

EVALUATION OF THE DALPRA-ANCASH PROJECT

AUGUST 1979 to AUGUST 1982

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### I. Project Overview

#### A. Introduction

The DALPRA Project began operations in August, 1979 in the Department of Ancash, based on an OPG from USAID, approved in March, 1979, and a subsequent contractual agreement between the National Office of Food Support (ONAA) and CARE, signed in August 1979. It was viewed as pilot project with a possible future extension to the Departments of Puno and Cajamarca. The intent was to improve the nutritional status of campesinos in selected communities by means of increased agricultural production.

The project was to provide new, improved seed varieties, fertilizers and pesticides as well as a staff of agronomists who would train and assist the farmers in the proper application of the technological package. Ultimately, a generated fund, from the sale of a portion of the harvest, would be controlled independently by the communities in order to assure their long term access to a financial resource for the necessary agricultural inputs. Simultaneously, nutritionists would organize a communal dining room in each community, relying on a share of the harvest to provide a mid-day meal to children under 6 and pregnant and lactating mothers. The dining room would also serve as the central point for nutrition education efforts.

The present evaluation will first review significant aspects related to the project's overall financial support, staffing and operations. Quantitative data will then be presented separately for the agricultural and nutrition components. The final section will offer conclusions and recommendations.

## B. Financial Support

Principal funding was provided by USAID through an OPG agreement with CARE. Total and annual inputs, in U.S. dollars or equivalent, from AID, ONAA and CARE were as follows:

	<u>1979-80</u>	<u>1980-81</u>	<u>1981-82</u>	<u>TOTAL</u>
USAID	\$83,083	\$138,052	\$78,865	\$300,000
ONAA	17,000	17,000	17,660	51,660
CARE	<u>17,000</u>	<u>18,000</u>	<u>17,000</u>	<u>52,000</u>
TOTAL	\$117,083	\$173,052	\$113,525	\$403,660

(Based on the CARE Fiscal Year, July 1 through June 30)

It should be noted that CARE's contractual obligation of between \$17,000 and \$18,000 per annum was not expected to cover CARE's personnel and operating costs at the national level. When these costs are included, total expenditures by CARE for personnel and operations were as follows:

	<u>1979-80</u>	<u>1980-81</u>	<u>1981-82</u>	<u>TOTAL</u>
CARE P&O	\$34,208	\$26,169	\$66,735	\$127,112

Equivalent figures for ONAA are not available.

USAID and CARE support terminated in 1982. Since August of 1982, ONAA has assumed overall responsibility for DALPRA (between August and December, 1982, CARE continued to assist in the administration of the generated fund).

## C. Project Structure and Operations

Overall control of the project rested with the "National Coordinating Committee" composed of representatives of AID, ONAA and CARE at the Lima level. Locally, in Huaraz, the "Regional Coordinating

Committee" was composed of the senior regional staff of ONAA and the CARE representative. Conceptually, the technical components of the project were to be managed by ONAA and administration, particularly financial administration, was to be assumed by CARE staff. In fact, the Organizational Manual prepared in early 1980 contained a series of overlapping responsibilities assigned to ONAA and CARE staff. This lack of a clear delineation of responsibilities certainly played a partial role in some of the personnel and administrative problems that the project suffered. For example during the latter part of the project's second year, it was decided that a qualified agronomist be hired as Technical Director to resolve some of the production problems. However, functions overlapped with those of the CARE representative in Huaraz and lines of authority were unclear, thus creating unnecessary friction and confusion among field staff and project beneficiaries as well.

At the field level, the two principal areas, Cuenca de Mancos and Cuenca de Marcará, were served by two teams, each composed of an agronomist, a nutritionist, 1 or 2 agronomy technicians and a driver (the more distant community of Quecas was covered by staff from these two teams). The size of the staff was adequate and, generally, quality was also acceptable. However, frequent personnel changes had a negative impact on operations and the fairly high turnover rate weakened, in some instances, rapport with the communities.

The reasons for relatively frequent loss of personnel are of course as varied as the number of individuals concerned. However, one factor can be cited as a particularly constant impediment to personnel management. At the inception of the project, CARE and ONAA shared responsibility for the hiring of personnel. Salary levels

for each classification were based on those then in effect for ONAA. However, the frequency of cost of living salary increases were different for each organization. This, in time, created a significant salary difference among project staff: an employee on the CARE payroll would eventually earn a higher salary than a counterpart with similar qualifications employed by ONAA. Additionally, the existence of 2 separate employers had a negative impact on a "team" concept, allegiance often being directed toward the employing organization rather than the project itself.

Concerning the nutritional component, each nutritionist reported directly to the Regional Coordinating Committee, according to the organizational chart, during the first 2 years of the project. In the third year, they reported to the agronomist in the newly created position of Technical Director. In either case, they were supervised by a staff with limited or no background in nutrition and as a result, nutrition related issues generally took a distant second place in operational priorities.

#### D. Beneficiaries

As indicated above, the project was initiated in 4 communities of the Cuenca de Marcará, 4 additional communities in the Cuenca de Mancos and one community in the Callejón de Conchucos, Quecas. In the baseline study presented in October of 1980, the number of beneficiary families in all 9 communities was estimated at 939, and a total population of 6,261 individual beneficiaries. The assumption was made that if a given community was involved in the project, then the total population would benefit. In fact, in several communities agreements were signed not with the community as a whole but only with specific sectors within the community. The population in the remaining sectors may be considered indirect beneficiaries in the sense that they had informal access to the training sessions provided by nutrition and agricultural staff, which they did attend, although the exact frequency and numbers

are unknown. They were not however, permitted to receive meals in the communal dining room nor agricultural commodities (note: in the community of Inti Raymi, the proceeds from the communities' share of the harvest was received by the governing council and theoretically used for development efforts for the entire community, regardless of whether a particular sector had participated in DALPRA or not. During the third year there were questions raised by the community as to the control of these funds by their governing board but at this time the matter is still pending. It has been alleged that the funds were used primarily for the board's own operating expenses).

During the evaluation of the project's third year and in the present document, only those sectors with active participation in DALPRA were recognized as direct beneficiaries: 542 families or an estimated 3,631 individuals.

## II. Agro-Economic Evaluation

### A. Background

When the project was first implemented, the evaluation system was based on CARE's internal "Program Implementation and Evaluation" report (P.I.E.) which is prepared 3 times per year and, for DALPRA, included a variety of indicators. During the first year the indicators were primarily related to the projects structure, e.g. the establishment of committees within each community and the development of training programs. One intermediate goal was related to an improved harvest though no quantifiable goal was established. Specific evaluation of the economic aspects of production was not a part of the original design.

Half way thru the second project year, Feb. 1981, a seminar was held to establish a method of evaluating the economic viability of DALPRA. As a result, the evaluation of the second year

was based on a "partial budget analysis" as first used in an earlier project in the Mantaro Valley. As applied to DALPRA, this approach would establish a benefit-cost ratio for production activities of farmers operating independently and using a traditional minimum level of investment in 3 variables: seeds, fertilizers, and pesticides. A second benefit-cost ratio is then established for those farmers receiving DALPRA assistance. In this case, the ratio is based on the increase in the cost of the variables used in DALPRA plots and the anticipated increase in the net income from the harvest.

In practice, several difficulties were eventually apparent in this approach. The control plot, operated independently of DALPRA, would theoretically be of equal soil quality, have equal access to irrigation and be planted with the same variety of seeds (though the quality would presumably be lower). In fact this was not always the case as the farmers tended to select the least productive areas for DALPRA assistance and similar plots to act as controls were not necessarily of the same quality. Also, some seed varieties were introduced to the area by the program and could not be matched in the control plot. Most important, however, is that the system of gathering data for the control plots was based on verbal data provided by the farmer. Such data is often not recorded and rests exclusively on the recall of the individual.

Further complicating the evaluation effort is that a standard reporting system, adequate to the needs of each of the three involved organizations, was never formally established. As a result, voluminous reports were produced by project staff, many of which had questionable or limited practical value.

An attempt has been made in the present evaluation to select economically significant data from each program year and present it in a format that will allow comparison from one year to the next. In some instances, the data presented here will differ from that found in some of the P.I.E. and other reports. The reasons for the discrepancies were not always clear. The data presented here is based primarily on a review of primary data from field reports, especially where contacts existed.

In the case of potato production, the results of the control plots are also presented, though the caveats identified above should be kept in mind. Control plots have only been used as a comparison in analyzing potato production as this represents 80% to 90% of the economic investment. For 1979-1980, the results of the control plots are actually for the period 1978-79 and are taken from information obtained during 161 interviews conducted as part of the projects base-line data. Information for 1980-81 and 1981-82 is based on 42 and 43 beneficiary interviews respectively. Respondants were not selected at random, rather it was usually the farmer most accesible at the time of the interviewers visit or one with whom the interviewer was familiar.

#### B. Area-Covered - Table I

The total area more than tripled over the three year period, from about 3.4% to 11.3% of total available land in those communities, or sectors of communities, where the project operated. Since the DALP plots were designed for demonstration purposes, the coverage in the last year is a reasonable level. Generally, there was a strong demand among the communities to increase the coverage each year.

AREA TOTAL Y PORCENTAJE CULTIVADO CON DALPRA POR COMUNIDAD Y POR AÑO

TOTAL CULTIVABLE AREA AND PERCENTAGE CULTIVATED WITH DALPRA BY COMMUNITY

AND YEAR

COMUNIDAD COMMUNITY	EXTENSION (Has) TOTAL AREA (H.)	AREA CULTIVADA CON DALPRA AREA CULTIVATED WITH DALPRA					
		1979 - 1980		1980 - 1981		1981 - 1982	
		HAS	% OF TOTAL	HAS	% OF TOTAL	HAS	% OF TOTAL
V. DE MUSHO	181	11.22	6%	25.20	14%	34.55	19%
MITIMAES	122	5.38	4%	11.57	9%	21.35	18%
J.C. MARIATEGUI	262	6.50	2%	0	0	0	0
MITA	90	0	0	11.90	13%	18.90	21%
HUASCARAN	238	9.93	4%	18.89	8%	41.29	17%
QUECAS	45	6.50	14%	15.70	35%	10.25	23%
INTI RAYMI	388	9.50	2%	17.50	5%	21.80	6%
RECUAYHUANCA	224	2.90	1%	11.31	5%	24.11	11%
COPA CHICO	369	6.50	2%	14.20	4%	9.07	2%
SIETE IMPERIOS	241	12.50	5%	13.90	6%	35.85	15%
TOTAL	2,160	70.93	3.4%	140.17	7.4%	217.17	11.4%

After the first year, one community J.C. MARIATEGUI did decide to withdraw apparently because of the low yields achieved, as will be seen below. In the second year it was replaced by the community of Mita. The percentage of total area cultivated with DALPRA is based on the total area of each community, or sector of the community, actually involved in that particular year.

### C. Benefit - Cost Evaluation

In the following tables describing the benefit-cost ratio, two different estimates of the level of investment, or cost, are provided. The first is the cost of the physical inputs (seeds, fertilizers and pesticides) provided by the project. The second adds to these physical inputs an estimated value of human labor and animal traction provided by the community. No estimate is made of the cost of project personnel and operations, interest costs or land value.

The results of the first year's production (1979-80) for all crops are shown in Table # 2. Of the 71 hectares sown, more than 1/3 were in potatoes with wheat, barley and corn as the other major crops. The most profitable crop was cob corn and remained the most profitable in each succeeding year as well. Overall, the investment of approximately 4.9 million Peruvian Soles, in the form of seeds, fertilizers and pesticides produced a harvest worth 15.3 million Soles, or a return of 3.14 Soles for each Sol inverted.

Table # 2 also provides an estimate of the level of investment made by the community, i.e. human labor and animal traction, in addition to the value of the physical inputs provided by the project. (In the case of peas and beans, such an estimate is

RELACION BENEFICIO/COSTO DE TODOS LOS CULTIVOS EN LA CAMPAÑA 1979-1980

BENEFIT/COST RATIO, ALL CROPS 1979 - 1980

PRODUCTO CROP	HECTAREA SENERADA HECTARES SOWN	RENDIMIENTO (Kls) PRODUCTION (KILOS) TOTAL/POR HAC	VALOR DE COSECHA HARVEST VALUE	COSTO DE INSUMOS COST OF INPUTS TOTAL/POR HAC	RELACION BENEF/COSTO BENEFIT/COST	COSTO DE INSUMOS MAS MANO DE OBRA INPUTS PLUS LABOR COST	RELACION BENEF/COSTO BENEFIT/COST
PAPA/ POTATO	25.74	162,023 / 6,295	10'937,228	3'588,208/139,402	3.05	4'800,536	2.28
TRIGO/WHEAT	16.90	10,963 / 649	1'048,611	444,119/ 26,279	2.36	1'047,459	1.00
CEBADA/ BARLEY	13.10	14,117 / 1,078	1'166,063	327,989/ 25,037	3.56	753,859	1.55
ARVEJAS/ PEAS	0.68	160 / 235	48,000	23,161/ 34,060	2.07	NO DISPONIBLE NOT AVAILABLE	
MAIZ CHOCLO/ COB CORN	3.30	54,000 / 16,364	540,000	95,160/ 28,836	5.67	245,060	2.20
MAIZ GRANO/ GRAIN CORN	9.71	11,343 / 1,168	1'586,620	387,747/ 39,933	4.09	782,069	2.03
FRIJOL/ BEAN	1.50	58 / 39	10,408	15,307/ 10,204	0.68	NO DISPONIBLE NOT AVAILABLE	
TOTAL/ PROMEDIO TOTAL/ AVERAGE	70.93	-- --	15'336,930	4'381,691	3.14	--	--

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not available). The effect on the Benefit/cost ratio is modest in the case of potato production (from 3.05 to 2.28) since the relative value of physical inputs required is much greater than the value of labor needed. In other crops, particularly corn, the ratio is substantially weakened. However, with the exception of wheat, where the value of the harvest was almost identical to the total investment, the remaining crops still demonstrate a ratio greater than 1.0, the break-even point.

Potato production levels were particularly disappointing, in spite of the positive benefit-cost ratio. The production per hectare was barely 6,300 kilos whereas with the level of technology applied, it should have approached 15,000 kilos per hectare. This was probably due to delays in having staff on-board and material available in a timely manner in the initial months of project operations, resulting in a late planting schedule.

In the second project year, 1980-81, the results shown in Table 3 demonstrate a much less favorable benefit-cost ratio compared to the first year. Overall, for an investment in physical inputs of 28 million Soles, a harvest value of 40.5 million Soles was realized, a return of 1.44 soles per sol invested. When community input is included in the level of investment, the return was negative, 0.94 soles per sol invested.

Several reasons have been identified for these poor results. Comparing production levels per hectare with those of the first year, the levels either decreased or remained at about the same level. In potato production, there was no substantial increase (6,323 kilos per hectare), thus the anticipated level of about

## RELACION BENEFICIO/COSTO DE TODOS LOS CULTIVOS EN LA CAMPAÑA 1980-1981

BENEFIT/COST RATIO, ALL CROPS 1980-1981

PRODUCTO CROP	HECTAREA SEMBRADA HECTARES SOWN	RENDIMIENTO (Kls) PRODUCTION (KILOS) TOTAL/POR HAC	VALOR DE COSECHA HARVEST VALUE	COSTO DE INSUMOS COST OF INPUTS TOTAL/POR HAC	RELACION BENEF/COSTO BENEFIT/COST	COSTO DE INSUMOS MAS MANO DE OERA INPUTS PLUS LABOR COST	RELACION BENEF/COSTO BENEFIT/COST
PAPA/ POTATO	77.11	487,597/ 6,323	34'694,895	24'972,835/323,860	1.39	35'675,476	0.97
TRIGO/ WHEAT	25.77	13,856/ 538	1'412,670	1.036,691/ 40,229	1.36	2'468,315	0.57
CEBADA/ BARLEY	18.02	10,090/ 560	932,460	672,090/ 37,297	1.39	1'600,127	0.58
ARVEJAS/ PEAS	2.90	680/ 234	127,500	129,085/ 44,512	0.99	268,927	0.47
MAIZ CHOCLO / COB CORN	8.15	NO DISPONIBLE NOT AVAILABLE	2'491,267	644,944/ 79,134	3.86	1'535,580	1.62
MAIZ GRANO/ GRAIN CORN	6.10	4,129/ 677	720,000	476,873/ 78,176	1.51	1'324,646	0.54
HABAS/ BROAD BEAN	2.12	692/ 326	106,125	131,763/ 62,152	0.81	235,290	0.45
TOTAL/PROMEDIO DALPRA	140.17	--	40'484,917	3'064,281	1.44	43'108,361	0.94

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15,000 kilos remained a distant goal. A prime reason was that the majority of seeds were purchased from one supplier and were documented as in good sanitary condition. It was soon realized, however, that the condition was not as represented, though too late to avoid serious damage to the harvest. Adding to this were administrative and logistical problems that caused delays in delivering the agricultural requirements to the field.

Beyond these production impediments, the benefit-cost ratio was most severely damaged by price increases in fertilizers and pesticides that far out-stripped the very modest increases in the market value of the crops produced. For example, between the first and second year, the average market price per kilo of potatoes increased 5% (from 67.5 to 71.2 soles) while the cost of inputs required per hectare increased 132% (from 139,402 Soles to 223,260 Soles) in the same period. In the case of wheat, the market price of the harvest increased by 6% and the cost of inputs increased by 53%.

Table 4 presents the third production year, 1981-82. Total value of the harvest was about 122.1 million Soles; investment in physical inputs was 53.2 million Soles, representing a benefit cost ratio of 2.3. When community inputs are added to investment costs, the ratio becomes 1.6.

This third year saw a very substantial increase in the key economic area of potato production, reaching an average of 13,319 kilos per hectare, very close to the desired 15,000 kilos level.

RELACION BENEFICIO/COSTO DE TODOS LOS CULTIVOS EN LA CAMPAÑA 1981-1982

BENEFIT/COST RATIO, ALL CROPS 1981 - 1982

PRODUCTO CROP	HECTAREA SEBRADA HECTARES SOWN	RENDIMIENTO (KIs) PRODUCTION (KILOS) TOTAL/POR HAC	VALOR DE COSECHA HARVEST VALUE	COSTO DE INSUMOS COST OF INPUTS TOTAL/POR HAC	RELACION BENEF/COSTO BENEFIT/COST	COSTO DE INSUMOS MAS MANO DE OBRA INPUTS PLUS LABOR COST	RELACION BENEF/COSTO BENEFIT/COST
POTATO	92.81	1'236,130/ 13,319	106'877,546	46'552,605/ 501,590	2.30	62'170,075	1.72
/ WHEAT	41.68	26,999/ 648	3'482,771	1'872,171/ 44,918	1.86	4'304,487	0.81
A/ BARLEY	32.63	31,275/ 958	3'469,914	1'473,439/ 45,156	2.35	3'416,853	1.02
AS/ PEAS	31.10	7,720/ 248	2'802,425	1'533,507/ 49,309	1.83	3'137,024	0.89
CHOCLO/COB CORN	8.25	132,811/ 16,098 (unidad) (unid)	4'265,811	909,071/ 110,190	4.69	1'628,956	2.62
GRANO/ GRAIN CORN	7.70	5,641/ 733	976,631	767,788/ 99,713	1.27	1'418,849	0.69
/ OTHERS	3.00	512/ 171	239,000	94,999/ 31,666	2.52	175,399	1.36
/PRMEDIO	217.17	-	122'114,098	53'203,580/ 244,986	2.30	76'251,643	1.60

\* Incluye un monto pequeño de frijol  
Includes a small amount of bean production

\*\* Choclo y frijol  
Tarwi and beans

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Once again, however, the benefit cost ratio was seriously weakened by market conditions. Sale price per kilo of potatoes for example increased by 21% over the previous year but the cost of inputs for potato production increased by 55%.

Since potato production represents the largest financial investment, an effort has been made to compare the projects experience with that of the farmer operating independently. Table 5 compares the data each year between that of the independent farmer on the one hand and DALPRA plots on the other. Again, it should be kept in mind that the data for independent production is based primarily on verbal information from farmers who generally have no, or very limited, recorded data available. The reliability is therefore very questionable.

In the first year, the benefit cost ratio realized in the DALPRA plots was almost double that of the independent farmer. It is noteworthy that the difference reported in investment costs in physical inputs, per hectare, is only 17% greater in the DALPRA plots. Yet the production per hectare was about 140% greater. Thus, based on this data, the critical difference was apparently in the application of the technology rather than the cost of the technology.

In the second year, the situation reversed: DALPRA's benefit cost ratio was a low 1.39 while the independent farmer realized a ratio of 2.40. This was in spite of DALPRA investing at a substantially higher level, spending about 73% more on physical inputs than the independent farmer. Principal negative factor in the case of DALPRA was undoubtedly the purchase of poor seed stock, as described above.

RESUMEN DE RELACIONES BENEFICIO/COSTO, CULTIVO DE PAPA CAMPANA 1979-80, 1980-81, 1981-82

SUMMARY OF BENEFIT/COST RATIOS, POTATO PRODUCTION 1979-80, 1980-81, 1981-82

PRODUCTOR PRODUCER	EXTENSION Has EXTENSION Has	RENDIMIENTO ( Kls) PRODUCTION (Kilos)	VALOR SOLES VALUE SOLES	COSTO DE INSUMOS COST OF INPUTS TOTAL/POR HAS	RELACION BENEF/COSTO BENEFIT/COST	COSTO DE INSUMOS MAS MANO DE OBRA INPUTS PLUS LABOR COST	RELACION BENEF/COST O BENEFIT/COST
1979- 1980							
DALPRA	25.74	162,023/ 6,295	10'937,228	3'588,208/ 139,402	3.05	4'800,536	2.28
* INDEPENDIENTE INDEPENDENTLY	1.00(X)	2,624/ 2,624	188,400	119,243/ 119,243	1.58	197,889	0.95
1980- 1981							
DALPRA	77.11	487,597/ 6,323	34'694,895	24'972,835/ 323,860	1.39	35'675,476	0.97
INDEPENDIENTE INDEPENDENTLY	1.00(X)	NO DISPONIBLE NOT AVAILABLE	450,888	187,603/ 187,603	2.40	NO DISPONIBLE NOT AVAILABLE	
1981 - 1982							
DALPRA	92.81	1'236,130/ 13,319	106'877,547	46'552,605/ 501,590	2.30	62,170,075	1.72
INDEPENDIENTE INDEPENDENTLY	1.00(X)	8,322/ 8,322	521,367	445,915/ 445,915	1.17	NO DISPONIBLE NOT AVAILABLE	

\* Representa los resultados de producción en la campaña 1978-79  
DATA REPRESENTS PRODUCTION ACTIVITI FOR 1978-79

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Third year data show a DALPRA benefit-cost of 2.30 compared to 1.17 for the independent farmer. As in the first year, the difference in increased investment is not substantial, DALPRA investing 12% more than the independent producer. The increased yield per hectare however was 60% greater for DALPRA.

#### D. Potato Seed Production

An additional component of potato production was an effort to produce good quality seed potatoes within the communities. Since it was not identified as a specific objective of the program, quantifiable targets were never established; nor was a standardized reporting system to track this key aspect of production. During the second program year, the records indicate that there were approximately 42 metric tons of seed quality potato available from the first year's production, with a market value of Soles 6,720,000 or US\$ 16,123 (at 416.80 soles = US\$ 1.00). During the second year, the production of seed potatoes was adequate to meet the needs of the principal campaign of the third year: 164 metric tons, valued at S/. 29,520,000 or US\$ 45,172 (at 653.50 soles = US\$ 1.00). These figures represent the program's share of production, an equal amount being available to the farmer or community.

This development of a degree of self sufficiency in quality potato seed production represents a significant step forward in future increased yields. Traditionally, the farmers did not have the necessary capital to purchase good quality seeds, especially considering high transportation costs and additional costs imposed by middle-men. The only recourse was continued use of poor seed stock, consistently limiting the level of

production. As replacement stocks of seed potatoes will be necessary every several years, additional investments will be required, but it is anticipated that this will be feasible for the independent farmer once he has been able to reproduce the high yields on non-DALPRA plots.

E. Generated Fund

As mentioned above a "Generated Fund" was established from the sale of the program's share of crop production, with the ultimate goal that it be turned over to the communities at the end of the third year and thus serve as a continuing financial resource for the purchase of the necessary agricultural inputs. During the operational stage, the funds were used to offset some of those agricultural costs not covered by the basic budget. The following summarizes the activity of the fund and the final disposition:

<u>Date</u>	<u>Deposits/Interest</u>	<u>Withdrawal</u>	<u>Balance</u>
Feb. 1981	Opening Deposit		S/.4,372,137
March	2,452,381		6,824,518
April	4,561,420		11,385,938
May	183,000		11,568,938
(July, 1981, account transferred from Banco de Crédito, Huaraz to the Banco Hipotecario, Lima)			
Aug.	Opening Balance		13,685,408
Sept.	1,170,431		14,856,839
Nov.	676,849	322,855	15,210,833
Dec.	2,129,365		17,340,198
Jan. 1982	2,368,074	222,225	19,486,047
Feb.	2,400,000		21,886,047
March	7,727,240	2,737,491	26,875,796
Apr.		5,691,504	21,184,292

<u>Date</u>	<u>Deposits/Interest</u>	<u>Withdrawal</u>	<u>Balance</u>
May 1982	8,762,199	4,380,642	25,565,849
Jun.	10,719,801	2,982,035	33,303,615
Jul.	3,977,766	16,955,883	20,325,498
Aug.	596,250	11,545,987	9,375,761
Sept.	2,801,897	1,246,469	10,931,199
Oct.		4,128,652	6,802,547
Nov.	465,980	3,046,247	4,222,280
Dec.	739,549	3,670,980	1,290,849
Jan. 1983	21,348	1,312,197	-0-

When CARE funding terminated in August, 1982, CARE continued to manage the fund at ONAA's request until Dec., 1982. During that period, the fund represented the only available source of funds for the payment of salaries and termination costs for staff that had previously been paid by CARE directly. The account was closed in Jan. 1983 and a check for the balance of S/. 1,312,197 (US\$ 1,274) was delivered to ONAA on Jan. 14, 1983.

The situation relating to the Generated fund touches on one of the weakest links in the DALFRA concept. Original plans presumed the early involvement of community leaders in all phases of purchasing supplies and equipment, marketing, and management of the generated fund. In practice, these 3 components, particularly marketing, presented considerable logistical and administrative problems that required full attention from project staff. Involving community leaders into the process and the development of a training effort in these areas was never realized. The earliest time frame for such an effort would have been the development of a systematic training program during the fourth year, implementation during the fifth year and finally primary responsibility for operations of each component

being assumed by the communities during the sixth year.

## Nutrition Evaluation

### A. Structure

Nutrition activities focused on the development of a Nutrition Committee in each community, composed principally of the community women. One of the two staff nutritionists assisted in the development of an organizational and work plan for each committee whose principal role was the establishment of at least one communal dining room, or "comedor", in each community. The comedores were to provide a mid-day meal for all children under 6 and pregnant or lactating mothers, typically the most nutritionally vulnerable group. Supply of the comedores was to come from a portion of the harvest: approximately 20% of the programs 50% share of the total harvest plus additional items not available from local production, such as cooking oil, noodles, rice and condiments purchased with funds from the sale of the harvest, i.e. the generated fund.

Formation of the nutrition committees was begun in the first program year, 1979-1980 and 3 of the 9 communities were operating a comedor by the end of that period. By the end of the second year, all 9 communities had a committee established, an active nutrition education program and, with one exception, all were operating at least one comedor. By the beginning of the third year, a total of 12 comedores were operational. Because of the sporadic starting dates of the various comedores, and the absence of a standardized reporting system, the present evaluation will focus primarily on the third year of operations.

The comedores served a double purpose, First as a means of providing a well balanced meal for the vulnerable population

and secondly as a gathering point for community women in which the staff nutritionist would offer either a class on basic nutrition or a practical demonstration in food preparation. The focus was on improving the family diet based on the use of locally produced foods. An additional achievement of the committee itself was in the development of organizational abilities among the women of the community. Though this aspect will not be evaluated in the present document, it was clear that a potential does exist to broaden the responsibilities of such women's organizations and focus on issues relating to general community development.

B. Acceptability and Costs of the "Comedores"

The initial plan was to have each comedor functioning 20 days each month, though this level was never achieved:

Average number of days per month  
comedores were functioning 1981-82

	<u>Cuenca de Marcará</u>	<u>Cuenca de Mancos</u>
Aug.	16.2	17.2
Sept.	16.2	8.0
Oct.	7.0	12.0
Nov.	13.2	15.8
Dec.	18.0	17.0
Jan.	13.8	15.6
Feb.	16.6	18.4
March	12.2	17.0

	<u>Cuenca de Marcará</u>	<u>Cuenca de Mancos</u>
Apr.	15.2	17.8
May	18.6	17.0
Jun.	17.4	16.0
Jul.	<u>12.6</u>	<u>16.0</u>
Monthly average	14.75	15.65

The reasons for non-functioning days were varied, but generally related to the demands of household or agricultural responsibilities. The women assigned to meal preparation on a given day were quite often unable to include the comedor among other responsibilities, especially during sowing and harvest periods. Illness was also frequently a reported cause of absence. Aside from these personal reasons, there were frequent instances when the comedor was not functioning simply because of logistical and administrative problems related to the purchase and delivery of food to each comedor.

Attendance records for children under 6 were as follows:

Average daily number of children  
under 6 years attending Comedores

1981 - 1982

	<u>Cuenca de Marcará</u>	<u>Cuenca de Mancos</u>
Aug.	222	142
Sept.	222	154
Oct.	208	150
Nov.	216	148
Dec.	212	148
Jan.	206	152

	<u>Cuenca de Marcará</u>	<u>Cuenca de Mancos</u>
Feb.	178	136
March	180	140
Apr.	160	122
May	156	132
Jun.	140	114
Jul.	<u>136</u>	<u>112</u>
Monthly Average	186.3	137.5

While mothers frequently found it difficult to bring children to the comedor for the same reasons mentioned above (other responsibilities with higher priority), there was a clear downward trend in attendance throughout the year in the Cuenca de Mancos and, particularly, in the Cuenca de Marcará.

It was during this third year that community members had become fairly vocal over the value of the comedores. Their concern centered around the following issues:

- The necessity to interrupt the days activities and bring the youngest children to the comedor. Often a considerable distance had to be travelled.
- The uncertainty of whether or not the comedor was functioning on a given day, either because one or more of the women "on turn" not being available or the late arrival of food supplies.

An additional factor probably existed, not voiced by the beneficiaries. The concept of the comedor was presented to the

community as an integral component of the entire agricultural and nutritional program and assistance at the comedor was probably seen during the early stage of operations as a necessary function for the continuation of DALPRA assistance. Undoubtedly, had the majority of communities been given the opportunity to receive the rations for home use by the vulnerable population, they would have preferred this to the comedor.

Owing to the low level of acceptance of the comedores in many communities and a more limited budget, the comedores were closed during the first half of the fourth project year.

Cost of operating the 12 comedores during the third year was:

<u>ITEM</u>	<u>COST</u>	
	<u>Soles</u>	<u>US\$</u>
Value of food delivered to comedores from harvest	1,970,535	3,889
Cost of purchased food (oil, rice, sugar, noodles and condiments)	<u>1,814,591</u>	<u>3,467</u>
Total	3,785,126	7,356

C. Nutrition Education

In the area of nutrition education, each of the 2 nutritionists visited each community 3 to 4 times per month and at each visit offered formal or informal classes and demonstrations, in addition to assisting in the organizational development of the committee and operation of the comedor. Informal education efforts were either open ended classes with a general topic or a practical demonstration of a particular dish (based on appropriate ba

lancing of locally produced food). More structured and in-depth "courses" were also offered, usually lasting 1 to 2 days and frequently attended by men as well as women. In the third year, a total of 16 courses and 247 classes or demonstrations were provided. Average attendance in the Cuenca de Marcará was 21 during the first half of the year for classes and 11 for demonstrations but this fell to an average of 6 and 7 respectively during the second half. In the Cuenca de Mancos, the trend was reversed, with attendance averaging 55 persons for classes and 26 for demonstrations during the first half, and increasing to 78 and 77 respectively during the second half.

One limiting factor in education was that neither of the nutritionists was Quechua speaking. For most community women, Quechua is the first language and though the majority are able to converse in Spanish, individual abilities are quite variable. It was often necessary to have one woman translate during the lecture.

Towards the end of the third project year when it was likely the comedores would be closed, an alternative education strategy was developed, focusing on already existing work groups of about 8 to 12 families each that generally live in close proximity. Each work group was to become a sub-unit of the community nutrition committee. Rather than focus on the comedor for educational efforts, classes and demonstrations would be offered in the home of one of the members of the work group. This was especially valuable in giving the nutritionist an opportunity to make the demonstrations more relevant to the home kitchen, broaden her familiarity with the practical limitation and additionally provide an opportunity to observe whether or not concepts taught

were being applied particularly those relating to environmental hygiene. Transportation problems would now largely be shifted from the beneficiaries to the nutritionists. Preliminary reports from the nutritionists suggest that this approach has been well received by the work groups.

During the project's third year, two opportunities were identified to broaden the impact of the nutrition component of the program: 1) expansion of the education efforts to include specific health topics and 2) the development of family gardens. In health, informal contacts were initially developed by the nutritionist assigned to the Cuenca de Mancos with staff from the area hospital in Yungay as well as health workers from local health centers. Close coordination at the field level provided the opportunity to include sessions on specific health topics as an integral part of the course offered (especially in the more structured educational sessions lasting 1 to 2 days) These sessions were presented by medical professionals and included for example, prevention and control of diarrhea, importance of vaccinations and family planning techniques. The most structured effort was a 4 day course on nutrition and health in the city of Carhuaz, June, 1982 attended by 18 active community women. There appears to be strong community interest in these courses, particularly in the Cuenca de Mancos.

The concept of family gardens was also enthusiastically received by the communities. Organization and implementation was under the control of the nutritionists with technical assistance from the agronomy staff. By the end of the third year, 4

gardens had been installed in Marcará and 71 in Mancos.

D. Anthropometric Surveys

In order to evaluate the impact of the nutrition component among children under 6 years of age, periodic anthropometric measurements (weight for age) were to be undertaken by the nutritionists for comparison with earlier results, particularly with the data obtained in the base-line study of April-May, 1980. Results of the initial and subsequent surveys were compared to standards published by Galvan and Jaspe and classified according to the following categories:

Normal	=	weight for age at least 90% of standard
First degree malnutrition	=	89.9% to 80% normal
Second degree malnutrition	=	79.9% to 70% normal
Third degree malnutrition	=	69.9% or less of normal.

Unfortunately, at the time of preparation of this report, data for the second and third years were not available for the Cuenca de Marcará. As soon as they are prepared, they will be presented as an addendum to the evaluation.

Table 6 presents the data for the Cuenca de Mancos and Quecas in the second and third program years for comparison with the base-line survey. Subjects were not selected at

random; only those children who assisted at the comedor on the days that measurements were to be taken were measured. Thus, children not attending, generally because of parents being unable to accompany them or illness, had no opportunity of being included in the survey.

The second survey was undertaken a few months after most comedores had become operational, and little or no impact can be expected. The third year shows no children remaining in third degree malnutrition and a substantial reduction in cases of second degree malnutrition. General conclusions, however, must be delayed until the data for the Cuenca de Marcara can be made available.

## EVALUACION DE PESO POR TALLA, NIÑOS MENORES DE 6 AÑOS

## WEIGHT FOR AGE SURVEY, CHILDREN UNDER 6 YEARS

ESTADO NUTRICIONAL <u>NUTRITION LEVEL</u>	EVALUACION # 1 ABRIL, MAY, 1980 <u>N = 243</u>		EVALUACION # 2 ABRIL, MAY, 1981 <u>N = 173</u>		EVALUACION # 3 ABRIL, MAY, 1982 <u>N = 123</u>	
	<u>N°</u>	<u>%</u>	<u>N°</u>	<u>%</u>	<u>N°</u>	<u>%</u>
NORMAL	57	23.5	27	15.6	42	34.1
1°GRADO MALNUTRICION	111	45.7	91	52.6	64	52.0
2°GRADO MALNUTRICION	64	26.3	51	29.5	17	13.8
3°GRADO MALNUTRICION	11	4.5	4	2.3	0	0.0

NOTA: La evaluación # 1 incluye todas las comunidades; la segunda y tercera incluye datos solamente de Mancos y Quecas.

NOTE: Evaluation # 1 includes all communities; the second and third includes data only from Mancos and Quecas.

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#### IV. Principal Conclusions and Recommendations

##### A. Administrative Aspects

The need to satisfy reporting requirements of three distinct organizations created a cumbersome, lethargic reporting system. A variety of documents were prepared, including monthly and quarterly field reports, P.I.E.'s, fiscal and inventory documents, etc., many of which were modified for vague reasons and rarely followed any coordinated pattern. As a result, many documents were produced that were of questionable value and in other cases required information was not available or was not in an appropriate format.

In a project as complex as DALPRA, an adequate and efficient reporting system should be planned in the pre-operational stage and should consider the reporting requirements of each organization. A prerequisite of course is the establishment of specific long and short term goals and what means will be used to measure progress. Additionally, internal reporting requirements of each organization need to be explicitly identified in both fiscal and programmatic areas. On the basis of these needs, a coordinated effort among the three organizations will determine the appropriate timing, content, format and recipients of periodic reports. Flexibility can be maintained provided modifications are coordinated among the three organizations.

Personnel administration was hindered by the different employee benefit policies of ONAA and CARE. This can only be resolved by having one agency assume all responsibilities for contracting staff. As ONNA was seen as the long-term implementor of the pro

ject, ONAA would be the logical institution to contract permanent staff.

There was a lack of clear delineation of responsibilities among field staff, creating confusion internally and between staff and beneficiaries as well. The obvious solution is the preparation of more explicitly defined job descriptions and organizational chart through which each staff member can readily identify the range of his or her responsibility and authority.

Since the economic viability of the project was a function of agricultural production levels and marketing operations, this area was generally given operational priority over the needs of the nutrition component. A step towards improving the level of coordination among these two basic components would be to appoint one of the two staff nutritionists as both senior nutritionist and a member of the Regional Coordinating Committee.

#### B. Agricultural Component

Poor production levels in the potato crop during the second year were largely due to the purchase of poor quality seeds and, to a lesser extent, logistic and administrative problems. Based on the third year's level of production, however, the implied premise that an increased investment in inputs will produce a crop large enough to justify the investment appears sound. Production levels of other crops of lesser economic importance cannot be evaluated in the absence of data from control plots. However, a reasonable benefit-cost ratio was realized for most crops, particularly cob corn.

It must be emphasized that production levels by themselves were not the controlling factor in determining benefit-cost ratios. Far more important were the unequal effects of inflation: substantial increases on the cost of agricultural inputs on the one hand and little or no compensating increase in the market value of the crop on the other hand.

Probably the most positive aspect of production was in seed potatoes. One half of the total production of seed quality potatoes in the third year was adequate to the needs of the principal campaign in the fourth year. This will ultimately reduce the farmer's dependence on seed wholesalers and reduce the level of cash required for maintaining increased production levels in future years. The development of seed banks should be considered as an exclusive or principal goal of future project strategies.

Marketing strategies were not an integral part of the training program for beneficiaries, largely due to the lack of adequately trained staff in this area. The most direct recommendation would be for the project to have included a consulting agricultural economist with responsibility for the training and supervision of project staff in marketing strategies. Responsibility for marketing operations would be increasingly shared with community leaders.

An alternative approach might also be considered which would call for a basic change in DALPRA strategy. Rather than provide the farmers with all necessary inputs in exchange for 50% of the harvest, this alternative strategy would provide the inputs in the form of a loan to be paid back to the project,

in cash, at the end of the production cycle. An agricultural economist would assist the farmers or communities in developing appropriate marketing techniques but the actual marketing would be the responsibility of the individual farmer or community. In this way, the marketing aspect would not be hindered by the relatively complex financial controls of either ONAA or CARE and, at the same time, the beneficiaries would be exposed to new strategies that would focus on improving their situation in what is likely to continue to be a very unfavorable marketing environment for food producers.

### C. Nutrition Component

The communal dining rooms were closed at the beginning of the fourth year because of practical disadvantages in terms of convenience and custom among the beneficiaries, as well as limited project resources as ONAA assumed the entire financial responsibility. The development of the alternative strategy, which focuses on nutrition education among already existing work groups, appears very promising and has been well received in the communities.

A constant limiting factor in educational efforts was that the nutritionists were not fluent in Quechua, though it is recognized that there are few bilingual nutritionists available. To the extent possible, the practice of identifying bilingual women in the communities who demonstrate both leadership skills and interest in nutrition should be encouraged to assume the role of intermediaries between nutrition staff and the community. Additional training for these individuals should be developed further.

Expansion of the nutrition program to include training in health promotion and disease prevention new needs to be formalized with the regional office of the Ministry of Health.

Specific strategies and personnel assignments should be coordinated with Ministry staff and appropriate agreement should be signed.

Family gardens have been enthusiastically initiated in most communities and form an appropriate component of the nutrition staff needs to be encouraged and the number of gardens increased. The cost of the agricultural inputs of the gardens is relatively minor and the quantity needed to plant at least the first crop should be made available to each family without seeking a return of 50% of the harvest. Savings realized by the closing of the dining rooms should be directed to family gardens.

Both of these expansions of the nutrition component were channeled through the nutrition committees and it seems likely that the role of these committees could now be expanded further to include additional activities in community development.