STUDY ON FARM SUPPORT SERVICES IN THE KIRINDI OYA IRRIGATION AND LAND SETTLEMENT PROJECT

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FOREWORD

Among the major criticisms levelled at the Kirindi Oya Irrigation and Settlement Project (KOISP) is the fact that the project was commenced without adequate preliminary investigations as to the optimal location of a major reservoir on the Kirindi Oya and without taking into account all the possibilities for incorporating into the delivery system the small tank communities that exist within the command area of such a reservoir. It has also been pointed out that inadequate attention has been paid to the need for establishing the requisite infrastructure for human settlement ahead of the allocation of land to settlers from the neighbouring districts; the failure to do this having resulted in placing them at a disadvantage vis a vis settlers chosen from the immediate vicinity of the reservoir, particularly those who owned land under the Ellagala system.

It is well known that the KOISP has been subject to the manipulation of special interest groups and that this has placed constraints on the possibilities for participatory development. In this context, this study on farm support services in the KOISP area, carried out as a mid-project evaluation exercise, offers insights into the nature of the mechanisms put in place to rectify the inherent problems of the project to at least manageable levels.

The plight of farmers under the present situation of limited agricultural extention, which has made them vulnerable to the dictates of the Agri-business sales agent, does not augur well for agriculture, particular in the context of World Bank recommendations which seek to "reduce the involvement of public sector institutions in extension". In this sense too, this study would serve as a challenge to the theoretical arguments which advocate reduced public expenditure on agriculture.

The Agrarian Research and Training Institute has carried out a large number of studies on virtually all aspects of agriculture in the South East Dry Zone of Sri Lanka, among which are several studies specific to the KOISP. This study, while drawing attention to the specific issue of the institutional support available to the farmer in the KOISP area, complements the extensive analyses of the multifaceted issues of the project.

It is our hope that it would help broaden the understanding of the problems of the farmers and generate effective measures to improve the support provided to them.

D.G.P. Seneviratne
DIRECTOR.

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D. Tennakoon
M.R.T. Jayasuriya

LIST OF ABBREVIATIONS

ADA	=	Agriculture Development Authority
ADA	=	Assistant Director of Agriculture
ADB	=	Asian Development Bank
AI	=	Agricultural Instructor
AO	=	Agriculture Officer
ARTI	=	Agrarian Research and Training Institute
ASC	=	Agrarian Service Centre
ASC	=	Agrarian Service Committee
CF	=	Contact Farmer
CO	=	Colony Officer
DA	=	Department of Agriculture
DAEO	=	Divisional Agriculture Extension Officer
DAPH	=	Department of Animal Production and Health
DI	=	Department of Irrigation
DTC	=	District Training Centre
FF	=	Follower Farmer
IE	=	Irrigation Engineer
IO	=	Institutional Organizer
IMD	=	Irrigation Management Division
KVS	=	Field Level Extension Worker
LCD	=	Land Commissioner's Department
LDD	=	Land Development Department
MADR	=	Ministry of Agricultural Development and Research
MLLD	=	Ministry of Land and Land Development
MPCS	=	Multi-Purpose Co-operative Society
NIA	=	New Irrigation Area
OFC	=	Other Field Crops
OIA	=	Old Irrigation Area
SMOO	=	Subject Matter Officers
SMSS	=	Subject Matter Specialists
TA	=	Technical Assistant
T&V	=	Training and Visit System

GLOSSARY

ASWEDDUMISED LAND	Land which is levelled and bunded to facilitate impounding of water.
BETHMA	A traditional system of cultivation in which farmers at the lower end of an irrigation tract are given a portion (usually a half or third share) of the plots allocated to farmers at the upper end for a single season's cultivation. This is done to reduce conveyance losses in times of water shortage in a village tank (reservoir).
CHENA	Shifting cultivation.
COMMAND AREA	The land area served by an irrigation system.
LIYADDE	The smallest bunded unit within a paddy field.
MAHA	A cultivation season which, in the Dry Zone, normally extends from about September - October to February - March. The bulk of rainfall received by the Dry Zone in any given year occurs during this season.
VEL VIDANE	An individual (often himself a cultivator) charged with the responsibility of ensuring fair and timely implementation of the irrigation schedule under village tanks.
YALA	A cultivation season which normally extends from about April - August and coincides with the South-west Monsoon during which time the Dry Zone receives little or no rain. During this season crop cultivation depends upon stored water (in reservoirs and occasional showers.
YAYA	A tract of asweddumised land comprised of several farm plots.

CONVERSION FACTORS

	British----->Metric		Metric------>British	
Length	1 inch	25.4 mili meters	1 meter	3.2808 feet
	1 foot	0.3048 meters	1 kilo meter	0.6214 miles
	1 yard	0.9144 meters		
	1 mile	1.60934 kilo meters		
Mass	1 ounce	28.3945 grams	1 kilo gram	2.2046 pounds
	1 pound	0.45359 kilo grams	1 metric ton	0.9842 tons
	1 cwt	50.8023 kilo grams		
	1 ton	1.01605 metric tons		
Volume	1 gallon	4.54609 litres	1 litre	0.219 gallons
Area	1 sq. foot	0.0929 sq. meters	1 hectare	2.47105 acres
	1 sq. yard	0.8361 sq. meters		
	1 sq. mile	2.58999 sq.kilo meters		
		258.999 hectares		
	1 acre	0.404686 hectares		

Processed Conversion Factors

Weights & Measures

1 pound per acre - 1.121 kilograms per hectares
1 cwt per acre - 125.536 kilograms per hectare
1 pint - 0.57 litres
1 ton mile - 1.635 metric ton - kilometer
1 bushel of paddy per acre - 51.570 kilograms of paddy per hectare

CONTENTS

CHAPTER ONE

Introduction

The Kirindi Oya Irrigation and Settlement Project (KOISP) in the Hambantota District is the largest project of this nature in Sri Lanka's Southern Province. The basic objectives of the project are: (a) establishment of a community of about 8,000 settlers within an essential economic and social infrastructure, (b) augmentation of the existing Ellegala system, (c) generation of employment and income through agricultural development, and (d) enhancement of the national economy by import substitution and increased crop production.

Implementation of KOISP commenced in 1979 and in 1982 it was reformulated in two phases when the original appraisal ran into difficulties due to unacceptable cost overruns. Phase one comprised of, the construction of head works, provision of irrigation facilities for about 4,200 ha. of new lands, settlement of about 4,000 families, and augmentation of irrigation for 4,584 ha. of paddy lands under the existing schemes. These activities were completed in August 1989. Phase two which commenced in 1987, is directed towards further irrigation system development and settlement, of another 4,000 families on about 4,200 ha. of new lands. The foreign exchange and some technical assistance components of phase two are funded by the Asian Development Bank (ADB).

1.1 Study Background

Among the distinguishing features of KOISP is the existence of the old and new irrigated areas in close geographical proximity. The Old Irrigated Areas (OIA) show some similarity to the traditional **Purana** village production environment, with stable cropping and an established network of agricultural support services. The New Irrigated Areas (NIA) are at two stages of development viz. Phase I NIA, where cropping started with the first water releases in 1986

and Phase II NIA, where settlement is currently in progress. Production in the NIA, as in many new settlements elsewhere, depends on settlers of limited farming backgrounds. These new settlement areas also lack the same degree of social cohesion and organisation that is usually present in a Purana village. The success of KOISP production components of cropping, animal husbandry and social forestry, depends to a large extent on increased production and productivity, precisely of the NIA. Planned intervention is therefore necessary, among other things, in the form of adequate, timely and efficient provision of agricultural support services.

The proposed study on the provision of agricultural support services is conducted as part of ARTI research commitment for the KOISP and at the request of the implementing agency.

1.2 Location and Physiography

The project area is in the dry zone of the Island, in its south-east quadrant about 260 km by road from Colombo (Figure 1).

A tropical monsoonal climate prevails in the area with mean monthly temperatures ranging from 26°C. The mean annual rainfall is about 1,000 mm and has a distinct bimodal pattern. About 75 percent of this precipitation is in the wet season called Maha which extends approximately from 15th September to 14th March. The dry season known as Yala extends from about 15th March to 14th September.

The topography of the project area is somewhat undulating with slopes up to 8 percent.

Based on the potential for crop production the soils in the area have been broadly classified into three categories viz.

(a) Upland - well drained reddish brown earth (RBE) soils which cover about 40 percent of the area,

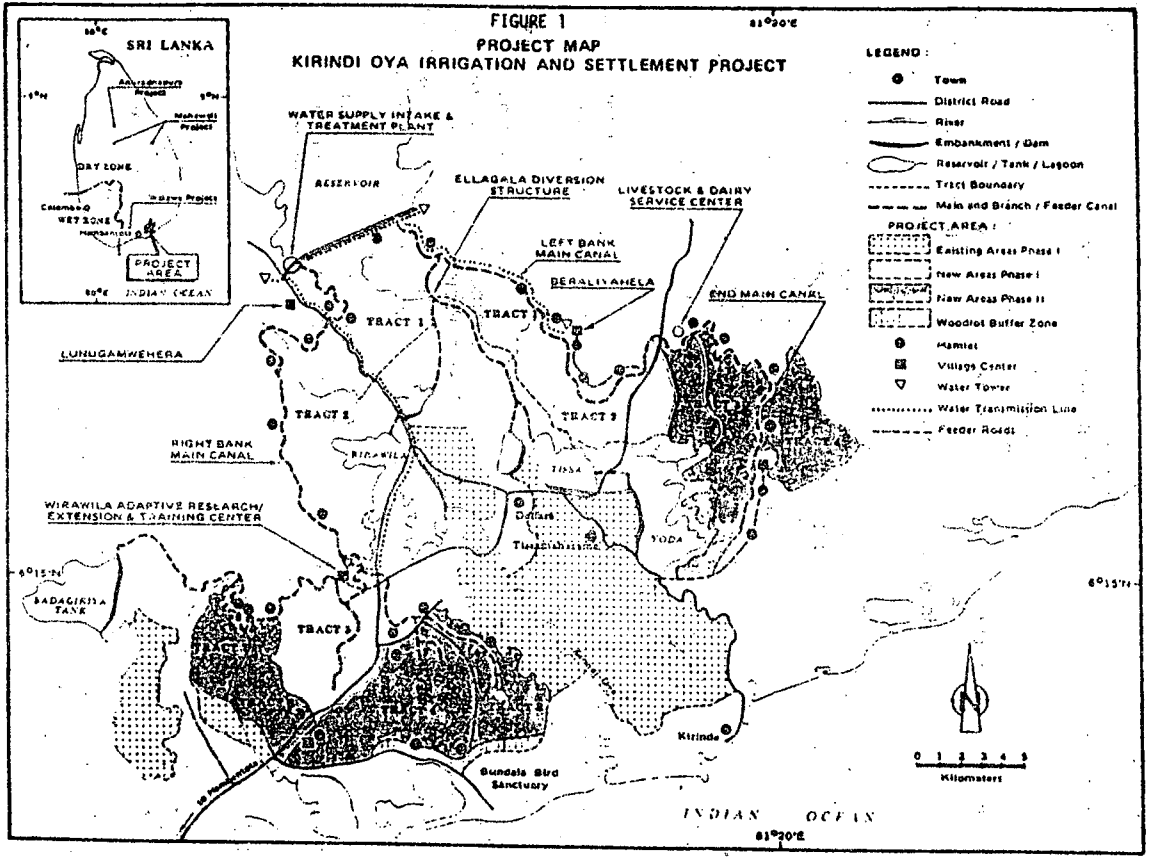
(b) Intermediate - a mixture of RBEs and low humic gley (LHG) soils which cover about 10 percent of the area,

(c) Lowland - poorly drained LHGs which cover about 50 percent of the area.

FIGURE 1

PROJECT MAP

KIRINDI OYA IRRIGATION AND SETTLEMENT PROJECT



1.3 Statement of Problem

Prior to stating the problem, it is necessary to define support services. The term agricultural or farm support services will denote the full range of services, including material inputs, credit, extension, agro-technical training and marketing infrastructure (FAO, 1987).

A complex array of state, semi-governmental and private agencies is at present involved to various degrees in the supply of individual support service components which has to be appropriate, both technically and in a socio-economic sense. It is not sufficient to deliver some standard package to all farmers of diverse resource and skill backgrounds.

Due to the many requirements that needs to be delivered to the farmers, and the exacting needs for acceptability and punctuality of the delivery as well as the complex variety of institutions involved, the provision of agricultural support services can be the source of a multitude of problems. Especially in a new settlement area such as KOISP, where new lands are brought into production, problems associated with the delivery of agricultural support services could be anticipated.

Problems of co-ordination and excessive compartmentalisation of functions among the various agencies can also be an impediment to the effective delivery of support services.

In the KOISP context, these problems may be aggravated by the limited resource capabilities and farming backgrounds of some of the new settlers. Further, the existing variety of stages of settlement (Scudder, 1985. P. 130) within the project's command is likely to result in a diversity of services that are most urgently needed.

Information on such problems and requirements of agricultural support service provision, generated through research can be utilized for forward planning and the adoption of suitable remedial measures.

1.4 Scope and Objectives of the Study

As the definition in the previous section indicates, farm support services include several major components. Recent or ongoing ARTI studies cover specific aspects of extension, marketing and credit services in the KOISP area. Accordingly, the present study will focus primarily on the supply of material inputs, which include seed, fertilizer, agro-chemicals and farm implements.

A key assumption of the study is that the project beneficiaries have reached a point where the productive activity can commence forthwith. It is clear that the supply of agricultural support services can acquire topical importance only when such a point is reached. It should be recognized, however, that in reality the attainment of such a point can be constrained due to a number of reasons such as problems associated with climatic factors, water delivery and availability, settler selection processes, general security situation etc.

Less emphasis on extension, marketing and credit components proposed in the interests of minimising duplication of research efforts, does not necessarily mean that the extent of coverage of the present study will be compromised. It is intended to make the fullest use of the information generated in previous studies in KOISP.

Study Objectives

Within the general framework of the ARTI Monitoring and Evaluation programme, the study seeks to generate information on the provision of farm support services with special reference to KOISP Phase II area. Specific objectives of the study are to:

1. describe the prevailing situation with respect to the provision of farm support services provision;

2. assess farm support service requirements of project beneficiaries with diverse resource and farming skill backgrounds, as well as their capacity to access the existing and likely future improvements to the agricultural support services;

3. identify constraints to effective delivery and accessibility to farm support services, with a view to proposing remedial measures.

The issues pertaining to the supply of physical inputs are many and varied. For instance, the supply of seed is at present the monopoly of the Department of Agriculture which does not, however, undertake to supply all the seed paddy required by farmers, but offers to replace it once in 3 or 4 years. This may result in a short supply of certified seed and problems of accessibility, for resource poor farmers.

As regards agro-chemicals, the import and distribution is largely vested with the private sector although some co-operatives also distribute them. With increased cropping and consequent increases in agro-chemical usage, and increased demand for spraying equipment should also be envisaged. The present pattern or ownership of machinery/equipment may be creating bottlenecks to their optimal use by a wider settler population.

Many state and private agencies are involved in the supply of material inputs to the farmer. It is thus necessary to gain a detailed understanding of the existing institutional mechanism for the supply of individual inputs to the project area and insights to the availability and accessibility to these inputs, as a pre-requisite to making suggestions for improvement.

It is assumed that the differing levels of availability of farm support services are reflected in the differing levels of agricultural productivity. For instance, the general level of agricultural productivity in the old irrigated areas may be higher than that of comparable new irrigated areas on account of better availability of farm support services. The close geographical proximity of old and new irrigated areas in KOISP presents unique opportunities for a comparative analysis of the provision of agricultural support services. This proximity provides a ready source from which at least a part of the farm support service needs of the NIA, could be drawn. The extent to which this is feasible, needs to be explored.

Differences in resource capability and farming skills of settler-farmers, alluded to earlier, means that the accessibility and needs of farm support services will also differ. Only a detailed scrutiny of income and class-specific service needs of the settler-farmers can lead to effective solutions to the problems identified.

1.5 Research Methods

A combination of descriptive and quantitative analytical methods are used.

The description phase of the study draws on secondary data both from published and unpublished sources, direct observations by research and field officers as well as a series of structured interviews/dialogues/discussions with:

1. project staff;

2. state, semi-governmental and private sector agencies, with interests in farm support service provision;

3. cross section of farmers of various tracts and tank command areas; and

4. local traders/retailers of farm support services and physical inputs.

As for the fulfilment of the other two remaining objectives, a comprehensive field survey with the administering of a suitable questionnaire was supplemented by a judicious mix of detailed discussion and follow-up, as well as direct observations by the research and field staff.

1.6 Sample

Stratification of the survey population was done on the basis of the customary classification into Old Irrigated Area (OIA) and Newly Irrigated Area (NIA). Five sub-samples were drawn from Yodakandiya and Bandagiriya in the OIA and hamlet '½' in the left bank, hamlets'5/6' and '18/19' in the right bank of the NIA. Forty farm families were selected from each of these sub-samples on the basis of a simple random sampling technique.

CHAPTER TWO

GENERAL CHARACTERISTICS OF THE PROJECT BENEFICIARIES

2.1 Demography

The basic unit of investigation in this study was the "household". The average size of a household in the sample was 5.3 (Table 2.1) compared with the national average of 5.6[1]. The high dependency ratio is a distinctive feature of this population, nearly 55% compared with the 45% islandwide[2]. The literacy ratio is 0.88. Male to female ratio is close to unity and are comparable with national figures of 0.85 and 1.04 respectively.

Sixty five percent of the project beneficiaries in the NIA are in the age group of between 26 and 45 while the corresponding figure for the OIA is only 20% (Table 2.2). Nearly 44% of the project beneficiaries in the OIA belong to the over 60 age group. Less than 2.5% of the project beneficiaries are in the age group of between 18 and 25 in both areas. The male to female ratio among the project beneficiaries is higher in the OIA compared with the NIA (7 Vs 4.5), while the figure is 5.3 for the whole project.

2.2 Education and Type of Employment

The high literacy rate generally observable in every part of Sri Lanka is also seen in the project area (Table 2.1). Males have a higher literacy rate compared with females. Table 2.3 shows the distribution of project beneficiaries by level of education. Between 55 to 59 percent of the project beneficiaries in either OIA or NIA had a level of education only upto grade six. In the OIA 2.5% of

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1 Department of Census & Statistics. Census of Population & Housing in Sri Lanka, 1981.

2 Central Bank of Sri Lanka, 1986.

the project beneficiaries were found to have had no schooling while 3.75% of the project beneficiaries were found to be illiterate.

Cultivation is the main occupation of the project beneficiaries, 99% and 97% in the OIA and NIA respectively. By way of secondary occupatioins, 10% are working as agricultural labourers and 13% are self-employed, while 72% have no secondary occupation in the OIA. In the NIA 26% and 14% are working as agricultural and non-agricultural labourers respectively, and 8% are self-employed, while 40% reported to have no secondary occupation.

2.3 Farm Size

The farmland in the project is either lowland or highland, based on the relative elevation and soil type. The individual farm size in the Newly Irrigated Area has been determined by the land allotment policy of the Kirindi Oya Irrigation and Settlement Project. An allotment consisting of 1.01 ha. of lowland and 0.20 ha. of highland is provided to the new settlers in the project. However, the operational allotment size in the Old Irrigated Area varies considerably with tenure, with some farmers operating on rented, mortgaged or encroached lands. The 'ande' system of land management is also prevalent.

Nearly 88% of the farms are between 1.1 and 1.5 ha. in the NIA. The average lowland and highland holdings are 1.01 and 0.30 ha. respectively in size. Almost all lowland holdings are 1.01 ha. in size, whereas 90% of highland holdings are less than 0.5 ha. (Table 2.4).

In the OIA, nearly 73% of the farms are between 1.1 and 2.0 ha. in size. The average lowland and highland holdings are 1.17 and 0.49 ha. respectively in size. Almost 64% of lowland holdings are between 1.1 and 1.5 ha. in size whereas 50% of highland holdings are less than 0.5 ha. (Table 2.4)

2.4 The Cropping System

The cropping systems can be broadly classified as lowland and highland, mono and mixed, with annual and perennial crops. Provided sufficient irrigation is received, the climate and soils favour intensive cropping in the Kirindi Oya Project area.

Table 2.1 : Demographic Characteristics of the Project Settlers

Area	Sample	Family size (No)	Dependency ratio	Male:Female ratio	Literacy rate
Old Area	80	5.4	1.2	1.02	0.87
New Area	120	5.2	1.4	1.08	0.89

Source : Field Survey, 1990

Table 2.2 : Distribution of Project Beneficiaries by Age and Sex

Age Groups	Old Area						New Area						Whole Project					
	M		F		T		M		F		T		M		F		T	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
18-25	01	1.25	-	-	01	1.25	02	1.67	01	0.83	03	2.5	03	1.5	01	0.5	04	2.0
28-45	14	17.50	02	2.5	16	20.00	64	53.33	14	11.67	78	65.0	78	39.0	16	8.0	94	47.0
46-60	22	27.50	06	7.5	28	35.00	27	22.50	06	5.00	33	27.5	49	24.5	12	6.0	61	30.5
Over 60	33	41.25	02	2.5	35	43.75	05	4.17	01	0.83	06	5.0	38	19.0	03	1.5	41	20.5
All age groups	70	87.50	10	12.5	80	100.00	98	81.67	22	18.33	120	100.0	168	84.0	32	16.0	200	100.0

Source : Field Survey, 1990.

Table 2.3 Distribution of Project Beneficiaries by Level of Education

Level of Education	Old Area		New Area		Whole Project	
	No.	%	No.	%	No.	%
Primary classes (0-5)	47	58.75	66	55.00	113	56.50
Grade 6 - G.C.E (O/L)	20	25.00	46	38.33	66	33.00
Passed G.C.E (O/L)	07	8.75	04	3.33	11	5.50
Passed G.C.E (A/L)	01	1.25	03	2.50	04	2.00
Undergraduate	-	-	-	-	-	-
Graduate	-	-	01	0.83	01	0.50
Literate but no schooling	02	2.50	-	-	02	1.00
Illiterate	03	3.75	-	-	03	1.50
Total	80	100.00	120	100.00	200	100.00

Source: Field Survey, 1990.

Table 2.4: Farm Size in the Project Area

Area	Farm type	Farm Size (ha.)					
		<0.5	0.5-1.0	1.1-1.5	1.6-2.0	2.1-2.5	2.6-3.0
Old Area	Lowland	6.25	20.0	63.75	10.0	-	-
	Highland	50.00	46.25	1.25	2.5		
	Lowland + Highland	5.00	13.75	21.25	51.25	6.25	2.5
New Area	Lowland	-	100.00	-	-	-	-
	Highland	90.00	6.67	1.67	1.67	-	-
	Lowland + Highland	-	0.83	88.33	7.50	1.67	1.67

* Percentages are based on the total number of sampled farms.

Source: Field Survey, 1990.

(a) **Lowland**

Cultivation is mainly irrigated while rainfed lowland is hardly found in either OIA or NIA. Almost 100% of farmers in both areas cultivate only paddy in their lowlands in **Maha** season. During **Yala**, 83% of the NIA farmers cultivate only paddy while the rest opted for irrigated other field crops out of which 60 prefered chillies. But almost all the lowlands in the OIA are under paddy in **Yala** as well.

(b) **Highland**

Cultivation is totally rainfed and mainly confined to the **Maha** season. A significant amount of land is left as fallow due to lack of water specially during **Yala**. Twelve percent of the farmers in the OIA and 4.2% in the NIA have perennials such as coconut, cashew, coffee and mango in their highlands. Approximately 18% of the NIA farmers have annuals such as banana and pineapple. Eighty one percent of the NIA farmers were found to be cultivating other field crops such as cowpea, greengram, chillies, groundnut and vegetables during **Maha** in their highlands while the corresponding figure for the OIA was a mere one percent.

CHAPTER THREE

PROJECT MANAGEMENT ORGANIZATION

This chapter analyses the overall project management and provides a description of the managerial, administrative and organizational aspects of the project. The present study in the Kirindi Oya total project area constitutes a mid-project situational analysis regarding how support services relate to increasing farm productivity, including effective benefits of the project organization on settler farmers in new areas as well as on traditional farmers in the old scheme areas. The first plan of the present study was aimed at studying the mid-project level situation concerning farm support services in the phase II development area. Unfortunately the uncontrolable delays in construction and settlement components in the phase II led to further expansion of the study so as to cover the entire project area even including the old settlement areas.

In production stages, any irrigation project management can be paralysed or rendered powerless when the prime requirements for production are not provided with. Ineffectiveness in the use of capital, labour, machinery and equipment and other associated inputs has been evident due to the unassured water supply for the new settler farmers in this project area. These inefficiencies in the use of production factors and related issues had slowed down the expansion of areas cultivated with food crops in the project. Most of the problems associated with the cultivation of newly developed land in this scheme area are reported to have originated from an inadequate development of infrastructural facilities, poor water management, poorly constructed field canals (these constructions were done by sub-contractors), a poorly maintained water distributory system and a lack of farmer participation in field crop cultivation during Yala season etc. Farmers were of the opinion that water in the reservoir, even in lean rainy seasons, can be saved if early sowing is adopted for paddy cultivation. In regard to water release,

most farmers suggested that a proper and acceptable tract wise rotational (Bethma) system, be maintained, from season to season, so as to allow each group of farmers in the project area have to access to water at least once in every two seasons. They were of the opinion that the project management sometimes tended to be biased due to the local political interference or powerful farmer gangs in the old scheme (traditional tracts) areas of the project.

Particularly this chapter includes areas of analysis and remarks on each specific area, as mentioned below.

Areas		Remarks
Management organization	:	Seems to be disintegrated due to the transfer of experienced officials from the project, and the responsibilities overlap among various project level officials, tied to different organizations.
Project implementation	:	Implementation seems to be delayed due to technical difficulties such as financial constraints, lack of sufficient facilities to meet all the demands made by project farmers and political interference in water delivery system etc.
Co-ordination and Management, project level coordination of various government, semi-government and private farm services	:	All the activities have to be coordinated in a single line of command of the Project Committee.
Progress control and management (monitoring performance)	:	Monitoring agency seems to be paralysed or rendered powerless due to the authority of the administration of the implementation agencies, and also through strong political interference.
On-going valuation	:	The implementation bodies seem to have failed to maintain proper contact with the on-going evaluation agency to overcome specific project

		drawbacks such as less farmer participation in project cultivation programmes etc.
Training of Project Staff	:	Specific training schedules should be maintained for training of project officials, in (1) water management, (2) agriculture and (3) farmer welfare etc.
People's participation in management activities	:	Presently farmers are disinterested in the project activities. A specific programme has to be initiated with the assistance of the evaluating agency to overcome the bottlenecks existing in the project.

3.1 Management Organization

The management organization of the Kirindi Oya Project lays high emphasis on project coordination and supervision of the two major coordinating committees namely (a) the Central Coordination Committee (CCC) (b) the Project Coordination Committee (PCC). The CCC and the PCC were established for the phase I project level coordination and these will continue to function under the proposed phase II of the project. The CCC was set up under the chairmanship of the Secretary of the Ministry of Lands and Land Development (MLLD) to coordinate the activities of the project at national level. The CCC is particularly responsible for the overall coordination of the project activities and holds meetings as often as necessary, at least once in every quarter. The membership of the CCC includes senior staff at head office level of all the executing and supporting agencies. The Director of Irrigation serves as the secretary to this committee.

During the implementation period, various government departments and organizations are responsible for implementation arrangements among the executing agencies. There are four major executing agencies for the project viz. (1) the Irrigation Department (ID), (2) the Land Commissioner's Department (LCD), (3) the Department of Agriculture (DA), and (4) the Central Bank of Sri Lanka. Regarding irrigation constructions including feeder roads and water supply and PBME activities, the ID has been the principal responsible executing agency during the construction and implementation stages. The LCD

is the executing agency responsible for the land settlement, livestock and dairy development and social forestry development components. The LCD is receiving technical and extension support from the Draught Animal and Dairy Development Programme (DADDP) of the Mahaweli Authority of Sri Lanka (MASL) for the livestock and dairy development component. The LCD is also receiving technical and extension support from the Forestry Department (FD), for the social forestry component.

The Central Bank is the executing agency for the preparation and guiding of the credit support component and is also responsible for making arrangements with selected participating banks for the provision of agricultural credit in the project area. The DA is the executing agency responsible for the agriculture support service component. Responsibilities and the organizational framework of the major institutions involved at the project level is given in seperate parts of this chapter. There are several other agencies and departments which also assist in carrying out various activities under the project.

3.2 Institutional Framework for Implementing the Construction Programme - Phase I

Since the inception of the KOISP, the Department of Irrigation of the Ministry of Lands and Land Development was the principal executing agency responsible for construction of the irrigation network and guiding and supervision of the infrastructural development in the project area. It held the overall responsibility for implementing the irrigation component of the project development plan. During the construction period of phase I, this task was delegated to a Chief Resident Engineer cum Project Manager, his deputies and the other staff. During that period the ID established two offices close to the work site, one in the Right Bank (RB) and the other in the Left Bank (LB) of the KOISP irrigation system. These two offices were manned by construction engineers, technical officers, supervisors and other skilled and unskilled employees who carried out the construction and rehabilitation work of the two main canals. A large number of officials and other employees who were attached to the project office provided the support services such as administration, financial control and miscellaneous activities for the staff resident at the work site. Since 1980, the construction of the dam and headworks of the project were contracted out by the ID to a statutory corporation, the River Valley Development Board (RVDB). The RVDB established a base camp adjacent to the dam site at Lunugamwehera and the engineers, technical and other supporting staff and field workers were housed

in this camp. This arrangement enabled the project authorities to initiate implementation of the work on the dam and the rehabilitation activities of the two main canals simultaneously.

The responsibility of the land settlement component of the project specially building the social infrastructure in the 28 villages (hamlets) and the three village clusters (centres) was shouldered by the Land Development Department (LDD), with the assistance of the Land Commissioners' Department (LCD). The work load involved was distributed among 14 officers in-charge who were employees of these two departments. These departments depended heavily on their own permanent skilled and unskilled labourers. Additionally they recruited some casual workers from the project area in order to carry out the construction works assigned to them in the settlement areas. The construction work relating to agricultural research, training and building premises also were included in the construction component of the project. The construction work coming within this component, such as the provision of irrigation facilities to fields, demonstration plots and research centres, and the building activities of the training centres were assigned to the ID and the LDD respectively. Later on, after having completed all the construction components of the project, the maintenance thereof was handed over to responsible officials of the different departments, and thus project management was also involved a civil administration responsibility.

The organizational chart of the project management established for project maintenance and implementation under the supervision of GA Hambantota (agriculture and land settlement) is shown in chart I.

CHART I : Organization Chart of Project Management - KOISP

Supervisory Bodies

GA Hambantota, Provincial Council, CCC and PCC

Project Management - Project Manager, Additional Government Agent

Agent Responsible for Settlement and Coordination

Deputy Project Manager Coordination		Project Director (ID)			
Officer-in-charge (LDD)	Officer-in-charge (DA)	PE (Headwork)	PE (R.B net work)	PE	PE phase II
Store Keepers, clerks, and operator	Office Staff KVS, Store Keeper	Office staff Accountants		Drafting office	

As can be seen from the chart I given above, the management of the project has a special organizational structure, with specific responsibilities in construction and management of project components, vested in it. This set up is popularly known as the "Matrix Organizational Structure" (ARTI, 1987). Under this pattern of organization, specific technical components were entrusted to the administrative/technical officer with special freedom of management and also had responsibilities for collective management. The Project Manager and his deputies being employees of a line department, are entrusted with the responsibility of the successful management of the production sector. During the construction period, the Project Manager, construction who is appointed from among senior engineers of the ID was entrusted with the responsibility of the successful completion of the entire project, while the execution of some of the other project components became the responsibility of the officers in some line departments. This reflects the features of most common organizational structures followed in the implementation of irrigation and land settlement projects in Sri lanka and in many other developing countries. The management of project components during the construction period was so critical to the project, that the Chief Resident Engineer of the ID was the Project Manager. Two officers-in-charge, one from the LDD and the other from the DA were the authorities at project level from the other government departments involved in the project implementation.

As mentioned at the inception of this chapter, the PCC was set up at the project level, and this committee convened all the responsible district officers at project level, and was expected to coordinate both the physical and institutional development aspects of project implementation. During the construction period the Chief Resident Engineer/Project Manager was the **de jure** Chairman of the PCC and all other senior staff at district and project level of the executing and supporting agencies comprised its membership. After the physical construction was over, the project management turned to production management appointing a Project Manager of Civil Administration, under the supervision of the GA of the district, and an additional GA to chair the management system. In addition Provincial Council members, Provincial Ministers, and district administrative heads are members of this committee. In many instanaces during 1986-1987, the PCC was chaired **de facto** by a provincial political leader. A Central Coordinating Committee (CCC) is set up under the chairmanship of the Secretary, MLLD to coordinate activities of the project at national level. According to many farmer leaders and village level officials this committee has become a customary assembly, or a routine administrative assembly, but has

failed to consider the most critical farmer problems which predominated during the last two years.

The institutional framework adopted by the management specially to undertake this massive labour intensive project, by and large, proved to be capable of performing the tasks entrusted to it during the construction period. At that time only two modifications were introduced to the original impelmentation procedure. The first was the provision for contracting out, the work of dam and other headworks, to the leading construction and engineering agency, the RVDB, and the second exception was the need for engaging private subcontractors for minor construction activities and other work connected with the distribution and field canals. Both these steps were necessary in order to keep with the strict completion time schedule of the construction programme. In many cases, the involvement of political organizations for the supply of casual labour and commissioning of sub-contracts to such organizations led to allegations being made by most settler farmers concerning defects and the poor quality of construction of field canals.

Even during the production period, the project management was subjected to allegations, by farmers and farmer leaders in regard to distribution of water and the selection of tracts and crops to be cultivated in the previous years. The old scheme area however had shown good results of the project development, by increasing their cropping intensity from 120 to 190 during the past few years. Conversely, in the new areas, most parts were abandoned due to shortages of water for cultivation. Many farmers in the new schemes responded that the project authorities always had a bias towards the old schemes perhaps mainly due to the powerful social relations of these wealthy farmers. In spite of such management failures, the organizational set up of the project, (top-to-bottom), is evident.

The success of the institutional framework in carrying out the activities assigned to the project and the maintenance of production periods was largely dependent upon the decentralized structure of the authority and the responsibility for the implementation and production planning process. There was a clear division of responsibility with the necessary authority delegated to the appropriate level of management in each implementing agency and this facilitated the contribution of individuals in the attainment of the objectives of the project, at the construction period of phase I development. During the production stage the system of management seems to have weakened due to lack of a single line of commanding authority responsible for the overall project management. Though the formation

of two committees, one at the project level and another at the national level facilitated the coordination among the institutions involved, yet the most pressing problems, i.e. inadequate water delivery and farmer disputes were not tackled in a satisfactory manner.

It is a fact that in undertaking projects of this scale and magnitude, where a multiplicity of line departments and institutions are involved, one will eventually face with immense problems of coordination. As can be seen from the organizational chart of the project office, the two officers in-charge of the activities assigned to the LDD and the DA belonged to two separate line departments and hence, did not come under the direct supervision of the Project Manager. The Project Manager directs issues which are taken by the project committee, as a collective responsibility of all the departmental heads in the district. In specific situations the Project Manager does not have the authority to issue orders to any of the line departments. Then his role becomes one of information gathering on the programme of the project and of reporting either to the PCC or to the CCC, depending on the seriousness of the individual situation. The dual command resulting from the particular organization structure adopted, makes it difficult for the Project Manager to be aware of the persons responsible for any faults and where the difficulties really lie. In fact, such shortcomings can crop up occasionally in the implementation of the production plan. However, there is greater unanimity of the project objectives and goals, and the assignments of the activities to each of the departments, institutions and parastatal bodies are being done on the basis of intimate association with the project tasks. Major decision making hazards are associated with the water distributory system for paddy cultivation in **Maha** season both for new settlement areas and old schemes (traditional tracts). Thus, in cases where there is friction, passing of fault to other agencies, and the resulting confusion can be kept to a minimum when the fullest participation of farmer associations and other farmer leaders in decision making is assured.

3.3 The Organizational Set Up of the Irrigation Department

The Irrigation Department in Kirindi Oya Irrigation and Settlement Project is officially headed by the Project Director, who is at the same time the Deputy Director (Major Constructions). The Project Director performs mainly administrative tasks relating to monitoring and evaluation of project implementation progress, on behalf of the ADB and the government for the whole project. He is based at the head office in Colombo.

With respect to technical issues, project coordination is done by the Project Director in his capacity as the Deputy Director (Major Construction) in consultation with the Deputy Director (Designs). During the actual design phase the Deputy Director (Designs) coordinates the inputs of the different specialized divisions in the head office of the Irrigation Department.

At the project level the Chief Resident Engineer functions as the Project Manager for the construction of the irrigation works and for the utilization of these works for delivering water. For specific components of the project the Chief Resident Engineer is assisted by Resident Engineers. For KOISP there are the Resident Engineer (Rehabilitation) (of the Old Areas), Resident Engineer (Head Works), Resident Engineer (right bank) and the Resident Engineer (left bank).

The Resident Engineers are responsible for the construction activities in their areas as well as for the delivery of water. The Resident Engineer Head Works is responsible for water delivery and maintenance of the head works of the Lunugamvehera reservoir only.

The commissioning of the project is done by the Water Management Feedback Centre in cooperation with the Resident Engineers. It consists of the Water Management Consultants, who are placed under the Chief Resident Engineer, and are assisted by a Senior Irrigation Engineer, three Irrigation Engineers and several Technical Assistants.

3.4 The Organizational Set Up of the Land Commissioner's Department

While the Deputy Director (Major Construction) of the Irrigation Department is the Project Director for all aspects of the projects, he has no administrative powers with regard to the other line agencies. With regard to land settlement aspects, it is limited to monitoring and evaluating project implementation progress.

At head office level the land settlement aspects of Kirindi Oya project are directed administratively and technically by the Additional Land Commissioner (Development). He coordinates and is responsible for all decisions regarding settler selection and distribution of settlers over the hamlets and command area.

At project level a special Additional Government Agent (Lands) functions as the Project Manager (Settlement) who is responsible

for settlement activities at project level. In addition, he represents the Government Agents of Hambantota and Moneragala districts in the project. He is assisted by an Assistant Project Manager (Lands). All these staff are officers of the Sri Lanka Administrative Service.

Colonization Officers are in charge of the land settlement activities at tract level and Field Instructors at hamlet level. At the time of settlement, the settlers have been organized in groups mainly to facilitate communication between the department staff and settlers for distribution of settler provisions as food and also to organizing meetings of settlers. Within these, group leaders have been appointed on the recommendation of the Field Instructors. Construction activities of infrastructure in the hamlets and towns under the project are also done by this department.

3.5 The Organizational Set Up of the Irrigation Management Division

In 1986, the Irrigation Management Division appointed two Project Managers for Kirindi Oya, one each for the old and new areas. They were supposed to organize water users in sustainable water user groups that would become effective after the construction is finished.

To that end, at field canal level water users were to be organized into informal groups, and at distributory canal level into "distributary canal organizations" and at system level into a project committee, each for the New and Old Areas.

The informal water user group at field canal level selects a leader, in principle by consensus, who represents the group in the distributary canal organization. The major duties of this field canal water user group are the cleaning of field canals, organizing water saving activities, collection of data, conflict solving among water users, assisting in the collection of service fees etc.

The distributory canal organization can fix its own procedures and determine number of members necessary to form a quorum. It is supposed to select, in principle by consensus, a President and a Secretary and if necessary, a Treasurer. The Irrigation Management Division advises that in the initial stages a divisional level officer of one of the involved line agencies should function as the Secretary, who can later be replaced by a farmer.

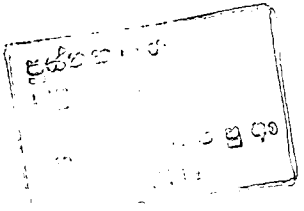
The distributory canal organization's duties and functions are water management (rotational distribution of water within field canals),

maintenance (programming, organizing collective work activities, assisting officials in the collection of service fees), preparation and implementation of the agricultural programme, and socio-cultural activities.

Representatives of the distributory canal organizations of the New Areas meet once a month in the Project Committee. The other members of this Project Committee are the different divisional level officers working in the New Areas (e.g. Irrigation Engineer, Technical Assistant, Colonization Officer, Agricultural Instructors) and the Project Manager of the Irrigation Management Division. District Level Officers may attend the meeting on invitation. The Project Manager chairs the meeting.

The main functions of the Project Committee include:

- Formulation and implementation of a cultivation programme for the season/year;
- Holding of timely cultivation meetings;
- Solving problems connected with distribution of irrigation water;
- Arranging for timely provision of credit, seed and other inputs;
- Monitoring the programme and taking corrective action where needed;
- Recovery of operation and maintenance fees;
- Arrangements for operation and maintenance of all capital assets and approval of items to be handled under the maintenance programme of the Irrigation System;
- Promoting formation of Farmer Organizations and ensuring participation;
- Identifying training needs of farmers and officers serving in the project and arranging for their training;
- Reporting at regular periods to the Sub-Committee of the District Agricultural Committee and to the Irrigation Management Division.



Thus in addition to organizing water user organizations, the Project Managers have to coordinate the activities of the different line agencies with regard to the agricultural implementation programmes in the system, i.e. the so-called programme for Integrated Management of Major Irrigation Schemes (INMAS).

At district level, the sug-committee of the District Agricultural Committee is expected to further strengthen the coordination between the different line agencies in regard to the programming, monitoring and implementation of the cultivation and the organizing of water users in groups. This committee is chaired by the Government Agent, and attended by all involved district level officers. For the Irrigation Department, the Range Deputy Director of Irrigation functions as the Secretary to this meeting.

Several project related officers such as the Chief Resident Engineer and the Project Manager (Settlement) do not attend this meeting, because the Project Coordinating Committee, (and since 1988 a sub-committee of it) functioned as a similar body for the agricultural implementation programme.

A Central Coordinating Committee for Irrigation Management functioned at national level with all heads of involved departments attending it to implement, monitor and evaluate the INMAS programme at this level.

3.6 Coordination between the Different Line Agencies

Apart from the coordination mechanisms seen in the set up of the Irrigation Management Division and the INMAS programme, several other coordination bodies have been provided for the Kirindi Oya project since it commenced in 1980.

In order to coordinate the activities between the different line agencies involved in the project which are mainly the Irrigation Department, the Land Commissioner's Department, the Agrarian Services Department, the Agriculture Department-Research and Extension, the Crop Insurance Board, the local banks and from 1986 the Irrigation Management Division, a Project Coordinating Committee was set up at project level under the chairmanship of the Government Agent. In practice the Project Manager (Settlement) in his capacity as the Additional Government Agent chaired the meeting on behalf of the Government Agent.

A Central Coordinating Committee had been set up for the coordination among the line agencies at national level. Moreover, the Deputy Director (Major Construction) was appointed Project Director for the overall coordination of the project and, in particular, for the supervision of the Project Manager (Irrigation), the Chief Resident Engineer, "and to liaison with the Project Manager (Settlement)".

CHAPTER FOUR

AGRO-SUPPORT SERVICES

Farmers should be supplied with certain services essential for the success of their cropping programme. Chief among these are supply of agricultural inputs, advisory and farmer guidance, agricultural credit, crop insurance and marketing of produce. These services are made available to the farmers by the respective agencies in the project. The state sector agencies in the project, concerned with providing these services, are the Agrarian Service Centres, Co-operative Services, Research, Extention and Training units of the DA, Banks, Agricultural Insurance Board and the Cooperative Wholesale Establishment (CWE). With regard to marketing, which is considered a very vital component, the private sector plays a significant role in purchasing the produce, bringing in greater competition to the local market, raising the prices of produce, and thereby benefiting farmers.

4.1 Input Supply

Seed, fertilizer and agro-chemicals are the more important inputs which must be supplied to the farmers. The specific inputs in adequate quantities should be provided in time, synchronising with the cultivation calender prepared for each season.

4.1.1. Seed

Through its Seeds Division, the Department of Agriculture has the capacity to produce foundation and registered seed for paddy and other field crops. The seed multiplication system starts with breeder seed which is maintained and multiplied by plant breeders. Foundation seed is multiplied from breeder seed in selected production farms under the supervision of the Plant Breeder. From Foundation seed, registered seed is produced in the government seed production

farms. Certified seed, which forms the final stage of the multiplication system is produced in selected farmers' fields or of contract growers under the supervision of the officers from the Farms Division. Certified seed is purchased by the Seeds Division and redistributed to farmers through the Agrarian Service Centre. Certified seeds are purchased only after they are tested and verified by the seed laboratories of the Division to have confirmed with established standards. The improved seed requirement of the project area is provided by the Bata-ata regional unit and seed farm which is located about 33 km from the project area.

4.1.2 Fertilizer

In 1978, controls on fertilizer imports were removed, and private firms are now importing in addition to Government Corporations. Ceylon Fertilizer Corporation (CFC), however, remains the largest importer and distributor of fertilizers. Fertilizer distribution in Sri Lanka at the wholesale level is undertaken by seven institutions, three of them in the public sector. Distribution is dominated by four wholesalers engaged in import, mixing and distribution viz. CEF, JEDB, CCC and Baurs. The CFC is the leading wholesaler, with four regional warehouses and an islandwide network of 34 stores. From the CFCs district stores, fertilizer is available for delivery at the district level to its retailers. The regional facility of the CFC in Matara with a fertilizer mixing plant of 10 mt/hr. capacity has a storage capacity of 10,500 mt. and there are also district stores in Hambantota and Uda Walawe. The facilities are considered adequate to service the retail outlets which serve the project.

There are four main groups distributing fertilizer at the retail level. They are the Multi-Purpose Co-Operative Societies (MPCSs), Agrarian Services Centres (ASCs), private dealers and various government agencies. Private dealers account for more than half of all retail fertilizer sales in the project area, the next important category being the MPCSs. In the project area, each of the 35 hamlets (18 in Phase I and 17 in Phase II) has a MPCS store. In addition, there are four ASC stores in the project's village centres. At the retail level, storage is a major problem. Most retailers have inadequate storage facilities and this causes intermittent shortages.

4.1.3 Agrochemicals

Agricultural chemicals for the control of weeds, pests and diseases are imported by both the Ceylon Petroleum Corporation and the private

sector. They are usually imported as active ingredients and emulsifiers; formulations are done locally. At the retail level, these chemicals are distributed by the MPCSs, ASCs and private retailers. The larger agro-chemical firms have their own field advisory services and carry out farm demonstrations to promote their products. An adequate range of agro-chemicals are available in the project area.

4.2 Advisory and Farmer Guidance

These services are provided by the Research, Extension and Training Divisions of the Department of Agriculture.

4.2.1 Agricultural Research

Agricultural Research is carried out by the DA through a system of Central and Regional Research Centres (RRC) and branch stations. Success in extension works is preconditioned by a continuous flow of information on improved techniques and practices. Such information on improved technology should continuously flow from research stations to the extension workers. The problems faced by the extension workers. The problems faced by the extension workers are to be discussed with the Research Staff and suitable remedies to be sorted out. Research is to be directed with adequate feedback of the field problems and farmers innovations from the extension services. Complete reliance on top-down recommendations from the research as the major source of recommendations to farmers is to be avoided.

The RRC is responsible for planning, executing and supervising the adaptive research programme. Adaptive research is conducted in farmers' fields as a link between research and extension. The activities would include field trials on new varieties, improved cultural practices and use of inputs for all field crops, based on technologies which emerge from research conducted by RRCs and their sub-stations.

Annual plans for adaptive research are prepared by RRCs in consultation with ADAs. Technical coordination between research, extension and training is fostered by the establishment of Regional Technical Working Groups headed by the DDR of the RRC, ADAs, AOs and ROs in the region, ADA of RTC, economists attached to RRCs, and their respective senior technical staff, meet at least twice a year to discuss the past and future seasonal programmes in research, extension and training within the AER. The DD (Research) would call meetings of all RRCs to achieve inter-regional coordination.

The RRC that provides research support to the project is located at Angunakolapelessa, about 60 km from the project area. Branch stations under this RRC include the Ambalantota Paddy Research Station and the Adaptive Research Station at Weerawila established under phase I of the porject. This adaptive station provides research support for irrigated crop and water management for subsidiary food crops. It is of tremendous importance that this station should conduct local on-farm trials that include components of low cost technology. Research support for paddy is proviced by the Ambalantota station.

4.2.2. Agricultural Extension

The attainment of much of the desired production objectives will depend on the extent to which agricultural extension services are provided to the farmers on time and their appropriateness. The project appraisal identified the importance of agricultural extension in increased crop production and specially in crop diversification in the project area. It also identified the needs associated with training of new settlers with or without experience in the cultivation of proposed crops. On the above reasons it has identified the Agriculture Department as one of the three main implementing agencies of the project.

Agricultural extension services are provided by Department of Agriculture (DA), through its division of Agricultural Extension. The division is headed by a DD who is assisted by 3 additional deputy directors at the regional level. At the district level, extension units are organized based on the number of Agrarian Service Centres in the district. The ADA is responsible for formulating the extension programme for each season in his district and supervising the programme implementation through Agricultural Officers (AO), Subject Matter Officers (SMOs), Agriculture Instructors (AIs) and village level extension workers (KVSs) serving under him. He is also responsible for providing training to KVSs and AIs and coordinating with the officers in the Agricultural Development Authority and Department of Agrarian Services. He also maintains close lateral administrative coordination among officers of different branches of the DA.

Under the charge of the ADA, Hambantota district is divided into 3 segments, each supervised by an AO. The Kirindi Oya project area comes under segment III which is headed by the Agricultural Officer stationed in Weerawila. There are 3 SMOs 4 AIs and 7 KVSs posted in the project area to assist in the proposed extension programme of the project. The three SMOs are working in three different specialized fields namely paddy, OFC and plant pathology. There is

also one lady SMO attached to the Farm Women's Extension Programme which mainly focuses on family nutrition and hygenic food preparation, working in the project area as well as in another segment of Hambantota. SMOs provide bi-weekly, one day training sessions to AIs and KVSs in the project and are responsible for conducting field demonstrations. A basic bi-weekly training schedule for KVSs and AIs is prepared each year, separately for Maha and Yala seasons, according to local crop calendars. Since the field demonstrations are mainly on selected "contact" farmers' fields, AIs and KVSs supervise the demonstration plots and explain the practices to the "follower" farmers during their scheduled visits to contact farmers.

4.2.3 Agricultural Training

The Division of Agricultural Education and Training of the DA conducts pre-service and in-service training for extension officers and personnel from other rural and agricultural institutions such as agrarian service officers and farmer leaders. Training is conducted at Regional Training Centres which provide in-service training to SMOs, AIs and KVSs. Pre-service training of KVSs and training for leader farmers are conducted in District Training Centres (DTC). The in-service Regional Training Centre in Angunakolapelessa and the DTC at Weerawila fulfil most of the training requirements of the project.

4.3 Institutional Credit

It has been shown that only a small percentage of farmers avail themself of Government-assited credit. Institutional credit accounts for less than 25 percent of available rural credit in Sri Lanka. Low recovery rates, estimated at 60 percent for crop loans is the main reason for the low availability. The reason for the high level of default is partially due to farmer attitudes towards money loaned by Banks. State Banks are considered extensions of the Government, and they lack effective sanctions against loan defaulters other than making them non-eligible for further loans.

The unavailability of institutional credit has been a major problem in the successful establishment of new settlement areas. This is especially so during the initial years when settler incomes are low and expenditure on inputs is necessarily high.

Due mainly to the intervention and the co-operation extended by the project's lending banks, a satisfactory level of credit disbursement amongst the Newly Irrigated Area (NIA) farmers has taken place

in their first cultivation season of Yala 1986. Information from the bank sources also suggests that the level of recovery from the NIA farmers was satisfactory for that particular season. But since then the default rate went up due to failure in achieving a successful season.

However, a different state of affairs was seen in the Old Irrigated Area (OIA). While the majority of the farmers, credit finance their paddy crops, only a few had opted to or had access to institutional credit. A complexity of factors appear to have led to this situation in the OIA. Beside the problems related to the borrower and the guarantor defaulting, consequently reducing the number eligible for institutional credit, the existence of complexities of tenurial conditions appeared to have resulted in increased private borrowings. For example, under certain informal tenurial arrangements land owners themselves undertook to provide material inputs as a part of the contract of the tenure arrangements. This meant that certain cultivators were not eligible for institutional loans.

Linking up institutional lending with crop insurance also appears to inhibit farmers approaching the banks for paddy loans. Farmers were generally reluctant to obtain crop insurance for many reasons. One major reason according to farmers was that the indemnities were too low. Lack of awareness of the insurance scheme, delays in payment of indemnities and the inability to pay the premium were other reasons given by farmers for their reluctance to obtain crop insurance.

Farmers generally found that obtaining credit from non-institutional sources was easier and flexible than from institutional sources. Their social and economic relationships with the lenders appeared to be fairly established at the village level, leading to a smooth disposal of credit and recovery. Non-institutional credit is used mainly for short-term crop production and often carries very high interest rates. Even under such circumstances these farmers prefer to have this as it does not involve cumbersome loan application and approval procedures.

Sources of institutional credit in the project are the Bank of Ceylon, the People's Bank and the Regional Rural Development Bank. Under the new Comprehensive rural Credit Scheme, crop loans are made available to farmers who carry agro-identity cards issued by the Agrarian Services Department, who can offer two acceptable guarantors, and who are not defaulters. Loans ranging from Rs.5,558/= for irrigated paddy to Rs.11,733/= for chilli and Rs.16,673/= per ha. for big onions are granted to farmers at 9.5 percent interest per annum repayable in full at the end of the crop season. The loan covers

land preparation, seed purchases, transplanting, fertilizers, agro-chemicals and harvesting. Defaulting farmers are given the chance to reschedule their loans, and on paying 10 percent can receive a new loan immediately. However, both the overdue amounts and the new loan must be repaid within ten months. Medium Term Loans (i.e. for tractors) are granted to borrowers at 12.5 percent for a period of 3 to 5 years. Livestock loans are given for six years at 12.5 percent, payable monthly with a six month grace period.

4.4 Agricultural Insurance

Agricultural Insurance is compulsory under the loan schemes and the cost of such insurance is included in the loan. However, insurance payments are pro-rated on the extent of losses, and cover a maximum of Rs.1476 per ha. for rainfed crops and Rs.5412/= per ha. for irrigated pady crops. Insurance scales for the Other Field Crops (OFCs) are given in Table 4.1. Cattle and buffaloes (dairy, draught and stud) come under an insurance scheme with a maximum insurance coverage offered ranging from Rs.2500/= to Rs.6000/= depending on the category of animals and age limits.

Crop insurance also induce farmers to adopt the recommended cropping patterns with greater confidence. However the past performance of crop insurance, particularly in OFCs, has been full of failures and the Agricultural Insurance Board (AIB) has consequently suffered heavy losses. The AIB has recently taken a decision that in spite of its difficulties it will insure OFCs on the basis that indemnification will be limited to 1.3 times the total premia collected from farmers participating in the programme. If the total indemnity payable to all claimants is within this limit, they will be paid the full amount due to them. If however, the limit is exceeded, individual farmers will be indemnified on the basis of 1.3 times their premia.

Table 4.1 OFC Insurance Scales for the Project

Crop	Premium (Rs/ha)	Indemnity (Rs/ha)
Maize	178	2964
Cowpea	178	2964
Soyabean	296	4940
Greengram	296	4940
Groundnut	296	4940
Chillies	593	9880

4.5 Marketing Storage and Processing

Since 1977 it has been the Government's policy to encourage the role of the private sector in marketing, stroage and processing activities, and to focus public sector activities on stabilizing produce prices within acceptable limits of seasonal price variation through the Guaranteed Price Scheme for paddy and the Floor Price Scheme for other field crops.

The PMB and the MPCSs were the main purchasers of paddy and OFC respectively before 1979, but virtually all purchases are now made by the private sector. Although the Government is committed to continuing the operation of its Floor Price Scheme, its intention is not to restrict the trade in paddy and subsidiary crops carried out by the private sector, and it expects that the private sector capacity will expand.

For the Hambantota district as a whole, the PMB and the cooperative stores have an estimated storage capacity of 19,000 metric tons. Data on storage capacity in the private sector is inadequate, but it is estimated that there are 200 operating mills in the district with a storage capacity of 5000 to 10,000 mt. Milling in the district is provided both by three PMB rice mills having a total capacity of 3,700 mt/month and by private mills which account for an estimated 11,800 mt/month. Within the project area, the PMB maintains two major storage and milling complexes, one with storage and milling capacities of 6,000 mt and two mt/hr. respectively and the other with a storage capacity of 1000 mt. and milling capacity of one mt/hr. About 40 private millers are located throughout the project area most of them being concentrated in Tissamaharama. Most have storage capacities of only 10-15 mt. Total private milling capacity is estimated at 700 to 1000 mt/month. The milling capacity in the project area is considered adequate to meet the requirement under the project. The Government's intention is that the private sector should continue to handle as much of the trade in paddy and OFCs as it wishes, and it expects the private sector capacity to expand as production expand under projects such as Kirindi Oya. It should be noted that in the Hambantota area the PMB now has a significant overcapacity in all its mills and warehouses having lost most of its trade to the private sector.

The marketing channels commonly found for paddy in the project are well established. Local collectors/traders and millers as well as outside traders from Galle, Matara and Colombo and millers from nearby areas are all active buyers in the project area. Collectors

and farmers are usually informed in advance of large traders coming to the area. Most collectors purchase directly at the farmgate or prearranged collection points, and sell immediately to millers and outside traders. Thus a significant percentage of paddy is milled outside the project area.

Marketing channels for OFCs are also well established. Again, collectors are the major buyers at the farmgate level. Producer fairs are another popular marketing outlet for OFCs, attracting local and outside traders. Vegetables and yams have been marketed at Pannegamuwa, Lunugamvehera and Tissamaharama and this has been consumed by residents of the project area while the surplus is collected by private traders and delivered to other areas. Other farm produce is also purchased by private dealers or agents of wholesale dealers at the farmgate at competitive prices. In the particular case of dried chillies, the local market is dominated by Colombo traders (commission agents) who purchase from producers and local collectors at prices generally higher than other traders. Primary sorting and grading are done by farmers and local collectors to a very limited extent, which significantly affects the prices offered by traders.

Due to the absence of an organized marketing and floor price system for the OFCs, such as that offered in paddy, violent price fluctuations with imperfections in the flow of market information to farmers are seen. This appears to be a major constraint affecting especially the crop diversification process. In the shift from paddy to diversified cropping, farmers seek price assurances for their products as the foremost incentive. In its absence and in the absence of organized marketing channels they appear reluctant to invest in OFCs.

4.6 Other Services

4.6.1 Transport

There are about 36 two wheel tractors and a few fourwheel tractors within the project area. These are used by the farmers to transport their produce upto Lunugamvehera, Pannegamuwa and Tissamaharama. The few passenger transport vans operating in the project area are also being used by the farmers to transport their produce. Private traders use their own and/or hired lorries to transport the produce from the farmgate. The MPCS, CWE, Markfed and Marketing Department use their own lorries to transport produce out of the project area.

4.6.2 Health Facilities

There are two district hospitals at Hambantota and Debarawewa. On the average they respectively serve 250 and 300 out-patients daily. The two hospitals are rather limited in facilities available for surgical treatment. In addition to these there is one dispensary for western medical treatment and one Ayurvedic dispensary providing indigenous treatment. Four midwives serve the area and five public clinics with pre-natal, post-natal and immunisation services are managed under the aegis of the Medical Officer of Health based at Hambantota. The lack of surgical facilities and specialised clinics compel the patients in need of such treatment to travel some 110 km to Matara. Public health clinics are held at specific places in the area on a particular day of the week at each location.

A veterinary service centre at Weerawila carries out artificial insemination and makes provision for animal health care. There is only one veterinary surgeon to cover both Hambantota and Tissamaharama regions.

4.6.3 Educational Facilities

The area, has a relatively large number of schools, four primary schools, seventeen secondary schools, six Maha Vidyalayas and one Madya Maha Vidyalaya. The last two categories of schools have classes up to the G.C.E. Advanced Level. The Madya Maha Vidyalaya at Debarawewa even provides for the teaching of science subjects up to the same level.

Practically all schools in the area suffer from a dearth of adequately qualified and trained teachers. This was especially so, in the case of Science and English subjects.

4.6.4 Administrative Services

Various administrative functions in the area fall upon the three Assistant Government Agents at Lunugamvehera, Tissamaharama and Hambantota. Their jurisdictions exceed the boundaries of the project area. Fourteen grama sevakas (village headmen) function under them within the project area.

CHAPTER FIVE

FARMERS' USE OF AGRICULTURE SERVICES AND INPUTS

This chapter includes several more important areas concerning the use of agricultural services and inputs by settler farmers in the project area. It particularly refers to the situation arising out of demands from the settler farmers for agro-support services, the driving forces that compel or preclude them from demanding agro-support services in the project area, and the reasons for it. Further it attempts to analyse the levels of use of services and inputs, settler farmers' attitudes towards services supplied by the project (more specifically, towards field officers, role of small farmer organizations and towards service departments and institutions) and farmers suggestions for improvement of the services etc. The concept of delivery mechanisms refers to the various services provided by governmental, non-governmental, semi-governmental and private organizations. The services provided by these organizations include agricultural research, extension services, input distribution, credit supply, marketing and maintenance of incentive price schemes. In this context, the receiving mechanism is also very important. Eventually, any success of the services and input delivery mechanism depends on the worthiness and ability of the farmers to obtain services, and specially on their ability to organize themselves into cohesive, collective interested farmer groups.

5.1 Levels of Use of Services and Inputs

Intensive use of agricultural land is facilitated by the organization and management of farm services and inputs which are an integral part of improved agricultural systems. Most agricultural services are provided by the governmental institutions in the project area as follows:

Agro-support Services

- Research (technology generation): provided exclusively by the government research organizations.
- Land and Agrarian Services : provided by the Land Commissioner's Department and the Agrarian Services Department.
- Extension: provided by the Department of Agriculture.
- Irrigation improvements, maintenance and irrigation water supply: provided by the Irrigation Department (special unit established in the project area).
- Water management: Irrigation Management Division of the MLLD.
- Training: Agriculture Department through regional training centres.
- Credit: Banks, cooperatives and the private sector.
- Marketing: government organizations and the private sector.
- Transport: private sector.
- Processing: private sector.
- Storage (preservation of excess produce): by the private sector and farmers themselves.
- Veterinary services: Department of Animal Health.

As was evident, the most critical factor in this context was that the receiving mechanism was also very important for realization of the benefits from the inputs used and for organizing and strengthening of services in the project area. It was found that most project farmers in new settler areas were not in a position to fully use the

the facilities provided, as they were not yet equipped for agriculture work due to various reasons such as lack of water, lack of a proper water management system and, even in lean rainy seasons, their hesitation to cultivate field crops in their lowlands. Most farmers preferred to cultivate paddy in both seasons, but the project authority had still failed to provide water for double cropping of paddy due to the fact that the water in the reservoir has been insufficient to irrigate all the developed lands in both new and old settlement areas of the project.

Agro-inputs (basically goods for agricultural production)

- Irrigation water: Provided by the project.
- Seeds (New improved): Agriculture Department and farmers who preserved seeds.
- Fertilizer (appropriate): Cooperatives and the private sector.
- Pesticides (suitable): Cooperatives and the private sector.
- Tools (efficient use): Private sector.
- Implements (manual use): Private sector.
- Machinery: Private sector.
- Credit: Banks and the private sector.
- Vaccines: Animal health clinics and the private sector.

In contrast to the new settlement areas, higher levels of input use was reported in old scheme areas where an assured irrigation water supply system was maintained for double cropping of paddy. It is a fact that where irrigation water was provided adequately, higher levels of input use are seen in other major irrigation schemes elsewhere in this country.

The problems associated with production activities in the project area both in the water release and irrigation management, and the provision of other farm supplies could often be attributed to the inadequate development of infrastructural facilities (specially in the new settlement areas of the project) as explained earlier. The

majority of farmers always criticised that priority in water release has been given to filling up the distributory tanks in the old scheme (traditional settlement) areas of the project. Such difficulties have inhibited adequate expansion of the cultivation area (perhaps double cropping of paddy or one season for paddy and other season for field crops) in the newly settled area of the project. In some cases external and technical difficulties were partly responsible for such unsatisfactory situations prevailing in this new settler areas of the project.

It was evident in this project area that inadequacies in the management and use of irrigation water, together with insufficiencies in the use of capital, labour, machinery, equipment and other associated inputs had further slowed down the expansion of agriculture in the new project area. The overall agricultural and management problems, as well as difficulties and constraints can be related to some aspects of the overall agricultural situations in relating to production existing in most irrigation schemes in this country. From this perspective, we could go on to examine the economic and other social forces that have increased productivity in relation to the use of modern irrigation facilities, modern farm technology, use of fertilizer, chemicals, farm machinery, and the use of high yielding varieties etc., which have paved the way for expansion in the area cultivated with food crops, thus increasing production. However, most farmers in the new settlement areas are solely dependent on other non-agricultural work and food aid mainly due to the fact that the project had completely failed to provide water to all the farmers in the project. It was observed that some farmers had partly benefitted while some others were in a critical situation.

Despite the forces mentioned earlier, which generally cause rapid changes in the use of technology and the output, organized provision of services and coordination, and well managed infrastructure development (irrigation, channels, field channels, culverts, field bunds and farm roads, and other transport facilities) and efficiency of project management are vital for the success of any irrigation and settlement project.

Factors which influence farm production and consequently the use of more services and inputs are: (1) use of inputs properly and for obtaining their incremental benefits, (2) output in relation to cost, (3) productivity, (4) labour use and increasing labour productivity, (5) farm size (cultivated), and (6) nature and skill of farm entreprenuership. To test the effectiveness of such factors for assessing the success of project programmes, be motivated for production by providing irrigation etc. In this new settlement project, as was observed,

only a proportion of farmers were able to cultivate their land in a season, in the 1989/1990 cropping programme. Detailed statistics showing different levels of input use by the farmers in the project area, (new and old settlement areas), are given in the annexed statistical tables.

Regarding fertilizer use, more than 96% of the farmers who cultivated **Maha** or **Yala** in 1989/90, indicated that they had used chemical fertilizer more or less according to recommendations, or in sufficient quantities. The majority of farmers in the new settlement areas indicated that they had obtained chemical fertilizer from cooperatives and through agrarian centres. In the old irrigation areas, the majority replied that they could obtain chemical fertilizer from private traders. Almost all farmers had used improved seed paddy, but only a few reported to have obtained their seed (certified seed) directly from the Department of Agriculture. About one third to one fifth (varying according to study locations) of the farmers had used their own seed and others had obtained seed paddy from stocks preserved by farmers and private traders. Regarding agro-chemicals, the majority of farmers replied that they had used agro chemicals for weed, pest and disease, control when it was necessary. Most farmers were of the opinion that services for supply and delivery outlets were located in the project area. In the case of availability of draught power, most farmers explained that there had been a shortage in availability of both tractors and buffaloes, for land preparation in 1989/90 **Maha** season. Most farmers were reported to have hired 4 wheel and 2 wheel tractors for land preparation, but it was very difficult to hire tractors, and even buffaloes, during peak periods of land preparation. The project authorities, had advised the farmers to use more buffaloes and ploughs for the second land preparation, muddying and leveling of plots, as a complementary source to reduce the heavy demand for tractors during the peak **Maha** season. It was observed in the project area, that the organization and management of agricultural services including agricultural extension and delivery systems for inputs, specially the distribution of agro-chemicals, and marketing (specially paddy production), seemed to have developed to a certain level compared with the pre-project situation. However, insufficient irrigation facilities had caused the fallowing of the most paddy lands for several seasons, specially in new settlement areas.

5.2 Settler Farmers' Attitude Towards Services Supplied by the Project

Farmers opinion and attitudes towards field officers, small farmer organization, service departments and institutions are briefly summarised in this section. Their attitudes towards service institutions

were somewhat moderate while about one third of the settler farmers gave negative view points on such service institutions. There are a number of government, semi-government and private agencies involved in providing agricultural services and in the delivery of materials to small farmers. A considerable proportion of farmers commented that the efficiency of those delivery systems and service management lines had remained at a low level due to lack of coordination among the various institutions at the project and tract level. There may be some truth in this, but such information cannot be generalized as the propotion of responses was considerably lower. According to most farmers in new settlement areas, the AD system was intermitently hampered and rendered ineffective with frequent shortages, inadequacies and delays due to lack of communication and coooperation among the service institutions compared to the situation in the old settlement (traditional farm areas) areas of the project. According to the farmers (in the new settlement area), many reasons have been attributed to the lack of demand (unstable demand) for services and inputs from the farmers' side, such as recurrent water shortages in the tank, off cultivation of paddy and even field crops, recurrent fluctuations in prices, lower income, and high risk and uncertainty inherent in farming under such adverse conditions, as have been experienced by the majority of farmers in the new irrigation area of the project. While, the majority of farmers views on field officials and agents were moderate, a few farmers responded negatively. Most field agents belonged to different departments and institutions and comprised of different categories viz. (1) administrative field agents, (2) extension workers, (3) agricultural technicians, (4) village administrators, (5) agents of small farmer cooperatives and associations, and (6) farmer leaders. Most farmers were of the view that the majority of village level officers, were less energetic, and forward-looking, worried about their jobs and incomes, while others had various socio-economic difficulties. the proportion of farmers who gave critical comments about the village officers, was very small compared with the total farm population. Therefore, such views cannot be generalised as regards the entire project, but there may be some truth.

In the same way the farmers had formed opinions about the farmer organizations. These organizations initiated for irrigation management in both new and old areas were predominant in the project area. Observations made during field visits and discussions with the sample farmers revealed that in most of these farmer organizations the leading role was played not by the ordinary small farmer groups. It was evident in the old irrigation areas, that the leading roles of such organization were played by the farmers of the

landed proprietors. It was complained by most smaller farmers that, in most cases, retired government officers, retired village headmen, landed proprietors cum traders, and money-lenders could easilly get into such organizations. Therefore, most farmers explained to us that this type of farmer organizations after having existed for few years, had now become new instruments of political and bureacratic influence in their project areas. This had become the main reason for the lack or decline of farmer participation in these organizations in the project area.

5.3 Settler Farmers Suggestions for Improvements of the Services

As highlighted by the field surveys, in regard to farmer representatives and village level officers in the project area, more than three-fourths of the respondents gave the following views on extension and other services associated with the AD system, in order to upgrade such services.

(1) Provision of training facilities to all village level extension cardres, in regard to paddy, field crops, and home gardening along with other social and scientific issues associated with rural extension.

(2) Upgrading of the contacts and relations between farmers and agents,

(3) Improving farmers' know-how of managing different crops where necessary.

(4) Improvement of the supervisory mechanism for village agents by their project level officials.

(5) A monitoring mechanism for assessing the progress intermittently of the services provided by the different service agencies provided by the different service agencies which is to be handled by the project authority, and

(6) There should be a proper coordination mechanism at the tract level, and farmer representatives should have an opportunity to participate (and their views should be considered in the preparation of cultivtion calendars, and implementation of the production programme.

Based on their personal knowledge some farmers reported, that most irrigation management organizations have been planned at the top level (by bureaucrats) and have been passed down to bottom for implementation. This reflected the need to have an organizational change, according to the concensus of the majority of farmers in the project area. Giving their views on major irrigation schemes, many farmers responded that the farmer organizations of water management and maintenance, which are newly set up, can be another instrument of politico-bureacratic management on small farmer groups (which were previously completly free to take decisions), under the pretext of irrigation management.

Regarding the distribution of farm inputs, farmers gave their view points for upgrading the delivery systems, in respect of the different kinds of inputs, widely used by the farmers in the project area. Details of statistics are given in the Appendix, Part IV. As regards the use of fertilizers, most farmers suggested several remedies to overcome some of the associated problems experienced, relating to the distribution of fertilizers in the project area. More than four-fifths of the farmers were of the view that the distribution of fertilizer can be enhanced if it is distributed through market outlets maintained by farmer organizations. One-third of the farmers suggested that adequate quantities be supplied to the project market outlets (specially outlets managed by the institutional sector) and that provision be made to distribute it to farmers at concessional rates. Regarding the use of seed for OFCs, most farmers pointed out the following associated problems encountered by them;

(1) Lack of good quality seed (about 90% of farmers reponded).

(2) High prices in the private sector due to insufficient supply by the government sector (about 30%), and

(3) Not available sufficiently from the government sector sed centres, due to insufficient stocks (90%).

In order to overcome the deficiencies associated with seed distribution, for both paddy and OFC, farmers gave differing views. About 15% - 25% of farmers (varies according to survey locations) were of the view that, the government sector and registered farmers should increase the supply of seed and that they should directly supply seeds to farmers at concessional prices. As much as 50% - 80% of respondents (varies according to survey locations) pointed out that the

lower compared to the national average of 5.6. The high dependency ratio was a distinct feature of the sample population, as nearly 56% were dependants.

The high literacy rate generally observable in every part of Sri Lanka is also seen in the project area. As usual males have a higher literacy compared with females (98% and 94%). Cultivation was the main occupation of the project beneficiaries; 99% and 97% were reported to be farmers in the OIA and NIA respectively. By way of secondary occupations 10% of them were working as agricultural labourers and 13% were self-employed.

The size of the farms slightly varied according to the tracts. The farmland in the project was either lowland or highland, based on irrigation, elevation and soil types. An allotment consisting of 1.01 ha. of lowland and 0.20 ha. of highland was provided to each new settler. However, the size of operational allottments in the OIA varies considerably with tenure, with some farmers operating on rented, mortgaged or encroached lands. In the OIA nearly 73% of the farms are between 1.1 and 2.0 ha. in size. Assured water supply, high rates of input use and higher yields had attracted settlers to paddy cultivation in this area. Almost 64% of the lowland holdings in the OIA are between 1.5 and 2.0 ha. whereas more than 50% of highlands in this area are less than 0.5 ha. in size.

The cropping system can be broadly classified as "lowland" especially double cropping of paddy when water is available and OFCs during Yala season if sufficient water for paddy cultivation is not available. Highlands are cultivated with mixed crops, annual or seasonal crops or perennial crops. It was observed that almost all farmers in both areas (NIA and OIA) prefer to cultivate only paddy in their lowlands. The project authorities encourage the farmers in the NIA to cultivate paddy in Maha season and OFCs in Yala season as water in the tank due to climatic reasons is not always sufficient to irrigate all the land for paddy cultivation. It was observed that during Yala 1990, most of the project land had been fallowed. It was also found that most farmers had fallowed their land due to a variety of reasons such as (1) they did not have confidence to cultivate OFCs during Yala season with irrigation facilities on their lowlands, (2) lack of credit, unavailability of seeds, unavailability of machinery for land preparation, uncertainty of irrigation water availability etc., and (3) they did have little knowledge in cultivation of OFCs with irrigation facilities.

project authority should always monitor the seed prices and encourage the private sector to provide good quality seeds. Also the seed prices should be properly controlled.

In regard to the other inputs, viz. farm implements and draft power availability, most farmers thought that the non availability of these machinery was due to a short supply suring the peak periods of land preparation. Most farmers viewed that if the project authority encouraged farmer organizations to hire tractors (for a definite period) from neighbouring towns and in turn hire out to farmers in the project, delays in land preparation can be reduced to a considerable level, in the Maha season. Other suggestions, made by a considerable proportion of farmers included (a) breaking down of the cultivation calendar in to several stages, (b) introduction of early sowing, (c) use of buffaloes in addition to tractors, and (d) provision of credit for early land preparation.

CHAPTER SIX

SUMMARY, CONCLUSIONS, AND POLICY IMPLICATIONS

The present study is not merely aimed at an evaluation of the delivery system for small farmers (in short agriculture support service system for the project settlers) but also an attempt to make an assessment of the support service system, reflecting the existing situation. Small scale and small farmer development programmes based on agriculture, as well as the non-agricultural sectors including community services are the first attempts taken in this regard for development in this project area. A note worthy feature to bear in mind is that during our survey of farm households, in Yala season 1990, farmers reported that majority of them did not cultivate their land (in the new project area) in 1990 Yala and 1989/90 Maha seasons due to scarcity of water. The proportion of the farmers who used irrigation water, new inputs, credit etc. were insignificant. This situation is a result of scarcity of water during the two seasons. Therefore, the study is based on qualitative information regarding the agriculture support services in the project area.

The total support service system consisted of all the agriculture services prevailing in the project area including the coordinating function of the project authorities, extension services, credit facilities, irrigation management services, marketing facilities and management and organizational support for input supply etc. which is the concern of this study. It was inputs which are produced by multinational companies, and on the other hand low producer prices for agricultural products, have lead to low profit margins for the small farmers resulting in poor living conditions among them.

6.1 Summary and Conclusions

1. General Characteristics of the Project Beneficiaries

"Household" was the basic unit of investigation in this study. The average household size in the sample was 5.3 persons which was

2. Project Management

In the production stages in any irrigation project, the management can be powerless when the prime requirements for production are not made available. Due to unassured water supply to most of the paddy tracts of the project, specially in the NIA, the efficient use of capital, labour, machinery, other equipment and associated inputs were often not possible. These inefficiencies in the use of production factors along with other related issues had slowed down the expansion of areas cultivated with food crops in the project area. Most farmers were of the opinion that the project management sometimes tended to be biased (in water release, preparation of cultivation calendars etc.) due to the local political interference or powerful farmer gangs in the old scheme (traditional paddy area) of the project.

3. Agro-support Services

For increasing the productivity farmers should be supplied with certian services essential for the successful operation of their cropping programmes. Among these services, the supply of agricultural inputs, extension services, credit facilities, crop insurance, and marketing facilities are most important to the farmers. These services are made available to farmers by the respective government and private agencies in the project. Except for a few, most farmers explained that the AD system in this project area was being considerably improved during the past few years. According to most farmers, the problem areas constitute water supply, irrigation management, credit, non-availability of certified seeds from the DA, and marketing. Therefore, the project authority will have to look into these aspects during cropping seasons.

6.2 Policy Implications

1. The study particularly focussed attention on specific areas of project, such as an assessment of the managerial, administrative and organizational aspects, the need for proper project coordination, maintaining of contacts with farmer representatives, leaders, committee members, and in the preparation of all stages of the production plans. It was evident that the project authority had been criticised by the farmers, as the decisions taken by the project authority to deliver water to specific tracts were usually their own, and sometimes there may have been other political influences on such decisions, in spite of farmers' opinions and their concensus to share the water rationally and equally among the different tracts.

2. The study of the productivity changes in respect of paddy and field crops with special reference to services, irrigation supply and water management programmes has shown that there can hardly be remarkable changes in these indices compared with pre-project situations. In the OIA, cropping intensity had been increased remarkably, due mainly to regular water supply for paddy cultivation. Therefore, the project authority will have to give its first priority to make changes and improvements for the new settler farmers, in the NIA of the project.

3. An assessment of the success of the farmer extension strategy and the operation of the new advisory services revealed that extension services and farmer training activities are progressing astisfactorily. The project authority will have to launch a special extension programme for farmers who are expected to cultivate OFCs, in Yala. It was evident that most of these farmers were still less confident of the cultivation of OFCs specially in Yala with irrigation facilities.

4. The impact of infrastructural changes, particularly land settlement, in irrigation construction areas, with special reference to new scheme areas (Phase I and Phase II stages of the NIA and Old scheme areas), on employment changes and on farmer income, revealed that non-agricultural employment opportunities in various areas of the project. Therefore, the project authority will have to think about diversifying the farmer activities from agriculture to non agriculture, (when possible according to seasonal variations) at least during loan periods. There are also possibilities to use more manual labour for Phase II construction activities.

5. The assessment of people's participation in the development activities revealed that farmers' awareness and participation in new irrigation management organizations and farmer organizations was low. Most farmers distrusted such organizations due to certain procedures followed by the project authority for water release and preparation of the cultivation calendars during 1989/90 Maha and 1990 Yala seasons. Therefore the project authority will have to use every possible means to obtain farmer participation for the production plans.

6. Investigations relating to other services such as credit and marketing, their coverage, efficiency and effectiveness suggest that present levels of such facilities provided are moderate. Most farmers felt that though credit was provided through banks

and cooperatives, the amount of credit was insufficient to cover all the expenses. It was found that prices of fertilizers and other agro-chemicals had gone up. Labour costs had also increased. It was felt that credit should be provided in sufficient amounts and at the time it is needed.

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