quantities of vegetables excluding tomatoes exported to Arab, Eastern Europe and Western Europe Countries, 1981.

Tomatoes exported from Egypt show the highest CIF prices. It is not clear why. One of the main strategies to develop exports is to keep the international marketing standardisation of goods to be exported. Table O-2-15 is the common standards in connection with "marketing" of tomatoes in the international market.

2-4 Marketing Channel

The marketing of agricultural products in the Project area will be made through the marketing system or marketing channels which is presently predominant in Egypt.
In Egypt, govenment control is executed in the marketing of agricultural products through the obligatory marketing commitments and with controlled prices.
Governmental marketing control is made to different extents according to commodity. Some are completely controlled, some moderately, and others only slightly.
In this sense, the products in the Project Area will be grouped as follows:

Governmental Control	Products
Completely	Sugar beet
Moderately	Rice and soybean
Slightly	Milk, meat and vegetables

The recommended marketing channels for vegetables, and for milk and dairy products are shown in Figures O-2-1 and O-2-2 respectively.

Table O-2-15 Summary Comparative Table of Requirements Laid Down by The Standard or Tomatoes

REQUIREMENTS	CLASSES		
	"EXRTA"	I	II
Market quality	Superior quality	Good quality	Minimum requirements
I. Minimum requirements (all classes)	-intact -fresh looking -sound -clean -free of abnormal external moisture -free of foreignsmell and/or moisture -appropriate degree of development		
II.Classification			
-appearance	-all typical characteristics of the variety	-all typical characteristics of the variety	-in keeping with minimum requirements
-shape	(a) "round" (including "cherry") -spherical -descoid	(a) "round" (including "cherry")	-may be slightly irregular
	(b) "ribbed"	(b) "ribbed"	
	(c) "oblong"	(c) "oblong"	
-fresh	-firm	-reasonably firm	-fairly firm
-greenbacks	-excluded	-excluded if visible	
-defects	-exempt, except for very slight superficial damage to the skin	-unhealed cracks excluded	-unhealed cracks excluded
		Defects allowed: -Slight defects in shape and development -slight defect in skin colouring -slight skin defect -very slight damage from machine handling	Defects allowed: -defect of shape and development -defect of colouring -skin defects, damage from machine handling and bruises which do not seriously affect the fruit

(Cont'd)

REQUIREMENTS	CLASSES		
	"EXTRA"	I	II
		-very slight bruises -healed cracks not more than 1 cm long, in the case of "ribbed" tomatoes	-healed cracks not more than 3 cm long
III. Sizing	-compulsory (excluding "cherry" tomatoes) -minimum diameter:"round" and "ribbed": 33mm "oblong:30mm	-compulsory (excluding "cherry" tomatoes) -minimum diameter:"round and "ribbed":35mm "oblong":30mm	-optional -unsized minimum diameter:"round" and "ribbed": 35mm "oblong":30mm
IV. Tolerances			
-quality (in number or weight)	5%	10%	10%
-size	-10% with a minimum of 33mm for "round"and "ribbed", and 28mm for "oblong"	-10% with a minimum of 33mm for "round" and "ribbed", and 28mm for "oblong"	-10% with a minimum fo 33mm for "round" and "ribbed", and 28mm for "oblong"
V. Packaging and Presentation			
-uniformity	-origin -commercial type or variety -shape -ripeness -colouring -uniform length for "oblong" -quality	-origin -commercial type or variety -shape -ripeness -colouring -uniform length for "oblong" -quality	-origin -variety or commercial type -quality
-packaging	-some form of protection compulsory -packages must be free from any foreign bodies		

Source: International standardization of Fruit and Vegetables;OECD, PARIS, 1976

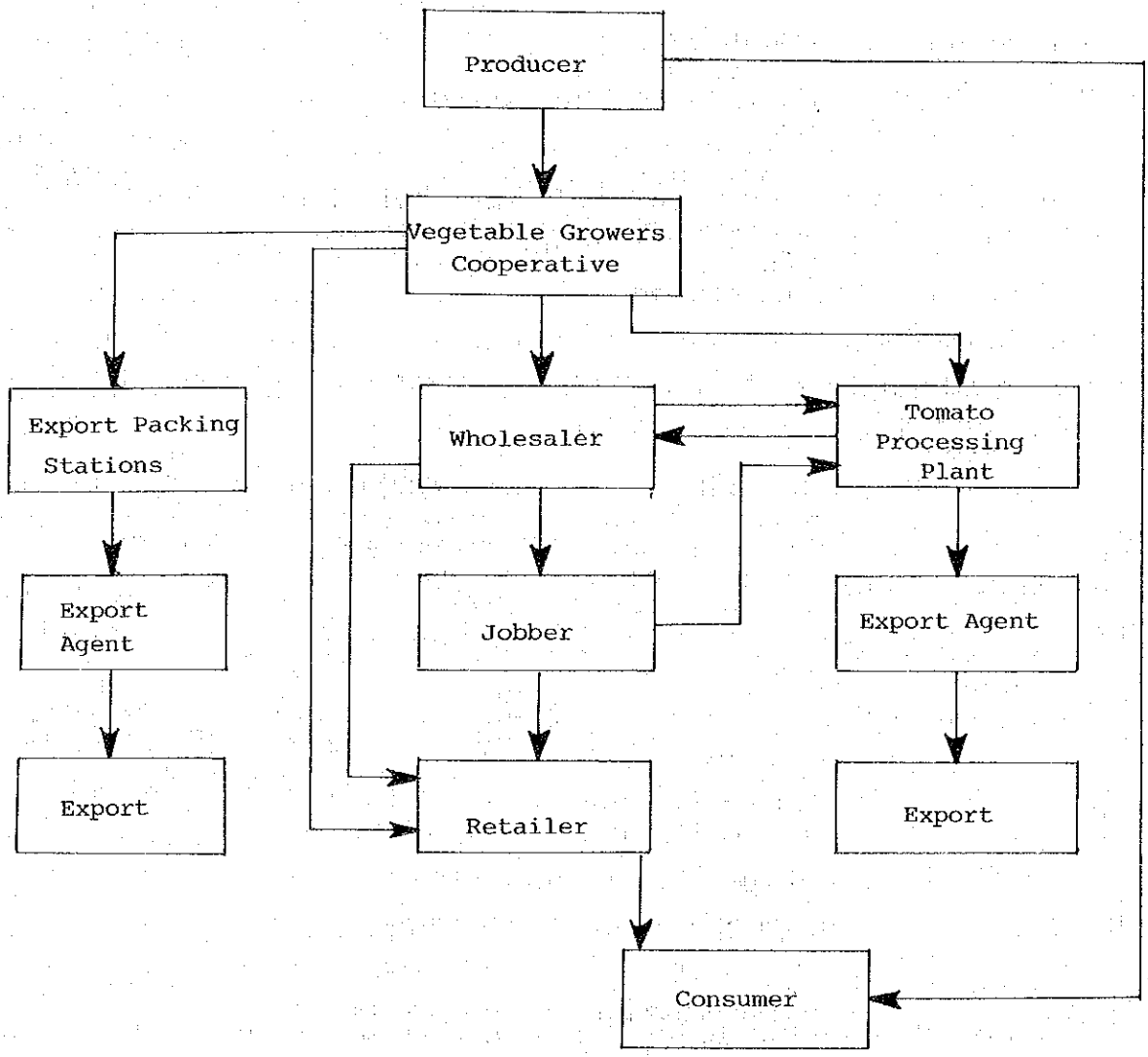

Fig. 0-2-1 Distribution Channels for Vegetable

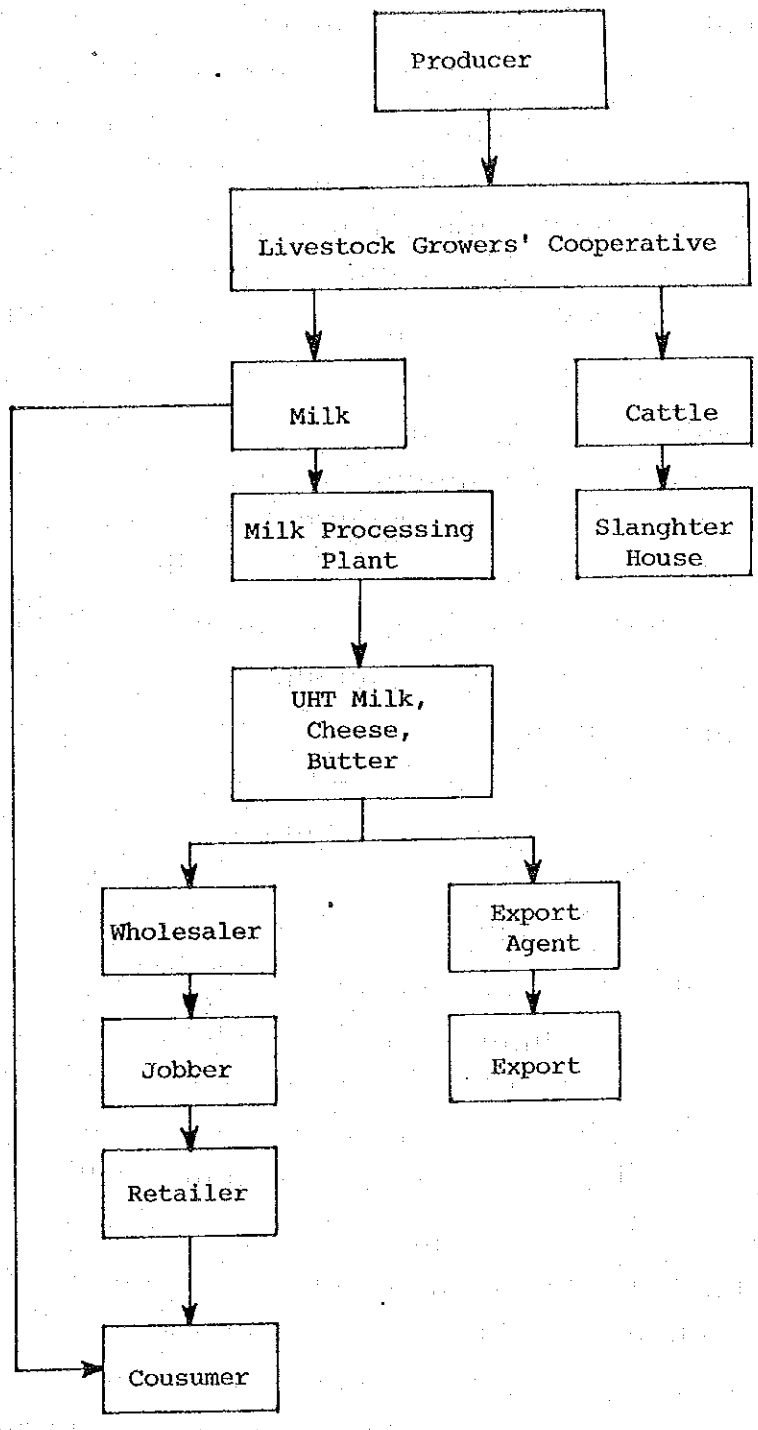

Fig. O-2-2 Production and Marketing System for Milk and Dairy Products

ANNEX

P. IMPLEMENTATION

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P. IMPLEMENTATION

1 Implementation Organization

1-1 General Framework

See Fig. P-1-1 Organization Chart of The Project Management Body

1-2 Sectional Functions

(1) Promotion Section

The jobs assigned to this Section include: (i) orientation to the project as a whole at its very outset; (ii) establishment of guiding principles for attaining its tasks; (iii) identification of definite courses for promoting agriculture development in the project area; (iv) appropriate adjustment to such development courses as and when necessary, and (v) constant effort to maintain the project at a position of outstanding significance among various agricultural development projects in Egypt. The works to be taken up by this Section from the outset, and along with the progress of the project, will be as follows:

(i) Since this project will see itself properly implemented through the co-ordinated approaches in the engineering, social, and economic spheres, it is imperative to predecide the procedures and programmes for constructing the physical facilities and consolidating the non-physical (socio-economic) infrastructure required in each sphere and also to make posting of personnel at their respective duties to run the machinery designed for smooth operation of each sphere. Equally important is the arrangement for synchronization and coodination of sphere-wise activities, phase after phase, to bring at an earliest opportunity as wide an area as possible under overall agricultural development activities.

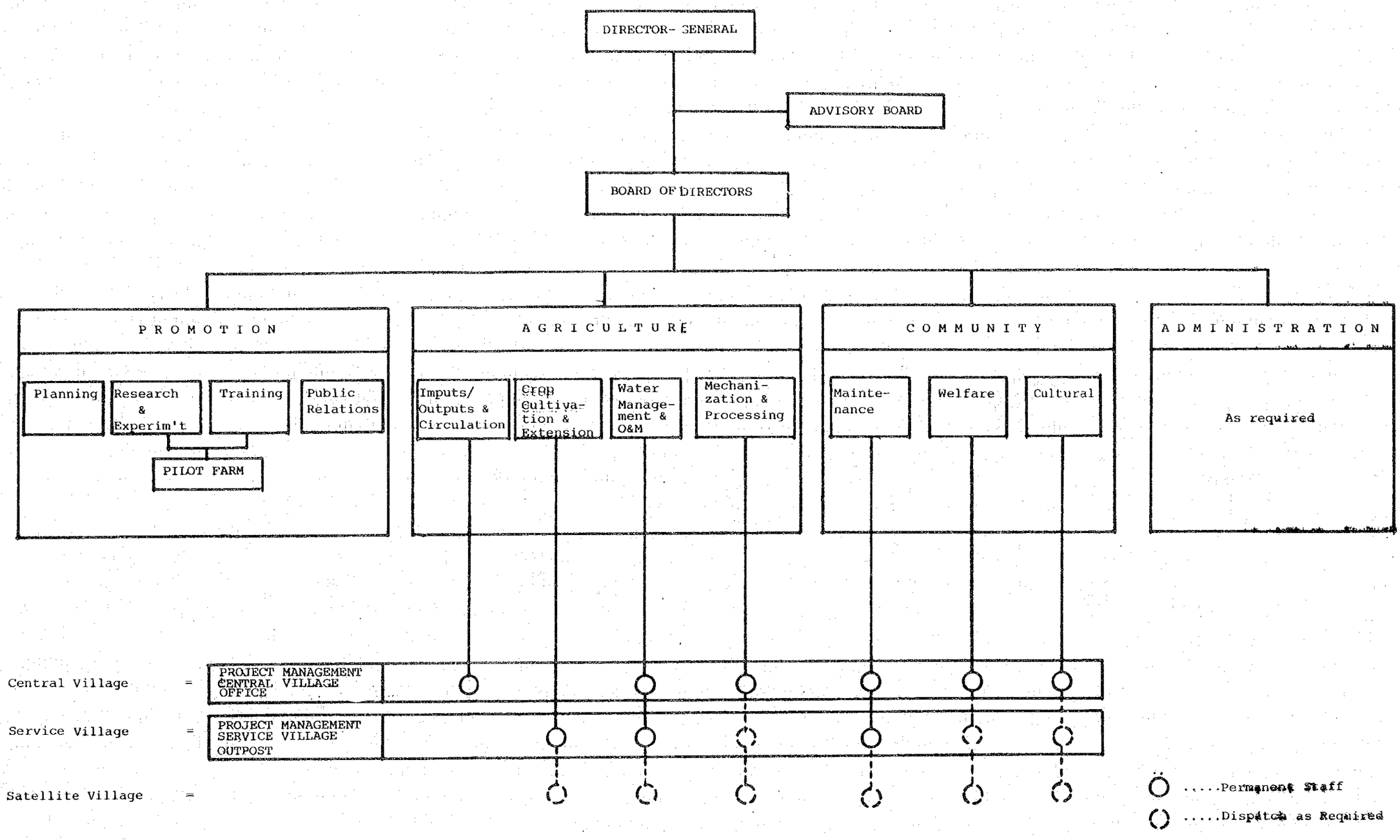


Fig. P-1-1 Organization Chart of the Project Management Body

(ii) As soon as the decision has been made to implement this project, the Pilot Farm shall be constructed at the most strategically advantageous site so that it may start on its assigned work to prepare the cropping patterns and crop rotation systems to be officially adopted in each part of the project area. This should preferably be done before the conclusion of the trial cropping which succeeds land reclamation work. Determination of such cropping patterns and crop rotation systems shall be made by taking into consideration the inter-relationships among the following four items: (i) input/output and circulation; (ii) crop cultivation and extension; (iii) water mangement and O&M, and (iv) mechanization. Since animal husbandry, vegetable cultivation, and fruit growing is also covered, the decision arrived at through experimental studies in the Pilot Farm will have the full implication of being a master plan for agricultural development which expects due establishment and provision of the facilities, institutions, and personnel prior to its implementation.

(iii) The substance of the original agricultural and agroindustrial production plan referred to in (ii) above would consist primarily of the outcome of full co-operation of the Agriculture Section, but the planning staff of Promotion Section needs to work very hard as coordinator and driving-force to give a proper form or shape to the master plan. Upon completion of the master plan, it will be further checked and finally approved by Agriculture Section; this procedure is unavoidable as its implementation through the agricultural co-operative systems, extension service network, and agroindustrial-ventures depends to a large extent on allout support by Agriculture Section.

The Promotion Section will also take over responsibility of training the extension workers attached to Agriculture Section on cultivation techniques, plant protection, and veterinary services in its Pilot Farm.

(iv) Various problems would be raised on such aspects as technical, institutional, and administratative aspects, once the master plan is introduced and widely implemented. The Promotion Section will diligently attend at solving all these problems and difficulties to improve the original master plan. Even when the required amendment or improvement remains local or fractional, such would not fail to give more or less influence on the entire plan. Technical aspects of crop cultivation, animal husbandry, and poultry may be adequately handled by the Pilot Farm but problems concerning the circulation of inputs and outputs through agricultural co-operative systems and others still remain to be solved simultaneously. Hence improvement or amendment of the master plan naturally calls for the good co-operation of Agriculture Section.

(v) It will be both desirable and necessary for the project to keep the decision-makers of the Government as well as the leaders of various agricultural development projects in the country, informed of the spadework made for emergence of the project, as well as its concrete action taken to achieve highly productive agriculture and decent livelihood environments, the net results obtained so far, the goals set in the near future and the methodology for reaching them, and all the relevant information of the project, from time to time, throughout its historic development. Through such public relations activities, the project itself will benefit immeasurably from constructive comments and suggestions given by them and, at the same time,

learn something valuable. Such public relations activities will also be necessary towards all the Sections and Departments of the project management body, co-operatives, PBDAC, and the common residents in the project area to strengthen the recognition of the progress being made by the project and to reawaken the sense of 'participation' among them.

(2) Agriculture Section

The Agriculture Section will provide very active services from the stage where the agricultural development master plan will have to be formulated on the basis of experimental studies undertaken in the Pilot Farm. This Section will consist of experts on the following four subject-matters and who cooperate with Promotion Section in their respective capacities for the formulation of the master plan, its implementation and improvement:

(i) Input/Output and Circulation;
(ii) Crop Cultivation and Extension;
(iii) Water Management and O&M, and
(iv) Mechanization and Processing.

(i) Input/Output and Circulation

Crop cultivation ultimately aims at obtaining the best outputs in both quantity and quality through optimal combination of the appropriate inputs and suitable farming technology, and at its beginning and end has to be attended by the two circulation processes of purchasing (procurement of input supplies) and marketing (including collection of agricultural and animul husbandary products of high quality and their deliverly to the agro-industrial plants and factories in good quality and timing.)

The circulation processes are planned to be channelled through the agricultural co-operative systems of PBDAC - Multipurpose Agricultural Co-operative route and the Specialized Agricultural Co-operative route.
Agricultural re-production is constantly enlarged from one stage to the other in the project area and can be assured by smooth flow of input and output in opposite directions through these channels. Therefore, this field of work will need to be attended by agricultural economists well versed with farmer organization operation. They shall be held responsible for guidance in organization and operation of the agricultural co-operative systems, in full co-ordination with the Government co-operative officers and PBDAC authorities.

(ii) Crop Cultivation and Extension

Naturally, agronomists will occupy the core of this work and they take up research and experiment works by full use of Pilot Farm facilities on the technical aspects of crop cultivation and their application among grass root farmers. Since the crops range in a wide scope, animal husbandry, vegetable cultivation, and fruit growing will have to be taken care of at the same time, participation of the respective experts is indispensable. They will have under their command extension workers who will be put in circuit in their given territories for extension services on crop cultivation, animal husbandry, poultry, vegetable cultivation, and fruit growing and be constantly ready to be dispatched anywhere as and when necessary for plant prorection and veterinary services. The training of these extension workers will be given in the Pilot Farm.

(iii) Water Management and O&M

Not a few difficulties will be faced in adequately meeting the demand for leaching, irrigation and drainage because of the peculiar nature of the land having been made through reclamation and the restrictions imposed upon supply of irrigation water both quantitatively and qualitatively. The water management plan to keep irrigation and drainage in a good balance will have to be put into practice under these circumstances, and this will depend on perfect operation and management of the network of water management installations and facilities. This heavy responsibility will need to be executed by groups of highly qualified engineers and well trained personnel who will have to be fully equipped and given adequate mobility.

(iv) Mechanization

The problems handled here will cover those concerning the mechanical farming and processing of farm products. This does not mean that mechanical engineers are all who are wanted. To adequately solve the problem of "mechanization" of farming, labour requirements stemming from the area-farmers' adherence to the prescribed cropping patterns and crop rotation systems will have to be analyzed, crop by crop, and the entire processes of farming from land preparation to post-harvest operations will need to be studied in detail in order to identify when and where the labour requirements may exceed that mobilizable on a family basis, what kind of machinery and equipment in which quantities and capacities will be required to overcome labour shortages, and in what manner.

In this respect, the experts attached to (i) Crop Cultivation and Extension will have to be consulted upon. As the farm machinery and equipment are put in the custody of the agricultural co-operative, as a rule, for joint-use among their member-farmers, the problems of mechanization would naturally involve the necessities for subsidization, financial assistance, and technical guidance towards the agricultural co-operative systems. In these matters, (i) Inputs/Outputs & Circulation staff, PBDAC authorities and others would have to be consulted upon.

To inaugurate agricultural processing industries, again, such problems as the procurement of raw materials, the availability of processing technique, the mobilization of operational and managerial skills, and the marketing will need to be taken into consideration, side by side with the mechanical aspect of plant layout and construction. Full co-operation must, therefore, be obtained from the experts working under (i) Inputs/Outputs & Circulation and (ii) Crop Cultivation & Extension, as well as a thorough discussion with the "specialized" agricultural co-operative system and PBDAC.

(3) Community Section

This Section will be dealing with maintenance and promotion of the people's welfare in general. (i) Maintenance will look after supplies of electricity and potable water, waste disposals, telecommunications, road network, etc. (ii) Welfare will be held responsible for adequate provision of public health services through the Township hospitals, the central village clinics, and the satellite village health centers. (iii) Cultural will attend at

maintenance of primary and secondary educational facilities and enforcement of adult education. Recreational programmes on behalf of the residents will also have to be worked out.

2. Construction Mechanization

2-1 General

Major Civil works and their quantities proposed for the project are as follows:

i)	Drainage Pumping Station	2 places
ii)	Drainage Canal	
	- Main drainage canal	109.4 km
	- Secondary drainage canal	218.5 km
iii)	Irrigation Canal	
	- Main irrigation canal	106.2 km
	- Secondary irrigation canal	264.7 km
iv)	Dykes	80 km
v)	Reclaimed land	110,000 feddan

Almost all the construction works are accounted for earthwork except for drainage pumping stations and bridges. Therefore heavy equipment needs to be introduced. The type and number of construction equipment required for the civil works are estimated based on the work quantity, construction schedule, and natural conditions of the Project Area.

2-2 Bearing Capacity for Construction Equipment

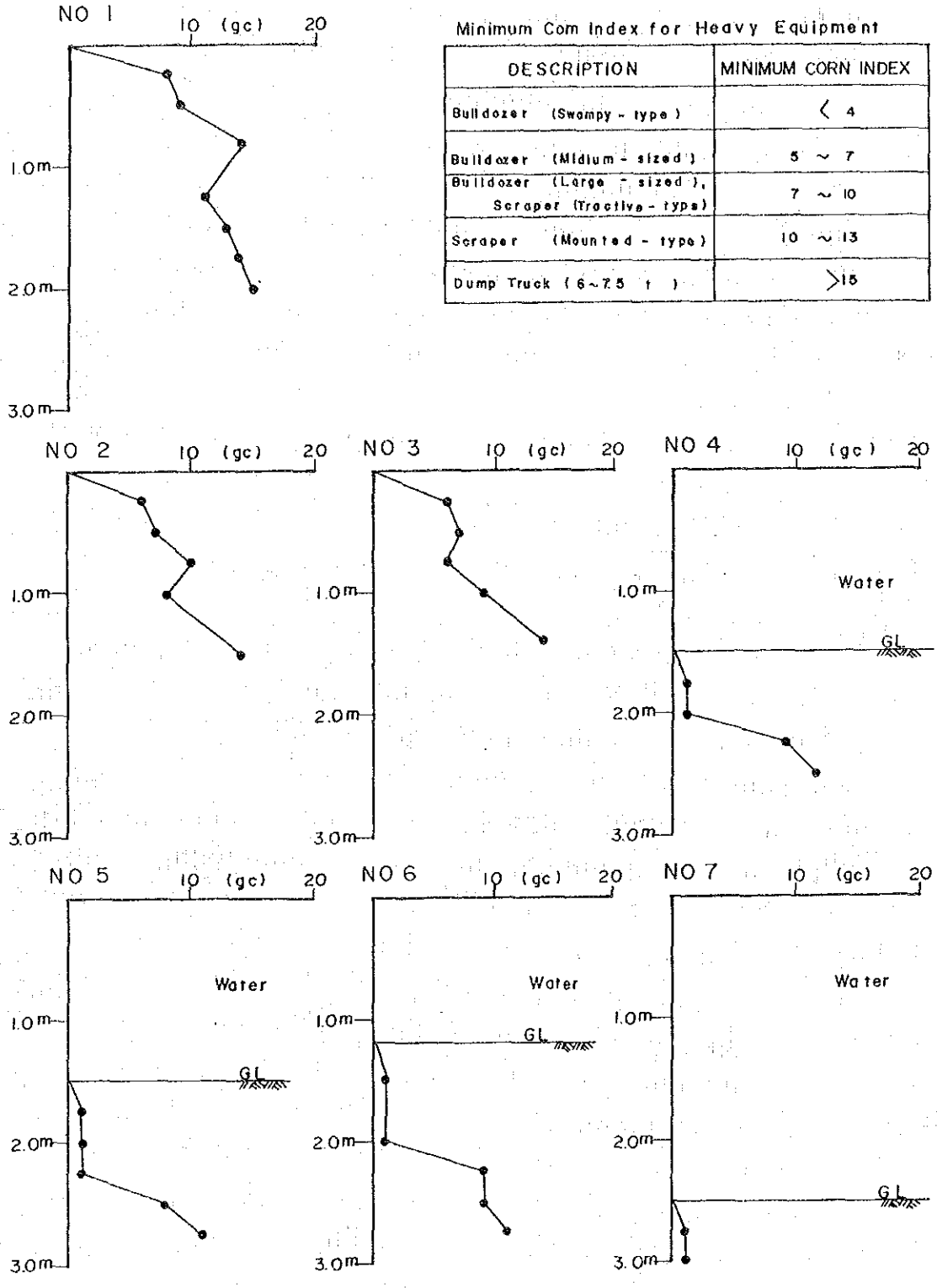
The bed of Manzala Lake is covered with sludge. This stratum is about 70 centimeters thick. In the area under such condition, it is impossible to use heavy equipment immediately after land drainage work because of the poor bearing capacity of the land. Deployment of heavy equipment will become possible within seveal months during which the surface soil will dry up. At the other area which has already been dried up, the trafficability for midium-size equipment will be secured. The result of bearing capacity survey (Corn Penetration Test) in the Project area and its location map are shown in Fig. P-2-1 and Fig. P-2-2.

2-3 Equipment for Construction Work under Water

As mentioned in the next clause "3. Implementation Schedule", earthwork required for the construction of a pump station and main drainage canal will involve underwater excavation work. Therefore drag-lines and micro-dredgers will need to be introduced.

2-4 Necessary Units of Construction Equipment

Necessary units of various construction equipment required for construction works in the Project Area are listed in Table P-2-1.



Minimum Corn Index for Heavy Equipment

DESCRIPTION	MINIMUM CORN INDEX
Bulldozer (Swampy - type)	< 4
Bulldozer (Midium - sized)	5 ~ 7
Bulldozer (Large - sized), Scraper (Tractive - type)	7 ~ 10
Scraper (Mounted - type)	10 ~ 13
Dump Truck (6~7.5 t)	>15

Fig. P-2-1 Resoults Corn Penetration Test

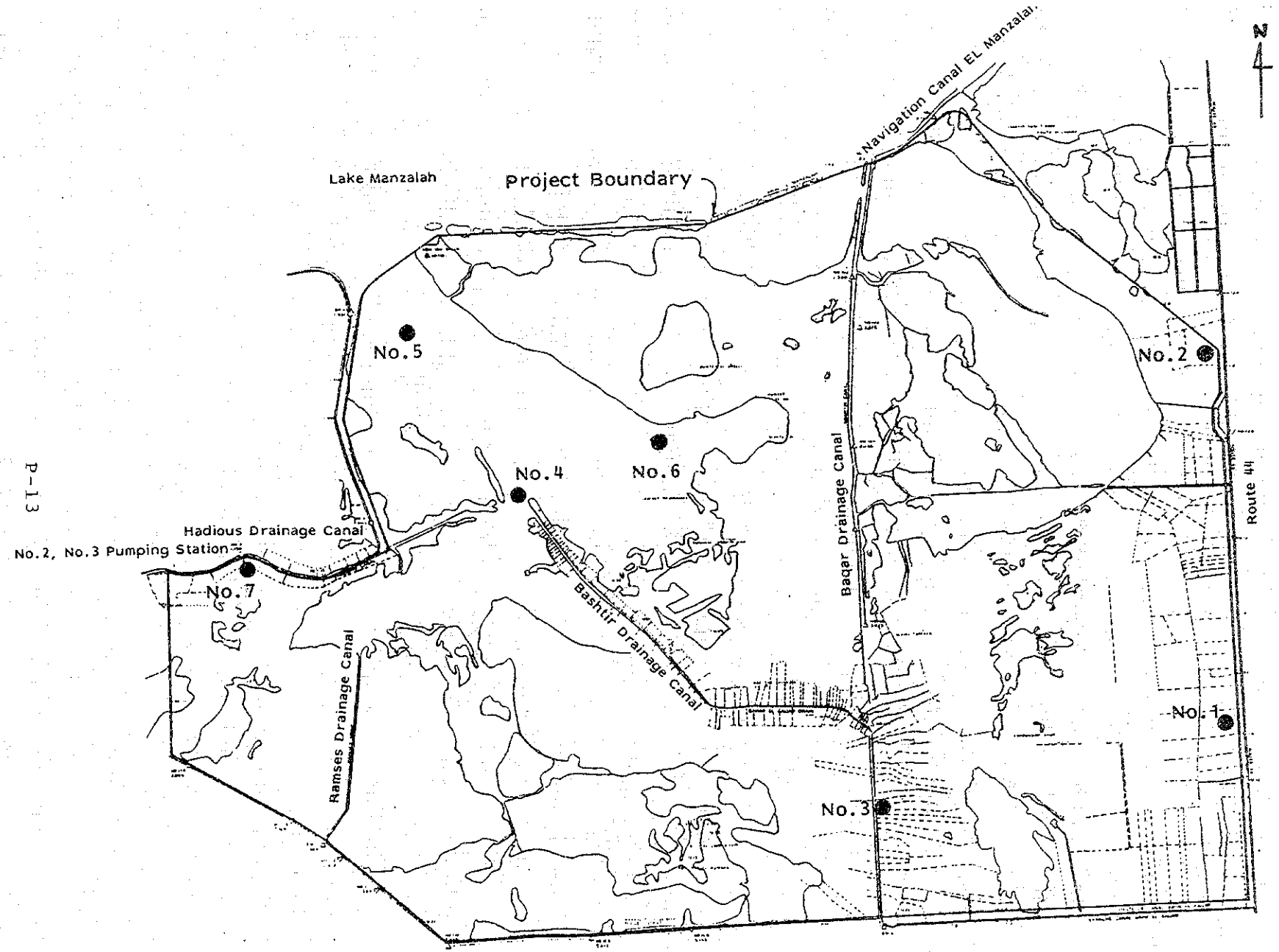


Fig. P-2-2 Location Map of Corn Penetration Survey

Table P-2-1 Necessary Units and Cost of Construction Equipment

(L E ' 000)

Name of Equipment	Specification		Nos.	Unit Price (FC)	Cost (FC)
Bulldozer	21 ton	183 ps	123	90	11,070
" (Swampy)	18 ton	108 ps	5	51	255
"	8 ton	76 ps	172	34	5,848
Backhoe	0.35 cum	80 ps	95	43	4,085
"	0.60 cum	127 ps	17	65	1,105
Drag-line	1.20 cum	170 ps	5	210	1,050
"	0.60 cum	105 ps	5	89	445
Micro Dredger	ϕ300	370 ps	33	216	7,128
Tire Roller	20 ton	85 ps	29	30	870
Road Roller	10 ton	58 ps	48	44	2,112
Scrape-dozer	6.4 cum	192 ps	29	121	3,509
Ripper-dozer	21 ton	190 ps	35	102	3,570
Wheel-type Loader	2.1 cum	134 ps	28	61	1,708
Motor-grader		126 ps	5	48	240
Dump Truck	8 ton	244 ps	285	21	5,985
"	10 ton	312 ps	18	31	558
Truck	4 ton	159 ps	18	10	180
"	8 ton	224 ps	18	20	360
Water Truck	10 cum	310 ps	57	20	1,140
Fuel Truck	8,000 lit.	224 ps	9	30	270
Trailer	25 ton		4	82	328
Diesel Pile Hammer	2.5 ton		1	38	38
Crawler Crane	35 ton		3	136	408
Concrete Mixer	0.5 cum	7.5 kW	27	9	243
Generator	45 kVA		9	10	90
Belt Conveyer	L-7.00 m		18	1	18
Concrete Vibrator	2.5 ps		27	1	27
Water Pump	ϕ100 mm	5.5 kW	30	1	30
Trencher		36 ps	13	27	351
Boling Machine		5 ps	3	10	30
Car Jeep			18	10	180
Car Wagon			9	17	153
Motorcycle	90 cc		36	1	36
Sub-Total					53,420
Spare Parts (10% of above)					5,342
Total					58,762

3. Implementation Schedule

3-1 Basic Idea of Construction Schedule

Basic Idea of the construction schedule is defined as follows;

(1) Apart from the limited amount consumed by evaporation, most of the closed water needs to be drained by use of pump and construction of main drainage canal to avoid accumlation of salt in the reclaimed soil. Hence, the boundary of each block is composed of a main drainage canal and dykes.

Final closure of the tidal dykes will have to be done at the next stage of construction works of main drain and pumping station, and blocks whose land consolidation work may not have yet been started at that time will need to be left under water.

(2) Consequently, the facilities which will have to be completed at first are dykes, pumping stations and main drains. Therefore the earthwork required for construction of these facilities involves excavation work under water. Futhermore, coffer-dams have to be constructed around the pumping station in North Hussinia.

(3) In spite of the above discussions, in any part or parts of 4 blocks (NH-2, NH-3, PS-1, and PS-2) where is near El Salam Canal and has already been dried up it is possible to start the construction work of irrigation facilities, drainage facilities, and land consolidation.

3-2 Phasing Blocks for Construction Schedule

The Project, both North Hussinia Valley and South Port Said, consists of 110,000 feddan of inundated and up-land area as a huge Agricultural Development Project.
The construction works would be executed on the basis of the phasing by blocks which are separated by the proposed main drainage canals as shown in Fig. P-3-1.

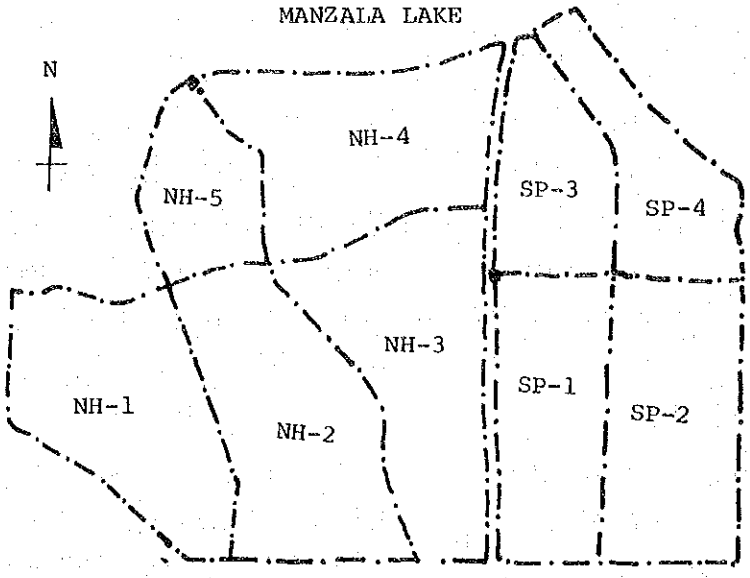


Fig. P-3-1 Construction Phasing Blocks

3-3 Drainage and Drying-Up of lake Water

As mentioned before. the lake water enclosed by dykes will be diminished of its volume partly through natural evaporation but a major part of it will need to be drained by use of drainage pumps to avoid accumulation of salt on the reclaimed land. The volume of lake water encrosed by dykes is assumed to be about 70 million m^3. Drainage of this-much water by use of pumps will take about one month.

Another 4.5 months' period will be spent for drying-up of the lake bottom to improve trafficability of heavy construction machinery. Thus, the total period spent for drainage and drying-up will be 5.5 months.

3-4 Alternatives for Implementation Schedule

Project implementation schedule can be divided into the following 6 phases:

(A) Preparatory Works

They comprise such kinds of works as the detail design, the tender procurement, the tendering and the financial arrangement. This phase usually takes about 2 years.

(B) Dyke, Pumping Station and Main Drainage Canal

Enclosure of the reclaimed land by dykes and construction of pumping stations and main drainage canals can be undertaken simultaneously; the period of time required for such work will

be either shortened or lengthened depending on construction performance of pumping stations and installation of pumps. the time required for this kind of work will be minimum 1.5 years.

(C) Drainage and Drying-Up

Drainage of the lakewater from the encloced area and drying-up of such land takes minimum 0.5 year.

(D) Irrigation Canal,Secondary Drainage Canal and Land Consolidation

This phase of project implementation involves the largest or heaviest work-load and the time spent for it will largely influence the total length of project implementation. .

(E) Primary Leaching

Primary leaching will take 2 years upon completion of land concolidation work.

(A) through (E) above comprise Stage I Construction Work.

(F) Tile Drain

3-4 years after complition of Stage I Construction Work, open-ditches will be replaced by tile drains as Stage II Work.

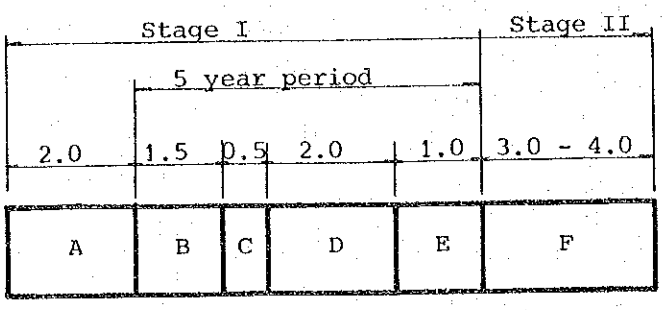
By taking into consideration the conditions pertaining to each phase of Stage I Construction Work, 3 alternative construction schedules have been visualized as per Fig. P-3-2.

Non-Flexibility of Phase D Work

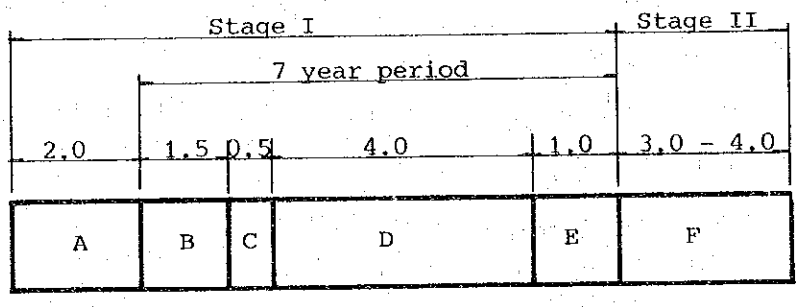
Since Works involved in Phase D would largely influence the period of time required for completion of the entire construction work covered by Stage I Construction Work, the degree or extent of flexibility of its components will be discussed in the below:

1) The entire Project area is divided into 9 blocks as per Fig. P-3-1. These 9 blocks can be further split into several "sub-blocks" in such a manner that each sub-block consists of the put between 2 secondary drainage canals, or of each command area of every village whose average size would be 2,157 feddan. Construction schedule in each sub-block is shown in Fig. P-3-3.

(1) 5 Year Schedule



(2) 7 Year Schedule



(3) 9 Year Schedule

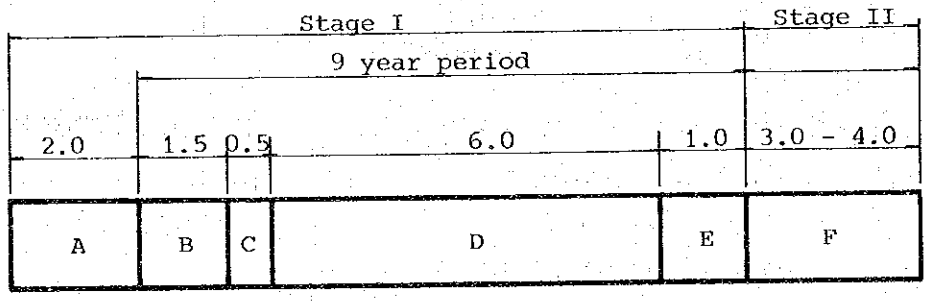
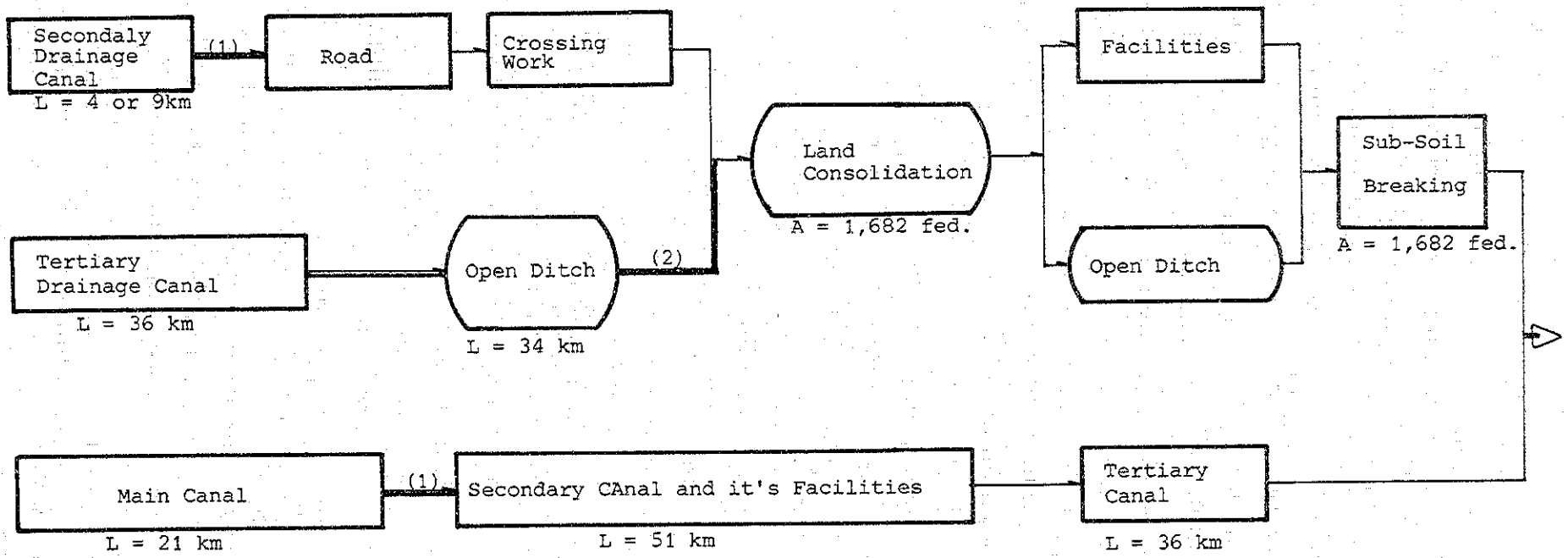


Fig. P-3-2 Three Altenative Construction Schedules



6 to 12 months	1 month	2 months	1 month

(1) : Dry-up period for Roads (2 - 6 months)

(2) : Dry-up period for Land Consolidation (2 - 6 months)

Average size of Sub-block is a 2,157 feddan.

Fig. P-3-3 Construction Schedule in each sub-block

2) The length of time required for Phase D work, the most time-consuming part of the entire work, ultimately depends on the number of machinery and labor which can be put into each work. However, as will be known from Fig. P-3-3, the work load in this phase has 2 critical passes, the one is the earthwork part including canal construction and land consolidation, and the other is drying-up of roads and field surface.

The earthwork problem can be theoretically solved by the quantum of construction machinery and trucks to be used for the purpose. But such earthwork can be properly undertaken on the condition that the roads and field surface should have been adequately dried up. Now, drying process is a natural process entirely depending on climate and weather. For drying the ground surface to the depth of 40 - 60 cm, it will take 2-3 months (4-4.5 mm/day) during summer season and 4-6 months (1.5 - 2.0 mm/day) during winter season.

On and above this, percolation of subsoil moisture must be added. Therefore, Phase D work in each sub-block would take 1 - 2 years.

3) In such blocks or sub-blocks which are situated nearer to El Salam Canal and which have more dryland than submerged area, Phase D work can theoretically be commenced side by side with Phase B work ot Phase C work; otherwise , earth work involving cutting and embankment cannot be properly undertaken since construction machinery and trucks cannot be adequately deployed.

4) The optimal volume of construction work of this nature has been identified at about 2,000 feddan per year from such practical considerations as the provision of numerous construction materials, the mobilization of labor, the deployment of construction machinery and equipment, and the organization and training of farmers.

5) Taking the entire Stage I Construction Period, the smaller blocks whose dryland percentage is larger may complete the entire work within 5 years, but other blocks will require 9 years. /1

/1 : Taking NH-1, NH-2, NH-3 and NH-4 blocks, for instance, the number of sub-blocks where Phase D work will need to be commenced simultaneously is as follows:

3 - 8 sub-blocks under 5-Year Construction Schedule
2 - 4 sub-blocks under 7-Year Construction Schedule
1 - 3 sub-blocks under 9-Year Construction Schedule

6) Under this Project, 9 Year Construction Schedule has been adopted, and 5 Year and 7 Year Construction Schedules have been worked out for comparison.

3-5 Project Implimentation Schedule

From view point of 9 Year Construction Schedule which is mentioned above, the 9 Year Construction Plan has been given as Fig. p-3-4, and finaly, the Project Implementation Schedule has been composed as shown Fig. P-3-5.

Fig. P-3-4 9 Year Construction Plan

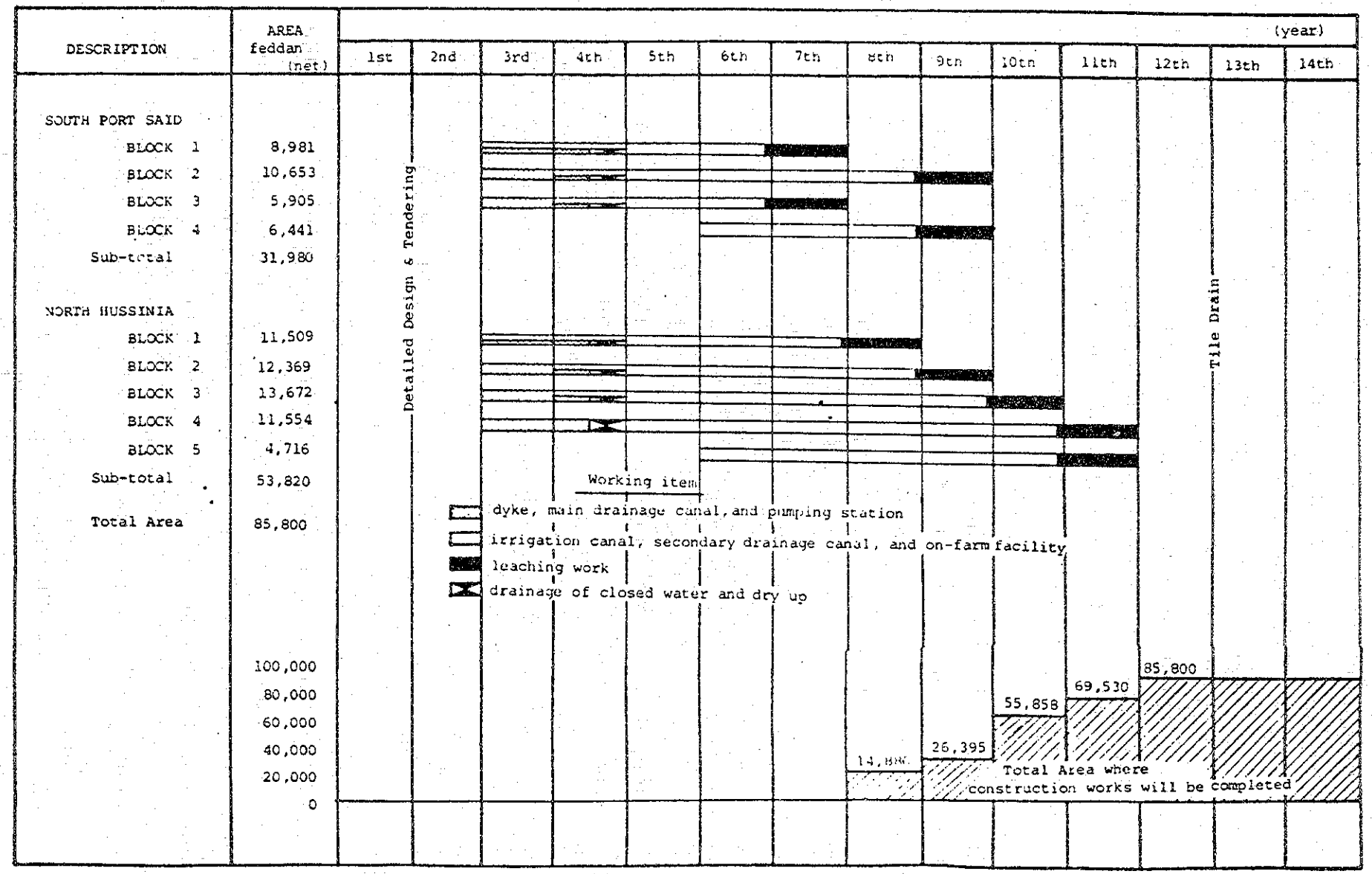
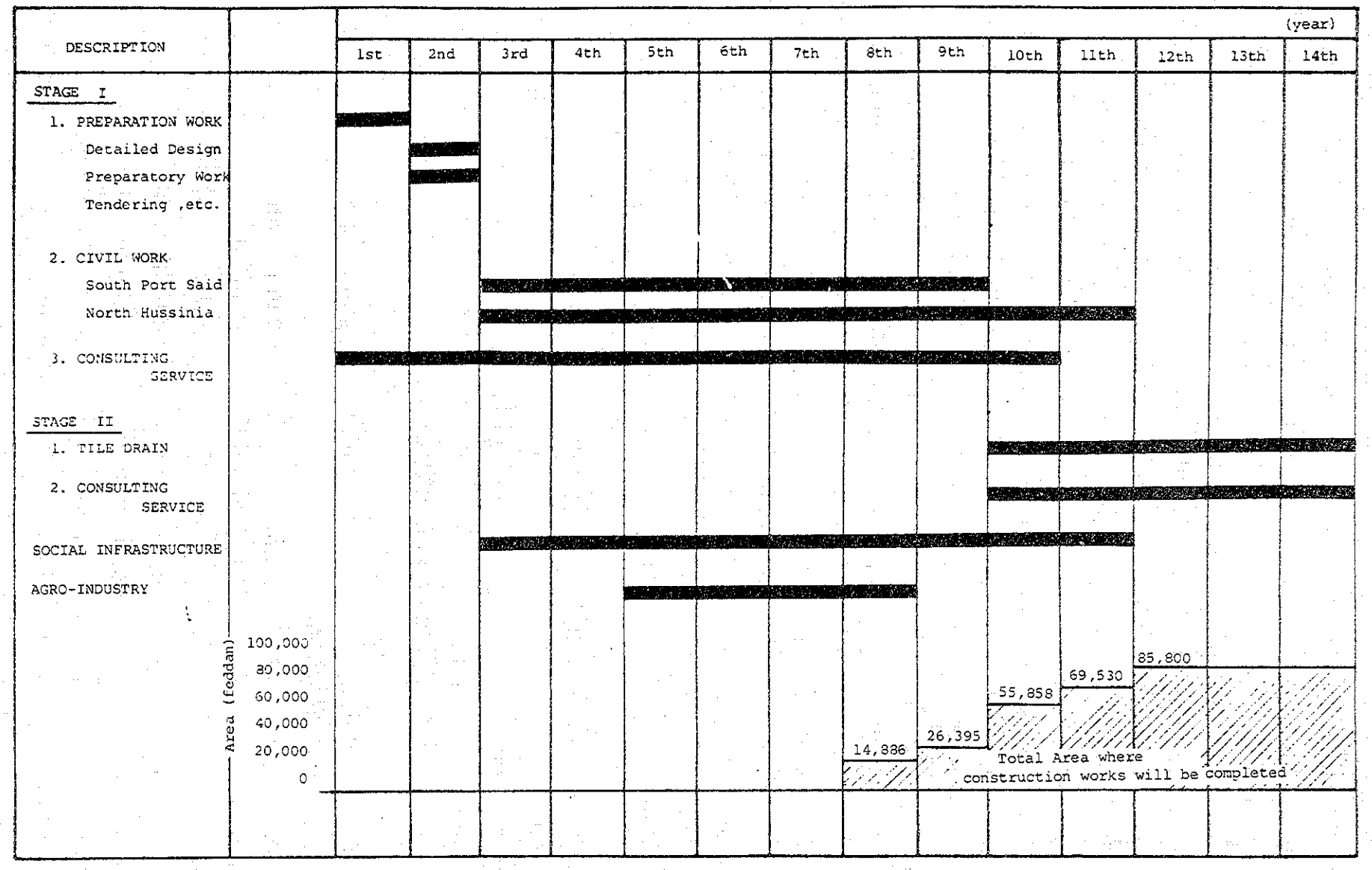


Table P-3-5 IMPLEMENTATION SCHEDULE



ANNEX

Q. ECONOMIC EVALUATION AND FINANCIAL ANALYSIS

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Q. ECONOMIC EVALUATION AND FINANCIAL ANALYSIS

1. General

The components of the Project consist of three plans, viz, agricultural development plan, land reclamation plan, and rural development plan. The Project aims to contribute to the Five Year Plan for Economic and Social Development, especially, the delta region development strategy. The gross Project Area totals 110,000 feddan or 46,200 ha. The net cultivated area is projected at 85,800 feddan. The farmlands will be cultivated by newly settled farmers of about 12,400 households. Successful attainment of the Project benefits depends upon the timely execution of these components.

It is reported that since the early 1950's, approximately 1.1 million feddan of land have been reclaimed in Egypt, but less than 60% of this land is actually under cultivation and possiblly as little as 35% is being cultivated with Project 1/. The major reasons for this are inadequate soil studies made before reclamation started, inadequate reclamation works, breakdown in irrigation pumping systems, failure to provide adequate drainage and shortage of funds. Implementation of this Project shall never repeat the failure of this kind.

1/ The Appraisal Report, New Land Development Project, West Nubariya, Oct. 1980, World Bank

2. Price Analysis

2-1. Conversion Factors

There are two market systems in Egypt with different prices of inputs and outputs; that is, the cooperative marketing system and the free marketing system. The major export or import substitution crops and cotton are sold only through the cooperative system. Amount of these crops exceeding the quota and the other crops might be sold in either market system. Reportedly, the compulsory prices in the cooperative market system were lower than the average prices in the free market in the 1960s by 50 to 20 percent. According to the World Bank Report entitled Agricultural Price Management in Egypt, 1980, the subsidized percent to traded inputs were as follows :

Subsidy as percent of border price - Egypt, 1975

Price	54%
Wheat	54%
Cotton	48%
Maize	44%
Meat	48%

These price systems mean that the prices received by farmers do not represent the real prices. Hence, it is necessary to estimate the economic or shadow prices for economic evaluation.

- Standard Conversion Factor (SCF)

A standard conversion factor is given by the following formula;

$$SCF = (Im + Ex)/(Im + Ex + TIm - TEx + SEx)$$

where;

SCF	:	Standard Conversion Factor
Im	:	Total Amount of Import (C.I.F.)
Ex	:	Total Amount of Export (F.O.B.)
TIm	:	Total Amount of Import Duties and Taxes
TEx	:	Total Amount of Export Duties and Taxes
SEx	:	Total Amount of Export Subsidy

Table Q-2-1 shows the Standard Conversion Factor of 0.8 in Egypt.

- Other Conversion Factors

According to "Shadow Price for Trade Strategy and Investment Planning in Egypt", World Bank Staff Working Paper No. 521, 1982, the following conversion factors on agricultural inputs and outputs are calculated;

Agricultural Machinery	1.159
Agricultural Machinery Spares	1.021
Agricultural Implements	0.992
Bags	1.280
Fertilizer (wtd average)	1.663

Pesticides	1.976
Seeds	1.149
Maize	1.313
Onions	4.259
Rice	2.043
Soybeans	0.992
Sugar	0.969
Wheat	1.591
Non traded agriculture	1.000

2-2. Economic Cost of Farm Labor

On the basis of the field investigation in the Project Area, market wage rate of rural unskilled labor is LE 5.00 per man-day. Although conversion factor of rural unskilled labor is 0.22 according to the World Bank Report, using the results of labor balance study, shadow wage rate is estimated at LE 2.5 per man-day. (See Table Q-2-2).

2-3. Farm Gate Prices

In the price analysis, economic prices of the Project input and output are computed on the basis of the World market prices and their projected ones as far as data are available, and the rest are referred with those figures obtained from the field investigation and the data provided by GARPAD as well as the relevant reports.
Table Q-2-3 gives the farm gate prices of the Project inputs and outputs.

2-4. Foreign Exchange Rate

Exchange rate of Egyptian Pound (LE) and Japanese Yen are estimated by data sources in Appendix Q-1. In this report the exchange rate is estimated at LE 0.82 per US$. The exchange rate of Japanese Yer per US$ is estimated at Yen 288 per LE. This is the average value for the last three months.

2-5. Price Escalation Factor

Since the project cost has been estimated on the basis of the 1983 price level, the expected price increase due to future inflation is calculated by applying the following rates which are based on OECF guideline;

	Foreign Currency	Local Currency
Annual Inflation Rate	5%	12%

3. Economic Benefit

3-1. Net Production Value without Project

At present, about 6,000 feddans are under cultivation by using drain water of Bahr el Baqar, Ramsis Drain and Hadous Drain, of which net production value is estimated at LE 160 per feddan. The low productivity is mainly due to water quality of these drains as well as lack of enough extension services on modern agricultural techniques.

3-2. Net Production Value with Project

(1) Cropped Area

Although total project area covers 110,000 feddans, net cultivable area is estimated at 85,800 feddans after completion of tile drain construction, and the rest is considered to be those areas for canals, roads, new villages and so on. According to the implementation schedule the first cropping would stand in 13,798 feddans of South Port Said Project area at the 8th Project year and full utilization of total net cultivable area of 85,800 feddans would be expected at the 15th project area (See Appendix Q-4).

Cropped area after full development stage is summarized below :

(Unit : feddan)

Crop	North Hussinia		South Port Said		Total	
	Summer	Winter	Summer	Winter	Summer	Winter
Rice	17,940	-	10,660	-	28,600	-
Soybean	17,940	-	10,660	-	28,600	-
Sorghum	16,599	-	8,602	-	25,201	-
Sugarbeet	-	17,940	-	10,660	-	28,600
Vegetable	1,341	17,940	2,058	10,660	3,399	28,600
Berseem	-	17,940	-	10,660	-	28,600
Total	53,820	53,820	31,980	31,980	85,800	85,800

Thus, cropping intensity after full development is 200 percent against the net cultivable area.

(2) Economic Profitability

Tables Q-3-1 and Q-3-2 show economic profitability of crop cultivation per feddan and livestock breeding per feeding unit, respectively. While various vegetables are introduced in the proposed cropping patterns, net production values of them are represented by that of tomato cultivation.

Tables Q-3-3 to Q-3-5 indicate gross production value, production cost and net production value of crop cultivation during gestation period, respectively, and Table Q-3-6 shows benefit stream arising from crop cultivation. Table Q-3-7 gives number of livestock to be bred by the project, and Table Q-3-8 gives benefit stream arising from livestock breeding.

4. Economic Cost

The economic initial investment cost which is based on the national economic point of view, is calculated by re-valuing fuel costs and costs for common labor in the land reclamation component and by applying the standard conversion factor for the other local currency portion in the land reclamation component as well as the whole local currency portion in the infrastructure component after deducting price escalation cost from the financial initial investment, the economic cost of the initial investment is estimated at 430.3 million LE as shown below ;

	Land Reclamation (LE 1,000)	Infrastructure (LE 1,000)	Total (LE 1,000)
F/C	97,314	110,276	207,590
L/C	88,932	133,759	222,691
Total	186,246	244,035	430,281

Tables Q-4-1 and Q-4-2 show cost stream of initial investment for the land reclamation project of North Hussinia and South Port Said, during construction period, respectively, and Tables Q-4-3 and Q-4-4 do that for the whole project area in case of construction period of 5 years and 7 years, respectively.

5. Economic Internal Rate of Return (Land Reclamation)

In calculating an economic internal rate of return, the following premises are taken into consideration;

a) In order to decide the project life, it must be considered that there are various project facilities which have respective durable life. In this project, it is assumed that most of all project facilities except pumping equipment has enough durable life to evaluate the project over 50 years as far as maintenance works for these facilities will be sufficiently implemented.

For pumping equipment, the required replacement costs are taken into account in the operation and maintenance cost.

b) The gestation period for attaining the full project benefit shall be 8 years after completion of primary leaching, taking development of crops yield into consideration.

c) The negative benefit arising from the fishery sector will occur after the 4th project year when the Bashtir canal and the Bahr el Baqar are connected.

Table Q-5-1 shows both stream of project cost and benefit over 50 years based on which the present worth values of project cost and benefit in different discount rates are calculated as indicated in Table Q-5-2. According to Table Q-5-2, the economic internal rate of return for the land reclamation project is calculated at 13.8 percent.

6. Farm Budget Analysis

6-1. General

Since Baladi cattle would be finally replaced by either Friesian cattle or buffalo, farm budget analysis has been carried out for the following farm size and farm type;

	Farm Type	
	Friesian	Buffalo
Farm Size (feddan)		
Smallholder	5.0	5.0
Largeholder A	15.0	15.0
Largeholder B	20.0	20.0

In the livestock breeding plan, 80% of total production of berseem and sorghum has been taken into consideration, and it could be expected that the remaining 20% can feed a couple of sheep per farm but the benefit arising from sheep breeding is

not counted in this farm budget analysis.

6-2. Net Farm Income

Table Q-6-1 and Q-6-2 give financial crop budget per feddan and financial profitability of livestock breeding, respectively. Tables Q-6-3, Q-6-4 and Q-6-5 show gross income, farm cost and net income per feddan during gestation period, respectively. On the other hand, Tables Q-6-6, Q-6-7 and Q-6-8 indicate feedable unit of livestock for 5.0, 15.0 and 20.0 feddans farms, respectively. Tables Q-6-9 thru Q-6-20 show net farm income of the respective farm during gestation period with both cropping patterns of No. 1 and No. 2.

6-3. Annual Amortization

General conditions of calculating annual amortization on land and house as well as cattle loan are as follows;

	Land and House		Cattle Loan
	Smallholder	Largeholder	
Repayment Period(Year)	25	25	5
Interest Rate (%)	none	1	6
Grace Period(Year)	3	3	none

On the basis of the above conditions, Table Q-6-21 and Q-6-22 give annual amortization amounts on cattle loan and land and house, respectively.

Other assumptions applied for the farm budget analysis are given below :

	Smallholder	Largeholder
Living Cost (LE)		
Subsistence level	1,200	1,440
Desirable level	2,040	2,400
Other Annual Charges	50	100
Irrigation Water Charge	LE 22 per feddan	
Land Tax	LE 5 per feddan	

6-4. Financial Cash Flow

Tables Q-6-23 thru Q-6-34 show financial cash flow of the respective farm during 10 years after primary leaching. In this cash flow analysis, every farm would require some private loan during the beginning stage after settlement of which conditions are assumed as repayment period of 1 year with interest rate of 12% per annum. In case any settler would have his own capital at the time of settling, the burden depending upon the private loan would decrease considerably.

Table Q-2-1 Calculation of Standard Conversion Factor

(Unit : LE 1,000)

	1978	1979	1980	1981	Average
1. Import (c.i.f., total)	2,632,191	2,686,213	3,402,000	6,187,497	3,726,975
2. Export (f.o.b., total)	679,754	1,287,813	2,132,178	2,262,982	1,590,682
3. Import Duties and Taxes	1,009,505	961,844	1,153,958	2,175,256	1,325,141
4. Export Duties and Taxes	2,142	1,119	1,030	1,182	1,368
5. Export Subsidy	-	-	-	-	-
6. (1 + 2)	3,311,945	3,974,026	5,534,178	8,450,479	5,317,657
7. (1 + 2 + 3 - 4 + 5)	4,319,308	4,934,751	6,687,106	10,624,553	6,641,430
8. SCF (6 ÷ 7)	0.766	0.805	0.827	0.795	0.800

Note: Refer to Appendix Q-2

Table Q-2-2 Economic Cost of Farm Labor

1. Labor Days of 5 Feddan

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Requirement	31.7	23.7	22.6	31.8	16.9	35.0	22.8	15.3	14.8	13.3	16.1	20.0
Available	52.0	48.0	52.0	50.0	52.0	50.0	52.0	52.0	50.0	52.0	50.0	52.0

2. $\frac{31.7 + 22.6 + 16.9 + 22.8 + 15.3 + 13.3 + 20.0}{52.0} + \frac{31.8 + 35.0 + 14.8 + 16.1}{50.0} + \frac{23.7}{48.0} = 5.18 \text{ days}$

3. $\frac{5.18 \text{ day} \times 5 \text{ L.E./day}}{12 \text{ month}} = 2.16$

4. $\frac{2.16 \times 1.070 \text{ (Conversion factor of Consumption)}}{5} = 0.46 \doteq 0.5$

5. Shadow wage = 5.0 x 0.5 = 2.5 L.E.

Table Q-2-3 Projected Farm Gate Prices
(1983 Constant Prices)

Item	Unit	Financial	Economic
Crop			
Rice (unhulled)	ton	105	182
Soybean	"	230	228
Sugarbeet	"	30	30
Tomato	"	70	70
Corn	"	30	30
French Bean	"	100	100
Okra	"	250	250
Onion	"	125	125
Cabbage	"	60	60
Bean	"	239	239
Pea (Dry)	"	496	496
Spinach	"	250	250
Cotton	"	363	657
Maize	"	114	160
Wheat	"	77	202
Livestock Product			
Milk	ton	300	290
Cattle			
Friesian	head	225	225
Baladi	"	250	250
Buffalo	"	250	250
Boned Meat	ton	2,500	2,420
Others			
Farm Labor	man-day	5	2.5
Gasoline	1,000 l	150	214
Diesel Oil	"	30	43
Urea (N:45%)	ton	312	326
T.S.P. (P_2O_5)	"	290	304

Note: See Appendix Q-3

Table Q-3-1 Net Production value with Project (Economic)

	Paddy	Soybean	Sugarbeet	Tomato[1/]	Cottton	Maize	Wheat
Yield (ton/fed)	3.0	1.2	25.0	15.0	1.3	2.0	1.8
Unit Price (LE/ton)	182	228	30	70	657	160	202
G.P.V. (LE/fed)	546	274	750	1,050	854	320	364
Production Cost (LE/fed)							
-Seed	1.2	10.4	48.2	10.3	17.0	11.0	18.0
-Fertilizers	61.5	50.0	78.2	133.6	66.0	70.0	62.0
-Agr. Chemicals	16.6	-	40.9	83.9	70.0	-	10.0
-Fuel	15	13.2	21.6	6.7	10	15	15
-Agr. Machinery[2/]	44	27	28	22	27	50	50
-Labor	63	40	52	230	300	50	81
-Miscellaneous	22	14	56	53	95	29	22
-Sub-total	223	154	325	540	585	225	258
N.P.V. (LE/fed)	323	120	425	510	269	95	106

Note : 1/ Representative of Vegetables (Winter and Summer)

2/ See Appendix Q-5

Table Q-3-2 Profitability of Livestock Breeding (Economic)[1/]

(Per Feeding Unit)

	Milk (kg)	Boned Meat (kg)	Heifer (head)	Manure (ton)	Total (LE)
1. Friesian					
-Annual Production	3,825	273	0.32	15	-
-Unit Price (LE)	0.29	2.40	225	3.00	-
-G.P.V. (LE)	1,109	655	72	45	1,881
-P.C. (LE)	-	-	-	-	1,170
-N.P.V. (LE)	-	-	-	-	711
2. Baladi					
-Annual Production	900	79	0.3	10	-
-Unit Price (LE)	0.29	2.40	250	3.00	-
-G.P.V. (LE)	261	190	75	30	556
-P.C. (LE)	-	-	-	-	297
-N.P.V. (LE)	-	-	-	-	259
3. Baffalo					
-Annual Production	660	94	0.25	10	-
-Unit Price (LE)	0.40	2.40	250	3.00	-
-G.P.V. (LE)	264	226	63	30	583
-P.C. (LE)	-	-	-	-	297
-N.P.V. (LE)	-	-	-	-	286

Note: 1/ Refer to Appendix Q-6

Table Q-3-3 G.P.V. with Project (Economic)

(Unit : LE/feddan)

Crop	Price (LE/ton)	Year after Primary Leaching 1	2	3	4	5	6	7	8
Clayey Soil									
Rice	182	91	182	237	328	419	455	510	546
Soybean	228	-	-	-	137	182	228	251	274
Sugarbeet	30	-	-	-	480	540	600	690	750
Tomato (W)	70	-	-	-	560	630	770	945	1,050
Loamy Soil									
Rice	182	91	182	255	346	437	473	510	546
Soybean	228	-	-	-	160	205	251	274	274
Tomato (S)	70	-	-	-	630	770	945	1,050	1,050
Sugarbeet	30	-	-	-	480	540	600	690	750
Tomato (W)	70	-	-	-	630	770	1,050	1,050	1,050

Table Q-3-4 Production Cost with Project (Economic)

(Unit : LE/feddan)

Crop	Cost 1/ (LE/fed)	Year after Primary Leaching 1	2	3	4	5	6	7	8
Clayey Soil									
Rice	223	45	78	112	145	178	201	223	223
Soybean	154	-	-	-	92	108	123	139	154
Sugarbeet	325	-	-	-	195	228	260	293	325
Tomato (W)	540	-	-	-	324	378	432	486	540
Loamy Soil									
Rice	223	45	78	112	145	178	201	223	223
Soybean	154	-	-	-	92	116	139	154	154
Tomato (S)	540	-	-	-	324	405	486	540	540
Sugarbeet	325	-	-	-	195	228	260	293	325
Tomato (W)	540	-	-	-	324	378	540	540	540

Note : Production Cost after full development

Table Q-3-5 N.P.V. with Project (Economic)

(Unit : LE/feddan)

Crop	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Clayey Soil								
Rice	46	104	125	183	241	254	287	323
Soybean	-	-	-	45	74	105	112	120
Sugarbeet	-	-	-	285	312	340	397	425
Tomato (W)	-	-	-	236	252	338	459	510
Loamy Soil								
Rice	46	104	125	201	259	272	287	323
Soybean	-	-	-	68	89	112	120	120
Tomato (S)	-	-	-	306	365	459	510	510
Sugarbeet	-	-	-	285	312	340	397	425
Tomato (W)	-	-	-	306	392	510	510	510

Table Q-3-6 Benefit Stream (Economic)

(Unit : LE 1,000)

Crop Cultiyation

Block	Soil Type	Cultivated Area	Project Year 8	9	10	11	12	13	14	15	16	17	18	19
NH-1	Clay	11,509	-	491	1,109	1,333	2,873	3,372	3,978	4,815	5,286	5,286	5,286	5,286
NH-2	"	12,369	-	-	527	1,192	1,433	3,088	3,624	4,276	5,174	5,681	5,681	5,681
NH-3	"	13,672	-	-	-	583	1,318	1,584	3,413	4,006	4,726	5,719	6,280	6,280
NH-4	"	3,506	-	-	-	-	149	338	406	875	1,027	1,212	1,467	1,610
NH-4	Loamy	8,048	-	-	-	-	343	776	932	2,718	3,312	3,926	4,209	4,381
NH-5	Clay	4,716	-	-	-	-	201	454	546	1,177	1,382	1,630	1,973	2,166
Sub-total		53,820	-	491	1,636	3,108	6,317	9,612	12,899	17,867	20,907	23,454	24,896	25,404
SP-1	Clay	8,981	383	866	1,040	2,242	2,631	3,104	3,757	4,125	4,125	4,125	4,125	4,125
SP-2	"	10,653	-	-	454	1,027	1,234	2,660	3,121	3,682	4,457	4,893	4,893	4,893
SP-3	Loamy	5,905	252	509	684	1,994	2,430	2,881	3,088	3,214	3,214	3,214	3,214	3,214
SP-4	"	6,441	-	-	275	621	746	2,175	2,650	3,142	3,369	3,506	3,506	3,506
Sub-total		31,980	635	1,375	2,453	5,884	7,041	10,820	12,616	14,163	15,165	15,738	15,738	15,738
Total		85,800	635	1,866	4,089	8,992	13,358	20,432	25,515	32,030	36,072	39,192	40,634	41,142

Table Q-3-7 Number of Livestock

(Unit : Feeding unit)

Project Year	North Hussinia			South Port Said			Whole Project Area		
	Friesian	Baladi	Buffalo	Friesian	Baladi	Buffalo	Friesian	Baladi	Buffalo
8	-	-	-	2,000	1,000	1,500	2,000	1,000	1,500
9	1,759	700	512	3,141	1,250	913	4,900	1,950	1,425
10	2,165	1,898	530	3,371	2,955	825	5,536	4,853	1,355
11	3,726	2,594	887	3,565	2,482	849	7,291	5,076	1,736
12	5,001	3,125	1,154	3,994	2,496	921	8,995	5,621	2,075
13	6,660	4,363	1.404	4,609	3,019	972	11,269	7,382	2,376
14	8,342	5,210	1,647	5,726	3,575	1,131	14,068	8,785	2,778
15	9,742	5,783	1,963	6,441	3,824	1,297	16,183	9,607	3,260
16	11,318	6,712	2,323	7,236	4,292	1,486	18,554	11,004	3,809
17	14,320	7,097	2,761	8,740	4,331	1,685	23,060	11,428	4,446
18	17,334	8,777	2,718	10,094	5,110	1,583	27,428	13,887	4,301
19	21,136	10,481	3,325	12,097	5,999	1,903	33,233	16,480	5,228
20	24,989	11,585	4,004	14,302	6,631	2,292	39,291	18,216	6,296
21	30,531	13,300	4,451	17,474	7,612	2,548	48,005	20,912	6,999
22+	30,528	4,452	4,452	17,472	2,548	2,548	48,000	7,000	7,000

Table Q-3-8 Benefit Stream (Economic)

(Unit : LE 1,000)

Livestock Breeding

Project Year	North Hussinia			South Port Said			Whole Project Area			
	Friesian	Baladi	Buffalo	Friesian	Baladi	Buffalo	Friesian	Baladi	Buffalo	Total
8	-	-	-	-	-	-	-	-	-	
9	1,156	181	146	2,065	324	261	3,221	505	407	4,133
10	1,534	492	152	2,390	765	236	3,924	1,257	388	5,569
11	2,556	672	254	2,446	643	243	5,002	1,315	497	6,814
12	3,458	809	330	2,761	646	263	6,219	1,455	593	8,267
13	4,596	1,130	402	3,180	782	278	7,776	1,912	680	10,368
14	5,759	1,349	471	3,953	926	323	9,712	2,275	794	12,781
15	6,794	1,498	561	4,492	990	371	11,286	2,488	932	14,706
16	7,897	1,738	664	5,048	1,112	425	12,945	2,850	1,089	16,884
17	9,892	1,838	790	6,037	1,122	482	15,929	2,960	1,272	20,161
18	12,038	2,273	777	7,010	1,323	453	19,048	3,596	1,230	23,874
19	14,645	2,715	951	8,382	1,554	554	23,027	4,269	1,495	28,801
20	17,367	3,001	1,145	9,940	1,717	656	27,307	4,718	1,801	33,826
21	21,174	3,445	1,273	12,118	1,972	729	33,292	5,417	2,002	40,711
22+	21,701	1,273	1,273	12,420	729	729	34,121	2,002	2,002	36,123

Table Q-4-1 Cost Stream (Initial Investment - Land Reclamation)

North Hussinia (Unit : LE 1,000)

Project Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Financial Cost														
F/C	793	366	7,731	8,139	7,525	8,610	6,950	5,656	2,510	1,394	2,610	2,802	3,091	3,669
L/C														
Fuel	-	-	305	312	272	317	257	214	95	50	108	110	122	145
Labor	-	91	2,548	2,548	2,555	3,185	2,555	2,128	847	427	910	910	1,050	1,050
Others	134	95	7,313	7,555	6.267	7,076	5,763	4,808	2,234	1,202	2,570	2,666	2,900	3,464
Sub-total	134	186	10,166	10,415	9,094	10,578	8,575	7,150	3,176	1,679	3,588	3,686	4,072	4,841
Economic Cost														
F/C	793	366	7,731	8,139	7,525	8,610	6,950	5,656	2,510	1,394	2,610	2,802	3,091	3,669
L/C														
Fuel 1/	-	-	437	447	390	454	368	307	136	72	155	158	175	208
Labor 2/	-	46	1,274	1,274	1,278	1,593	1,278	1,064	424	214	455	455	525	525
Others 3/	107	76	5,850	6,044	5,014	5,661	4,610	3,846	1,787	962	2,056	2,133	2,320	2,917
Sub-total	107	122	7,561	7,765	6,682	7,708	6,256	5,217	2,347	1,248	2,666	2,756	3,020	3,650
Total	900	488	15,292	15,904	14,207	16,318	13,206	10,873	4,857	2,642	5,276	5,548	6,111	7,319

1/ Financial Cost x 43/30

2/ " x 3.5/7.0

3/ " x 0.8

Table Q-4-2 Cost Stream (Initial Investment - Land Reclamation)

South Port Said (Unit : LE 1,000)

Project Year	1	2	3	4	5	6	7	8	9	10	11	12
Financial Cost												
F/C	466	216	4,945	4,412	4,294	4,883	4,524	4,519	0	3,364	0	3,845
L/C												
Fuel	-	-	124	174	161	186	178	175	5	133	0	153
Labor	-	49	1,498	1,498	1,498	1,876	1,505	1,253	105	1,120	0	1,253
Others	78	60	2,502	4,139	3,698	4,135	4,249	4,411	43	3,192	0	3,693
Sub-total	78	109	4,124	5,811	5,357	6,197	5,932	5,839	153	4,445	0	5,099
Economic Cost												
F/C	466	216	4,945	4,412	4,294	4,883	4,524	4,519	0	3,364	0	3,845
L/C												
Fuel 1/	-	-	178	249	231	267	255	251	7	191	0	219
Labor 2/	-	25	749	749	749	938	753	627	53	560	0	627
Others 3/	62	48	2,002	3,311	2,958	3,308	3,399	3,529	34	2,554	0	2,954
Sub-total	62	73	2,929	4,309	3,938	4,513	4,407	4,407	94	3,305	0	3,800
Total	528	289	7,874	8,721	8,232	9,396	8,931	8,926	94	6,669	0	7,645

1/ Financial Cost x 43/30

2/ " x 3.5/7.0

3/ " x 0.8

Table Q-4-3 Cost Stream (Initial Investment - Land Reclamation)

Whole Area (5 years' Construction Period)

(Unit : LE 1,000)

Project Year	1	2	3	4	5	6	7	8	9	10
Financial Cost										
F/C	1,260	582	15,535	15,010	19,307	16,058	9,922	0	4,516	15,123
L/C										
Fuel	-	-	545	582	720	600	369	0	177	593
Labor	-	140	4,900	4,984	5,838	6,041	5,054	0	1,547	5,194
Others	212	155	12,711	13,838	17,456	13,365	6,872	0	4,179	13,977
Sub-total	212	295	18,156	19,404	24,014	20,006	12,295	0	5,903	19,764
Economic Cost										
F/C	1,260	582	15,535	15,010	19,307	16,058	9,922	0	4,516	15,123
L/C										
Fuel 1/	-	-	781	834	1,032	860	529	0	254	850
Labor 2/	-	70	2,450	2,492	2,919	3,021	2,527	0	774	2,597
Others 3/	170	124	10,169	11,070	13,965	10,692	5,498	0	3,343	11,182
Sub-total	170	194	13,400	14,396	17,916	14,573	8,554	0	4,371	14,629
Total	1,430	776	28,935	29,406	37,223	30,631	18,476	0	8,887	29,752

1/ Financial Cost x 43/30

2/ " x 3.5/7.0

3/ " x 0.8

Table Q-4-4 Cost Stream (Initial Investment - Land Reclamation)

Whole Area (7 years' Construction Period) (Unit : LE 1,000)

Project Year	1	2	3	4	5	6	7	8	9	10	11	12
Financial Cost												
F/C	1,260	582	13,649	9,099	15,166	15,166	11,374	7,583	3,792	4,516	9,521	5,602
L/C												
Fuel	-	-	506	337	563	563	422	281	140	177	381	222
Labor	-	140	4,823	3,220	5,362	5,362	4,025	2,681	1,344	1,547	3,647	1,547
Others	212	155	11,568	7,708	12,850	12,850	9,634	6,425	3,209	4,179	8,283	5,684
Sub-total	212	295	16,897	11,265	18,775	18,775	14,081	9,387	4,693	5,903	12,311	7,453
Economic Cost												
F/C	1,260	582	13,649	9,099	15,166	15,166	11,374	7,583	3,792	4,516	9,521	5,602
L/C												
Fuel 1/	-	-	725	483	807	807	605	403	201	254	546	318
Labor 2/	-	70	2,412	1,610	2,681	2,681	2,013	1,341	672	774	1,824	774
Others 3/	170	124	9,254	6,166	10,280	10,280	7,707	5,140	2,567	3,343	6,626	4,547
Sub-total	170	194	12,391	8,259	13,768	13,768	10,325	6,884	3,440	4,371	8,996	5,639
Total	1,430	776	26,040	17,358	28,934	28,934	21,699	14,467	7,232	8,887	18,517	11,241

1/ Financial Cost x 43/30

2/ " x 3.5/7.0

3/ " x 0.8

Table Q-5-1 ***** STREAMS OF PROJECT COST AND BENEFIT *****

(Land Reclamation Project - Excluding El Salam Canal) (UNIT: LE 1,000)

PROJECT YEAR	PROJECT COST				PROJECT BENEFIT	NET BENEFIT
	INITIAL COST	REPLACE. COST	O & M COST	TOTAL		
1	1428	-	-	1428	-	-1428
2	777	-	-	777	-	-777
3	23166	-	-	23166	-	-23166
4	24625	-	-	24625	-5630	-30255
5	22439	-	-	22439	-2540	-24979
6	25714	-	-	25714	-2540	-28254
7	22137	-	-	22137	-2540	-24677
8	19799	-	333	20132	-2272	-22404
9	4951	-	591	5542	2475	-3067
10	9311	-	1253	10564	6104	-4460
11	5276	-	1560	6836	12282	5446
12	13193	-	1926	15119	18101	2982
13	6111	-	1926	8037	27276	19239
14	7319	-	1926	9245	34772	25527
15	-	-	1926	1926	43212	41286
16	-	-	1926	1926	49432	47506
17	-	-	1926	1926	55829	53903
18	-	-	1926	1926	60984	59058
19	-	-	1926	1926	66419	64493
20	-	-	1926	1926	71443	69517
21	-	-	1926	1926	78329	76403
22	-	-	1926	1926	73741	71815
23	-	-	1926	1926	73741	71815
24	-	-	1926	1926	73741	71815
25	-	-	1926	1926	73741	71815
26	-	6103	1926	8029	73741	65712
27	-	4719	1926	6645	73741	67096
28	-	12080	1926	14006	73741	59735
29	-	5606	1926	7532	73741	66209
30	-	6855	1926	8781	73741	64960
31	-	-	1926	1926	73741	71815
32	-	-	1926	1926	73741	71815
33	-	-	1926	1926	73741	71815
34	-	-	1926	1926	73741	71815
35	-	-	1926	1926	73741	71815
36	-	-	1926	1926	73741	71815
37	-	-	1926	1926	73741	71815
38	-	-	1926	1926	73741	71815
39	-	-	1926	1926	73741	71815
40	-	-	1926	1926	73741	71815
41	-	6103	1926	8029	73741	65712
42	-	4719	1926	6645	73741	67096
43	-	12080	1926	14006	73741	59735
44	-	5606	1926	7532	73741	66209
45	-	6855	1926	8781	73741	64960
46	-	-	1926	1926	73741	71815
47	-	-	1926	1926	73741	71815
48	-	-	1926	1926	73741	71815
49	-	-	1926	1926	73741	71815
50	-	-	1926	1926	73741	71815

Table Q-5-2 Present Worth Value[1/]
(Land Reclamation Project - excluding El Salam Canal)

***** CALCULATION OF INTERNAL RATE OF RETURN *****

(UNIT: LE 1,000)

DISCOUNT RATE	+++++ PRESENT WORTH +++++ BENEFIT	COST	B/C RATIO
7.00 %	374956.	140590.	2.67
8.00 %	296355.	129525.	2.29
9.00 %	236273.	120008.	1.97
10.00 %	189862.	111714.	1.70
11.00 %	153662.	104405.	1.47
12.00 %	125168.	97902.	1.28
13.00 %	102553.	92070.	1.11
14.00 %	84457.	86801.	0.97
15.00 %	69874.	82013.	0.85
16.00 %	58044.	77639.	0.75

INTERNAL RATE OF RETURN ---------- 13.8 %

Note: 1/ See Appendix Q-7

Table Q-6-1 Crop Budget (Financial)

	Paddy	Soybean	Sugarbeet	Tomato 1/	Cotton	Maize	Wheat
Yield (ton/fed)	3.0	1.2	25.0	15.0	1.3	2.0	1.8
Unit Price (LE/ton)	105	230	30	70	363	114	77
Gross Income (LE/fed)	315	276	750	1,050	472	228	139
Farm Cost (LE/fed)							
Seed	1.2	9.0	42.0	9.0	14.8	9.5	18.0
Fertilizers	58.8	47.7	74.7	127,6	63.1	66.8	59.3
Agr. Chemicals	8.3	-	20.8	42.5	35.6	_	5.0
Fuel	2.3	3.3	5.4	2.2	2.5	3.8	2.3
Agr. Machinery 2/	42.0	30.0	30.0	24.0	28.9	55.6	42.0
Miscellaneous	5.4	5.0	9.1	10.7	7.1	7.1	6.4
Sub-total	118.0	95.0	182.0	216.0	152.0	143.0	133.0
Net Income (LE/fed)	197	181	568	834	320	85	6

Note : 1/ Representative of Vegetables (Winter and Summer)

2/ See Appendix Q-5

Table Q-6-2 Profitability of Livestock Beeding (Financial)[1/]

(Per Feeding Unit)

	Milk (kg)	Boned Meat (kg)	Heifer (head)	Manure (ton)	Total (LE)
1. Friesian					
-Annual Production	3,825	273	0.32	15	-
-Unit Price (LE)	0.30	2.50	225	3	-
-Gross Income (LE)	1,148	683	72	45	1,948
-Farm Cost (LE)	-	-	-	-	863
-Net Income (LE)	-	-	-	-	1,085
2. Baladi					
-Annual Production	900	79	0.3	10	-
-Unit Price (LE)	0.30	2.50	250	3	-
-Gross Income (LE)	270	198	75	30	573
-Farm Cost (LE)	-	-	-	-	176
-Net Income (LE)	-	-	-	-	397
3. Baffalo					
-Annual Production	660	94	0.25	10	-
-Unit Price (LE)	0.42	2.50	250	3	-
-Gross Income (LE)	277	235	63	30	605
-Farm Cost (LE)	-	-	-	-	176
-Net Income (LE)	-	-	-	-	429

Note: 1/ Refer to Appendix Q-8

Table Q-6-3 Gross Income of Crop Cultivation with Project (Financial)

(Unit : LE/feddan)

Crop	Price (LE/ton)	Year after Primary Leaching 1	2	3	4	5	6	7	8
Clayey Soil									
Rice	105	53	105	137	189	242	263	294	315
Soybean	230	-	-	-	138	184	230	253	276
Sugarbeet	30	-	-	-	480	540	600	690	750
Tomato (W)	70	-	-	-	560	630	770	945	1,050
Loamy Soil									
Rice	105	53	105	147	200	252	273	294	315
Soybean	230	-	-	-	161	207	253	276	276
Tomato (S)	70	-	-	-	630	770	945	1,050	1,050
Sugarbeet	30	-	-	-	480	540	600	690	750
Tomato (W)	70	-	-	-	630	770	1,050	1,050	1,050

Table Q-6-4 Farm Cost of Crop Cultivation with Project (Financial)

(Unit : LE/feddan)

Crop	Cost 1/ (LE/fed)	Year after Primary Leaching 1	2	3	4	5	6	7	8
Clayey Soil									
Rice	118	24	41	59	77	94	106	118	118
Soybean	95	-	-	-	57	67	76	86	95
Sugarbeet	182	-	-	-	109	127	146	164	182
Tomato (W)	216	-	-	-	130	151	173	194	216
Loamy Soil									
Rice	118	24	41	59	77	94	106	118	118
Soybean	95	-	-	-	57	71	86	95	95
Tomato (S)	216	-	-	-	130	162	194	216	216
Sugarbeet	182	-	-	-	109	127	146	164	182
Tomato (W)	216	-	-	-	130	151	216	216	216

Note : 1/ Farm Cost after full development and not including labor cost

Table Q-6-5 Net Income of Crop Cultivation with Project (Financial)

(Unit : LE/feddan)

Crop	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Clayey Soil								
Rice	29	64	78	112	148	157	176	197
Soybean	-	-	-	81	117	154	167	181
Sugarbeet	-	-	-	371	413	454	526	568
Tomato (W)	-	-	-	430	479	597	751	834
Loamy Soil								
Rice	29	64	88	123	158	167	176	197
Soybean	-	-	-	104	136	167	181	181
Tomato (S)	-	-	-	500	608	751	834	834
Sugarbeet	-	-	-	371	413	454	526	568
Tomato (W)	-	-	-	500	619	834	834	834

Table Q-6-6 Feedable Unit of Livestock

(Unit : feeding unit)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
5 feddans Farm								
Clayey Soil								
SE Production (kg)[1/]	2,792	3,854	5,012	4,915	5,948	6,773	7,689	8,319
Feedable Unit								
-Friesian	1.0	1.4	1.8	1.8	2.2	2.5	2.8	3.0
-Baladi	1.6	2.2	2.8	2.8	3.3	3.8	4.3	4.7
-Buffalo	1.7	2.3	3.0	3.0	3.6	4.1	4.6	5.0
Loamy Soil								
SE Production (kg)[1/]	2,792	3,854	5,112	4,639	5,601	6,282	6,769	7,024
Feedable Unit								
-Friesian	1.0	1.4	1.7	1.7	2.0	2.3	2.5	2.6
-Baladi	1.6	2.2	2.6	2.6	3.1	3.5	3.8	3.9
-Buffalo	1.7	2.3	2.8	2.8	3.4	3.8	4.1	4.2

Note: 1/ Refer to Appendix Q-9

Table Q-6-7 Feedable Unit of Livestock

(Unit ; feeding unit)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
15 feddans Farm								
Clayey Soil								
SE Production (kg)[1/]	8,364	11,546	15,014	14,779	17,880	20,360	23,113	25,010
Feedable Unit								
-Friesian	3.0	4.2	5.4	5.4	6.5	7.4	8.4	9.1
-Baladi	4.7	6.5	8.3	8.3	10.0	11.4	13.0	14.1
-Buffalo	5.0	7.0	8.9	8.9	10.8	12.3	13.9	15.1
Loamy Soil								
SE Production (kg)[1/]	8,364	11,546	15,313	13,926	16,820	18,861	20,325	21,095
Feedable Unit								
-Friesian	2.0	4.2	5.1	5.1	6.1	6.9	7.4	7.7
-Baladi	4.7	6.5	7.8	7.8	9.4	10.6	11.4	11.9
-Buffalo	5.0	7.0	8.4	8.4	10.1	11.4	12.2	12.7

Note: Refer to Appendix Q-9

Table Q-6-8 Feedable Unit of Livestock

(Unit : feeding unit)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
20 feddans Farm								
Clayey Soil								
SE Production (kg) 1/	11,175	15,426	20,060	19,695	23,868	27,132	30,802	33,329
Feedable Unit								
-Friesian	4.1	5.6	7.2	7.2	8.7	9.9	11.2	12.1
-Baladi	6.3	8.7	11.1	11.1	13.4	15.2	17.3	18.7
- Buffalo	6.7	9.3	11.9	11.9	14.4	16.3	18.6	20.1
Loamy Soil								
SE Production (kg) 1/	11,175	15,426	20,460	18,464	22,422	25,142	27,094	28,119
Feedable Unit								
-Friesian	4.1	5.6	6.7	6.7	8.2	9.1	9.9	10.2
-Baladi	6.3	8.7	10.4	10.4	12.6	14.1	15.2	15.8
-Buffalo	6.7	9.3	11.1	11.1	13.5	15.1	16.3	16.9

Note: Refer to Appendix Q-9

Table Q-6-9 Net Farm Income (Financial)

Farm Size : 5 feddans
Farm Type : Friesian
Cropping Pattern : No.1

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	241	477	622	2,228	2,601	3,037	3,556	3,898
Livestock	974	2,727	3,506	3,506	4,286	4,870	5,454	5,844
Total	1,215	3,204	4,128	5,734	6,887	7,907	9,010	9,742
Farm Cost 2/								
Crop	109	186	268	609	715	817	915	996
Livestock	432	1,208	1,553	1,553	1,899	2,158	2,416	2,589
Hired Labor	-	-	-	-	-	-	-	-
Total	541	1,394	1,821	2,162	2,614	2,975	3,331	3,585
Net Farm Income	674	1,810	2,307	3,572	4,273	4,932	5,679	6,157

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-10 Net Farm Income (Financial)

Farm Size : 5 feddans
Farm Type : Friesian
Cropping Pattern : No.2

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	241	477	667	2,914	3,514	4,322	4,627	4,759
Livestock	974	2,727	3,312	3,312	3,896	4,480	4,870	5,065
Total	1,215	3,204	3,979	6,226	7,410	8,802	9,497	9,824
Farm Cost 2/								
Crop	109	186	268	716	855	1,091	1,143	1,173
Livestock	432	1,208	1,467	1,467	1,726	1,985	2,158	2,244
Hired Labor	-	-	-	-	-	15	29	29
Total	541	1,394	1,735	2,183	2,581	3,091	3,330	3,446
Net Farm Income	674	1,810	2,244	4,043	4,829	5,711	6,167	6,378

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-11 Net Farm Income (Financial)

Farm Size : 5 feddans
Farm Type : Buffalo
Cropping Pattern : No.1

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	241	477	622	2,228	2,601	3,037	3,556	3,898
Livestock	514	1,392	1,815	1,815	2,178	2,481	2,783	3,025
Total	755	1,869	2,437	4,043	4,779	5,518	6,339	6,923
Farm Cost 2/								
Crop	109	186	268	609	715	817	915	996
Livestock	150	405	528	528	634	722	810	880
Hired Labor	-	-	-	-	-	-	-	-
Total	259	591	796	1,137	1,349	1,539	1,725	1,876
Net Farm Income	496	1,278	1,641	2,906	3,430	3,979	4,614	5,047

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-12 Net Farm Income (Financial)

Farm Size : 5 feddans
Farm Type : Buffalo
Cropping Pattern : No.2

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	241	477	667	2,914	3,514	4,322	4,627	4,759
Livestock	514	1,392	1,694	1,694	2,057	2,299	2,481	2,541
Total	755	1,869	2,361	4,608	5,571	6,621	7,108	7,300
Farm Cost 2/								
Crop	109	186	268	716	855	1,091	1,143	1,173
Livestock	150	405	493	493	598	669	722	739
Hired Labor	-	-	-	-	-	15	29	29
Total	259	591	761	1,209	1,453	1,775	1,894	1,941
Net Farm Income	496	1,278	1,600	3,399	4,118	4,846	5,214	5,359

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-13 Net Farm Income (Financial)

Farm Size : 15 feddans
Farm Type : Friesian
Cropping Pattern : No.1

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	721	1,428	1,863	6,698	7,821	9,129	10,693	11,716
Livestock	2,922	8,182	10,519	10,519	12,662	14,415	16,363	17,727
Total	3,643	9,610	12,382	17,217	20,483	23,544	27,056	29,443
Farm Cost 2/								
Crop	326	558	802	1,827	2,151	2,454	2,754	2,994
Livestock	1,295	3,625	4,660	4,660	5,610	6,386	7,249	7,853
Hired Labor	700	1,224	1,749	2,274	2,798	3,148	3,498	3,498
Total	2,321	5,407	7,211	8,761	10,559	11,988	13,501	14,345
Net Farm Income	1,322	4,203	5,171	8,456	9,924	11,556	13,555	15,098

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-14 Net Farm Income (Financial)

Farm Size : 15 feddans
Farm Type : Friesian
Cropping Pattern : No.2

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	721	1,428	1,999	8,752	10,555	12,978	13,892	14,289
Livestock	2,922	8,182	9,935	9,935	11,883	13,441	14,415	15,000
Total	3,643	9,610	11,934	18,687	22,438	26,419	28,307	29,289
Farm Cost 2/								
Crop	326	558	802	2,146	2,568	3,188	3,435	3,523
Livestock	1,295	3,625	4,401	4,401	5,264	5,955	6,386	6,645
Hired Labor	772	1,350	1,929	2,508	3,086	3,472	3,858	3,858
Total	2,393	5,533	7,132	9,055	10,918	12,615	13,679	14,026
Net Farm Income	1,250	4,077	4,802	9,632	11,520	13,804	14,628	15,263

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-15 Net Farm Income (Financial)

Farm Size : 15 feddans
Farm Type : Buffalo
Cropping Pattern : No.1

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	721	1,428	1,863	6,698	7,821	9,129	10,693	11,716
Livestock	1,513	4,235	5,385	5,385	6,534	7,442	8,410	9,136
Total	2,234	5,663	7,248	12,083	14,355	16,571	19,303	20,852
Farm Cost 2/								
Crop	326	558	802	1,827	2,151	2,454	2,754	2,994
Livestock	440	1,232	1,566	1,566	1,901	2,165	2,446	2,658
Hired Labor	367	643	919	1,194	1,470	1,653	1,837	1,837
Total	1,133	2,433	3,287	4,587	5,522	6,272	7,037	7,489
Net Farm Income	1,101	3,230	3,961	7,496	8,833	10,299	12,266	13,363

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-16 Net Farm Income (Financial)

Farm Size : 15 feddans
Farm Type : Buffalo
Cropping Pattern : No.2

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	721	1,428	1,999	8,752	10,555	12,978	13,892	14,289
Livestock	1,513	4,235	5,082	5,082	6,111	6,897	7,381	7,684
Total	2,234	5,663	7,081	13,834	16,666	19,875	21,273	21,973
Farm Cost 2/								
Crop	326	558	802	2,146	2,568	3,188	3,435	3,523
Livestock	440	1,232	1,478	1,478	1,778	2,006	2,147	2,235
Hired Labor	491	859	1,227	1,594	1,962	2,208	2,453	2,453
Total	1,257	2,649	3,507	5,218	6,308	7,402	8,035	8,211
Net Farm Income	977	3,014	3,574	8,616	10,358	12,473	13,238	13,762

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-17 Net Farm Income (Financial)

Farm Size : 20 feddans
Farm Type : Friesian
Cropping Pattern : No.1

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	963	1,908	2,489	8,926	10,422	12,165	14,249	15,614
Livestock	3,993	10,909	14,026	14,026	16,948	19,285	21,818	23,571
Total	4,956	12,817	16,515	22,952	27,370	31,450	36,067	39,185
Farm Cost 2/								
Crop	436	745	1,072	2,436	2,867	3,271	3,671	3,989
Livestock	1,769	4,833	6,214	6,214	7,508	8,544	9,666	10,442
Hired Labor	1,131	1,980	2,828	3,676	4,525	5,090	5,656	5,656
Total	3,336	7,558	10,114	12,326	14,900	16,905	18,993	20,087
Net Farm Income	1,620	5,259	6,401	10,626	12,470	14,545	17,074	19,098

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-18 Net Farm Income (Financial)

Farm Size : 20 feddans
Farm Type : Friesian
Cropping Pattern : No.2

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	963	1,908	2,671	11,665	14,070	17,300	18,519	19,048
Livestock	3,993	10,909	13,052	13,052	15,974	17,727	19,285	19,870
Total	4,956	12,817	15,723	24,717	30,044	35,027	37,804	38,918
Farm Cost 2/								
Crop	436	745	1,072	2,861	3,423	4,251	4,578	4,695
Livestock	1,769	4,833	5,782	5,782	7,077	7,853	8,544	8,803
Hired Labor	1,215	2,126	3,037	3,947	4,858	5,466	6,073	6,073
Total	3,420	7,704	9,891	12,590	15,358	17,570	19,195	19,571
Net Farm Income	1,536	5,113	5,832	12,127	14,686	17,457	18,609	19,347

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-19 Net Farm Income (Financial)

Farm Size : 20 feddans
Farm Type : Buffalo
Cropping Pattern : No.1

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	963	1,908	2,489	8,926	10,422	12,165	14,249	15,614
Livestock	2,027	5,627	7,200	7,200	8,712	9,862	11,253	12,161
Total	2,990	7,535	9,689	16,126	19,134	22,027	25,502	27,775
Farm Cost 2/								
Crop	436	745	1,072	2,436	2,867	3,271	3,671	3,989
Livestock	590	1,637	2,094	2,094	2,534	2,869	3,274	3,538
Hired Labor	690	1,207	1,724	2,241	2,758	3,103	3,448	3,448
Total	1,716	3,589	4,890	6,771	8,159	9,223	10,393	10,975
Net Farm Income	1,274	3,946	4,799	9,355	10,975	12,804	15,109	16,800

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-20 Net Farm Income (Financial)

Farm Size : 20 feddans
Farm Type : Buffalo
Cropping Pattern : No.2

(Unit : LE)

	Year after Primary Leaching							
	1	2	3	4	5	6	7	8
Gross Income 1/								
Crop	963	1,908	2,671	11,665	14,070	17,300	18,519	19,048
Livestock	2,027	5,627	6,716	6,716	8,168	9,136	9,862	10,225
Total	2,990	7,535	9,387	18,381	22,238	26,436	28,381	29,273
Farm Cost 2/								
Crop	436	745	1,072	2,861	3,423	4,251	4,578	4,695
Livestock	590	1,637	1,954	1,954	2,376	2,658	2,869	2,974
Hired Labor	842	1,474	2,106	2,738	3,370	3,791	4,212	4,212
Total	1,868	3,856	5,132	7,553	9,169	10,700	11,659	11,881
Net Farm Income	1,122	3,679	4,255	10,828	13,069	15,736	16,722	17,392

Note: 1/ See Appendix Q-10
2/ See Appendix Q-11

Table Q-6-21 Calculation of Capital Repayment on Cattle Loan

(Unit : per head)

	Friesian	Baladi	Buffalo
1. Purchase Price (LE)	600	250	250
2. Repayment Period (year)	5	5	5
3. Interest Rate (% per annum)	6	6	6
4. Annual amortization (LE)	142	59	59

Table Q-6-22 Calculation of Capital Repayment on Land and House

(Unit : LE)

	5 feddans	15 feddans	20 feddans
1. Reclaimed Land (@5,000)	25,000	75,000	100,000
2. Settlers' House	2,500	8,000	8,000
3. Repayment Period (year)	25	25	25
4. Interest (%)	0	1.0	1.0
5. Annual Amortization - 3 years' grace period	1,250	4,350*	5,660*

* including interest during grace period

Table Q-6-23 Financial Cash Flow of Settled Farmer

Farm Size : 5 feddans Farm Type : Friesian Cropping Pattern : No.1

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	674	1,810	2,307	3,572	4,273	4,932	5,679	6,157	6,157	6,157
Private Loan	853	732	170	-	-	-	-	-	-	-
Total Inflow	1,527	2,542	2,477	3,572	4,273	4,932	5,679	6,157	6,157	6,157
Outflow										
Annual Amortization										
- Land and House	-	-	-	1,250	1,250	1,250	1,250	1,250	1,250	1,250
- Cattle Loan	142	142	142	142	142	-	-	-	-	-
- Sub-total	142	142	142	1,392	1,392	1,250	1,250	1,250	1,250	1,250
Irrigation Water Charge	110	110	110	110	110	110	110	110	110	110
Land Tax	25	25	25	25	25	25	25	25	25	25
Other Annual Charges	50	50	50	50	50	50	50	50	50	50
Repayment of Private Load	-	955	820	190	-	-	-	-	-	-
Cost of Living	1,200	1,260	1,330	1,400	1,480	1,560	1,800	1,900	2,040	2,040
Total Outflow	1,527	2,542	2,477	3,167	3,057	2,995	3,235	3,335	3,475	3,475
Balance	0	0	0	405	1,216	1,937	2,444	2,822	2,682	2,682
[Cumulative Balance]	0	0	0	405	1,621	3,558	6,002	8,824	11,506	14,188

Table Q-6-24 Financial Cash Flow of Settled Farmer

Farm Size : 5 feddans Farm Type : Friesian Cropping Pattern : No.2

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	674	1,810	2,244	4,043	4,829	5,711	6,167	6,378	6,378	6,378
Private Loan	853	732	233	-	-	-	-	-	-	-
Total Inflow	1,527	2,542	2,477	4,043	4,829	5,711	6,167	6,378	6,378	6,378
Outflow										
Annual Amortization										
- Land and House	-	-	-	1,250	1,250	1,250	1,250	1,250	1,250	1,250
- Cattle Loan	142	142	142	142	142	-	-	-	-	-
- Sub-total	142	142	142	1,392	1,392	1,250	1,250	1,250	1,250	1,250
Irrigation Water Charge	110	110	110	110	110	110	110	110	110	110
Land Tax	25	25	25	25	25	25	25	25	25	25
Other Annual Charges	50	50	50	50	50	50	50	50	50	50
Repayment of Private Load	-	955	820	291	-	-	-	-	-	-
Cost of Living	1,200	1,260	1,330	1,400	1,480	1,560	1,800	1,900	2,040	2,040
Total Outflow	1,572	2,542	2,477	3,268	3,057	2,995	3,235	3,335	3,475	3,475
Balance	0	0	0	775	1,772	2,716	2,932	3,043	2,903	2,903
[Cumulative Balance]	0	0	0	775	2,547	5,263	8,195	11,238	14,141	17,044

Table Q-6-25 Financial Cash Flow of Settled Farmer

Farm Size : 5 feddans Farm Type : Buffalo Cropping Pattern : No. 1

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	496	1,278	1,641	2,906	3,430	3,979	4,614	5,047	5,047	5,047
Private Loan	989	1,375	1,514	1,725	1,517	715				
Total Inflow	1,485	2,653	3,155	4,631	4,947	4,694	4,614	5,047	4,047	5,047
Outflow										
Annual Amortization										
- Land and House	-	-	-	1,250	1,250	1,250	1,250	1,250	1,250	1,250
- Cattle Loan	100	100	100	100	100	-	-	-	-	-
- Sub-total	100	100	100	1,350	1,350	1,250	1,250	1,250	1,250	1,250
Irrigation Water Charge	110	110	110	110	110	110	110	110	110	110
Land Tax	25	25	25	25	25	25	25	25	25	25
Other Annual Charges	50	50	50	50	50	50	50	50	50	50
Repayment of Private Load	-	1,108	1,540	1,696	1,932	1,699	801			
Cost of Living	1,200	1,260	1,330	1,400	1,480	1,560	1,800	1,900	2,040	2,040
Total Outflow	1,485	2,653	3,155	4,631	4,947	4,694	4,036	3,335	3,475	3,475
Balance	0	0	0	0	0	0	578	1,712	1,572	1,572
[Cumulative Balance]	0	0	0	0	0	0	578	2,290	3,862	5,434

Table Q-6-26 Financial Cash Flow of Settled Farmer

Farm Size : 5 feddans Farm Type : Buffalo Cropping Pattern : No. 2

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	496	1,278	1,600	3,399	4,118	4,846	5,214	5,359	5,359	5,359
Private Loan	989	1,375	1,555	12.78	328	-	-	-	-	-
Total Inflow	1,485	2,653	3,155	4,677	4,446	4,846	5,214	5,359	5,359	5,359
Outflow										
Annual Amortization										
- Land and House	-	-	-	1,250	1,250	1,250	1,250	1,250	1,250	1,250
- Cattle Loan	100	100	100	100	100	-	-	-	-	-
- Sub-total	100	100	100	1,350	1,350	1,250	1,250	1,250	1,250	1,250
Irrigation Water Charge	110	110	110	110	110	110	110	110	110	110
Land Tax	25	25	25	25	25	25	25	25	25	25
Other Annual Charges	50	50	50	50	50	50	50	50	50	50
Repayment of Private Load	-	1,108	1,540	1,742	1,431	367	-	-	-	-
Cost of Living	1,200	1,260	1,330	1,400	1,480	1,560	1,800	1,900	2,040	2,040
Total Outflow	1,485	2,653	3,155	4,677	4,446	3,362	3,235	3,335	3,475	3,475
Balance	0	0	0	0	0	1,484	1,979	2,024	1,884	1,884
[Cumulative Balance]	0	0	0	0	0	1,484	3,463	5,487	7,371	9,255

Table Q-6-27 Financial Cash Flow of Settled Farmer

Farm Size : 15 feddans Farm Type : Friesian Cropping Pattern : No.1

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	1,322	4,203	5,171	8,456	9,924	11,556	13,555	15,098	15,098	15,098
Private Loan	1,049	-	-	-	-	-	-	-	-	-
Total Inflow	2,371	4,203	5,171	8,456	9,924	11,556	13,555	15,098	15,098	15,098
Outflow										
Annual Amortization										
- Land and House	-	-	-	4,350	4,350	4,350	4,350	4,350	4,350	4,350
- Cattle Loan	426	426	426	426	426	-	-	-	-	-
- Sub-total	426	426	426	4,776	4,776	4,350	4,350	4,350	4,350	4,350
Irrigation Water Charge	330	330	330	330	330	330	330	330	330	330
Land Tax	75	75	75	75	75	75	75	75	75	75
Other Annual Charges	100	100	100	100	100	100	100	100	100	100
Repayment of Private Load	-	1,175	-	-	-	-	-	-	-	-
Cost of Living	1,440	1,560	1,680	1,800	1,920	2,040	2,160	2,280	2,400	2,400
Total Outflow	2,371	3,666	2,611	7,081	7,201	6,895	7,015	7,135	7,255	7,255
Balance	0	537	2,560	1,375	2,723	4,661	6,540	7,963	7,843	7,843
[Cumulative Balance]	0	537	3,097	4,472	7,195	11,856	18,396	26,359	34,202	42,045

Table Q-6-28 Financial Cash Flow of Settled Farmer

Farm Size : 15 feddans Farm Type : Friesian Cropping Pattern : No.2

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	1,250	4,077	4,802	9,632	11,520	13,804	14,628	15,263	15,263	15,263
Private Loan	1,049	-	-	-	-	-	-	-	-	-
Total Inflow	2,371	4,077	4,802	9,632	11,520	13,804	14,628	15,263	15,263	15,263
Outflow										
Annual Amortization										
- Land and House	-	-	-	4,350	4,350	4,350	4,350	4,350	4,350	4,350
- Cattle Loan	426	426	426	426	426	-	-	-	-	-
- Sub-total	426	426	426	4,776	4,776	4,350	4,350	4,350	4,350	4,350
Irrigation Water Charge	330	330	330	330	330	330	330	330	330	330
Land Tax	75	75	75	75	75	75	75	75	75	75
Other Annual Charges	100	100	100	100	100	100	100	100	100	100
Repayment of Private Load	-	1,175	-	-	-	-	-	-	-	-
Cost of Living	1,440	1,560	1,680	1,800	1,920	2,040	2,160	2,280	2,400	2,400
Total Outflow	2,371	3,666	2,611	7,081	7,201	6,895	7,015	7,135	7,255	7,255
Balance	0	411	2,191	2,551	4,319	6,909	7,613	8,128	8,008	8,008
[Cumulative Balance]	0	411	2,602	5,153	9,472	16,381	23,994	32,122	40,130	48,138

Table Q-6-29 Financial Cash Flow of Settled Farmer

Farm Size : 15 feddans Farm Type : Buffalo Cropping Pattern : No. 1

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	1,101	3,230	3,961	7,496	8,833	10,299	12,266	13,363	13,363	13,363
Private Loan	1,139	406	-	-	-	-	-	-	-	-
Total Inflow	2,240	3,636	3,961	7,496	8,833	10,299	12,266	13,363	13,363	13,363
Outflow										
Annual Amortization										
- Land and House	-	-	-	4,350	4,350	4,350	4,350	4,350	4,350	4,350
- Cattle Loan	295	295	295	295	295	-	-	-	-	-
- Sub-total	295	295	295	4,645	4,645	4,350	4,350	4,350	4,350	4,350
Irrigation Water Charge	330	330	330	330	330	330	330	330	330	330
Land Tax	75	75	75	75	75	75	75	75	75	75
Other Annual Charges	100	100	100	100	100	100	100	100	100	100
Repayment of Private Load	-	1,276	455	-	-	-	-	-	-	-
Cost of Living	1,440	1,560	1,680	1,800	1,920	2,040	2,160	2,280	2,400	2,400
Total Outflow	2,240	3,636	2,935	6,950	7,070	6,895	7,015	7,135	7,255	7,255
Balance	0	0	1,026	546	1,763	3,404	5,251	6,228	6,108	6,108
[Cumulative Balance]	0	0	1,026	1,572	3,335	6,739	11,990	18,218	24,326	30,434

Table Q-6-30 Financial Cash Flow of Settled Farmer

Farm Size : 15 feddans Farm Type : Buffalo Cropping Pattern : No. 2

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	977	3,014	3,574	8,616	10,358	12,473	13,238	13,762	13,762	13,762
Private Loan	1,263	761	-	-	-	-	-	-	-	-
Total Inflow	2,240	3,775	3,574	8,616	10,358	12,473	13,238	13,762	13,762	13,762
Outflow										
Annual Amortization										
- Land and House	-	-	-	4,350	4,350	4,350	4,350	4,350	4,350	4,350
- Cattle Loan	295	295	295	295	295	-	-	-	-	-
- Sub-total	295	295	295	4,645	4,645	4,350	4,350	4,350	4,350	4,350
Irrigation Water Charge	330	330	330	330	330	330	330	330	330	330
Land Tax	75	75	75	75	75	75	75	75	75	75
Other Annual Charges	100	100	100	100	100	100	100	100	100	100
Repayment of Private Load	-	1,415	852	-	-	-	-	-	-	-
Cost of Living	1,440	1,560	1,680	1,800	1,920	2,040	2,160	2,280	2,400	2,400
Total Outflow	2,240	3,775	3,332	6,950	7,070	6,895	7,015	7,135	7,255	7,255
Balance	0	0	242	1,666	3,288	5,578	6,223	6,627	6,507	6,507
[Cumulative Balance]	0	0	242	1,908	5,196	10,774	16,997	23,624	30,131	36,638

Table Q-6-31 Financial Cash Flow of Settled Farmer

Farm Size : 20 feddans Farm Type : Friesian Cropping Pattern : No. 1

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	1,620	5,259	6,401	10,626	12,470	14,545	17,074	19,098	19,098	19,098
Private Loan	1,042	-	-	-	-	-	-	-	-	-
Total Inflow	2,662	5,259	6,401	10,626	12,470	14,545	17,074	19,098	19,098	19,098
Outflow										
Annual Amortization										
- Land and House	-	-	-	5,660	5,660	5,660	5,660	5,660	5,660	5,660
- Cattle Loan	582	582	582	582	582	-	-	-	-	-
- Sub-total	582	582	582	6,242	6,242	5,660	5,660	5,660	5,660	5,660
Irrigation Water Charge	440	440	440	440	440	440	440	440	440	440
Land Tax	100	100	100	100	100	100	100	100	100	100
Other Annual Charges	100	100	100	100	100	100	100	100	100	100
Repayment of Private Load	-	1,167	-	-	-	-	-	-	-	-
Cost of Living	1,440	1,560	1,680	1,800	1,920	2,040	2,160	2,280	2,400	2,400
Total Outflow	2,662	3,949	2,902	8,682	8,802	8,340	8,460	8,580	8,700	8,700
Balance	0	1,310	3,499	1,944	3,668	6,205	8,614	10,518	10,398	10,398
[Cumulative Balance]	0	1,310	4,809	6,753	10,421	16,626	25,240	35,758	46,156	56,554

Table Q-6-32 Financial Cash Flow of Settled Farmer

Farm Size : 20 feddans Farm Type : Friesian Cropping Pattern : No. 2

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	1,536	5,113	5,832	12,127	14,686	17,457	18,609	19,347	19,347	19,347
Private Loan	1,126	-	-	-	-	-	-	-	-	-
Total Inflow	2,662	5,113	5,832	12,127	14,686	17,457	18,609	19,347	19,347	19,347
Outflow										
Annual Amortization										
- Land and House	-	-	-	5,660	5,660	5,660	5,660	5,660	5,660	5,660
- Cattle Loan	582	582	582	582	582	-	-	-	-	-
- Sub-total	582	582	582	6,242	6,242	5,660	5,660	5,660	5,660	5,660
Irrigation Water Charge	440	440	440	440	440	440	440	440	440	440
Land Tax	100	100	100	100	100	100	100	100	100	100
Other Annual Charges	100	100	100	100	100	100	100	100	100	100
Repayment of Private Load	-	1,261	-	-	-	-	-	-	-	-
Cost of Living	1,440	1,560	1,680	1,800	1,920	2,040	2,160	2,280	2,400	2,400
Total Outflow	2,662	4,043	2,902	8,682	8,802	8,430	8,460	8,580	8,700	8,700
Balance	0	1,070	2,930	3,445	5,884	9,027	10,149	10,767	10,647	10,647
[Cumulative Balance]	0	1,070	4,000	7,445	13,329	22,356	32,505	43,272	53,919	64,566

Table Q-6-33 Financial Cash Flow of Settled Farmer

Farm Size : 20 feddans Farm Type : Buffalo Cropping Pattern : No. 1

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	1,274	3,946	4,799	9,355	10,975	12,804	15,109	16,800	16,800	16,800
Private Loan	1,201	-	-	-	-	-	-	-	-	-
Total Inflow	2,475	3,946	4,799	9,355	10,975	12,804	15,109	16,800	16,800	16,800
Outflow										
Annual Amortization										
- Land and House	-	-	-	5,660	5,660	5,660	5,660	5,660	5,660	5,660
- Cattle Loan	395	395	395	395	395	-	-	-	-	-
- Sub-total	395	395	395	6,055	6,055	5,660	5,660	5,660	5,660	5,660
Irrigation Water Charge	440	440	440	440	440	440	440	440	440	440
Land Tax	100	100	100	100	100	100	100	100	100	100
Other Annual Charges	100	100	100	100	100	100	100	100	100	100
Repayment of Private Load										
Cost of Living	1,440	1,560	1,680	1,800	1,920	2,040	2,160	2,280	2,400	2,400
Total Outflow	2,475	3,940	2,715	8,495	8,615	8,340	8,460	8,580	8,700	8,700
Balance	0	6	2,084	860	2,360	4,464	6,649	8,220	8,100	8,100
[Cumulative Balance]	0	6	2,090	2,950	5,310	9,774	16,423	24,643	32,743	40,843

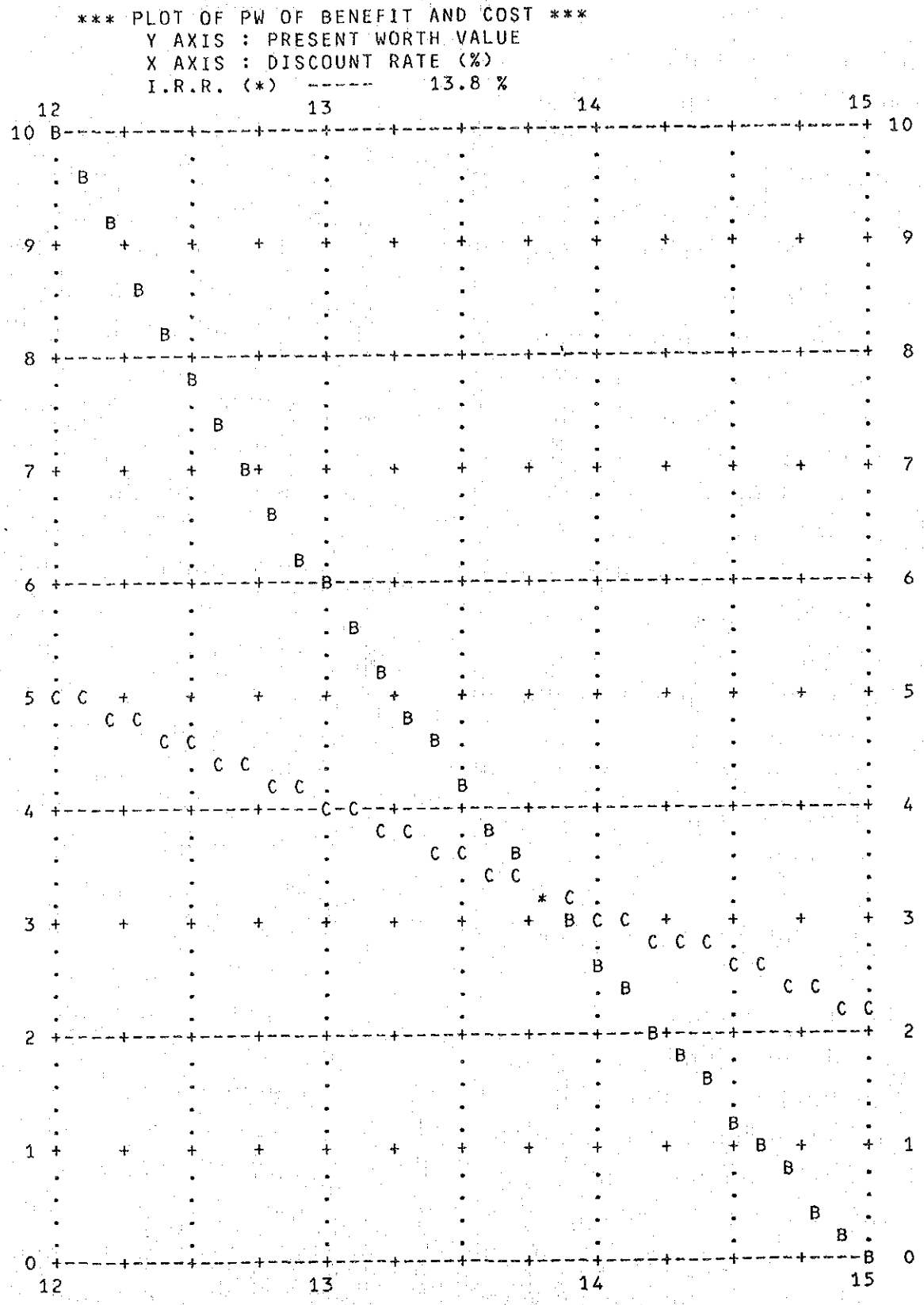
Table Q-6-34 Financial Cash Flow of Settled Farmer

Farm Size : 20 feddans Farm Type : Buffalo Cropping Pattern : No. 2

(Unit : LE)

	Year after Primary Leaching									
	1	2	3	4	5	6	7	8	9	10
Inflow										
Total Net Farm Income	1,122	3,679	4,255	10,828	13,069	15,736	16,722	17,392	17,392	17,392
Private Loan	1,353	431	-	-	-	-	-	-	-	-
Total Inflow	2,475	4,110	4,255	10,828	13,069	15,736	16,722	17,392	17,392	17,392
Outflow										
Annual Amortization										
- Land and House	-	-	-	5,660	5,660	5,660	5,660	5,660	5,660	5,660
- Cattle Loan	395	395	395	395	395	-	-	-	-	-
- Sub-total	395	395	395	6,055	6,055	5,660	5,660	5,660	5,660	5,660
Irrigation Water Charge	440	440	440	440	440	440	440	440	440	440
Land Tax	100	100	100	100	100	100	100	100	100	100
Other Annual Charges	100	100	100	100	100	100	100	100	100	100
Repayment of Private Load	-	1,515	483	-	-	-	-	-	-	-
Cost of Living	1,440	1,560	1,680	1,800	1,920	2,040	2,160	2,280	2,400	2,400
Total Outflow	2,475	4,110	3,198	8,495	8,615	8,340	8,460	8,580	8,700	8,700
Balance	0	0	1,057	2,333	4,454	7,396	8,262	8,812	8,692	8,692
[Cumulative Balance]	0	0	1,057	3,390	7,844	15,240	23,502	32,314	41,006	58,390

Figure Q-5-1



Note: Land Reclamation Project - Excluding El Salam Canal