

~~P.D. AA2-95~~

PD-AA2-95

63117

Haiti
AGRICULTURAL STATION
A Proposal
for
A Cooperative Agreement

presented by

Agricultural Cooperative Development International
201 Continental Building
1012 Fourteenth Street, N.W.
Washington, D.C. 20005

and

World Wide Development Ltd.
4 Shalom Aleichem Street
Jerusalem, Israel, 12184

to

A Group of Haitian Agri-Business Leaders
and
The United States Agency for International Development
Mission to Haiti

February 3, 1983



Agricultural Cooperative
Development International

Table of Contents

	<u>Page</u>
I. Introduction	I-1
A. The Problem	I-1
B. The Constraints	I-1
C. Work To Date	I-2
D. Baseline Data	I-3
II. Proposed Cooperative	II-1
A. Project Initiation	II-1
B. Agricultural Station	II-3
1. Training	II-3
2. Assistance to Members and Farmers in the Area	II-4
3. Buying and Distributing Inputs	II-5
4. Marketing Services for Export	II-6
5. Machine Pool	II-6
C. Cooperative Membership	II-6
D. Role of ACDI and WWD	II-8
E. Benefits	
III. The Production and Demonstration Farm	III-1
A. The Market	III-1
B. Production Program	III-3
C. Cost of Agricultural Machinery	III-4
D. Interest on Working Capital	III-7
E. Irrigation System	III-7
F. General Farm Investments	III-8
G. Management Expense	III-9
IV. Systematic Summary and Time Chart	IV-1
A. Goal	IV-1
B. Purposes	IV-1
C. Outputs	IV-3
D. Technical Assistance Inputs	IV-4
E. Implementation Schedule	IV-6

	<u>Page</u>
V. Evaluation	V-1
VI. Technical Assistance Budget	VI-1
VII. Management Proposal	VII-1
A. Agricultural Cooperative Development International	VII-1
B. World Wide Development, Ltd.	VII-3

Annexes

Annex A: Crop Budgets

Annex B: Summary of Relations Among the Cooperative, WWD,
the Station and the Production Unit

LIST OF TABLES

I. Division of Land	I-3
II. Three Country Comparison	II-2
III. Crop Area Under Cultivation	III-3
IV. Estimated Producer Prices (Farmgate)	III-4
V. Annual Budget Tractor Work	V-5a
VI. Investments in Tractors and Equipment	III-6
VII. General Farm Investment	III-8
VIII. Farm and Station Management Expenses	III-9
IX. Investment Budget and Working Capital Budget for Farm and Station	III-10
X. Production and Demonstration Farm: Annual Budget	III-11
XI. Yields in Israel of Various Vegetable Crops	III-12
XII. Cash Flow, Cooperative Station	III-13

I. Introduction

A. The Problem

Haitian agriculture suffers from a chronic disuse, underuse and misuse of its basic resources in land, capital, water, manpower, climate and opportunities deriving from its proximity to markets. There exists a structural error at the very core of the Haitian farming sector. In the case of the subsistence farmer on fragmented microscopic plots, low priced, low yielding staple crops are grown with outdated primitive methods and wasteful irrigation practices where irrigation exists, thus, assuring the continuation of the bondage of subsistence farming forever.

Obviously, the conditions of Haiti cry out for a change-over to high yielding, high value exportable cash crops such as winter vegetables, fruits and flowers, etc. for which the basic advantages and conditions so abundantly exist.

Nor is the situation in the medium and large farm sector much better. The farms are often owned by absentee landlords and are generally underused or not used at all. Here, at least structurally, the introduction of modern, tractor based methods of soil preparation would be possible because of the size of the fields. Unfortunately, except for a few notable exceptions, little is being done and this sector, despite its obvious advantages, is little better than the smallholders.

B. The Constraints

The major constraints on the development of Haitian agriculture towards a greater use of its potential are:

- Unavailability of information to farmers on all the different aspects of modern technology and its uses for agriculture;
- Unavailability of suitable advanced farm management and indeed lack of appreciation by farmers of the importance of such management;

- unavailability of effective low cost farm supply and marketing services.
- inability to attract investment in agriculture. Until now, it is extremely difficult to persuade commercial banks to finance ventures based on agriculture, the reason apparently being the lack of suitable, properly documented projects and a skepticism on the part of the banks in the credibility of the proposed management.

C. Work to Date

The number of projects involved in agriculture in Haiti in one way or another is legion. National organizations with bilateral efforts, international institutions and organizations providing funding and aid, religious and other public spirited organizations give assistance in a variety of integrated projects in concert with the Haitian government or privately with varying degrees of success.

In addition several Haitian agribusiness leaders and large landowners have attempted modern agricultural production for export. In all cases, they have suffered initial losses due to incomplete approach, inadequate technology and investment and inadequate farm management. A few have overcome these problems in considerable part and are now generating substantial farm revenues.

However, no general progress or success was registered anywhere in this sphere nor was an approach proposed which promises, on a pilot basis, to counter the many constraints existing.



D. Baseline Data

The following shows the division of land ownership in Haiti.

Table I: Division of Land

<u>Size of Unit</u>	<u>Farms Number</u>	<u>%</u>	<u>Area Thousand 000 Acres</u>	<u>%</u>
0. - 3 1/4 acres	438,000	71.1	702.7	32.5
3 1/4 - 9 3/4	147,000	23.8	874.6	40.9
9 3/4 - 32 1/4	29,650	4.8	471.8	21.9
above 32 1/4	2,175	0.3	109.7	5.1
Total	61,6825	100	2158.8	100.0

The table demonstrates the prominence of the small landholder in the country and the relatively small share of the land taken up by large farms. This, however, includes much of the best, flat land.

Agriculture hardly took part in the general growth of the Haitian economy in recent years. In per capita terms most staple food crops as well as the traditional industrial crops regressed. Some vegetables, such as tomatoes, potatoes, sweet peppers, melons, etc. showed a net growth which is not surprising given the low level of production to begin with. Agriculture as a whole declined between 1954-55 and 1977-78 from 44-49% of the total domestic product to about 34-41%. The share of agricultural products in total export also fell from 97.6% in 1950-55 to 51.8% in 1975-80. This was due both to agricultural stagnation and to the growth of industrial exports (assembling).

Average yields are low:

Sorghum 800-850 lbs per acre
Corn 850-900 lbs per acre
Beans 350-450 lbs per acre
Tomatoes 7700-9500 lbs per acre

* from 'promotion des investissements dans l'agriculture "Capital Consult S.A. Haiti"'

As a result, the average income of the Haitian farmer is the lowest in the hemisphere. Here again a decline must be reported in real terms. In the fifties it was around \$200-250. It is now in today's dollars 300-350, a decrease in real terms.

II. Proposed Cooperative

In order to point the way on a pilot basis toward overcoming these difficulties and create an instrument of change which would stimulate progress toward a high yielding agriculture in Haiti, Agricultural Cooperative Development International (ACDI) and World Wide Development Ltd. (WWD) propose to collaborate with a group of Haitian agri-industrial leaders and major farm operators in the establishment of a multi-purpose agricultural service cooperative. The principal initial effort of the cooperative will be the establishment of a regional "station" for the demonstration, training and dissemination of modern, high yield farm technology and management based on Israeli experience. The station will be at the site of a substantial production unit, owned jointly by the cooperative and WWD, which will generate revenue to support agricultural outreach consulting, training and extension services as well as net return for its owners. Subsequently, it is expected that the cooperative will develop effective input supply and produce marketing services for member farmers which will improve the availability of farm inputs at reasonable costs and access to external markets for quality produce.

A. Project Initiation

Because of the need for a substantial amount of investment capital to launch the high technology agricultural production unit and station, the initial group being asked to join the cooperative consists of a group of Haitian agribusiness and agricultural leaders who are capable of investing considerable sums in the equity of the cooperative, totalling some \$250,000 for the group. The investment of the cooperative in the production unit will be matched by Israeli investors through WWD, which will also be a founding member of the cooperative. On the strength of these equity investments and of a solid feasibility study, additional Investment Capital will be sought from the Agricultural and Industrial Development Bank. In order to bring this investment to life, it is proposed that AID provide

funds for the provision of expatriate technical assistance including two full-time agricultural and cooperative development specialists for at least the first two years of the project, plus a modest amount of overseas training and specialists consultation. The cost of this initial technical assistance for two years is estimated at \$500,000. It is anticipated that it will be at least five years before the complex enterprise is fully operational and self-supporting and that additional dollar-financed technical assistance will be required during the ensuing period. However, by the third year the demonstration and production farm should be earning substantial net revenues, and it is impossible to estimate at this time what the financial requirement for further technical assistance will be.

Prior to final AID decision on the initial technical assistance grant, it will be necessary for the various investors to formally commit themselves to establishment of the cooperative and agricultural demonstration center, including a deposit of investment funds in an escrow account contingent on approval of the grant by AID. Following that approval, it will be necessary to proceed immediately to the formal establishment of the cooperative as a legal entity, the location of a significant acreage of productive land for lease in a central and available location and the development on the land of a modern, fully equipped irrigated farm capable of producing high quality winter vegetables as well as more traditional summer crops. An analysis of the proposed farm or production unit, including the required investments, cropping pattern, working capital requirements, production costs and initial estimated revenues are included in section III below. The production unit will be a joint venture of the cooperative and WWD, legally and for accounting purposes separate from the cooperative's station, even though they will share the same site, and many staff and facilities. Section III ends with a projected cash flow budget of the cooperative and station for the first two years.

B. Agricultural Station

The operational instrument of the cooperative is the agricultural station. It will serve as the focus of the cooperative's training programs, as the center for demonstration of agricultural methods and technology, and as a field testing and observation station. The station will have facilities needed for the services to be provided to cooperative members, will be at the site of the production farm and will share some staff and facilities with it.

The services to be provided by the cooperative through the station will include the following:

1. Training of technical staff and member farm managers
2. Agricultural consultancy and management assistance to members and extension work with small farmers in the area
3. Buying and distributing of agricultural inputs
4. Marketing services, especially for export
5. Machine pool

These services will be provided to members for a fee based on direct cost plus a small overhead charge.

1. Training

This function will be provided for two main groups: (1) the cooperative's own staff of managers agronomists and technicians. (2) Member farm operators and key personnel.

The training will be carried out in three ways: (1) On-the-job training with all that this term implies. The trainees will form a management group under the guidance of the expatriate project director and be given the opportunity to acquaint themselves systematically with the running of agricultural enterprises from the different aspects of a modern operation, (2) Theoretical back-up will be given ranging from field days to

explain certain basic stages as they occur chronologically (such as soil preparation and sowing, for instance) to classroom instruction through formal evaluation of the season just finished by description, compilation of data, discussion, analysis and the drawing of formal conclusions in writing, (3) Training abroad in the United States and Israel in formal courses or training programs organized by recognized institutions; these courses being naturally restricted in number will be reserved for only a few candidates of key personnel of the cooperative itself.

The training service will commence simultaneously with the beginning of agricultural operations.

2. Agricultural Consultancy and Management Assistance to Members and Extension Work with Small Farmers in the Area.

This service especially the first part will commence immediately with the launching of the project. However, its scope will at first be limited to the time available to the project director. It is estimated that during the months of production for exports both expatriate experts will have to spend all of their time on the farm. In due course it is expected that staff trained at the station, quite possibly including Peace Corps Volunteers, will be able to provide significant advisory and extension services, under the direction of the Project Director, to members and other farmers in the region. One of the major benefits of the consulting service will be to help the farmer develop a farm plan which will enable him to successfully seek bank credit to support high yield production. In order to provide such services, the farm will be staffed with an extra compliment of agronomists and technicians who initially will be interns and trainees and ultimately will be spending most of their time working outside the farm in an advisory capacity on the farms of cooperative members. It is expected that this outreach service will be most effective within the area where the farm is located and that ultimately, it may be appropriate to develop satellite technical centers in distant agricultural regions of the country.

3. Buying and Distributing of Agricultural Inputs

This service will commence only in the second year of the project. The purchase of the inputs for the first agricultural season will serve as the running in of operations. For a successful start and continuation, the supply service needs a good business manager and a firm and growing demand from the cooperative members and users. At first in-put procurement will be focused on the needs of the production unit. As cooperative members move into high-yield commercial production, the cooperative's supply service can be expanded to meet their needs, developing needed revenues and gaining the economies of bulk procurement for members.

4. Marketing Services for Export

The production farm will be export oriented. Right from the first season, it will be necessary not only to produce vegetables for export, but also to market them. This entails a number of activities, from sorting and packing under export specifications to contact and contract with buyers, transport facilities, etc. This activity which the production farm will have to begin for its own use, will serve the cooperative members when the time comes with their marketing. Conceivably, the cooperative could in time establish regional sorting and packing stations which will serve the neighboring member farms.

It is anticipated that the supply and marketing services will take on increasing importance as membership in the cooperative spreads and more and more farmers are involved in the production of high quality crops especially for export. It may well be that the development of these commercial services will take place to a major extent following the end of the current two year grant during the expected future life of the project. In order to accommodate the development of the commercial services, it may

prove feasible to shift the cost of the farm manager to the production farm where his efforts are concentrated and that grant funding be used to bring in a third expatriate with cooperative management and agricultural supply and marketing experience to develop these commercial services.

5. Machine Pool

The cooperative station will have six tractors and various agricultural implements as well as tractor operators and an agricultural mechanic. The initial equipment will be planned to meet the needs of the production unit, which will pay full cost for their use. In the months when these tools and tractors are not busy with their chores on the production farm they can serve as a machine pool for members. Here, again, for a successful operation demand from nearby member farmers is a must. As more farmers in the region benefit from station advice and seek to emulate the success of the production unit, demand for machine use will increase, justifying an increase in the number of tractors and agricultural implements making the pool more competitive.

C. Cooperative Membership

Membership in the cooperative is to be open to all farmers in Haiti who see an advantage in joining and who are willing to participate in the responsibilities as well as the privileges of membership. A special effort will be made by the staff of the farm and technical center to assure that all farmers, especially in the region where the farm is located are aware of this opportunity and are invited to participate as its capacity is developed to serve them.

Clearly this membership will include many medium and small farmers who are quite incapable of joining on a major investment basis comparable to that of the founding group. In order to maximize the impact of the station on Haitian agriculture, membership in the

cooperative should be made easy as well as open. It is suggested that new members be invited to join on a basis such as an initial subscription of perhaps \$5 in cash for each acre operated plus an agreement for the withholding of one or two percent of the gross value of produce marketed through the cooperative until a total equity position of \$100 per acre has been built up. This will enable new members with limited means to build toward a responsible equity position in the cooperative, and will provide the cooperative with a source of equity to match its expected growth. In line with cooperative principles, all such equity, including the initial shares invested by the founding group, should yield a fixed limited return of perhaps eight percent, payable from net revenues of the cooperative.

If the cooperative is to thrive and grow to serve Haitian agriculture on a broad basis, it will need substantial revenues and a significant and continuing accumulation of working capital. Revenues can be derived from the production unit, from the provision of advisory services other than extension charged at marginal costs and from the provision of supply and marketing services on a reasonable commission or margin basis. It will be prudent for the cooperative to develop substantial undistributed reserves for use as working capital before any further distribution of patronage dividends is made to members.

D. Role of ACDI and WWD

WWD, primarily through the activity of Eli Mizrachi, President, has served as the key instigator and mobilizer of this project. He has developed the concept, excited the interest of the Haitian founding group, of ACDI and USAID and has brought into the picture an Israeli investor group which will enable WWD to match the investment of the founding group in the demonstration and production farm. WWD will join the founding group as a participating member and will continue its entrepreneurial relationship to the project, taking responsibility for the management of the production unit, through the expatriate experts, and for export marketing of the products of the production unit in the North American and European markets.

The relations between the cooperative and WWD as joint owners of the production unit and its financial relations to the station are spelled out in annex B.

ACDI will serve as the primary agency for the provision of technical and management assistance to the cooperative and to the production farm. The proposed AID grant will be made available through a cooperative agreement with ACDI providing for long-term and short-term advisory and training assistance to the cooperative over a period of two years. ACDI and WWD will provide the services of Mr. Dan Reis, experienced agricultural development specialist, who has worked successfully in Haiti, to serve as Project Director during that period. He will be General Manager of the Cooperative, the Station and the Production Unit. ACDI will also subcontract with WWD to provide an Israeli farm manager who will be in direct charge of production on the farm and will assist with training station staff. WWD will, thus, have a dual role in relation to the project, that of entrepreneur and investor, on the one hand, and of subcontractor on the other. It is hoped that an evaluation of the enterprise toward the end of the second year will justify the continuation of the activity and a renewal of AID support, making possible continued ACDI participation with the provision of such further management and technical assistance as may be required at that time.

E. Benefits

The benefits of this project will be of several kinds, but it is not expected they will include any cash return on investment during the first two years. It is to be hoped that some of them will start to be realized in the second, or even the first year, but the full benefits will not be evident for three to five years.

The Haitian founding group will benefit in the first instance, from the availability of expert agronomic advice and consultation by the Project Director and farm manager for their own farms. Because of the pressure of activities in launching the enterprise and

establishing the demonstration and production farm, the time available for such consultation will be limited, at first, but the availability for even brief visits or telephone consultations of interested and extremely knowledgeable Israeli specialists in high quality agricultural production should prove very valuable to the member major farm owners.

The projected cash flow for the cooperative reveals a net gain on current account which is entirely absorbed by investment costs in the first year and largely taken up by loan repayment in the second year. These revenues derive from the cooperative's share of the net surplus of the production unit and from the payment by the production unit of the full cost of machine services provided by the station. They also depend on the fact that expatriate station and farm managers are funded by the AID grant, half of those costs being attributed to the station and half to the production unit. It is suggested that there be no distribution of revenues to the investors until the reserves of the cooperative have been increased to an amount equal to the technical assistance grant attributed to the production unit, that reserve to be maintained as permanent working capital for the station and production unit.

The projection indicates that the enterprise can be substantially profitable in future years, even though expenditures on station management and overhead will have to be greatly increased, as expatriate technical assistance declines and the demand for station services increases. The extension, advisory, and service activities of the station cannot be achieved without cost which inevitably will cut into the revenues otherwise available to the investors in the cooperative. However, without that outreach activity, there would be no technical assistance from AID and ACDI.

The third group to benefit from the enterprise will be medium and small Haitian farmers, especially those in the region surrounding the demonstration farm. The poorest among them will benefit immediately through increased employment in the labor intensive production on the farm itself. This may well result in doubling the actual incomes of several hundred landless or near landless families.

More importantly farmers in the area will benefit from the extension and outreach services of the farm. These will increase in value and volume as the farm becomes fully established, its demonstration affect becomes known and the farm management and advisory staff become trained in the techniques of improved agriculture and extension work. Agronomists and technicians from the agricultural center will assist nearby medium and subsequently small farmers with the development of farm plans for improved production, on the basis of which they can seek credit for the necessary investments. In addition, the station and cooperative will make available to these farmers, as they join the cooperative, supplies of the inputs necessary for improved production and will contract with them to undertake the marketing of their high value crops either by purchasing them at fair prices, or on a commission basis. As the enterprise develops, the availability of these commercial farm services is expected to take on greater and greater importance and become as significant a contribution to the ability of the small Haitian farmers to enter a high production activity as is the availability of technical and farm management advice from the agricultural center.

The availability of farm planning advice, production supervision, market contracting and timely supply of requisite inputs from the station to the medium and small farmers of the area who are members of the cooperative should make it possible for them to borrow from the agricultural bank the requisite working capital to improve their on-farm production. If such a cooperative arrangement with the agricultural bank cannot be developed effectively, it may become necessary for the cooperative to borrow additional working capital itself from the banks for the purpose of relending to small farmer members to make possible their increased and improved production.

While the benefits from the enterprise will be most evident in the region surrounding the demonstration and production farm, word of success travels widely, and it is to be

III. The Production and Demonstration Farm

A. The Market

The market for the produce of the production farm consists of two elements. The first: - the local market for which it will produce during the summer rainy season staple grain crops such as corn and sorghum which in Haiti are food crops with a more or less assured market. The second: - winter vegetables for export to the North American market for which it will produce high value crops which are at a premium in that season. The proposal for the production of vegetables in Haiti for the export market in the U.S. and Canada in the winter is based on the following circumstances and natural advantages:

- a. Climate: During the winter-balmy, generally, dry weather prevails in most parts of the country. The temperatures are ideal for most vegetable crops. The rainless period permits irrigation whenever water is available and avoids the disadvantages of excessive rain which damages the crop. It is at this time precisely that the U.S. and Canada import a large part of their vegetable needs mainly from Mexico.
- b. Proximity: Haiti is relatively close to the major northeast urban centers. As far as the east coast is concerned, Haiti has got an advantage over the main export producing area in Mexico - the state of Sinaloa. By sea or air the distance from Haiti to New York, for instance, is little more than from Florida.
- c. Manpower: Vegetable production is still largely a matter of manual labor. In Florida, for example, the part of the total production cost per unit of most vegetables deriving from labor is 48%. Hourly wages in Florida are several times greater than the daily wage in Haiti. The minimum daily wage hoped for but seldom realized in practice is \$2 per day*. Even in Mexico the daily wage is far higher and reached \$6 four years ago.

* most farm laborers get 60-80 cents a day.

(Before the latest devaluation of the peso, it was \$12 per working day). Intangibles such as a willingness to work probably unsurpassed elsewhere in the Caribbean makes this advantage even greater.

The following is a three country comparison of tomato production costs in winter. In the case of Florida and Mexico the figures are taken from, "Producing Fresh Winter Vegetables in Florida and Mexico: Costs and Competition," by G.A. Zapp and R.L. Simmons, USDA. In the case of Haiti, projections are calculated on the transfer of technology from Israel based on yields obtained there with suitable conservative reductions of estimated yields.

Table II

Three Country Comparison

	Florida 1978-79		Mexico	Haiti	
	ground	staked	staked	staked	gro
Total Cost of Production per acre	\$ 3874.5	5310.5	5117.5	3472	23
Total preharvest cost per acre	\$ 1902	2710.2	1113	1171	10
Total preharvest cost per carton	\$ 2.85	2.85	1.25	1.00	1.5
Harvesting costs per carton	\$ 0.92	0.89	0.89	0.15	0.2
Packing and marketing costs per carton	\$ 2.00	1.85	3.61	1.8	1.8
Total cost farmgate per carton	\$ 5.74	5.59	5.75	2.96	3.5
Total cost farmgate per pound	\$ 0.19	0.19	0.19	0.10	0.1
Yield per acre in 30 pound cartons	675	950	890	1173	67
Yield per acre in pounds	20,250	28,500	26,700	35,190	20,2
1973 - 1977-8 Prices F.O.B. 5 season average (carton)	\$ 7.30	7.30	7.13		

B. Production Program

The farm will produce in the first year six crops, four of them in winter vegetables for export: tomatoes, cucumbers, melons and sweet peppers; two grain crops: sorghum and corn.

The crops chosen for the first year are by no means the only ones to come into question. Other crops such as squash, lettuce, eggplant, watermelons, okra, etc., will be considered. For rainfed crops other possibilities such as cotton, rice, soybeans and tobacco have to be investigated.

<u>Table III: Crop Area Under Cultivation</u>			
	Irrigated area acres	Rainfed area acres	Annual total cultivated land acres
Area under cultivation	100	150	250
Crops: tomatoes	25	-	25
melons	25	-	25
cucumbers	25	-	25
sweet peppers	25	-	25
sorghum	25	150	175
corn	100	150	250
Annual total crops	225	300	525

In times of erratic rainfall, it will be technically possible to water the grain crops, sorghum and corn, thereby ensuring the projected yields.

The project prices are in most cases based on what was attained in previous years.

Table IV: Estimated Producer Prices (Farmgate)

	Input Costs Per Unit				
	Unit	\$		Unit	\$
gasoline	gallon	2.15	Savin 75	liter	1.80
diesel oil	gallon	1.40	Furadar	kg	1.6
corn pioneer seed	lb.	1.00	Coside	lb	3.43
Ammonium sulphate	lb	0.11	Dymid	pint	2.57
Super phosphate	lb	0.12	Ridomil	lb	20.0
pottassium sulphate	lb	0.16			
npk 7-14-14	lb	0.06			
Dektal 75	kg	20.0			
Atrazin	kg	7.0			
Lasso	liter	11.7			
Kobex	liter	14.8			
Dithan 45	kg	7.9			
Ridomil 25	lb	13.86			
Benlet	kg	56.00			
Mando 80	lb	2.27			
Malathion 57	liter	2.25			
Lannet 20	liter	17.20			
Lannet 90	oz	1.35			
Diazinon	liter	15.00			
Diazinon	pt	7.86			

Wages

Three categories of workers are presented:

Tractor drivers	\$6 per day
Skilled workers	\$4 per day
Unskilled workers	\$2 per day

The daily wage for an unskilled farm laborer is often far less than the minimum wage of \$2 and reaches 60-80 cents in many places. Calculations were based on \$2 as a matter of policy.

C. Cost of agricultural machinery

It is proposed that tractors and essential tools would be bought in order to avoid the difficulties encountered by relying solely on hired machinery. The calculation of the cost of a working hour for each of the different machines was based on fuel consumption, maintenance and capital recovery.

The capital recovery cost of the investment in tractors and equipment is included in the price of each tractor hour and debited to the crop. Two types of tractors for which the price of working is calculated, thus:

heavy tractor (ht)	100-120 horsepower	\$20 per hour
medium heavy tractor (mt)	60-90 horsepower	\$10.5 per hour

For one working hour of all other types of agricultural machinery the crop is debited with \$3 as an average figure.

The requirement for tractors in hours per month is shown in Table V.

Table V: Annual Budget Tractor Work

Heavy Tractor needs in hours of work

Crop	Months Acres	1	2	3	4	5	6	7	8	9	10	11	12	Total
Tomatoes	25										62.5			62.5
Melons	25											62.5		62.5
Cucumbers	25												62.5	62.5
Sweet Peppers	25										62.5			62.5
Sorghum	175								437.5					437.5
Corn	250				500.0									500.0
TOTAL	525.0				500.0				437.5		125.0	62.5	62.5	1187.5
Medium tractor needs in hours at work														
Tomatoes	25	67.5	67.5	42.5							62.5	25.0	25.0	290
Melons	25	37.5	37.5	37.5								65.5	25	165.5
Cucumbers	25	25.0	37.5	37.5									62.5	162.5
Sweet Peppers	25	62.5	62.5	37.5							62.5	25.0	25.0	275.0
Sorghum	175								525.0	175		262.5		962.5
Corn	250				500.0	250.0	250.0	375.0						1375.0
TOTAL	525	192.5	205	117.5	500.0	250.0	250.0	375.0	525.0	175.0	125.0	378.0	137.5	3230.0

On the assumption that in the peak months of use April and August there are 15 working days (rains) x 12 hours = a total of 180 hours work per month per tractor, the farm needs 3 heavy tractors and 3 medium tractors.

D. Interest on working capital

Interest on working capital is based on the following data. Five months of crop growing (including the time of storing, delay in payment, etc.) with 25% of the production cost occurring in the first week of the crop. Interest rate equals 12% (under the assumption that the financing will be provided half by IDAI at 10% interest and half by commercial banks at 14% interest).

Calculation of working capital for each dollar spent:

$$\frac{0.25 + 1.0}{2} \times \frac{0.12}{12} \times 5 = 0.03$$

In the case of longer crops such as tomatoes or sweet pepper a rate of 3.75% was calculated.

E. Irrigation System

It is not possible to grow vegetables in Haiti for the winter export market without a reliable irrigation system. The method recommended is the drip irrigation system. While this is the most expensive one, it is also the most economical in the use of water which is a commodity in short supply. Advantages of drip irrigation:

1. Saving a large quantity of water. The existing irrigation systems in Haiti using ditches to carry the water from the source to the field and there irrigate by flooding little squares are extremely wasteful. With drip irrigation, the existing water supply will go much further and more land can be irrigated.
2. Precision of irrigation: each plant gets the required amount needed for its special need according to crop season stage of development.
3. Capability to meter out precise quantities of fertilizer with the irrigation water.

4. Capability to irrigate difficult patches (geometrically and topographically).
5. Attainment of higher yields. In most cases this has been the case - yields have been increased substantially. Not all crops can take advantage of drip irrigation. The crops in this this particular program can.

Assuming a convenient source of water, the cost of a drip irrigation system comes to about \$2000 an acre. Precise calculations will have to be made according to the condition and circumstances found on the site.

Estimate of investment in a drip irrigation system

Investment: 200,000	Capital recovery: 28000
investment per acre: 2000	280

The cost of water (energy and maintenance) was calculated at 3 cents per cubic meter and is debited to irrigated crops as well as the capital recovery cost.

F. General Farm Investments

The general investments necessary for the productive farm serve also in part the services of the agricultural station.

<u>Table VII: General Farm Investment</u>				
	Capital Recovery			
	Value \$	Years	Interest 6.5%	Capital Recovery
Land clearing	5,000	25	"	400
Grain storage barn	18,000	15	"	1538
Chemical store shed 100 m ²	12,000	15	"	1200
Vegetable sorting shed 200 m ²	15,000	15	"	1475
Concrete Surface 150 m ²	7,500	10	"	1045
Work Shop Factory 70 m ²	5,500	20	"	637
Office Building 60 m	10,000	20	"	910
1 pick-up vehicle (4 wheel drive)				
1 station wagon (4 wheel drive)				
(both 4 wheel drive	30,000	5	"	7250
Other investment	10,000	5	"	2405
Total	110,000			17,605

G. Management Expense

The overhead cost of operating the station and the production unit is estimated as follows:

Table VIII: <u>Farm and Station Management Expenses</u>		
	Monthly Expenses \$	Annual Expenses \$
Farm Management Team including advisory and extension technicians	1500	18000
Administrator	500	6000
Agricultural mechanic	400	4800
Bookkeeper/Secretary	300	3600
Three Guards	200	2400
Office and Sundry expenses		10000
Current exp		13,000
4 wheel drive vehicles		
Current expenses		
Project Director's Car		5000
Insurance & Taxes		5000
		62800

The table above represents the first year management costs of the station and farm but without the cost of the expatriate experts. These appear in the special technical assistance budget.

It includes the cost of the station facilities for the services of the cooperative but not the cost of the services themselves beyond the cost of vehicle operation. User charges will cover any additional advisory and training costs possible in the first year. Service activities and revenues will both increase in the second year.

The annual operating cost and revenue of the farm, once in full operation, is estimated in Table X. It is based on the crop budgets included in Annex A. The capital recovery costs of various investment as well as overhead and management are not included in the crop budgets. They are listed as a single economic unit in the farm budget as a whole.

Table IX: Investment Budget and Working Capital Budget for Farm and Station1. Investments

6 Tractors	\$ 156,600	Born by cooperative
Agricultural Equipment	78,690	Born by cooperative
Irrigation System (100 acre)	200,000	Born 50% by WWD, 50% by coop.
General Farm Investment	<u>118,000</u>	Born 50% by WWD, 50% by Coop.
Total Investment	<u>\$ 553,290</u>	\$394,290 Born By Cooperative \$159,000 Born by WWD

2. Working Capital

Farm	\$ 157,950	split between station and farm
Management Expenses	\$ 62,800	50% station, 50% prod. unit
Tomatoes 25 acres	31,525	\$1261.00 per acre, all prod. unit
Melons 25 acres	19,233	769.31 per acre, " "
Cucumbers 25 acres	19,450	778.00 per acre, " "
Sweet Peppers 25 acres	23,342	933.71 per acre, " "
Sorghum 175 acres	48,156	315.90 per acre, " "
Corn 250 acres	<u>78,975</u>	315.90 per acre, " "
Total working capital budget	<u>\$ 441,430</u>	

Table X: Production and Demonstration Farm: Annual Budget

	Unit	Tomatoes	Melons	Cucumbers	Pepper	Sorghum	Corn	Total
Area	Acre	25	25	25	25	175	250	--
Yield Per Acre	Lbs	35.200	13.200	22.000	22.000	5280	6720	
Net Price Per lb	\$	0.15	0.25	0.20	0.20	0.075	0.08	
Revenue Per Acre	\$	5280	3300	4400	4400	396	538	
Total Yield	lbs	880.000	330.000	550.000	550.000	924.000	168.000	
Total Revenue	\$	132.000	82.500	110.000	69.300	134.500	638.300	
Direct Cost Per Acre	\$	1.588	1.073	1.081	1.248	283	325	
Total Direct Cost	\$	39.700	26.800	27.025	31.200	49.525	81.250	255.500
Total Gross Profit	\$	92.300	55.700	82.975	28.800	19.775	53.250	382.800
Land Rent	\$							25.000
Overhead Expenses (50%)	\$							31.400
Marketing Expenses	\$							100.000
G.G Costs of General Investments (50%)	\$							8.800
Profit	\$							217.600

Crop revenues are a function of price times yield. Prices in this were calculated on what was obtained in the past and conservative projections for the future. The projected yields were based on the transfer of Israeli technology which achieved particularly high results in the field of vegetable production. A list of yields in Israel is shown in table XI.

The yield shown include only exportable quality, provision will have to be made to utilize the part which is left. It is estimated that the first year's yield could be lower than foreseen whereas in the third and fourth year, yields are expected to go up and keep rising.

Profitability may fluctuate upon market price changes and transportation costs changes.

Table XI: Yields in Israel of Various Vegetable Crops

	National Average	Good Yields
Tomatoes	32 metric tons/acre	50 metric tons/acre
Cucumbers	10 metric tons/acre	20 metric tons/acre
Sweet Peppers (green)	12 metric tons/acre	25 metric tons/acre
Eggplant	20 metric tons/acre	30 metric tons/acre
Melons	8 metric tons/acre	15 metric tons/acre

The figures refer to open field crops (not hot houses) in the most suitable seasons. In the case of tomatoes, the results are generally achieved with staking. The yield represent the total of the crop including grade "b" produce. Obviously, not the whole crop could be exported.

The yields are based on all types of irrigation and represent the average of all different systems - drip irrigation alone would have higher yields. Clearly, not the same yields could be expected in Haiti even with the infusion of imported Israeli technology, management and inputs, but taking in consideration that the above Israeli achievements were obtained under often more difficult conditions, the project yields in Haiti are rather conservative, provided of course, that all relevant preconditions are met.

Table XII: Cash Flow, Cooperative and Station
(\$000)

	<u>Year I</u>	<u>Year II</u>
<u>Capital Account</u>		
<u>Receipts</u>	<u>394.0</u>	<u>119.0</u>
Founding member equity	250.0	40.0
Current surplus	68.0	70.0
Bank loan (2 year)	76.0	
<u>Expenses</u>	<u>394.0</u>	<u>97.0</u>
Machinery and equipment	235.0	-
Irrigation	100.0 ^{1/}	-
Farm and station facilities	59.0 ^{1/}	-
Loan repayment without interest	-	97.0
<u>Net (increase in reserves)</u>	<u>-</u>	<u>13.0</u>
<u>Current Account</u>		
<u>Receipts</u>	<u>299.0</u>	<u>341.0</u>
AID Grant	119.0 ^{2/}	131.0 ^{2/}
Payments for station services	71.0 ^{2/}	90.0 ^{2/}
Revenue from production unit	109.0	120.0
<u>Expenses</u>	<u>231.0</u>	<u>271.0</u>
Technical assistance	119.0 ^{2/}	131.0 ^{2/}
Station overhead	31.0 ^{2/}	40.0 ^{2/}
Cost of station services (includes equip maintaince - deprec.)	71.0	90.0
Interest on working capital	10.0 ^{2/}	10.0 ^{2/}
<u>Net (current surplus (deficit))</u>	<u>68.0</u>	<u>70.0</u>

^{1/} One half total; other half born by WWD

^{2/} One half total; other half charged to production unit

IV. Systemmatic Project Summary

A. Goal

1. To increase agricultural production in Haiti.
2. To increase farm incomes in Haiti
3. To provide effective information supply and marketing services to medium and small farmers, especially in one region in Haiti.

Measures of Success

1. The kind and yields of production on the neighboring farms in the area surrounding the proposed agricultural center.
2. The volume of Haitian agricultural exports at the end of project compared with the beginning.
3. The number of members of the proposed cooperative and the volume of use of its services.

Related Assumptions

1. That unused and underused agricultural resources, including land, labor and capital, are available in Haiti in significant quantity.
2. That Haitians in control of those resources are willing to invest them in increased and improved agricultural production, given proven improved technology and reliable low cost supply and marketing services.
3. That the Haitian government will continue to favor private action in support of the stated goals.
4. That the economic and social gap between rich and poor in Haiti will not prove unbridgeable, i.e., that an enterprise started by major investments by industrial leaders will remain open to active participation by medium and small farmers and that the latter will be willing to join an enterprise dominated by capitalists.

B. Purposes

1. To found and develop a multi-purpose agricultural cooperative based on member equity and dedicated to the provision of agricultural information, supply and marketing services to members at cost and on an ultimately self supporting basis.

2. The development of an agricultural technical center owned by the cooperative, and of a production farm, jointly owned by the cooperative and a WWD, which together serve as a center for the demonstration and extension of advisory and supervisory services to farmers especially in the region surrounding the center.
3. The development of effective and timely input supply services for members on a collective procurement basis and of marketing services for member produce, including as necessary, packing, grading, shipping, contracting and production supervision.

Related Measures at the end of Two Years

1. The cooperative has 100 members including a significant number of medium farmers in the area surrounding the center and some small farmers. All new members have paid in some cash equity and have agreed to the accumulation of further equity through a check off on marketing contracts with the cooperative.
2. The agriculture center and farm are established on leased land, initial investments are completed, the farm is achieving some net revenue and has initiated export of winter vegetables; 10 agronomists and technicians have been trained for farm management and advisory work based on state-of-the-art agriculture.
3. Cooperative input supply services are established, available to and being used by member farms in the area, and member farmers in the area have entered into winter vegetable production for export under marketing contracts with the cooperative in total volume at least equal to that available from the cooperative farm itself.

Related Measures at the end of Five Years

1. The cooperative has 1000 members with ten thousand acres in production on a modern, high technology basis. This may well include cooperative subgroups of small farmers operating on a semi collective basis with the assistance of the center and with collective marketing agreements with the cooperative.
2. The agricultural center is operating with 20 well-trained staff, in addition to which 50 farm operators and managers of member farms have been trained. The production farm is in full operation with net revenues equalling \$300,000 per year or more.
3. The supply and marketing services of the cooperative are handling volumes of fertilizer, seeds, pesticides and other inputs related to 5,000 acres in high yield production and are handling produce marketing from at least half that area. These services are making net revenues of some \$100,000 per year.

Related Assumptions

1. That bank credit will be available for needed investment and working capital for the establishment and initial operation of the agricultural center and farm based on the substantial equity input and solid feasibility studies.
2. That bank credit will be available to members for necessary on-farm investments and input financing based on farm plans and production management assisted by the center.
3. That the leadership group of the cooperative will continue to take a long-term and public interest view of the development of the enterprise and will not exploit it for their short-term personal gain.
4. That honest and trainable Haitian technicians and managers can be located who will serve the development of the enterprise effectively.
5. That unpredictable costs such as customs blockages, bureaucratic delays, price controls, new export taxes will not destroy the effectiveness and profitability of the enterprise.
6. That agricultural production in the region of the center will not be seriously damaged by a hurricane or any other unusual weather phenomenon.
7. That medium farmers and subsequently small farmers in the area of the center will progressively shift from subsistence to high value commercial production as its profitability and the reliability of the services provided by the cooperative are demonstrated.

C. Outputs

Whereas the purposes above are the contributions of the entire enterprise toward the stated goals, the outputs are the contributions of the proposed technical assistance toward the achievement of those purposes.

1. Guidance of the elected board of directors, including the elected representatives of new members, in making consistent sound decisions in the long run interest of the cooperative and its total membership.
2. Experienced trained and effective Haitian managers of the cooperative and of the agricultural center and farm.
3. Technical staff of the station and many member farm managers effectively trained in high technology agriculture.
4. Effective extension, advice and production supervision being provided to members farmers of the region by center staff.

4. The Production Unit

- a. The Production Unit will be managed by the (Israeli) expatriate experts, with the help of local Haitian staff.
- b. The Production Unit will be owned in equal parts by the Cooperative and WWD.
- c. The operation costs of the farm unit will be born by Cooperative and investors group in equal parts.
- d. Sharing of profits will also be in equal parts.
- e. The Production Unit will be the primary and priority user of the machine pool of the Cooperative, against payment as calculated on pg. III-5.
- f. Management overhead costs as well as general farm investment capital recovery will be born in equal parts by the Station and the Production Unit.
- g. The investment in the irrigation system, which is used solely on the Production Unit, will be shared in equal parts by the Cooperative and WWD.
- h. The irrigation system, which is an Israeli specialty, will be supplied by WWD according to the costs as shown on p. III-8.
- i. Working capital for the Production Unit's activity will be sought from an Haitian Bank or financial institution: interest costs will be born by Cooperative and WWD in equal parts. To secure the Bank loans, all the assets of the Station and Production Unit will be used.

Summary of Relations Among the Cooperative, WVD,
the Station and the Production Unit

1. The Cooperative

- a. Will consist in the first year of approximately 20 members who will contribute a founders share of 15,000 each and together not less than \$250,000.
- b. The Cooperative will found the Agricultural Station as an executive instrument of its activities.
- c. The Cooperative will go into partnership with WVD to own and operate an Agricultural Production Unit.
- d. Future membership in the Cooperative will be open to Haitian medium and small farmers, especially in the area of the Station on an equitable basis.

2. WVD (Including the Israeli Investor Group)

- a. Will be 50% - 50% partner with the Cooperative in production costs and profits.
- b. Responsibility for the Production Unit management will rest with WVD using the Station's expatriate staff.
- c. Will share 50% of working capital costs of Production Unit.
- d. Will share 50% of investment in irrigation system and will also be responsible for its purchase.
- e. Will share 50% of general farm investment as mentioned on p. III-8, Table VII.
- f. Will be responsible for the marketing in the export target countries.

3. The Station

- a. The Station will be run by Israeli experts.
- b. The Station, which is owned by the Cooperative, is physically in the area of the Production Unit.
- c. The Cooperative will own and operate the agricultural machine and equipment pool of the Station which will serve the Production Unit as first priority.
- d. The Station will extend the following services to members: training, management assistance, marketing assistance, machine pool, central purchasing and agricultural consultancy.
- e. The agricultural management services will be provided according to time tables and conditions set out in the description of Station's services.
- f. Non-members can also benefit from Station's services on a descending priorities system, and for different fees.

Table XVII: Crop Budget: Corn (cont.)

Items	months	April	May	June	July	Quantity	Price of Unit \$	Cost \$
<u>Tractor work in hours</u>								
Potassium sulphate	lb	90				90	0.16	14.4
Atrazin	<u>Chemicals</u> lb	0.25				0.25	3.18	0.78
Furadon	lb		1.76	3.52		5.28	0.73	3.85
Malathion 57%	liter		0.8			0.8	5.50	4.40
Tractor drivers	labor	4.0	1.0	1.0	1.0	7.5	0.75	5.65
Skilled						3.0	0.50	1.50
Unskilled						128.0		32.00
Weeding hoeing			16.0	16.0		32.0		
Harvesting					64	64.0		
Threshing						32.0		
Other inputs and costs								
Seeds	lbs	17.5				17.5	1.0	17.5
Bags	units				30	30	0.22	6.6
Contingency						300.0	5%	15.73
Interest on working capital						315.90	0.3	9.48
Total cost* Farmgate								<u>325.38</u>

*excluding C.R., overhead

36

Table XVII: Crop Budget: Corn

Sowing Date: mid-April
 Harvesting Date: End of July
 Yield (est): 5720 lbs

Items	months	April	May	June	July	Quantity	Price of Unit \$	Cost \$
<u>Tractor work in hours</u>								
M.T. Fertilizing		05						
H.T. Ploughing		1.0						
H.T. Discing Harrowing		1.0						
M.T. Farrowing rolling		1.5						
M.T. Sowing spraying		0.5						
M.T. Cultivating			0.5					
M.T. Spraying			0.5	1.0				
M.T. Slashing cutting					0.5			
M.T. Harvesting Transporting					1.0			
Total Tractor Tools						7.5	3.0	22.5
Total H.T.		2.0				2.0	20.0	40.0
Total M.T.		2.0	1.0	1.0	1.5	5.5	10.5	57.25
	<u>Fertilizer</u>							
Ammonium Sulphate	lbs	52.50	175.0			700	0.11	77
Super phosphate	46% lbs	140				140	0.12	16.8

31

Table XVI: Crop Budget: Sorghum (cont.)

Tractor work in hours	August	September	October	November	Quantity	Price of \$	Cost \$
Potassium sulphate lb	90.0				90.0	0.16	14.4
<u>Chemicals</u>							
Atrazin lb	0.25				0.25	3.18	0.78
Furadon lb	1.76	3.52			5.28	0.73	3.85
Malathion 57% liter		0.8			0.8	5.50	4.40
Tractor drivers labor	6.5	1.5		1.5	6	0.75	4.50
Skilled					3	0.5	1.50
Unskilled					125		31.25
Weeding hoeing	10	12	8		30		
Harvesting			60		60		
Threshing				35	35		
<u>Other inputs and costs</u>							
Seeds lbs	8.0				8.0	1.5	12
Bags units				30	30.0	0.22	6.6
Contingency %					262.08	5%	13.10
Interest on working capital					275.18	3%	8.26
Total cost* Farmgate							<u>283.44</u>

*excluding C.R., overhead

128

Table XVI: Crop Budget: Sorghum

Sowing Date: End July - August
 Harvesting Date: End October-November
 Yield (est): 5280 lbs

Tractor work in hours	months				Quantity	Price of \$	Cost \$
	August	September	October	November			
M.T. Fertilizing	0.5						
H.T. Ploughing	1.0						
H.T. Harrowing	1.0						
H.T. Levelling	0.5						
M.T. Farrowing rolling	1.5						
M.T. Sowing spraying	0.5						
M.T. Cultivating		0.5					
M.T. Spraying	0.5	1.0					
M.T. Slashing cutting				0.5			
M.T. Harvesting Transporting				1.0			
Total Tractor Tools					8.5		25.5
Total H.T.	2.5				2.5	20.0	50.0
Total M.T.	3.0	1.5		1.5	6	10.5	63.0
<u>Fertilizer</u>							
Ammonium Sulphate lbs		250.0			250.0	0.11	27.5
Super phosphate 46% lbs	140.0				140.0	0.12	16.8

24

Table XV: Crop Budget: Sweet Pepper (cont.)

A-9

Item	Months	October	November	December	January	February	March	Quantity of \$	Price \$	Cost
<u>Tractor Work</u>										
Lannet 90	oz		20	30	20	20	10	100	1.35	135.00
Malathion	pt			4	4	4	2	14	2.86	31.78
Diazinon	pt		2					2	7.86	15.71
Dyniol	pt	4						4	2.57	10.29
<u>Labor</u>										
Tractor Drivers in-hours		5.0	1.0	1.0	2.5	2.5	1.5	13.5	0.75	10.13
Skilled in hours		15	5	15	15	15	15	80	0.50	40.00
Unskilled (total)		65	30	40	155	140	95	525	0.25	131.25
Transplanting		50						50		
Weeding hoeing			30	40	40	40	30	180		
Irrigating		15					15	30		
Picking					115	100	50	265		
<u>other inputs</u>										
Water	in cubic meter	300	500	600	600	600	600	3200	0.03	96.00
Contingency								889.74	5%	94.46
Interest on working capital %								933.71	3.75%	35.0
C.R. irrigation system without										968.72
With C.R. Irrigation										280
Total Cost Farmgate										
Excluding C.R. overhead										<u>1248.72</u>

AD

Table XV: Crop Budget: Sweet pepper (1 acre)

Planting Date: October 15-20
 Harvesting Date: January - March
 Yield (est): 22,000

Item	Months	October	November	December	January	February	March	Quantity of \$	Price \$	Cost \$
<u>Tractor Work</u>										
M.T. Fertilizer Spreading		0.5								
H.T. Ploughing		1.0								
H.T. Discing (harrowing)		1.0								
H.T. Levelling		0.5								
M.T. Furrowing rotavating		1.5								
M.T. Cultivating			0.5							
M.T. Spraying		0.5	0.5	1.0	2.0	2.0	1.0	7		
M.T. Harvesting (transporting)					0.5	0.5	0.5	1.5		
Total H.T.		2.5						2.5	20	50
Total M.T.		2.5	1.0	1.0	2.5	2.5	1.5	11.0	10.5	115.50
<u>Fertilizers</u>										
7-14-14 (N.P.K)	lb	1200						1200	0.06	75.5
Ammonium Sulphate	lb		120	240	240	240	120	960	0.11	109.71
Manel 80/Chemicals	lb			2.4	7.2	2.4		12	2.27	27.24
Coside	lb			4.0	6.0	2.0		12	3.43	41.14

11

Table XIV: Crop Budget: Cucumbers (cont.)

Lannet 90	oz		10.0	30.0	20.0	60.0	1.35	81.00
Round-up	pt	4.8				4.8	8.57	91.14
Malathion	pt		2.0	6.0	4.0	12.0	2.27	27.24
<u>Labor</u>								
Tractor drivers (in hours)		5.0	1.0	1.5	1.5	9	0.75	6.75
Skilled		10.0	5.0	5.0	5.0	25	0.50	12.5
Weeding hoeing		5.0	20.0	10.0		35.0		
Irrigating		15.0				15.0	30.0	
Picking				70.0	60.0	130.0		
<u>Other inputs and costs</u>								
Water in cubic meters		280	400	400	280	1360	0.03	40.8
Seeds	lb	3.5				3.5	26.00	31.00
Contingency %						741.0	5%	37.0
Interest on working capital						778.05	3%	23.24
Total cost without C.R. irrigate								801.39
C.R. Irrigation system								<u>280.00</u>
total cost								1081.39

Table XIV: Crop Budget: Cucumber (1 acre)

Planting Date: 15-31 December
 Harvesting Date: 1.II - 15.III
 Yield (est): 22,000 lbs

Item	Months	December	January	February	March	Quantity	Price of Unit \$	Cost \$
<u>Tractor work (hours)</u>								
M.T. Fertilizer Spreading		0.5						
H.T. Ploughing		1.0						
M.T. Discing Harrowing		1.0						
H.T. Levelling		0.5						
M.T. Furrowing Rotavating		1.5						
M.T. Cultivating			0.5					
M.T. Sowing		0.5						
M.T. Spraying			0.5	1.0	1.0			
M.T. Harvesting Transporting				0.5	0.5			
Total H.T.		2.5				2.5	20.0	50.0
Total M.T.		2.9	1.0	1.5	1.5	6.5	10.5	68.5
	<u>Fertilizer</u>							
Ammonium Sulphate lb			300.0	300.0		600.0	0.11	66.00
N,P,K. 7-14-14 lb		1200				1200.0	0.06	72.00
	<u>Chemicals</u>							
Maneb 80 lb			2.4	7.2	7.2	16.8	2.24	38.14
Ridomil lb			2.0			2.0	20.0	40.0
Diazinon pt			2.0			2.0	2.86	57.20

43

Table XIII: Crop Budget: Melons (cont.)

Items	Months	November	December	January	February	Quantity	Price of Unit \$	Cost \$
Tractor work in hours								
Lanel 9C	oz	10.0	30.0	20.0		60.0	1.35	81.00
Round-up			4.8			4.8	8.57	41.14
Tractor drivers <u>Labor</u> (in-hours)		5.0	1.0	1.5	1.5	9.0	0.75	6.75
Skilled		10.0	5.0	5.0	5.0	25.0	0.50	12.5
Unskilled		20.0	20.0	60	60	160	0.25	40.0
Weeding hoeing		5	20	10		35		
Irrigating		15			15	30		
Picking and other inputs and costs				30	25	55		
Water in cubic meters		360.0	720.0	720.0		1800	00.3	54.0
Seeds	lb	2.5					26.0	65.0
Contingency						732.67	5%	36.63
Interest on Working Capital						769.31	3%	23.08
Cost without C.R. irrigation								792.39
C.R. Irrigation System								280.00
Total Cost								1072.39

M

Table XII: Crop Budget: Tomatoes (cont.)

<u>Staking/Other Inputs and Costs</u>										
<u>Material</u>										
Water (in cubic meters)	250	400	500	500	450	400	2500			180.0
Contingency %							1201	5%		75.0
Interest on working capital							1261.05	3.75%		60.05
Total cost without C.R. irrigation										1308.00
C.R. irrigation system										280.00
Total Cost Farmgate without general C.R. and overhead										1588.33

1/5

Table XII: Crop Budget: Tomatoes (cont.)

Item	Months Tractor work	In-hours					Quantity of Unit	Price \$	Cost	
		October	November	December	January	February				March
Lannet 90	oz		20.0	40.0	40.0	20.0	120.0	1.35	162.00	
Diazinon	pt		2.0				2.0	2.86	5.72	
Melathion	pt		2.0	4.0	4.0	2.0	12.0	2.27	27.27	
Sencor	oz		5.5				5.5	0.53	2.92	
Tractor Drivers	<u>labor</u> in-hours	5.0	1.0	1.0	2.7	2.7	1.7	14.	0.75	10.58
Skilled		15.0	15.0	20.0	15.0	15.0	15.0	95.0	0.50	47.5
Unskilled		65.0	60.0	70.0	160.0	160.0	165.0	680.0	0.25	170.0
Transplanting		50.0						50.0		
Weeding hoeing			30.0	40	40.0	90.0	30.0	180.0		
Irrigating		15.0					15.0	30.0		
Staking			30.0	30.0				60.0		
Picking					120	120	120	360.0		

20

Table XII: Crop Budget: Tomatoes (1 acre)

Planting date: October 20-31
 Harvesting date: January through March
 Yield (est): 35,200 lbs

Item	Months	Tractor work in hours						Quantity of Unit	Price \$	Cost
		October	November	December	January	February	March			
M.T. Fertilizer Spreading		0.5								
H.T. Ploughing		1.0								
H.T. Discing (harrowing)		1.0								
H.T. Levelling		0.5								
M.T. Rotavating/Furrowing		1.5								
M.T. Cultivating			0.5							
M.T. Spraying		0.5	0.5	1.0	2.0	2.0	1.0	7.0		
M.T. Harvesting (transporting)					0.7	0.7	0.7	2.1		
Total H.T. (hours)		2.5						2.5	2.0	
Total M.T. (hours)		2.5	1.0	1.0	2.7	2.7	1.7	11.6	10.5	
<u>Fertilizers</u>										
Ammonium Sulphate	1b		120	240	240	240		840.0	0.11	92.40
N.P.K. 7-14-14	1b	1200						1200	0.06	75.5
Maneb 80	<u>chemicals</u>									
	1b		4.8	9.6	9.6	4.8		28.8	2.24	65.38
Ridomil	1b			1.0	1.0			2.0	20.0	40.0

B. World Wide Development

World Wide Development Ltd. is an Israel based company having as its aim the fostering of agricultural development in developing countries, based on the achievements of the Israeli agriculture. WWD's expertise consists of the mobilization of investment capital in its various forms, through engagement of Israeli technical know-how and through a system of putting the various components together in a workable package.

Eli Mizrachi, the President of WWD, Ltd. was formerly chief of staff and political advisor to three prime ministers of Israel. He has personally been involved in Haiti for over a year. He believes that this country possess as the potential for significant agribusiness development through the mobilization of Haitian willingness and investment linked to U.S. and Israeli expertise and involvement.

WWD has an agency relationship with AGRIDEV, the Israeli Government corporation which is widely engaged in development assistance projects throughout the world. It is the prime source of Israeli agricultural technology for application to the agricultural problems of developing countries.

WWD has engaged the committed interest of an Israeli investor group in Haitian agricultural development. The group includes owners of the largest private fruit and vegetable farm in Israel, which is producing primarily for export to the European market. Members of the group are deeply experienced both in high-technology, high-yield fruit and vegetable production and in the development and satisfaction of export markets.

ACDI maintains a small headquarters office, the officers and staff of which have among them 52 years of prior experience in U.S. farm credit, supply and marketing organizations and more than 120 years of work abroad.

ACDI has developed relations with a number of very experienced cooperative management people who are willing to serve as short-term consultants on a variety of assignments. With current AID budget support, we have expanded our staff and consultant capability for project design and evaluation, cooperative management training, trade and credit studies, seminars and workshops on such problems as cooperative management and small farmer credit. During 1982, ACIDI supplied a total of 352 person-months of overseas technical assistance of which 52 person months were for short-term assignments.

In connection with a number of projects, we have successfully arranged on-the-job study programs conducted by one or more of our member organizations for host country participants. This ability to arrange practical training in member organizations in the U.S. that directly supports the work of ACIDI advisors overseas is a major aspect of ACIDI's technical assistance.

Because of the willingness of officers and experts from our member organizations to contribute time to our work and because of the basic AID support of our non-profit headquarters activities, we are able to offer this array of backstop services, including full administrative support of our field technicians, for an extremely low general administrative assessment.

ACIDI, to the largest extent possible, recruits financial management experts, credit experts and coop management specialists from its member organizations. In addition, ACIDI maintains files of other experts who have had successful overseas experience. The men currently serving as long-term advisors abroad on ACIDI projects have among them an aggregate of 246 years of experience in U.S. farm service organizations and 109 years of development work abroad, including 52 years of employment with ACIDI.

We strive very hard for this combination of domestic and overseas experience in our recruitment because of the need to field technicians who can modify and adapt the relatively sophisticated techniques and technology of U.S. farmer service organizations to meet the very different conditions often found in developing countries.

VII. MANAGEMENT PROPOSAL

A. Agricultural Cooperative Development International.

I. General Statement

Agricultural Cooperative Development International (ACDI) is a non-profit, educational, technical and management assistance organization created by the leading agricultural cooperatives and farmer organizations of the United States in response to the "Humphrey Amendment" to the Foreign Assistance Act. Its purpose is to respond to the needs of agricultural cooperatives, farm credit systems and supporting government agencies in the developing countries by providing technical assistance in the development of farmer organizations and other supply, marketing and credit services to farmers.

ACDI's membership which includes 40 major U.S. agricultural marketing, supply and manufacturing cooperatives, farm credit banks, and national farmer associations, with access to the total range of U.S. experience and expertise in agricultural supply, marketing and credit. In addition, ACDI offers the unique asset of having one member from Asia, the Indian Farmers Fertilizer Cooperative, (IFFCO).

ACDI is governed by a board of directors nominated by the member organizations, one from each. They meet at least semiannually to determine the broad policy of ACDI and to review progress. Many of them take an active interest in our work and are of considerable help in locating appropriate experts for overseas service. Donald E. Wilkinson, Governor of the Farm Credit Administration, Washington, D.C. serves on ACDI's executive committee as an advisory member.

Since 1962, ACDI has provided long-term technicians and short-term consultants for a variety of projects of assistance in Asia, Africa and Latin America. ACDI is currently engaged in cooperative development in Tonga, Honduras, Bolivia, Kenya, and Uganda, management assistance to small farmer credit and marketing in the Philippines and Guyana, and assistance to the agricultural banks in Egypt and Tanzania. In connection with these projects, ACDI has arranged and administered 40 person-months of practical training and short-course study programs in the U.S. in the past year for host-country personnel.

Also during the past year, ACDI has provided consultants for project identification, design and appraisal missions or for project technical assistance in Bangladesh, Burma, Indonesia, Philippines, Thailand, Tonga, Jamaica, Kenya, Tanzania, Uganda, Zambia, Panama, Bolivia, El Salvador, Honduras, and Colombia.

Technical Assistance Budget
(\$000)

		<u>ACDI</u>	<u>WWD (subcontract)</u>
Project Director,	first year	80	
	second year	80	
Farm Manager,	first year		75
	second year		75
Overhead (50% of salary)			36
Participants -	U.S. 10 x 2 weeks Florida	12	
	3 x 2 months Cooperative	13	
	Israel - 12 roundtrips (scholarships)		18
Consultants -	U.S. 5 x 3 weeks @\$200	28	
	- Israel 5 x 3 weeks @\$150		<u>28</u>
		213	232
G & A	13.5%	<u>29</u>	11% <u>26</u>
		242	258

Proposed release of funds:

- On signature of Cooperative Agreement	200
- Following establishment of Cooperative Station and Farm (Sept. 1)	100
- Following review of first year (March 1)	<u>200</u>
	500

V. Evaluation

It has not been possible to include extra funds in the two-year technical assistance budget for this project for evaluation. The proposed evaluation activities during that period would be carried out by project advisory staff and by project monitoring staff of ACDI and USAID. It will be important to include the gathering of baseline data in the initial feasibility study of the agricultural center and farm and also to include funding for a thorough impact evaluation in whatever follow-on technical assistance proves desirable in future years.

The proposed evaluation during the current two-year period includes the following elements:

1. As part of the feasibility study for the production and demonstration farm and agricultural center, collect data on a rough sample basis, on the crops currently grown, the yields, the methods used and the prices obtained on the land to be occupied by the farm and by farmers in the surrounding area. This will, in effect, be baseline data for the project.
2. Toward the end of the first year, the status and functioning of the cooperative, the agricultural center and the farm should be checked, including their staffing both in quantity and quality, their capitalization including paid-in equity, their revenues, gross and net, overall production, export volume, prices obtained and costs of production. This review will be the basis for decision to proceed with the second year of project funding.
3. Toward the end of the second year, a comparable review should take place, including also review of the level and kind of outreach activity, whether satellite cooperatives and precooperatives are in formation, the number of members in the cooperative, the amount of export marketing being carried out by members through the cooperative and the cost-effectiveness of supply and marketing services provided by the cooperative. This review should provide confirmation for the need for additional technical assistance and the basis for final design for a follow-on project.

Any follow-on technical assistance should include annual evaluation reviews focused like the above on institutional developments. There should also be provision, preferably after the withdrawal of the expatriate advisors, for a systematic impact evaluation in which a substantial sample of farm production and marketing data would be gathered from member and other farmers for a comparison with the baseline data and which would also provide a systematic review of the institutions developed by the project as they continue to operate under exclusively Haitian direction and management. ACDI has just completed such an evaluation of a project in Bolivia for a cost of \$20,000.

E. Implemenation Schedule

Year II

- Training visits to Florida growers
- Scholarships to Israel training
- Installation of drip irrigation
- First winter vegetable crop
- Field advice to members
- Continued staff training
- Extension work with area farmers'
- Consultant on coop. management
- Development of supply services
- Rainfed corn crop
- Rainfed sorghum crop
- Second winter vegetable crop

	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Training visits to Florida growers								—	—	—		
Scholarships to Israel training		—										
Installation of drip irrigation				—								
First winter vegetable crop	—											
Field advice to members												
Continued staff training												
Extension work with area farmers'												
Consultant on coop. management	—			—			—			—		
Development of supply services												
Rainfed corn crop	—											
Rainfed sorghum crop					—							
Second winter vegetable crop								—				

E. Implementation Schedule

	Year 1														
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Purchase or lease of initial farm equipment															
Constuction of minimal initial center facilities				4											
Approval of bank loans for farm															
Selection of Haitian agric center and farm management team(s)									?						
Initial rainfed crop															
Market development visits to Florida packers															
Purchase of further equipment															
Training of Haitian staff															
Field advice to cooperative members															
Release of funds for training and consultants															
Training visits to Florida growers									X						
Scholarships to Israel training															
Installation of drip irrigation															
First winter vegetable crop															
Review of first year release of second year funds															
Field advice to members															
Continued staff training															
Extension work with area farmers'															
Consultant on coop. management															
Development of supply services															

1/1

7. At least three roundtrips to Israel per year for agronomists and technicians at the center who have won scholarships at Israeli agricultural production training centers for training in modern agriculture.

4. Development of an effective administrative staff for the cooperative supply, marketing and accounting services working under established policies and procedures.
5. Development of active member participation in cooperative activities, including use of available services, participation in annual meetings, election of members of the board of directors and contribution of substantial equity.
6. Development of effective commercial relationships with input suppliers and produce marketers including direct import of inputs and export of produce.

Related Assumptions

1. That Haitian leaders are available with sufficient social concern and integrity to direct the development of the cooperative on the basis of sound long-term business judgements rather than short-term self interests.
2. That Haitian business and peasant leaders can develop sufficient confidence in each other to be willing to join and play an active role in a cooperative institution which admits both as active participants.
3. That honest, trainable, service motivated Haitian staff are available.

D. Technical Assistance Inputs

1. An experienced agricultural development expert and cooperative leader on a full-time basis to serve as general manager of the cooperative and agricultural center for three years, full-time advisor for the fourth year and part-time advisor in the fifth year.
2. An expert farm manager who would assist with the development of the agricultural center and serve as production manager on the farm.
3. Expert consulting for a minimum of five weeks per year on special agricultural problems.
4. At least five orientation visits to Florida per year to review fruit and vegetable production, packing, grading and marketing operations there and to make contact with produce marketers who could be of service to the cooperative.
5. Three roundtrips to Israel for center staff members holding scholarships for training at Israeli agricultural training centers.