The second extensionist also was posted initially in Cochabamba, but after several months returned to La Paz to work with the IBTA national extension leadership at the request of IBTA.

Accomplishments were largely management and administrative in nature. At no time did the extension thrust have a very direct linkage with the research program being conducted at the experiment station and on farmers fields. There were serious differences of opinion between the CID technician and the Extension Director, and one result was limited impact at the national IBTA Extension Director level. (See End of Tour Report by Larry K. Bond, December 1977.) The specific items accomplished at the national level as reported in the first extensionists end of tour report include:

1. Development of written job descriptions for all IBTA personnel.
2. Development of screening and selection criteria based on professional qualifications. This was later abandoned because of IBTA funding limits.
3. Development of a salary schedule based upon education, experience, time in grade, etc. This later was abandoned because of IBTA funding limits.
4. A handbook of policies and procedures for operation of IBTA was prepared.
5. Revised procedures for IBTA plans of work.
6. Developed procedures for evaluating IBTA agents and supervisors.

Accomplishments at the regional level as reported by Bond include:

1. Organization of a potato producer's association at Cochabamba.
2. Development of a plan whereby the CID research technicians were to serve as extension specialists. The plan was not implemented.
3. Development of periodic meetings for extension supervisors.
4. Development of an adult education program which included:
  - a. Use of range cages to demonstrate effect of improved pasture management. They were placed on 1000 farms. Their effectiveness was reportedly limited by drought and abandoned after the technician's departure.

- b. Several simple grain seed cleaners were developed and distributed to farmers. Drought was reported as a factor limiting their immediate use. The project was discontinued.
  - c. The earlier USU sheep improvement program was revived, farmer credit provided and an underutilized grazing area selected for use by a number of farmers. The program was expanded to a group of thirty-two young married couples. Whether transfer of useful technology or desired social change occurred was not reported.
  - d. Six short courses were conducted the first 2-1/2 years to farmer groups.
  - e. Vegetable seed was distributed in the Santa Cruz region.
5. A number of in-service training programs were developed, including:
- a. Eight three-day training sessions for agents.
  - b. Thirty-two seminars to extension agents on a variety of topics.
  - c. One hundred fifty-six informal training sessions.
  - d. A five-day community development training workshop.
6. Several communication projects were developed including:
- a. An annual field day both in 1976 and 1977 at Toralapa and Saavedra experiment stations.
  - b. A weekly agricultural radio program established at La Paz and Cochabamba.
  - c. Ten extension bulletins published.

All of the above accomplishments were made during the tour of duty of the first agricultural extension specialist.

#### Sector Management

The Sectoral Management component emerged from the earlier USU contract as a continuation of the "supporting the planning section" and as an outgrowth of the sector assessment documents prepared by the USU team for GOB and AID/Bolivia. The latter work defined the philosophy built into the work plan documents of the CID contract for sector assessment. The Sectoral

Management component was to have the technical services of two agricultural economists. One was to be an economic planner to serve as counterpart to the Director of the Office of Planning of MACA in La Paz. The other was to be an agricultural marketing economist to serve as counterpart to the Director of the Office of Statistics, Economic Studies, and Marketing of MACA in La Paz.

The Sectoral management component was in operation for the first three years of the contract. It was abolished by Amendment 4 of GOB/AID 511-101 contract in December 1978 at the request of GOB and concurrence of AID/Bolivia.

The planning position was filled by two persons. The first technician served in the position the first year. The subsequent two years were filled by the second technician. The marketing position was unfilled the initial 2-1/2 years of the project. Several short-term advisors were used to assist on assessment issues in the planning office and general agricultural economic assistance at the policy and planning level.

During the first year, the CID planner helped the staff of the planning section (OPS) produce the five-year agricultural plan, the Plan Quinquenal. This substantial effort brought together both historical data and objectives for a development program. It represented a major piece of work that was accomplished in a very short time and under heavy pressure. The Planner initiated training in planning techniques including benefit/cost analysis for the planning office staff

The second CID planner served the next two years. He: (a) helped junior staff members in the planning section find data and/or outline various reports assigned by the director of OPS; (b) prepared reports on specific topics assigned by the director of OPS; and (c) prepared various

statistical summaries and supply/demand studies to indicate the structure of the Bolivian agricultural sector. The Planner also served as liaison between the Ministry of Planning and OPS of MACA. He helped junior staff of OPS organize a system of working papers within OPS.

Upon specific request from AID/Bolivia the CID planner's job assignment was reinterpreted and rewritten leaving out any coordination function with the statistics and marketing sections of MACA. Except for informal on-the-job training, no training function was identified in workplans required by the director of OPS.

The two CID planners completed 13 reports alone or as co-author. Manuscripts for two others were completed and submitted for planning section review at tour end. Information in these reports was used by planning groups in several national ministries including Finance, Hacienda, Health section of CONEPLAN, MICT, and INE.

Unfortunately OPS was not in a position to have great impact upon national agricultural priorities or policy. None of the programs proposed in the Plan Quinquenal were implemented during the life of the contract. Upon concurrence from GOB and USAID/Bolivia the entire sector assessment component was discontinued in December 1978. However, all CID support essentially ceased upon the second planner's departure in July 1978.

#### Documentation

Reports and manuscripts from the project were published in three forms. One form involved the Administrative Report which contained the annual Plan of Work and the Annual Technical Progress Report. These reports met contractual reporting requirements. The Administrative Reports are listed both in Appendix G. The technical manuscripts were published either in the

CID Working Paper Series or the CID Technical Report Series. A complete listing of these documents are presented in Appendix G in chronological order. The Working Paper Series identifies the author by: (1) long-term CID technician; (2) short-term CID advisor; or (3) short-term AID/GOB advisor. The Working Paper and Technical Report Series were developed as repositories for all technical reporting until such time as MACA gained technical, editorial, and printing capability. A complete set of the CID/Bolivia documents in all three categories are on file at the MACA library in La Paz. Nearly all of the reports were published in Spanish and English. A tabulation of the number of reports listed in Appendix G by category is as follows:

CID Working Paper Series	98
By Long-Term CID Technicians	49
By Short-Term CID Advisors	28
By Short-Term GOB Advisors	21
Administrative Reports	37
Technical Reports	<u>25</u>
	160

At the beginning of the CID project in 1975, little capacity for publishing MACA research documents existed. There were no professional peer group periodical publication sources for any agricultural discipline within the country, nor were there any linkages to outside publication sources. Evaluation by administrators appeared to be largely on the basis of factors other than scientific capability and performance. The MACA libraries in La Paz now receive several international scientific journals. The majority in English get little use, however, nor is there access to them outside La Paz.

A seminar was held at UMBSS in 1976 on the Status of Bolivian Agriculture. It was a Symposium sponsored by the Economics faculty. It was well attended and got extensive outside press coverage.

Short courses and workshops were conducted by CID to disseminate research results to extension agents and commodity groups. The most important of these was a two-day seminar program series presented in March/May 1982. Its purpose was to summarize the results of the seven year research effort and make recommendations about what information should be passed on to farmers. Presentations were made in five locations as follows:

<u>Dates</u>	<u>Location</u>	<u>No. of Participants</u>
March 31 - April	Cochabamba	54
April 21 - 22	Sucre	56
April 28 - 29	Oruro	95
May 5 - 6	Tarija	24
May 19 - 20	Santa Cruz	42
		<u>271</u>

The CID staff distributed 350 copies of a manual at the seminars. It contained a summary of research results, research concepts, administrative recommendations and lists of technical publications. Such lists contained 120 technical publications and 37 administrative reports. Unsolicited newspaper articles appeared in the local newspaper at each seminar site and CID staff were interviewed on TV at Oruro, Sucre, and Cochabamba.

A communications specialist was hired by CID for two months in April-May 1982 to help the communications units of IBTA/CIAT in La Paz, Cochabamba, Oruro, Potosi, Tarija, and Yacuiba. The purpose was to convey the summary research information from the seminars into simple flyers, brochures and audio-visuals for use by extension agents in transmitting practical results to farmers.

CID sponsored a two-day workshop, May 25-26, 1982, dealing with publications and communications for the extension, research, publications and communication units of MACA/IBTA.

Current problems in information production, printing and distribution were treated in an attempt to initiate a functioning unit within IBTA which has produced no publications of agricultural research and extension. The IBTA unit received an offset press from AID/Bolivia in 1978 but it was not taken out of the packing crate until June, 1982.

During the last two months of the project, CID helped MACA with the construction of several rooms to house the press. CID further purchased several cameras and photography equipment to enable the communications unit to increase the quality and quantity of their publication.

## CONCLUSIONS

It is important to place the project in historical perspective. The Basic Foods Production and Marketing Project had its roots in the agricultural sector assessment prepared by USU personnel under auspices of the RDD/USAID/Bolivia Technicians in the early 1970's. That work was one of the first pioneering "benchmark" studies of an agricultural sector attempted by a university for a developing country. Also new was the concept of a host country contract in which the grantor relationship was shifted from the AID Mission to the host country itself. The CID/GOB was CID's second long-term contract. Also, this was USAID/Bolivia's first host country contract. Thus, a great deal was to be learned by all parties to the contract through on-the-job training, rather than lessons learned from previous experiences. New and uncharted ground was trod and inevitably some mistakes were made along the way.

A wide variety of technologies was developed by the CID team. Those dealing with new improvement of small grain varieties were adopted by barley growers in the Tiraque and Colomi Valleys in Cochabamba province. An untold number of potato producers who began using backpack sprayers prior to CID's entry in 1975 have been adopting a number of pesticides to control insects, disease, and weed pests.

Several impacts occurred through improvement of the MACA institutional structure itself. Essentially, all of them took place at the operational counterpart level. They include: (1) an expanded disciplinary research capacity which now embraces potato breeding, soil fertility, entomology pathology, and weed control; (2) expanded commodity research capacity which embraces soybeans and peanuts; (3) introduction of on-farm field testing;

and (4) orientation toward systematic research and training for 35 counterparts and 96 becarios.

In terms of long-term impact, several agricultural technologies, developed in the U.S. or at international agricultural research centers, were introduced by the CID/Bolivia technical team for testing, evaluation, adaptation, and demonstration to local Bolivian farmers in specific target areas. By the end of the contract, actual farmer adoption of some of the technologies had taken place. By large commercial farm standards of the U.S., this may not seem high, but for a small farmer in the Tiraque Valley, it meant increased total farm income of 25 to 50 percent annually.

Several technologies developed and tested by the project appear close to adoption. Several new potato varieties appear promising from frost resistance. A number of new varieties seems promising in late blight resistance. If this potato breeding work were to continue, a breakthrough in these two areas would be expected within two to five years.

To meet the overall agricultural sector goal of increasing per capita income of rural people of Bolivia, the GOB needs to provide essential public services for agricultural development. The Consortium and its member institutions stand ready to assist Bolivia in its future efforts.

Appendix A. Financial Status of Active Projects Related to Agriculture by USAID/Bolivia  
As of 9/30/79

Project	Start	Completion	Project Costs (\$)			AID Funding (\$)		
			Total	AID	GCB	Obligations	Disbursements	
<u>ACTIVE PROJECTS</u>								
A. <u>Directly Related to Agriculture</u>								
Subtropical Lands Dev. (511-T-050)	9/19/74	2/19/71	18,054,000	9,700,000	8,354,000	9,700,000	7,367,713	
Basic Food Production (511-T-052)	4/24/75	3/02/80	9,963,855	6,963,855	3,000,000	6,963,855	6,234,464	
Basic Food Production & Marketing (511-0451)	4/25/75	9/30/82	6,900,000	6,900,000	-	4,624,130	3,616,748	
Agricultural Sector I (511-T-058)	4/24/75	9/22/80	14,850,000	9,200,000	5,650,000	9,200,000	7,172,666	
Small Farmers Organization (511-0152)	4/29/75	5/31/80	3,417,000	3,417,000	-	3,346,851	2,480,109	
Small Farmer Organizations (511-T-655)	3/24/76	3/24/80	13,850,000	7,500,000	6,350,000	7,500,000	3,385,070	
Exploratory Research (611-0464)	9/30/76	3/30/80	690,000	500,000	190,000	458,643	314,532	
Agricultural Sector II (511-T-059)	11/24/77	11/24/82	17,330,000	11,300,000	6,030,000	11,300,000	3,603,022	
Small Farm Production (511-0481)	11/24/77	11/24/82	2,200,000	2,200,000	-	1,400,000	150,244	
Agribusiness & Artisanry (511-T-060)	1/9/78	12/31/82	10,070,000	6,200,000	3,870,000	6,200,000	263,043	
Agribusiness & Artisanry (511-0474)	1/9/78	12/31/82	400,000	400,000	-	400,000	59,467	
Farm Policy Study (511-0485)	3/23/78	9/30/81	1,583,000	1,115,000	468,000	772,000	105,244	
P.L. 480, Title III (Local Currency)	5/31/78	12/31/83	63,900,000	63,900,000	-	63,900,000	1/ 3,965,727	
Productive Credit Guaranty Program	7/21/78	12/31/81	3,750,000	2,500,000	2/ 1,250,000	2,500,000	2/ -	
Subtotal			<u>166,957,855</u>	<u>131,795,855</u>	<u>35,795,855</u>	<u>128,265,479</u>	<u>38,718,901</u>	
B. <u>Partially Related to Agriculture</u>								
Rural Access Roads I (511-T-056)	9/20/76	12/06/80	15,570,000	8,500,000	7,070,000	8,500,000	5,903,719	
Village Development (511-T-062)	8/23/78	8/23/83	23,260,000	15,300,000	7,960,000	15,300,000	7,013,620	
Village Development (511-0499)	8/23/78	8/23/83	300,000	300,000	-	300,000	65,744	
Rural Access Roads II (511-T-051)	8/30/78	8/30/83	22,800,000	13,000,000	9,800,000	13,000,000	-	
Rural Access Roads II (511-0466)	8/30/78	8/30/83	300,000	300,000	-	300,060	-	
Departmental Dev. Corp. (511-T-065)	9/20/79	9/20/84	18,500,000	10,000,000	8,500,000	10,000,000	-	
Subtotal			<u>75,780,000</u>	<u>47,400,000</u>	<u>28,330,000</u>	<u>47,400,000</u>	<u>6,982,983</u>	
Total Active Projects			<u>242,687,865</u>	<u>179,195,855</u>	<u>63,492,000</u>	<u>175,665,479</u>	<u>46,701,884</u>	

Source: Project Agreement and USAID/Controller Records as reported in "Audit Report 1-511-80-10 Agricultural Sector USAID/Bolivia" prepared by Auditor General, Latin America Area AID, September 1979.

Appendix B. CID LONG-TERM TECHNICAL PERSONNEL

<u>TITLE</u>	<u>STATUS</u>	<u>CID STAFF</u>	<u>FROM</u>	<u>TO</u>	<u>TOTAL MONTHS IN-COUNTRY</u>	<u>BOLIVIA SITE</u>	<u>AFFILIATION</u>	<u>TENURE</u>
1. Chief of Party		Boyd Wennergren	July 75	Oct 78	40	La Paz	USU	Yes
		David James	Oct 78	June 80	20	La Paz	USU	Yes
2. Ag Research & Extension Director	Position discontinued Feb 80	James Thomas	July 80	June 82	24	La Paz	USU	Yes
		R. L. Smith	Sept 75	June 77	22 <sup>1</sup>	La Paz	USU	Yes
3. Ag Extension Specialist-Cochabamba	Position moved to La Paz Nov 79	David James	July 77	Oct 78	16 <sup>1</sup>	La Paz	USU	Yes
		Larry Bond	Jan 76	Dec 77	24	La Paz	USU	Yes
4. Ag Economist (Planning)	Position discontinued June 78	Jose Santaella	Nov 78	June 80	17 <sup>2</sup>	Coch/La Paz	Pvt Consult	No
		Morris Whitaker	July 75	July 76	13 <sup>2</sup>	La Paz	USU	Yes
5. Agronomist-Toralapa		Allen LeBaron	Aug 76	June 78	23	La Paz	USU	Yes
		James Walker	Sept 76	Dec 78	27	Cochabamba	CSU	Yes
6. Cereal Agronomist-Pathologist		Robert Kunkle	Jan 79	June 82	41	Cochabamba	WSU	Retired
		Ken Ellis	Oct 75	Sept 77	24	Cochabamba	CSU	No
		William Brown	Sept 77	July 80	34	Cochabamba	CSU	No
		Victor Otazu	Jan 81	June 82	17	Cochabamba	USU	No
7. Potato Breeder	Authorized July 78	Robert Hoopes	Sept 78	June 82	45	Cochabamba	USU	No
8. Soil & Water Mgt. Specialist	Authorized Oct 78	Thomas Stilwell	Dec 78	June 82	42	Cochabamba	USU	No
9. Ag Economist (Marketing) Cochabamba	Authorized Sept 77 Vacant (8/80)	Kendall Adams	Dec 77	July 80	32	Cochabamba	SIU	Yes
10. Agronomist (Entomologist)	Discont Sept 80 SCZ moved to CBB	Max Long	July 75	June 76	11 <sup>2</sup>	Santa Cruz	USU	No
		Charles Ward	Oct 76	Sept 78	24	Santa Cruz	NMSU	No
		Donald Foster	Jan 79	June 82	41	SC/ Cochabamba	NMSU	No
11. Oilseeds, Irrigation, Cereals Agronomist	Discontinued Nov 80	Warren Fisher	Nov 75	Aug 77	22	Santa Cruz	ASU	Yes
12. Campus Coordinator at USU		Don Kidman	Dec 77	Nov 80	35 <sup>3</sup>	Santa Cruz	USU	No
		Keith Allred	Aug 75	June 77	19 <sup>3,4</sup>	-	USU	Yes
		James Thomas	July 77	June 80	41 <sup>3,4</sup>	-	USU	Yes
		Keith Roberts	July 80	Dec 81	17 <sup>5</sup>	-	USU	Yes

- <sup>1</sup> Promoted to Party Chief Oct 78  
<sup>2</sup> Hold over from previous U.S.U. contract  
<sup>3</sup> Full-time position  
<sup>4</sup> Promoted to Party Chief July 80  
<sup>5</sup> Full-time until Oct 81 then to half-time

Source: Office of Campus Coordinator for Bolivia Project, Utah State University.

APPENDIX C. SHORT-TERM ADVISORY SERVICES UTILIZED ON GOB/AID-511-96 CONTRACT

NAME	DATE OF ASSIGNMENT	MAN DAYS	INSTITUTION	SPECIALTY	PURPOSE OF TDY
Pedro Negrón Ramos	04/20-04/30/78	10	STC	Extension	
Jose Santaella	04/20-05/05/78	14	STC	Extension	
Carmelo Guzman	01/11-02/04/79	24	STC	Ag Credit School	
Jose Font	11/25-12/21/78	26	STC	Ag Credit School	
Victor Alonso	01/07-02/04/79	27	STC	Ag Credit School	
Pedro Negrón Ramos	01/08-02/17/79	30	STC	Ag Credit School	
Pedro Negrón Ramos	03/04-03/10/79	7	STC	Ag Credit School	
Juan Jose Castro*	06/23-07/79	14	STC		
Jose Santaella	06/06-09/05/79	90	STC		
William Roach*	07/07-07/31/79	24	STC		
Pedro Negrón Ramos	07/19-08/25/79	36	STC		
Juan Jose Castro*	06/23-07/06/79	13	STC		
Anthony Hatch	05/01-06/01/76	30	CSU	Fruit Specialist	
Anthony Hatch	08/23-09/06/76	14	CSU	Fruit Specialist	Gather Fruit Samples for Bolivia
Oscar Bacon	05/01-06/01/80	30	USU	Entomology	Entomology Research
Arthur McCain*	05/23-06/03/80	10	UC, Berkeley	Plant Pathology	Research
John McGill*	07/07-07/29/79	21	Credit Union Assoc	Banking	Advise Bolivia Agr Credit Unions

\*AID Consultant

\*\*Financial report verification

NAME	DATE OF ASSIGNMENT	MAN DAYS	INSTITUTION	SPECIALTY	PURPOSE OF TDY
Russell Hale*	07/08-08/11/79	30		Credit Analyst	
Jerome Franchoviak	12/10-12/14/77	4	Wisconsin	Potato Breeder	
Robert Frans	02/05-03/13/78	38	Univ of Arkansas	Weed Control	
Charles O'Brien	03/21-04/25/78	34	Univ Florida	Entomology	
Lois O'Brien	03/21-04/25/78	34	Univ Florida	Entomology	
Richard Swenson*	04/23-05/08/78	15	USU	Administration	
Antonio Turrent*	04/23-05/08/78	15	CP-Chapingo	Extension	
Edgardo Moscardi*	04/23-05/08/78	15	CIMMYT	Economist	Project Evaluation
Frank McGill*	05/28-06/11/78	14	Georgia	Extension	Peanuts
Robert Kunkel	08/23-09/12/78	21	WSU	Agronomy	Potatoes
Welling Roskelley	02/06-03/31/79	50			
Austin Goheen	02/23-03/21/79	28			
Monty Harrison	03/24-04/17/79	25			
Jeff Wagonet	01/27-02/28/79	30	USU	Soils Specialist	Calibrate Neutron Probe
Richard Griffin	08/20-09/07/78	17	USU	Irrigation	

\*AID Consultant

\*\*Financial report verification

NAME	DATE OF ASSIGNMENT	MAN DAYS	INSTITUTION	SPECIALTY	PURPOSE OF TDY
J. Clark Ballard	08/20-09/05/79	15	USU	Administration	
Gilbert Stalknecht	08/20-09/05/79	15	Idaho	Plant Physiologist	Project Evaluation
David Daines	08/20-09/05/79	15	CID	Deputy Director	
Monte Harrison	03/22-04/16/79	24		Plant Pathologist	
Anthony Hatch	03/05-03/27/79	21	CSU	Pomologist	
Ray Miller	01/11-03/16/79	65		Soils Lab Equipment Install	
Jose Santaella	05/06-09/11/80	125	STC	Extension	
Larry Sellers*	July-August 79	23	NMSU	Entomology	
Ray Miller	05/01-06/30/80	60			
Russell Hale	07/09-08/10/80	30			
Charles Ward	April-Nov 76	20			
Anthony Hatch	April-Nov 76	20			
Robert Frans	April-Nov 76	2			
Bruce Brown	April-Nov 76	30	Harza Eng	Ag Economics	Office of Planning-Data
E.H. Paschal	August 76	14	INTSOY	Soybean Work	
Bruce Brown	February 77	30	Harza Eng	Ag Economics	Office of Planning-Data

\*AID Consultant

\*\*Financial report verification

NAME	DATE OF ASSIGNMENT	MAN DAYS	INSTITUTION	SPECIALTY	PURPOSE OF TDY
Manuel Rosero	Late 76	30	CIAT	IRRI-Rice	Rice Work
Albert Madren	January-Feb 77	45	CSU	Ag Econ	Office of Planning- Data
George Root	January-Feb 77	21	California Dept of Agr	Pesticide Use	
Robert Voight	January-Feb 77	21	California Dept of Agr	Plant Quarantine	Plant Quarantine
Hagen Lippke	Early 77	30		Ag Economist	Milk and Meat Production
Don Kidman	October 77	10	Peru	Irrigation Agron	Corn Production Research
Larry Bond	January 78	30	USU	Ag Economist	
Everett Mitchell	January 78	30	USDA	Entomology	
Allan Sparks	January 78	30	USDA	Entomology	
Concepcion Peters	April-Sept 78	90	Bolivia	Soil Testing	Soil Testing Lab
Peter Appleton	Sept-Oct 78	60	Canada	Ag Economist	
David James	March-April 81	30	USU	Soils	Soils Research Review
Oscar Bacon	April-May 80	21	UC-Davis	Entomology	Potato Insects
David Eding	June-Sept 80	90	Consultant	Ag Economist	Continued Adam's Work
Lawrence Greenbury*					
Lloyd Jacobs*					

\*AID Consultant

\*\*Financial report verification

NAME	DATE OF ASSIGNMENT	MAN DAYS	INSTITUTION	SPECIALTY	PURPOSE OF TDY
Leeowen Taylor*					
Bill Wilkinson*					
Ivan Guzman*					
Hector Acevedo*					
Robert Flick*					
Pedro Negron*					
David Hansen*					
Alejandro Pierront*					
Sonia Aranibar*					
Samuel Velez*					
TOTALS:		$\frac{1892}{30} = 63$ MM total			
		$\frac{1698}{30} = 56.6$ MM CID			

CONCLUSION: CID received approximately 56.6 mm of total 63 mm consultancies funded. Twenty-three consultant assignments were AID while 51 were CID. The full \$453,930 was expended.

SOURCE: CID/Bolivia 511-96 Project Book on file in Accounting Office, CID Executive Office, Tucson, Arizona, and verified by CID financial reports and CID Billings Books. Information from the CID Executive Office was cross-referenced with documentation in the Office of Campus Coordinator for the Bolivia Project, Utah State University, Logan, Utah.

Appendix D. CID Long-term Bolivian Support Staff

Location	Name	Position	Period of Service		Months of Service
			From	To	
La Paz	Lydia S. de Novillo	Administrative Assistant	07/01/75-06/30/82		84
	Teresa Rivera Elfo	Bilingual Secretary	07/01/75-01/31/79		42
	Norah Lopez Llanos	Bilingual Secretary	08/01/75-06/30/82		83
	Magda Alberta Ocampo	Bilingual Secretary	02/10/76-06/30/82		76
	Beatriz P. de Pacheco	Bilingual Secretary	03/15/77-02/28/78		11
	Martha Olmos	Bilingual Secretary	12/26/78-01/26/79		1
	Rosario B. de Reynolds	Bilingual Secretary	05/15/79-06/18/79		1
	Susan Guardia	Bilingual Secretary	06/18/79-07/23/79		1
	Lino Calle Ticona	Driver/Mechanic/Interpreter	07/15/75-06/20/78		35
	Eduardo Perez Alfaro	Driver/Mechanic/Interpreter	07/01/75-09/30/77		27
	Cecilio Chavez Balboa	Janitor	07/01/75-06/30/82		84
Cochabamba	Maria Teresa Barnal	Bilingual Secretary	04/15/77-06/30/82		62
	Maria Luisa J. de Tejada	Bilingual Secretary	04/01/78-06/30/82		51
	Marisol Udaeta Ojalvo	Bilingual Secretary	01/16/79-06/30/82		41
	Margot Lopez Prada	Bilingual Secretary	03/01/79-06/30/82		40
	Edmundo Sanchez Portanda	Driver/Mechanic/Interpreter	10/01/75-06/30/82		81
	Luis Fernandez Quisbert	Driver/Mechanic/Interpreter	10/01/77-06/30/82		57
	Carlos Tejada Vargas	Driver/Mechanic/Interpreter	01/01/78-06/30/82		53
	Jorge Heredia Torrico	Driver/Mechanic/Interpreter	06/05/79-06/30/82		37
	Mario Lairana Chavez	Driver/Mechanic/Interpreter	09/10/79-12/09/79		3
	Carlos Vargas	Driver/Mechanic/Interpreter	08/08/78-09/22/78		2
	Vitalio Alvarez Sanabria	Janitor	01/01/80-06/30/82		30
Juvenal Alvarez Cabrera	Watchman	03/17/81-04/21/81		1	
Santa Cruz	Maria Nelly Avila Aponte	Bilingual Secretary	10/01/75-03/15/81		65
	Ana A. de Reierson	Bilingual Secretary	11/01/75-04/15/77		16
	Rene Noya Majica	Driver/Mechanic/Interpreter	10/01/75-08/13/79		46
	Alcides Carlos Sabath	Driver/Mechanic/Interpreter	12/26/79-02/15/81		14
	Jorge Velasquez Ortuno	Driver/Mechanic/Interpreter	01/01/79-03/31/79		3
	Gualberto Majica Valverde	Driver/Mechanic/Interpreter	03/06/79-10/15/80		19
	Rolando Guardia Suarez	Driver/Mechanic/Interpreter	06/19/79-09/18/79		3

$$\text{Average} = \frac{1069}{30} = 35.6$$

$$\text{Average excluding the 8 who were not accepted for permanent employment} = \frac{1054}{22} = 48$$

Appendix E. Bolivian Principal Counterparts, their technical specialty, training, and change in educational status during the 7 year period of the CID contract.

Station & Name of Principal Counterpart	Period of Assign.	Years on Assign.	Position	Change in Position	Education	Change in Education
<u>La Paz</u>						
Gover Barja	1975-1978	4.0	Dir. Gen./MACA	Became PL480 Administrator	Ing. Agronomo Some MS training in range Mgt./USU	
Lucio Arce	1978-79	1	Dir. Gen./MACA	Retired	MS/Agronomy	
Luis Antezana	1979-80	1	Dir. Gen./MACA	Removed after Coup.	BS/Agronomy	
Jaime Sejas	1981-82	1.5	Dir. Gen./MACA		MS/Agronomy/ Chapingo, Mex.	
Simon Riera	1975-1980	5.5	Exec. Dir/IBTA	Accepted Exec. Dir. of EMBRAPA/Brazil	PH.D. AK. science USU	
Francisco Pereira	1975-1980	5.5	Nat'l Dir Ext/IBTA		Some M.S. Training in extension/USU	
Edgar Zapata	1980-1982	1.5	Exec. Dir/IBTA		MS/Forage Agronomy	
Humberto Tapia	1982		Dir. Res./IBTA	Fired for blocking work	MS/Economics	
Jose Cortez	1980-82	2.0	Nat'l Dir. Ext/IBTA		MS/Extension/USU	MS/NMSU/1980
<u>Santa Cruz - Saavedra Station</u>						
Carlos Vacadiez	1975-82	7	Exec. Dir/CIAT		Ing. Agronomo/ Argentina	
Carlos Periera	1975-80	4	Station Director	1980-LWOP	MS/Agronomy	1980-Accepted Ag. Econ. Scholarship/ Argentina
Hebert Zurita	1975-82	7	Proj Dir/Oilseeds		MS/Chapingo	
Francisco Paz	1975-82	7	Proj Dir/Rice		Ing. Agronomo	
Florian Rodriguez	1975-79	4	Proj Dir/Corn & Sorghum	1979-LWOP	Ing. Agronomo	MS/Agronomy/NMSU/ 1981
	1981-82	1				
Hugo Serate	1975-79	4	Entomology	1979-LWOP	Ing. Agronomo	MS/Entomology/NMSU/ 1981
	1981	5	Station Director	1981-Resigned to Direct private sugar cane station		

## Appendix E. (Cont'd)

Station & Name of Principal Counterpart	Period of Assign.	Years on Assign.	Position	Change in Position	Education	Change in Education
Erwin Ortiz	1975-82	7	Rice Breeder		Ing. Agronomo	
Victor Gonzalez	1979-82	3	Entomology		Ing. Agronomo	Some training at Chapingo
<u>Cochabamba - San Benito Station</u>						
Juan Cordova	1982		Barley Breeding		Ing. Agronomo	
Juan Carlos Rodriguez	1975-78	3	Station Director	Replaced	Ing. Agronomo	
Jaime Salamanca	1975-80	3	Mat'l Dir/Small Grains	Promoted	MS/Plant Breeding/	
	1978-80	2	Station Director	Replaced	Chapingo	
	1980-82	2	Nat'l Dir/Small Grains			
Ivan Guzman	1980-82	2	Station Director		Ing. Agronomo	
Mary De Quiton	1975-82	7	Dir. Plant Disease Lab.		Ing. Agronomo	
David Villarroel	1975-79	4	Dir. Nat. Insect Museum	LWOP	MS/Entomology/	
	1981-82	1	& Nat. Entom. Program		Yugoslavia	1979-81-Some course work in Yugoslavia for Ph.D
Jaime Silva	1979-82	3	Dir. Nat. Insect Museum		Ing. Agronomo	
Vidal Velasco	1975-82	7	Plant Pathology		Ing. Agronomo	Received Ing. Agron. under CID sponsorship. Worked on Ing. Agron. thru CID.
Rene Gomez	1978-82	7	Small Grain Agron.		Egresado	
Fabian Crespo	1975-80	5	Horticulture		MS/Plant Path/USU	
Mary de Quitun	1982		Diagnostic Clinic	Replaced	BS/Plant Path.	
<u>Cochabamba-Toralapa Station</u>						
Gonzalo Claire	1975-81	6	Station Director		MS/Plant Breeding	
	1981-82	1	Dir. of Nat'l Potato Improv. Program	Replaced	USU	

Appendix E. (Cont'd)

Station & Name of Principal Counterpart	Period of Assign.	Years on Assign.	Position	Change in Position	Education	Change in Education
Israel Aviles	1975-82	7	Potato Plant Breeder		Ing. Agronomo	
Gerardo Caero	1975-82	7	Plant Pathologist		Egresado	
Romulo Claire	1975-82	5	Potato Variety Improv.	Resigned	Egresado	
Rene Alarcon	1981-82	1	Potato Agronomy		Ing. Agronomo	Some MS training in Peru
Arturo Moreira	1979-81	2	Plant Breeding & Virology	Resigned to work with ASAR	MS/CIP & Peru	
Rene Torrico	1982		Potato Nematology		Egresado	Worked on Ing. Agron. thru CID.
			<u>1975</u>		<u>1982</u>	
			Number	Percentage	Number	Percentage
Totals:	No. of counterparts -		21	100	25	100
	No. with advanced degrees -		5	24	5	20
	No. with advanced degree training -		2	9	1	4
	No. receiving formal adv. degree training during contract		-	-	5	20
	No. ing. agronomos -		9	43	10	40
	No. egresados -		5	24	4	16

Source: Former COPs: Dr. James Thomas and Dr. David James.

APPENDIX F. STUDENT SCHOLARSHIP (BECA) RECIPIENTS

<u>Student</u>	<u>Location</u>	<u>CID Advisor</u>	<u>Status G=Graduated</u>
Rodolfo Aguilar	Santa Cruz	Kidman	
Alberto Aguilera	Santa Cruz	Kidman	
Miguel Ramiro Aguilera	Santa Cruz	Kidman	
Mario Altamirano O.	Cochabamba	Stilwell	G
Eddy Victor Alvarez M.	Cochabamba	Hoopes	
Rene' Eduardo Andrew	Cochabamba	Foster	G
Estaban A. Antezana L.	Cochabamba	Stilwell	
Jose Luis Rios Antezana	Cochabamba	Thomas	
Rosario M. de Aparicio	Cochabamba	Stilwell	G
Juan Humberto Arana I.	Cochabamba	Thomas	G
Ruben Tito Aranibar I.	Cochabamba	Kunkel	G
Fernando Rivas Arias	Cochabamba	Hoopes	
Paul Velasquez Arias	Cochabamba	Foster	
Roberto Bernal	Cochabamba	Stilwell	
Ramiro Blacutt B.	Cochabamba	Kunkel	G
Alan Bojanic	Cochabamba	Adams	G
Freddy Caballero L.	Cochabamba	Hoopes	G
Isidro Caballero	Santa Cruz	Foster	
Margarita Cabrero	Santa Cruz	Kidman	
Ruben Herbas Canelas	Santa Cruz	Thomas	G
Felipe Cantuta	Cochabamba	Kunkel	
Luis Fernando Cardona	Santa Cruz	Foster	
Rene Eduardo A. Cardoso	Cochabamba	Foster	G
Garton Carvajal	Cochabamba	Brown	
Freddy Claros	Cochabamba	Stilwell	G
Rosario de Claire	Cochabamba	Hoopes	G
Jose Villarroel Coca	Cochabamba	Stilwell	G
Ignacio Huayta Colquehauia	Cochabamba	Hoopes	G
Armand Ferrufino Coqueugriot	Cochabamba	Foster	G
Freddy Corrales M.	Cochabamba	Stilwell	
Jose Prado Crespo		Kunkel	G

<u>Student</u>	<u>Location</u>	<u>CID Advisor</u>	<u>Status G=Graduated</u>
Paul Nunez Cruz	Cochabamba	Stilwell	G
Eybar Gorena Donoso	Cochabamba	Foster	G
Judith Dorado	Santa Cruz	Foster	
Juan Manuel Echalar T.	Cochabamba	Kunkel	
Andres G. Mejia Escalera	Cochabamba	Kunkel	G
Jose Luis Escobar	Cochabamba	Santaella	
Armando Ferrufino C.	Cochabamba	Foster	G
Edwin F. Gallardo T.	Cochabamba	Stilwell	
Jose Gutierrez	Cochabamba	Hoopes	
Jaime A. Herbas C.	Cochabamba	Foster	G
Igracio Huaita C.	Cochabamba	Hoopes	G
Hortensia Leon Hurtado	Santa Cruz	BTAM	G
Carlos Padilla Irigoyen	Cochabamba	Thomas	
Edwardo Sarmiento Jaddin	Cochabamba	Kunkel	
Monica Cecilia Lora	Cochabamba	Adams	
Marco Lara	Cochabamba	Adams	
Ginner Ledezma	Cochabamba	Kunkel	
Claudio Ticona Martinez	Cochabamba	Thomas	G
Gustavo Franco Maldonado	Cochabamba	Kunkel	G
Julio Mancilla	Cochabamba	Santaella	
Andres Gregorio Mejia	Cochabamba	Kunkel	
Nelson A. Rodriguez Mendez	Santa Cruz	BTAM	G
Raul Gregorio Morales M.	Cochabamba	Santaella	G
Filemon Iriarte Montano	Cochabamba	Kunkel	G
Mario Coca Morante	Cochabamba	Otazu	G
Felipe Nararro	Cochabamba	Santaella	
Jorge Navarro	Santa Cruz	Kidman	
Oscar Omonte V.	Cochabamba	Stilwell	G
Emilio Ormachea V.	Santa Cruz	BTAM	
Elroy Sanabria Ortuno	Cochabamba	Stilwell	G
Luis Pedrazas A.	Cochabamba	Stilwell	G
Gregorio Pinto V.	Cochabamba	Stilwell	
Gregorio Quilo	Cochabamba	Stilwell	
Carlos Quiston	Cochabamba	Brown	G

<u>Student</u>	<u>Location</u>	<u>CID Advisor</u>	<u>Status G=Graduated</u>
Jarier Ramirez	Cochabamba	Stilwell	G
Luis Nelson Reyes	Santa Cruz	Foster	G
Elias Rojas Ricaldez	Santa Cruz	Thomas	G
Tito Jose Revollo	Cochabamba	Brown	
Jesus Ricaldez	Cochabamba	Brown	
Nelson Rodriguez	Cochabamba	Kunkel	G
Ruth de Rodriguez	Cochabamba	Hoopes	G
Jose Modestino Rojas R.	Cochabamba	Thomas	G
Fernando Riva A.	Cochabamba	Hoopes	
Jose Luis Rios A.	Cochabamba	Thomas	G
Ivonne Silvia Rivera	Santa Cruz	Kidman	
Reynaldo Ruiz	Cochabamba	Santaella	
Daniel Sanchez	Cochabamba	Adams	
Eloy Sanabria O.	Cochabamba	Stilwell	
Eduardo Sarmiento J.	Cochabamba	Kunkel	G
Rene' Fernando Santa Cruz S.	Cochabamba	Stilwell	
Florencio Siles	Cochabamba	Kunkel	
Alejandro Tejerina	Santa Cruz	Kidman	
Jose Roerto Terceros H.	Cochabamba	Stilwell	
Claudio Ticona M.	Cochabamba	Thomas	G
Rene Torrico M.	Cochabamba	Hoopes	
Roger Eduardo Velez	Santa Cruz	Foster	
Vidal Velasco	Cochabamba	Brown	G
Gregorio Pinto Vega	Cochabamba	Stilwell	
Alberto Lopez Valencic	Cochabamba	Kunkel	G
Teofilo Villarroe1	Cochabamba	Otazu	G
Alejandro Marida Villarroe1	Cochabamba	Thomas	
Edgar Daner Villarroe1	Santa Cruz	Brown	
Mario Jaimes Villarroe1	Cochabamba	Kunkel	G

<u>Student</u>	<u>Location</u>	<u>CID Advisor</u>	<u>Status G=Graduated</u>
Raul Saravia Zunta	Cochabamba	Foster	
Luis M. Zapata	Cochabamba		<u>G</u>
		Total =	96
		Graduated =	47

APPENDIX G.

PUBLICATIONS

No.

- 01/75 The Nature and Purpose of the Office of Planning, Ministry of Rural Affairs and Agriculture, Bolivia, Morris D. Whitaker, August, 1975.
- 01/76 Common Property Rangeland and Induced Neighborhood Effects: Resource Misallocation in Bolivian Agriculture, Morris D. Whitaker and E. Boyd Wennergren, March, 1976.
- 02/76 An Assessment of the Entomological Problems of Agriculture in Bolivia, Charles R. Ward, August, 1976.  
Evaluación de los Problemas Entomológicos en la Agricultura Boliviana, Charles R. Ward, Agosto, 1976.
- 03/76 Status of Agronomic Research in Bolivia: Saavedra, San Benito, Toralapa and Chinoli, R. L. Smith and CID Technicians, May, 1976.  
Situación de la Investigación Agrícola en Bolivia: Saavedra, San Benito, Toralapa y Chinoli, R. L. Smith y Técnicos del CID, Mayo, 1976.
- 04/76 Guidelines for Publishing in Bolivian Agricultural Journal, R. L. Smith, May, 1976.  
Guía de Publicación para la Revista Agrícola de Bolivia, R. L. Smith, Mayo, 1976.
- 05/76 CID Program Review - Sector Management Component, Morris D. Whitaker, May, 1976.
- 06/76 An Assessment of the Temperate Fruit Research Program at the San Benito Research Center, Anthony H. Hatch, August, 1976.  
Una Evaluación del Programa de Investigación de Fruta de Clima Templado en la Estación de Investigación de San Benito, Anthony H. Hatch, Agosto, 1976.
- 07/76 Economic Prospects for Substitution of Citrus and Coffee for Coca in the Chulumani Area of Bolivia's Yungas, Morris D. Whitaker and Clovis Villegas, August, 1976.  
Perspectivas Económicas de la Sustitución de Coca por Frutas Cítricas y Café en el Area de Chulumani, Yungas en Bolivia, Morris D. Whitaker y Clovis Villegas P., Agosto, 1976.
- 08/76 Short-Term Consultant Report (Soybeans), E. H. Paschal, II, August, 1976.  
Informe de Consulta a Corto Plazo (Soya), E. H. Paschal, II, Agosto, 1976.

- 09/76 A Subjective Ranking of High Priority Planning Proposals for the Agricultural Sector of Bolivia, Bruce F. Brown with the assistance of Lic. Jorge Velarde, Lic. José Nuñez del Prado and Ing. Agr. Jaime Buhezo, September, 1976.
- 10/76 Estimates of the Distribution of Urban and Rural Family Incomes in Bolivia, Allen LeBaron, Bruce Brown and Raúl Ortiz, November, 1976.
- 11/76 Notes on Consumption of Bolivian Crop and Animal Products # 1. Meat, Allen D. LeBaron, December, 1976.
- 01/77 An Investigation of Resource Management Options in Bolivian Agriculture: Summary Findings of a Linear Program Model, Allen LeBaron, Bruce Brown and Darwin Nielsen, January, 1977.
- Una Investigación de las Alternativas de Manejo de Recursos en la Agricultura Boliviana: Resumen de Resultados de un Modelo de Programación Lineal, Allen D. LeBaron, Bruce Brown, Darwin Nielsen, Enero, 1977.
- 02/77 Feasibility of a Program to Extend Wheat Flour with Other Cereals # 1. Rice and Soya, Allen D. LeBaron, February, 1977.
- 03/77 Informe de Consulta a Corto Plazo (Arroz), Manuel Rosero, Enero, 1977.
- 04/77 Evaluación de Responsabilidades Legales y Funcionales de Entidades Públicas para Actividades de Mercadeo Agrícola en Bolivia, Dr. Albert G. Madsen con la asistencia del Ing. Freddy Arteaga H., Febrero, 1977.
- 05/77 Income and Household Size Elasticities for Urban and Rural Sectors of Bolivia, Allen D. LeBaron, March, 1977.
- 06/77 Short-Term Consultant Report--Discussing Pesticide Control and Plant Quarantine in Bolivia, George A. Root and Robert E. Voigt, March, 1977.
- Informe de Consultoría a Corto Plazo--Control de Pesticidas y Cuarentena de Plantas en Bolivia, George A. Root y Robert E. Voigt, Marzo, 1977.
- 07/77 Progress of the Temperate Fruit Research Program at the San Benito Research Station, Anthony H. Hatch, March, 1977.
- 08/77 Metodología para la Conducción de Investigación sobre Márgenes y Canales de Mercado para Productos Agropecuarios, Albert G. Madsen, Febrero, 1977.
- 09/77 Un Curso Breve en Ciencia de Malezas, Robert Frans, Mayo, 1977.
- 10/77 Report on Short Term Consultation (Animal Production), Hagen Lippke, April, 1977.
- Informe de Consulta a Corto Plazo (Producción Pecuaria), Hagen Lippke, Abril, 1977.

- 11/77 Manejo de Fincas--Una Guía para Agentes de Extensión y Agentes de Crédito, Larry K. Bond, Mayo, 1977.
- 12/77 Five-Year Work Plan for the Bolivian Center for Potato Research: 1977-82, Kenneth C. Ellis, July, 1977.
- Plan de Trabajo durante Cinco Años para el Centro Boliviano de Investigación de Papa: 1977-82, Kenneth C. Ellis y E. Boyd Wennergren, Julio, 1977.
- 13/77 Management of Weed Pests in Bolivian Agriculture, Robert Frans, August, 1977.
- Investigaciones sobre Control de Malezas en Cultivos de Bolivia, 1976-77, Robert Frans, F. E. Tollervey, Raúl Lara y Roberto Unterladstatter, Agosto, 1977.
- 14/77 Short Term Consultant Report: Progress on Bolivian Agricultural Sector Model, Bruce F. Brown, August, 1977.
- Informe de Consultoría a Corto Plazo: Progreso sobre el Modelo del Sector Agrícola Boliviano, Bruce F. Brown, Agosto, 1977.
- 15/77 Indice de Enfermedades de las Plantas en Bolivia, Kenneth C. Ellis, Septiembre, 1977.
- 16/77 Short-Term Consultant Report, Don C. Kidman, November, 1977.
- Informe de Consulta a Corto Plazo, Don C. Kidman, Noviembre, 1977.
- 17/77 Short-Term Weed Science Consultantship, Robert Frans, December, 1977.
- Informe de Consultoría a Corto Plazo sobre Malezas, Robert Frans, Diciembre, 1977.
- 18/77 Short-Term Consultant Report (Potato Breeding Program), J. D. Franckowiak, December, 1977.
- Informe de Consultoría a Corto Plazo (Programa de Mejoramiento Genético de la Papa), J. D. Franckowiak, Diciembre, 1977.
- 01/78 Short-Term Consultant Report--Review of Extension Program, Larry K. Bond, February, 1978.
- Informe de Consultoría a Corto Plazo--Revisión del Programa de Extensión, Larry K. Bond Febrero, 1978.
- 02/78 Short-Term Consultant Report--Use of Pheromones for Trapping the Fall Armyworm and Other Insect Pests in Bolivia, Dr. Everett R. Mitchell and Dr. Alton R. Sparks, February, 1978.
- Informe de Consultoría a Corto Plazo--Uso de Feromonas para Atrapar el Gusano Militar y Otras Plagas en Bolivia, Dr. Everett R. Mitchell y Dr. Alton N. Sparks, Febrero, 1978.

- 03/78 Estimates of Non-Food Income and Household Size Elasticities for Urban and Rural Sectors of Bolivia, Allen LeBaron, April, 1978.
- Estimaciones de Elasticidades de Ingreso de Productos No Alimenticios y Tamaño de la Familia para los Sectores Urbano y Rural de Bolivia, Allen D. LeBaron, Abril, 1978.
- 04/78 The CID/MACA Agronomic Research Program and the USAID Small Farm Mandate, E. Boyd Wennergren with assistance of CID Technical Staff, April, 1978.
- El Programa de Investigación Agrícola del CID/MACA y el Mandato del Sector del Pequeño Agricultor de USAID, E. Boyd Wennergren con la colaboración del personal técnico del CID, Abril, 1978.
- 05/78 Final Report on Data Processing Within the Ministry of Rural Affairs and Agriculture (MACA), Lawrence Greenberg, April, 1978.
- Informe Final sobre Computación de Datos dentro del Ministerio de AA.CC. y Agropecuarios, Lawrence Greenberg, Abril, 1978.
- 06/78 A Review of the Scope of Work and Contract Between MACA and CID... submitted to USAID/Bolivia in May 5, 1978, Edgardo R. Moscardi, Richard W. Swenson, and Antonio Turrent, May, 1978.
- Una Revisión de los Alcances del Trabajo y del Contrato entre el MACA y CID...enviado a USAID/Bolivia en mayo 5 de 1978, Edgardo R. Moscardi, Richard M. Swenson y Antonio Turrent, Mayo, 1978.
- 07/78 Short-Term Weed Science ConsultantShip, Robert Frans, March, 1978.
- 08/78 Informe de Consulta a Corto Plazo--Viaje de Observación al Programa del IETA en Cochabamba y al Programa del CIAT en Santa Cruz, Ing. Agro. José Santaelia Pons, Mayo, 1978.
- 09/78 Short-Term Consultant Report (Statistics), Lloyd E. Jacobs, May, 1978.
- 10/78 Socio-Economic Study of Santiesteban Province--No. 1: The Structure of Agricultural Production, Ing. Manuel Ortiz (CIAT); Dr. Allen LeBaron, Dr. Kendall Adams, and Dr. Larry Bond (CID), May 1, 1978.
- 11/78 Raising Campesino Incomes in the Short-Run... by Allen D. LeBaron, May, 1978.
- Incremento a Corto Plazo de los Ingresos del Campesino..., Allen D. LeBaron, Mayo, 1978.
- 12/78 Short-Term Consultant Report--San Julián Road Clearing Project, Yacuiba Land Clearing Project, and Experiment Station Machinery, Leewen Taylor, May, 1978.
- Informe de Consultoría a Corto Plazo--Proyecto de San Julián sobre Desmonte de Tierras, Proyecto de Desmonte en Yacuiba, Maquinaria en las Estaciones Experimentales, Leewen Taylor, Mayo, 1978.

- 13/78 Plan de Trabajo para un Estudio del Sistema de Comercialización de los Productos Agrícolas en Santa Cruz de la Sierra, Peter L. Appleton, Mayo, 1978.
- 14/78 Short-Term Consultant Report--Feasibility Study of Peanut Production Potential and Recommendations for the Yacuiba Area of Tarija-Bolivia, J. Frank McGill, June 1978.
- Informe de Consulta a Corto Plazo--Estudio de Factibilidad y Recomendaciones sobre el Potencial de Producción de Maní en el Area de Yacuiba, Tarija, Bolivia, J. Frank McGill, Junio, 1978.
- 15/78 Manual of Soil Fertility Investigations: A National Program for Research and Extension, David W. James, July, 1978. (Spanish version issued by IBTA).
- 16/78 Report on Short-Term Consultation--Assistance in the Development of a National Entomological Museum in Bolivia, Drs. Lois and Charles O'Brien, April, 1978.
- Informe de Consultoría a Corto Plazo: Ayuda para el Desarrollo de un Museo Nacional Entomológico en Bolivia, Dres. Lois y Charles O'Brien, Abril, 1978.
- 16/78 Short Term Consultant Report--Advisory Services to CODETAR for Farm Equipment and Heavy Equipment Operations, William J. Wilkinson, November, 1978.
- Informe de Consultoría a Corto Plazo--Servicios de Asesoría a CODETAR sobre Equipo Agrícola y Equipo Pesado, William J. Wilkinson, Noviembre, 1978.
- 17/78 Un Diseño de Métodos para Fincas Pequeñas, Kendall A. Adams y Walter Gómez, Julio, 1978.
- 18/78 Estructura del Mercado y Análisis de los Canales de Comercialización, Kendall A. Adams, Julio, 1978.
- 19/78 Consultation Report--Review of the Potato Research Program, Dr. Robert Kunkel, September, 1978.
- Informe de Consultoría--Revisión del Programa de Investigación de la Papa, Robert Kunkel, Septiembre, 1978.
- 20/78 Short-Term Consultant Report (Seguencoma Soils Laboratory), Concepción V. Peters, April 30, 1978.
- Informe de Consultoría a Corto Plazo (Laboratorio de Suelos de Seguencoma), Concepción V. Peters, Abril, 1978.

- 21/78 A Preliminary Identification of Some Insects Associated with Crops in Bolivia, Charles R. Ward, Norma F. Ward, Hugo Serrate, and David Villarroel.
- Una Identificación Preliminar de Algunos Insectos Asociados con Cultivos Producidos en Bolivia, Charles R. Ward, Norma F. Ward, Hugo Serrate y David Villarroel.
- 22/78 Short-Term Consultant Report (Irrigation), Richard E. Griffin, September, 1978.
- Informe de Consultoría a Corto Plazo (Riegos), Richard E. Griffin, Septiembre, 1978.
- 23/78 Report on Short-Term Consultant Services on Automated Data Information Systems within the Agricultural Sector, Iván Guzmán de Rojas, December, 1978.
- Informe de Consultoría a Corto Plazo--Informática en el Sector del MACA, Iván Guzmán de Rojas, Diciembre, 1978.
- 24/78 Short-Term Consultant Report (Preparatory and Field Activities of the National Socio-Economic Farm Survey), Lloyd Jacobs, December, 1978.
- Informe de Consultoría a Corto Plazo (Actividades Preliminares y de Campo de la Encuesta Sectorial Agropecuaria), Lloyd Jacobs, Diciembre, 1978.
- 25/78 Food Marketing Systems in the Cochabamba Region, Peter Appleton assisted by Kendall Adams, November, 1978.
- 26/78 Short-Term Consultant Report--Advisory Services to CODETAR in the Implementation of the Oil Seed Production Program in Yacuiba, William J. Wilkinson, December, 1978.
- Informe de Consultoría a Corto Plazo--Servicio de Asesoramiento a CODETAR en la Ejecución del Programa de Producción de Oleaginosas en Yacuiba, William J. Wilkinson, Diciembre, 1978.
- 01/79 Grain Marketing by Small Farmers in the Cochabamba Region, Kendall A. Adams, January, 1979.
- Comercialización de Granos por Pequeños Agricultores en la Región de Cochabamba, Kendall A. Adams, Enero, 1979.
- 02/79 Report on Short-Term Consultation--Determination of Water Infiltration and Drainage for Selected Soils of the Santa Cruz Area, Bolivia, R. J. Wagenet, February, 1979.
- Informe de Consultoría a Corto Plazo--Determinación de Infiltración de Agua y Drenaje en Suelos Seleccionados del Area de Santa Cruz, Bolivia, R. J. Wagenet, Febrero, 1979.

- 03/79 Informe de Consultoría a Corto Plazo--Servicio de Asesoramiento a CODETAR en la Ejecución del Programa de Producción de Oleaginosas en Yacuiba, William J. Wilkinson, Marzo, 1979.
- 04/79 Short-Term Consultant Report--A Review of Bolivia's Soil Analysis Laboratories and Improvement of Their Analytical Operations, Raymond Miller, March 1979.
- Informe de Consultoría a Corto Plazo--Una Revisión de los Laboratorios de Análisis de Suelos en Bolivia y el Mejoramiento de sus Operaciones Analíticas, Raymond W. Miller, Marzc, 1979.
- 05/79 Void
- 06/79 Short Term Consultant Report--Development of Grape Production in Bolivia, A.C. Goheen, March, 1979.
- Informe de Consultoría a Corto Plazo--Desarrollo de la Producción Vitícola en Bolivia, A. C. Goheen, Marzo, 1979.
- 07/79 Short Term Consultant Report--An Evaluation of Potential Deciduous Orchard Sites in Bolivia, Anthony H. Hatch, March, 1979.
- Informe de Consultoría a Corto Plazo--Evaluación de Lugares Potenciales para Huertos de Arboles de Hojas Caducas en Bolivia, Anthony H. Hatch, Marzo, 1979.
- 08/79 Short Term Consultant Report (potatoes-pathology), Monty D. Harrison, April, 1979.
- Informe de Consultoría a Corto Plazo (papas-patología), Monty D. Harrison, Abril, 1979.
- 09/79 I. Research Project Management: A Manual of Report Format and Function  
II. Management of Agriculture Research and Extension to Facilitate Inter-agency Communication, David W. James, April, 1979.
- I. Manejo de Proyectos de Investigación: Un Manual de Formato y Función de Informes - II. Manejo de Investigación y Extensión Agrícolas para Facilitar la Comunicación Interinstitucional, David W. James, Abril, 1979.
- 10/79 Short Term Consultant Report--Evaluation of Ag. Sector II Land Clearing Project - Tarija, Kenneth Graber, April, 1979.
- Informe de Consultoría a Corto Plazo--Evaluación del Programa de Limpieza de Tierra del Sector Agrícola II en Tarija, Kenneth Graber, Abril, 1979.
- 11/79 An Evaluation of the Quantity and Quality of Information Yield from Experiment Stations Saavedra, San Benito, and Toralapa-1976-77 and 1977-78, David W. James and Technical Staff, July, 1979.
- Evaluación de la Cantidad y Calidad de la Información Generada por las Estaciones Experimentales de Saavedra, San Benito y Toralapa-1976/77 y 1977/78, David W. James y Técnicos del CID, Julio, 1979.

12/79 The Economic Effects of Phosphorus Fertilization on Potatoes in the Cochabamba Region, Kendall Adams, Gonzalo Claure, and David James, July, 1979.

Efectos Económicos de la Fertilización con Fósforo en Papas en la Región de Cochabamba, Kendall Adams, Gonzalo Claure y David James, Julio, 1979.

13/79 Informe de Consultoría a Corto Plazo--Fortalecimiento de la Oficina de Planificación Sectorial Agropecuaria de Bolivia, Juan J. Castro Chamberlain, Junio, 1979.

14/79 Short Term Consultant Report-Bolivian Agricultural Bank Financial Analysis, William Roach, July, 1979.

Informe de Consultoría a Corto Plazo--Análisis Financiero del Banco Agrícola de Bolivia, William Roach, Julio, 1979.

15/79 Short-Term Consultant Report--Pesticide Analysis Laboratory Design and Analysis Methodology, Larry G. Sellers, July, 1979.

Informe de Consultoría a Corto Plazo--Diseño del Laboratorio de Análisis de Pesticidas y Metodología de Análisis, Larry G. Sellers, Julio, 1979.

16/79 Short-Term Consultant Report--Institutional and Financial Analysis La Cooperativa Multiactiva Madre y Maestra, DESEC, ASAR, and BAB, Russell Hale, July, 1979.

17/79 Short-Term Consultant Report--Institutional and Financial Profile Cooperative Multiactiva La Merced Ltda., Santa Cruz, Bolivia by Agricultural Cooperative Development International (ACDI), July, 1979.

Informe de Consultoría a Corto Plazo--Perfil Financiero e Institucional Cooperativa Multiactiva La Merced, Ltda., Santa Cruz, Bolivia por Agricultural Cooperative Development International (ACDI), Julio, 1979.

18/79 Short-Term Consultant Report--State of the Reorganization of the Bolivian Agricultural Bank and Capacity for the Administration of the Credit to the Small Farmers, Pedro Negrón, August, 1979.

Informe de Consultoría a Corto Plazo--Estado de la Reorganización del Banco Agrícola de Bolivia y Capacidad para la Administración del Crédito al Pequeño Agricultor, Pedro Negrón, Agosto, 1979.

19/79 Short-Term Consultant Report--Financial & Institutional Analysis, FENACRE La Merced, John H. Magill, August 1979.

Informe de Consultoría a Corto Plazo--Análisis Financiero e Institucional FENACRE-La Merced, John H. Magill, Agosto, 1979.

- 20/79 Short-Term Consultant Report--Sociological Analysis of Group Lending Through CROFCC and the Banco Agrícola, Dr. David O. Hansen, July, 1979.
- 21/79 Short-Term Consultant Report (Crop Technology Survey), Lloyd Jacobs, December, 1979.
- Informe de Consultoría a Corto Plazo (Encuesta de Tecnología Agrícola), Lloyd Jacobs, Diciembre, 1979.
- 22/79 Farm Family Case Studies, Rodeo Region, Kendall A. Adams, December, 1979.
- Un Ensayo sobre Familias Campesinas de la Región de Rodeo, Kendall A. Adams, Diciembre, 1979.
- 01/80 Agribusiness Integration as an Alternative Small Farm Strategy, Kendall A. Adams, April, 1980.
- Integración Agroindustrial como una Estrategia Alternativa para el Sector de la Pequeña Agricultura, Kendall A. Adams, Abril, 1980.
- 02/80 Evaluación del Programa de Entrenamiento del Préstamo 511-T-053, Sector Agrícola I, Dr. Alejandro Pierront H. y Srta. Sonia Aranibar, Mayo, 1980.
- 03/80 Short-Term Consultant Report--Control of Crown Gall in Cochabamba, Arthur McCain, May, 1980.
- Informe de Consultoría a Corto Plazo--Control de La Agalla de la Corona en la Región de Cochabamba, Arthur H. McCain, Mayo, 1980.
- 04/80 Short-Term Consultant Report--Diseases Affecting Potatoes in Bolivia, Oscar G. Bacon, June, 1980.
- Informe de Consultoría a Corto Plazo--Insectos que Afectan a los Cultivos de Papa en Bolivia, Oscar G. Bacon, Junio, 1980.
- 05/80 The Effect of Shipping Containers on Transportation Damage to Tomatoes, Green Onions and Carrots, Kendall A. Adams, April, 1980.
- El Uso de Cajones de Madera para el Embarque de Tomates, Cebollas Verdes y Zanahorias, y su Efecto en la Reducción de Daños Ocurredos en Tránsito, Kendall A. Adams, Abril, 1980.
- 06/80 Informe de Consultoría a Corto Plazo (Publicación de Trabajos Científicos), Samuel Vélez, Junio, 1980.
- 07/80 Planning of Research Priorities, Thomas C. Stilwell, April, 1980.
- Determinación de Prioridades para la Investigación, Thomas C. Stilwell, Abril, 1980.
- 08/80 Short-Term Consultant Report, David Eding, November, 1980. (Economics)
- Informe de Consultoría a Corto Plazo, David Eding, Noviembre, 1980.

- 09/80 Marketing Processes Observed in Bolivia with Recommendations for Change, Kendall A. Adams, December, 1980.
- Procedimientos de Comercialización Observados en Bolivia y Recomendaciones para Introducir Cambios, Kendall A. Adams, Diciembre, 1980.
- 01/81 Short-Term Consultant Report--Applied Fertilizers and Their Residual Effect in Continuous Cropping, Don C. Kidman, March, 1981.
- Informe de Consultoría a Corto Plazo--Aplicación de Fertilizantes y su Efecto Residual en Cultivos Continuos, Don C. Kidman, Marzo, 1981.
- 02/81 Short-Term Consultant Report--Review of Soil Analysis and Fertility Research-CID/IBTA, David W. James, May, 1981.
- Informe de Consultoría a Corto Plazo--Revisión de Análisis de Suelos e Investigación sobre la Fertilidad del Suelo-CID/IBTA/CIAT, David W. James, Mayo, 1981.
- 03/81 Manual de Soporte del Sistema de Estadística Agrícola para el Digital PDP 11/45, Thomas C. Stilwell, Julio, 1981.
- 04/81 Factores que Influyen en la Elección de Variedades de Trigo, Papa y Alfalfa en el Valle Alto de Cochabamba, Mario Altamirano Orosco, Julio, 1981.
- 05/81 Manual del Usuario del Sistema de Estadística Agrícola para el Digital PDP 11/45, Thomas C. Stilwell, Julio, 1981.
- 06/81 Relación entre Factores Agro-Económicos y Tecnología Utilizada por Agricultores que Cultivan Trigo, Oscar Omonte M., Octubre, 1981.
- 07/81 Una Encuesta sobre Sistemas de Producción en el Valle Alto (Cochabamba), Ing. Orlando Claros y Dr. Thomas C. Stilwell, Diciembre, 1981.
- 08/81 Elección y Utilización de Variedades de Trigo para la Molienda en el Valle Alto, José Luis Ríos Antezana, Octubre, 1981.
- 09/81 Encuesta sobre Sistemas de Producción de Valle Alto (Cochabamba), Ing. Agr. Olando Claros Rivero y Dr. Thomas Stilwell, Diciembre, 1981.

CID ADMINISTRATIVE REPORTS

- 001/75 Quarterly Report - July 1-September 30, 1975
- 002/75 Technical Plan of Work (Nov. 28, 1975)
- 003/75 Quarterly Report - October 1-December 31, 1975
- 001/76 Quarterly Report - January 1-March 31, 1976
- 002/76 End of Tour Report, Max G. Long, June, 1976
- 003/76 Quarterly Report - April 1-June 30, 1976
- 004/76 End of Tour Report, Morris D. Whitaker, August, 1976
- 005/76 Quarterly Report - July 1-September 30, 1976
- 006/76 Technical Plan of Work - September 1, 1976-August 31, 1977
- 007/76 Quarterly Report - October 1, 1976-December 31, 1976
- 001/77 Quarterly Report - January 1, 1977-March 31, 1977
- 002/77 Quarterly Report - April 1, 1977-June 30, 1977
- 003/77 End of Tour Report, R. L. Smith, July 31, 1977
- 004/77 End of Tour Report, Warner D. Fisher, October, 1977
- 005/77 End of Tour Report, Kenneth C. Ellis, September, 1977
- 006/77 Quarterly Report - July 1-September 30, 1977
- 007/77 Technical Plan of Work - October 1, 1977-September 30, 1978
- 008/77 End of Tour Report, Larry K. Bond, December, 1977
- 009/77 Quarterly Report - October 1-December 31, 1977
- 001/78 Quarterly Report - January 1-March 31, 1978
- 002/78 Quarterly Report - April 1-June 30, 1978
- 003/78 End of Tour Report, Allen D. LeBaron, July 3, 1978
- 004/78 End of Tour Report, Charles R. Ward, September 30, 1978
- 005/78 End of Tour Report, E. Boyd Wennergren, November, 1978

006/78 Quarterly Report - July-September, 1978  
007/78 Technical Plan of Work - October 1, 1978-September 30, 1979  
008/78 Quarterly Report - October 1-December 31, 1978  
001/79 Semi-annual Report - January-June, 1979  
002/79 Semi-annual Report - July-December, 1979  
001/80 End of Tour Report - Kendall A. Adams - July, 1980  
002/80 End of Tour Report - David W. James - June 30, 1980  
003/80 Semi-annual Report - January 1-June 30, 1980  
004/80 End of Tour Report - William M. Brown, July, 1980  
005/80 End of Tour Report - Don Kidman, November, 1980  
006/80 Semi-annual Report - July-December, 1980  
001/81 Semi-annual Report - January-June, 1981  
002/81 Semi-annual Report - July-December, 1981

Appendix H. CID Budget for Basic Foods Production and Marketing Contract

Contract	Time Period	Budget Line Items					Total	Cumulative
		Salaries	Allowances	Travel and Transportation	Support Costs	Indirect Costs*		
GOB/AID-511-92	07/01/75-03/31/76	\$ 153,897	\$ 50,600	\$ 82,030	\$ 93,225	\$ 125,628	\$ 505,380	\$ 505,380
Amendment #2	04/01/76-06/30/76	56,501	52,415	26,850	16,047	42,362	194,175	699,555
Amendment #3	07/01/76-07/31/76	17,389	-15,799	2,520	13,786	7,902	25,798	725,353
Amendment #4	08/01/76-12/31/76	145,817	56,670	87,735	59,490	115,351	465,063	1,190,416
Amendment #6	01/01/77-10/31/77	223,900	137,660	94,030	200,700	173,713	830,003	2,020,419
GOB/AID-511-101 (053-007-HHC)	11/01/77-11/30/78	348,077	179,706	146,252	217,650	188,118	1,079,803	3,100,222
Amendment #3	12/01/78-11/30/79	319,216	137,529	85,500	226,504	183,429	952,178	4,052,400
Amendment #5	12/01/79-02/29/80	101,788	36,978	43,892	120,084	72,258	375,000	4,427,400
Amendment #6	03/01/80-11/30/80	207,068	70,552	81,842	152,818	136,582	638,862	5,076,262
Amendment #8	12/01/80-07/31/81	172,481	55,974	19,540	172,266	120,151	612,712	5,688,974
Amendment #9	08/31/81-12/31/81	100,439	33,523	19,540	107,570	64,928	326,000	6,014,974
Amendment #8	01/01/82-05/30/82	127,591	45,742	77,200	146,518	76,949	474,000	6,488,974
	Total	1,974,164	841,556	839,231	1,526,658	1,307,371**	6,488,974	--
	Percent of Total	30	13	13	23	21	100	--

\*Includes CID and USU indirect costs.

\*\*Includes USU on campus support of \$515,660 for the 7 year period.

Source: CID Executive Office financial reports and USU Campus Coordinator files for Bolivia Project.