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MAHAWELI ENTERPRISE DEVELOPMENT

MED/EIED PROJECT

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CONTRACT FARMING
IN
THE MAHAWELI AREAS OF SRI LANKA

by
Bechir Rassas

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Mahaweli Enterprise Development (MED)

MED is a project of the Mahaweli Authority of Sri Lanka and the United States Agency for International Development. The Enterprise, Investment and Enterprise Development (EIED) Division of the Mahaweli Authority is the MED implementing agency.

MED/EIED promotes investment and employment generation through the development of microenterprises and contract outgrower programs in the irrigated, dry zone areas managed by the Mahaweli Authority. At 12 locations, MED/EIED Business Centers provide technical, marketing, financial and training services to aspiring and existing entrepreneurs, farmer organizations and companies. The Centers also work with established financial and technical institutions, specialized line agencies, non-governmental organizations, private associations and others to facilitate the access of Mahaweli enterprises to their services.

Technical consultancy is provided by a consortium led by the International Science and Technology Institute, (ISTI).

PREFACE

From 900 in 1990, the number of contract outgrowers in Mahaweli areas rose to more than 7,000 in 1993. The development of outgrower programs has been one of the most successful EIED/MED services for generating market-based employment and crop diversification. While participation in outgrower programs is not appropriate for all settler farmers, it can be a viable strategy for raising the family incomes of farmers with the requisite skills, family labor and other attributes.

Outgrower numbers in 1994 declined to 6,200, a reminder that sustainability requires continuing, concerted efforts to meet mounting competition in international and domestic markets. This study identifies actions to be taken to increase the competitiveness of existing and new contract farming enterprises in Mahaweli areas:

- continue facilitating the establishment and management of the programs, particularly in their initial phases;
- improve the water management system;
- improve the physical infrastructural services; and,
- intensify support to local organizations, including farmer organizations and exporter associations.

The study comments on the importance of the policy environment. In the absence of appropriate trade, pricing and exchange policies, it would not be possible to maintain outgrower competitiveness, regardless of actions which might be taken in the Mahaweli areas. While not the subject of this study, the sustainability of outgrower programs also requires actions at the sectoral level.

Bechir Rassas is a senior agricultural economist at ISTI. His extensive experience in agricultural development includes studies on contract growing in other tropical countries and on the impact of trade policies on irrigated agriculture in Sri Lanka.

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LIST OF ACRONYMS

BM	Block Manager
EEC	European Economic Community
EIED	Employment, Investment and Enterprise Development
MARD	Mahaweli Agriculture and Rural Development (Project)
MASL	Mahaweli Authority of Sri Lanka
MED	Mahaweli Enterprise Development (Project)
RPM	Resident Project Manager
UM	Unit Manager
USAID	United States Agency for International Development

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The author is particularly indebted to Jayantha Jayawardena, whose knowledge of the Mahaweli has greatly contributed to the success of this assignment.

ABSTRACT

Two major objectives of this study are to: (1) develop an understanding of contract farming arrangements in the Mahaweli, including principal reasons for contracting, contract management, and the impact of contract farming schemes on rural and farm income; and (2) identify actions to be supported by the USAID-funded Mahaweli Enterprise Development (MED) project in its extension period to achieve sustainability of contract farming in the area.

Economic development in the Mahaweli has emphasized income and employment generation activities, a smallholder-oriented strategy, and greater reliance on the private sector. A major finding of this study is that contract farming has made an important contribution to each of those objectives. However, sustainability of these contributions will not be achieved without a concentrated effort to increase competitiveness of existing and new contract farming enterprises.

Sustainable interventions to increase competitiveness of the contract farming industry in the Mahaweli include efforts to: (1) facilitate the establishment and efficient management of contract farming schemes, especially at the early stages of the contract farming arrangement; (2) develop an improved water management system to accommodate contract farming crops in the Mahaweli areas; (3) improve physical infrastructural services of primary importance to contract farming; (4) intensify support to local organizations, including farmer organizations and exporter associations; (5) conduct a detailed study on other crops that may be cultivated under farming arrangements; and (6) reduce policy distortions that discriminate against contract farming crops.

EXECUTIVE SUMMARY

Two major objectives of this study are to: (1) develop an understanding of contract farming arrangements in the Mahaweli, including principal reasons for contracting, contract management, and the impact of contract farming schemes on rural and farm income; and (2) identify actions to be supported by the USAID-funded Mahaweli Enterprise Development (MED) project in its extension period to achieve sustainability of contract farming in the area.

Gherkins and tobacco are by far the most important contract farming crops in the Mahaweli. The combined share of contract farming crops other than gherkins and tobacco (measured in terms of participating growers) does not exceed 2 percent of total contract farming crops. The share of gherkins and tobacco is 59 percent and 39 percent, respectively. The number of contract farmers increased more than ninefold over the past four years, from less than 1,000 in 1989 and 1990 to more than 7,000 in 1993.

The scale of operation varies by crop, system and company. While the number of participating farmers is less than 100 for all minor contract crops and is as low as 8 for tomatoes, 13 for ash pumpkin and 21 for ornamental fish, gherkin and tobacco schemes average more than 300 and 1,200 farmers, respectively.

Contract farming is an institutional arrangement between farmers and buyers in which farmers supply produce according to specified production and management methods, while buyers retain responsibility for marketing operations and technical assistance in production.

Contract farming in the production and marketing of gherkins and tobacco in the Mahaweli is an institutional response to the imperfectly competitive nature of the market for the two commodities. Both processing and the export-oriented characteristic of the two commodities tend to require strict specifications on *quality characteristics* of the raw material supplied. The gherkin and tobacco companies are very grade-conscious. Their agreements with farmers often enumerate a set of criteria that allow the commodity to be classified and priced according to size, shape, color, texture, absence of blemish, and other specific requirements. The two commodities are also highly *perishable* as they cannot be stored in their raw form for an extended period after harvest without sustaining substantial or total loss in value. Together with the fact that the two commodities have a *high market value* per unit of weight in comparison with other crops such as foodgrains, these characteristics enable the contracting companies to obtain adequate returns despite the elaborate produce-collection system and the extensive technical-assistance package provided to farmers.

Private firms develop contractual links with outgrowers not only when the necessary commercial characteristics cannot be efficiently managed through spot-market price signals, but also when estate production is not cost-effective due to economic or managerial constraints. A central aspect of production contracting is the labor intensity of contracted crops. The high levels of labor use in gherkin and tobacco farming is due to both the complexity and high degree of labor intensity associated with the production and postharvest handling of the two crops. Labor is mobilized largely through domestic sources. Reliance on family labor enables farmers to avoid both the search for often scarce salaried labor and the cost of labor shirking. In addition, paying a salary on a regular basis to a hired worker may be in many cases beyond farmers' limited financial resources.

Another principal reason for a private firm to select smallholder contracting as a means of commodity procurement is that companies prefer the flexibility and easy-exit option that contracting offer over commercial farming. Limiting capital outlays by not investing heavily in land improvement and related infrastructure, such as irrigation and drainage facilities, provides the companies with greater flexibility to terminate their operations at a minimum loss should political or economic circumstances warrant such a decision.

Outgrower schemes in the Mahaweli are formal or informal arrangements between smallholders and a contracting company in which farmers receive inputs and technical assistance to produce a specific commodity subject to the tie-in provision that output be sold to the contracting company, which retains responsibility for marketing the commodity in the domestic or export market. Payments to farmers are based on fixed prices established at the beginning of the planting season.

While outgrowers are responsible for all on-farm operations, the company provides a wide range of extension services and inputs. These include planting material, fertilizer, and pesticides. Inputs distributed to farmers are assessed at harvest and recovered from the value of the commodities purchased by the company.

Since the effectiveness of the contract farming operation depends on the careful monitoring of input application and cultivation methods, the company has a strong commitment to extension. Field officers representing the company in each growing area are in regular contact with farmers, giving advice and ensuring that the appropriate production methods are followed.

Despite the existence of a number of difficulties associated with contract management in the two major outgrower crops in the Mahaweli, mistrust between contracting companies and farmers is not widespread. While performance of the contracting companies has been adversely affected by a number of practices ranging from tardy payment to downward revision of agreed upon prices, regarding farmer opportunism, the most critical issue is associated with "leakages," or farmers' propensity to sell produce outside of the contractual arrangement.

The extent of the leakage will depend on whether alternative markets exist. In the extreme case where there is only one buyer, such as in the tobacco outgrower schemes throughout Sri Lanka, leakages are nonexistent. At the other end of the spectrum, where a variety of alternative outlets exist (such as in certain tomato and passion fruit schemes outside the Mahaweli), leakages have been rampant and the contracting companies have had great difficulties in procuring supplies from farmers.

The ability of the tobacco companies to secure farmers' commitment is a direct result of the absence of alternative market outlets for tobacco. Most gherkin companies manage to maintain reasonably low rates of farmer default. However, most gherkin companies accept such losses as part of the cost of contracting. When a farmer defaults on contract provisions with a clear intention to defraud the company, the company will simply drop the farmer from the scheme in successive years after absorbing the loss.

A major impact of contract farming schemes has been the injection of increased income and employment opportunities into a newly settled area.

The labor intensity of most contracted commodities has generated a significant increase in the demand for on-farm labor. This result holds for both household and hired labor. Contract farming in the Mahaweli areas has also increased the demand for non-farm labor. This conclusion reflects the postharvest and processing requirements of the two major contracted commodities produced in the region.

It is sometimes argued that outgrowers in the Mahaweli have faced only one or a few active buyers in a market structure featuring monopsony, asymmetric information and considerable inequality in terms of bargaining power, and that such market characteristics have enabled the private companies to extract large economic surplus produced by peasant labor. This study notes that empirical evidence does not corroborate such a perception. In particular, available evidence suggests that net returns per ha for gherkins and tobacco are substantially higher than for most other crops grown in the area.

Contract farming has strengthened the private input supply system by making available to farmers a variety of planting material, fertilizers and agricultural chemicals. The contracting companies' extension resources have also been a welcome addition to existing government agricultural extension infrastructure in the newly settled areas.

Economic development in the Mahaweli has emphasized income and employment generation activities, a smallholder-oriented strategy, and greater reliance on the private sector. A major finding of this study is that contract farming has made an important contribution to each of those objectives. However, sustainability of these contributions will not be achieved without a concentrated effort to increase competitiveness of existing and new contract farming enterprises.

Sustainable interventions to increase competitiveness of the contract farming industry in the Mahaweli include efforts to: (1) facilitate the establishment and efficient management of contract farming schemes, especially at the early stages of the contract farming arrangement; (2) develop an improved water management system to accommodate contract farming crops in the Mahaweli areas; (3) improve physical infrastructural services of primary importance to contract farming; (4) intensify support to local organizations, including farmer organizations and exporter associations; (5) conduct a detailed study on other crops that may be cultivated under farming arrangements; and (6) reduce policy distortions that discriminate against contract farming crops.

CHAPTER 1
INTRODUCTION

1.1. BACKGROUND AND OBJECTIVES

The outgrower or contract farming[1] component of the USAID-financed Mahaweli Enterpris Development (MED)[2] project in Sri Lanka was part of the original project design. The technical anne of the project paper projected that half of the enterprises receiving assistance through MED pre investment programs would be contract farming operations. However, estimates of the number of job created through contract farming schemes (about 1,400) were well below realized potential. From les than 800 in 1989, the number of outgrowers increased to more than 7,000 by the end of 1993.

A report on the sustainabilty of MED activities (Huntington 1994) recommended a program to strengthei the project's Field Business Centres and its Rural Credit Program. The report also recommended tha EIED arrange for a study on contract farming in the Mahaweli as a first step in developing an action plai to enhance the sustainability of this component.

The major objectives of this report are to: (1) develop an understanding of contract farming arrangement in the Mahaweli, including principal reasons for contracting, contract management, and the impact o contract farming schemes on rural and farm income; and (2) identify actions to be supported by MEI in its extension period to achieve sustainability of contract farming in the project area.

1.2. METHODOLOGY

This study was conducted between 26 June and 28 July, 1994 in Sri Lanka. Research for the study was based on: (1) in-country review and cross-checking of available studies and documents; (2) interviews in Colombo with representatives of all the private companies involved in contract farming in the Mahaweli and Sri Lanka, as well as with MASL personnel and other knowledgeable individuals; and (3) fact-finding in the project areas, including participation in MASL field inspections of existing commercial farmers, and thorough interviews with company personnel at the field level, a number of participating farmers and local MED/EIED personnel at the Field Business Centres.

Two separate presentations of major findings and recommendations were made to USAID/Sri Lanka officials and EIED personnel in Colombo. This report incorporates further analysis as well as comments received during the two presentations.

The report provides an overview of the structure and performance of contract farming in the Mahaweli and Sri Lanka. Since the study seeks to identify the common technical, institutional, policy, and other factors which have contributed to the development of contract farming in the area, primary attention is given to common patterns and cross-cutting issues, rather than to the details of individual cases. Due to time limitations, many important dimensions of the contract farming industry in the Mahaweli could not

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[1] Outgrower and contract farming schemes will be used interchangeably throughout this report.

[2] MED is a five-year project to increase private-sector investment and employment in the large rural resettlement areas in the dry zone administered by the Mahaweli Authority of Sri Lanka (MASL). The project is implemented by the Employment, Investment and Enterprise Development (EIED) Division, a small MASL entity with responsibility for promoting private-sector development.

be investigated. A fuller understanding of the microeconomics of outgrower schemes as well as the institutional linkages among participants would require more data gathering and a wider range of interviews than was possible in the course of this study.

The report is divided into five chapters, including this introductory material. An analysis of the major characteristics of the contracted crops and the reasons for contracting is presented in Chapter 2. Contract management, including marketing channels, market participants and enforcement of contract agreements, is investigated in Chapter 3. Chapter 4 describes the impact of contract farming schemes on economic development in the Mahaweli areas. Major conclusions and recommendations are outlined in Chapter 5.

CHAPTER 2
CONTRACT FARMING SCHEMES IN THE MAHAWELI

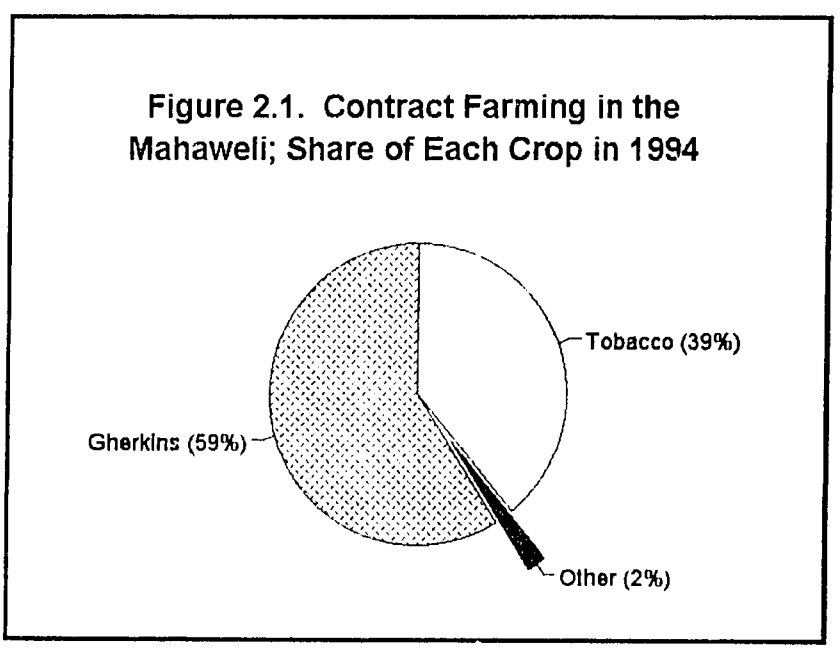
2.1. CONTRACTED CROPS AND SCALE OF OPERATION

As shown in Table 2.1 and Figure 2.1, gherkins[3] and tobacco are by far the most important contract farming crops in the Mahaweli. The combined share of contract farming crops other than gherkins and tobacco (measured in terms of participating growers) does not exceed 2 percent of total contract farming crops. The share of gherkins and tobacco is 59 percent and 39 percent, respectively. The balance is divided among tomatoes, chilies, seed paddy, ash pumpkin and ornamental fish (see Table 2.3).

Table 2.1. Contract Farming in the Mahaweli Areas, by Crop: Number of Farmers and Share of Each Crop, 1994

Crop	Number of Farmers	Share of Total (%)
Gherkins	3,709	59
Tobacco	2,435	39
Other	147	2
Total	6,291	100

Source: Annex B.



[3] Small cucumbers used for pickling

As illustrated in Table 2.2 and Figure 2.2, the number of contract farmers in the Mahaweli increased more than ninefold over the past four years, from less than 1,000 in 1989 and 1990 to more than 7,000 in 1993. After a relatively slow initial increase of 23 percent between 1989 and 1990 and 14 percent between 1990 and 1991, the number of contract farmers tripled in 1992 and more than doubled between 1992 and 1993. As of June 1994, the number of participating farmers exceeded 6,000, approaching the 7,000 reached in 1993.

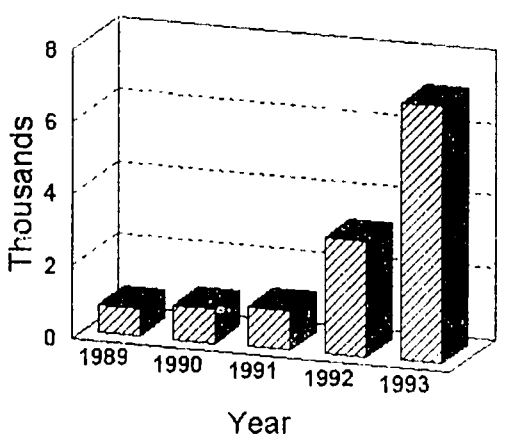
Table 2.2. Number of Contract Farmers in the Mahaweli Areas, 1989-94

Year	Number of farmers
1989	770
1990	945
1991	1,081
1992	3,201
1993	7,135
1994 (1)	6,291

Note: (1) as of June 1994

Source: MED survey of outgrower companies

Figure 2.2. Contract Farmers in the Mahaweli (1989-93)



The scale of operation varies by crop, system[4] and company (Table 2.3). While the number c participating farmers is less than 100 for all minor contract crops and is as low as 8 for tomatoes, 13 fc ash pumpkin and 21 for ornamental fish, gherkin and tobacco schemes average more than 300 and 1,20 farmers, respectively.

Table 2.3. Number of Contract Farmers in the Mahaweli by Company, Crop and System - June 1994

Company	Crop	Systems					
		B	C	G	H	UW	Total
Aequadolphins	Ornamental Fish		21				21
Ackensco	Gherkin			207			207
Chas P Haley	Gherkin					100	100
CPC Lanka	Ash Pumpkin				13		13
	Tomatoes	8					8
CTC	Tobacco				1148		1,148
CIC	Chilies				49		49
	Seed Paddy				56		56
Forbes Agric. Service	Gherkin		545	300			845
Intabex	Tobacco					1287	1,287
Heron Agroproducts	Gherkin					15	15
Pickle Packers	Gherkin			389	400		789
Sunfrost	Gherkin	400	300	375	278		1,353
Vanathavilluwa	Gherkin		175		225		400
Total		408	1,041	1,271	2,169	1,402	6,291

Source: MED survey of outgrower companies

Sunfrost is active in gherkin production in all Mahaweli systems, except Uda Walawe where another Hayleys Group subsidiary operates, and has the highest number of contract farmers (more than 1,300 in

[4] Irrigation management command area.

June 1994).[5] Forbes and Pickle Packers are in second place (about 800 farmers), followed by Vanathavilluwa, Ackensko and Chas P. Haley, with 400, 200 and 100 farmers, respectively. Tobacco production is divided almost equally between Intabex and CTC. Contract companies are more active in System H (more than 2,000 farmers), Uda Walawe (1,400 farmers), System G (about 1,300 farmers) and System C (about 1,000) and less active in System B (400 farmers).

2.2. MOTIVES FOR CONTRACTING

2.2.1. Spot Market Inefficiencies

Neo-classical economists define perfect competition as a model based on several assumptions, including: (1) homogeneity of the product (i.e., all units of the product for which a market exists are identical and there is no advantage for a buyer to choose among sellers); and (2) perfect information (i.e., all economic agents possess perfect knowledge of the market for the commodity in question).

In a perfectly competitive market, resource allocation is determined by the forces of supply and demand. These forces define the (spot) prices at which the commodity is most efficiently exchanged. Spot markets are less effective in coordinating supply and demand when one or more of the assumptions underlying the competitive model are violated.

When spot markets fail to provide adequate signals on complex supply and demand conditions, vertical coordination[6] may be used to integrate production and marketing. However, under a set of circumstances, the marketing company may be able to obtain the desired quantity and quality of supplies it seeks without investing in all farm inputs and management operations. Contract farming, an intermediate institution between the spot market system and vertical coordination, may under those circumstances be used to overcome the limitations of both systems.

Contract farming is an institutional arrangement between farmers and buyers in which farmers supply produce according to specified production and management methods, while buyers retain responsibility for marketing operations and technical assistance in production.

Contract farming in the production and marketing of gherkins and tobacco in the Mahaweli is an institutional response to the imperfectly competitive nature of the market for the two commodities. Much time and knowledge of market conditions are required by both sellers and buyers for efficient marketing. While identification of contract growers provides vital information to gherkin and tobacco buyers on available supply, details on future demand and the relevant markets for the two commodities are difficult to obtain for farmers. Farmers' decisions as to how much and what to produce are made more complex by the specific requirements that buyers have on crop variety and quality.

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[5] Sunfrost's outgrower program is carried out by 5,000 farmers on 1,250 acres throughout the country. Sunfrost and CPH Agroproducts (two subsidiaries of the Haileys Group of Companies), together account for more than 50 percent of gherkins exported from Sri Lanka and are the world's largest exporter of gherkins to the EEC and Japan.

[6] Vertical integration is an element of market structure in which a company carries out a number of successive stages (e.g., production and marketing) in the supply of a product, as opposed to operating only one stage — which is referred to as horizontal integration.

In effect, both processing and the export-oriented characteristic of the two commodities tend to require strict specifications on *quality characteristics* of the raw material supplied. The gherkin and tobacco companies are very grade-conscious. Their agreements with farmers often enumerate a set of criteria that allow the commodity to be classified and priced according to size, shape, color, texture, absence of blemish, and other specific requirements. For instance, even though a typical contract stipulates five grades and prices for gherkins based on diameter and shape (Annex E), up to seven grades may be specified (see, for instance, Gleason 1990a). Intabex, one of the two tobacco companies operating in Sri Lanka lists up to 18 grades ranging from X1 — minimum length 38 cm, thin bodied, spotty leaf from lower stalk position, without other blemish, even cinnamon color — to S1 — thin spotty but otherwise unblemished strips or scrap from lower stalk position of even cinnamon color with no stem or foreign matter — to Y2 — slightly mottled or yellow heavier bodied leaf with only moderate other blemish (Annex E).

The two commodities are also highly *perishable* as they cannot be stored in their raw form for an extended period after harvest without sustaining substantial or total loss in value. In the absence of adequate cooling facilities (as is presently the case in the Mahaweli), gherkins must be processed without delay after picking. Tobacco begins to deteriorate immediately and, unless cured, its value begins to decrease within hours of stripping.

Together with the fact that the two commodities have a *high market value* per unit of weight in comparison with other crops such as foodgrains, such characteristics enable the contracting companies to obtain adequate returns despite the elaborate produce-collection system and the extensive technical-assistance package provided to farmers.

Thus, contract farming is a production and marketing arrangement used by market agents when the price mechanism fails to ensure effective coordination of supply and demand. In this perspective, contract farming may be more effective in coordinating the market for selected export and processed commodities, but it is unlikely to be used in the production of basic food crops for which an adequate domestic market exists and/or for which quality and timing of supplies are less important to buyers.

In addition to evidence from other countries, the above analysis suggests that a number of crop characteristics limit the categories of commodities that can be produced under contract. In particular, the heterogeneity condition (due to the importance of the quality characteristics of the contracted crop) associated with the contract-produced commodities helps explain why contract farming is not prevalent (or when attempted has not been able to survive) in the production of staple commodities. For this reason, contract farming in Sri Lanka should not be viewed as a key to increased production of major agricultural commodities, including rice and many other food crops, but rather as an enterprise that may provide an added range of positive contributions toward efficiency in selected agricultural markets, particularly those associated with certain exports and/or commodities for processing.

Private firms develop contractual links with outgrowers not only when the necessary commercial characteristics cannot be efficiently managed through spot-market price signals, but also when estate production is not cost-effective due to economic or managerial constraints. Cost-effectiveness may reflect savings from not having to manage production.

2.2.2. Reduced Management Costs

2.2.2.1. Reduced General Management Requirements

Company representatives in Colombo and field-level staff state that qualified managers are not always available locally. Competent managers willing to move to production areas are generally not willing to relocate without a financially attractive incentive package. Even though all of the gherkin and tobacco firms are financially able to train future management and technical personnel or hire managers with demonstrated experience, many companies feel that such an investment is not always warranted, especially in the face of other difficulties associated with large-scale farming. Chief among these are constraints involving labor management issues.

2.2.2.2. Reduced Labor Management Costs

A central aspect of production contracting is the labor intensity of the contracted crops. As shown in Table 2.4, two to three times more labor is used in tobacco than in paddy production. Labor use is even higher for gherkins (five to six times than for paddy).

Table 2.4. Labor Use for Selected Crops, Maha 1992/93

Crop	Labor (days/ha)		
	Family	Hired	Total
Paddy			
Polonnaruwa	49	54	103
Anuraradapura	94	28	122
Kalawewa	72	40	112
System B	80	60	140
Average	74	45	119
Tobacco (1)	—	—	292
Gherkins (2)	587	111	698

Notes: (1) Hanguranketha-Walapane area, Maha 1988/89; (2) System B.

Sources: Computed from data in Gleason, Lalith and Weerasinghe 1993, and Department of Agriculture 1994. Data for tobacco provided by the Mahaweli Environment Unit.

Such high levels of labor use in gherkin and tobacco farming is due to both the complexity and high degree of labor intensity associated with the production and postharvest handling of the two crops. Tobacco is labor-intensive in virtually all phases of the crop cycle. In addition to the heavy labor investments associated with the construction of a curing barn and the arduous task of preparing wood for curing,[7] tobacco farming requires continuous crop monitoring, particularly during reaping and curing.

[7] Fuelwood is still used in flue-cured tobacco processing by many farmers.

Tobacco is usually ready for reaping about eight weeks after planting, and the reaping process usually lasts for about eight weeks. However, due to low altitude and high temperature, Sri Lanka experiences faster ripening and, consequently, a shorter reaping period. It is important that reaping be as even as possible and that only leaves at a similar stage of ripeness be collected together. Reaping under-ripe leaves will result in leaf curing too dark or green in color. If the leaves are left to become over-ripe on the plant, yield will be reduced and disease incidence will rise. If leaves start drying on the plant, they will bleach under sunshine or stain and spoil by rain.

Such close monitoring is not needed only during the reaping period. To ensure that the right color and chemical composition are obtained, certain conditions must be met during curing. If the drying process is too long (e.g., because of overpacking of leaves or continuous rain), the tobacco will be darker than desired and rot can set in. If the drying process is too short, the leaf will have a yellow color. In both cases quality will be dramatically lower.

Curing starts during the Maha rains, causing barn rot unless reapings are placed far apart on the wire and sufficient space is left between wires. When the rains stop, most of the areas dry very quickly and middle and upper reapings face the danger of fast curing. To avoid severe quality losses under dry weather conditions, farmers must cover the sides of the shed with cadjans and grass mats and water the barn floor regularly.

Labor requirements in terms of both quality and quantity are equally high in the production of gherkins, especially during harvest. As can be seen in Annex G, gherkin production is an elaborate process characterized by a high degree of labor intensity during all phases of the crop cycle. After ridge and drain preparation is completed, fertilizer is applied and planting is carried out. Due to plant vulnerability to pest and disease, a variety of fungicides and pesticides are applied throughout the three months of the plant cycle. Weeding is carried out once every week and training creepers to the trellies at least once every four days. Watering occurs every two to three days after planting, and daily during the last two months. Such a strict irrigation schedule illustrates the importance of important water management issues that will be discussed in a subsequent chapter.

The tightly controlled gherkin production cycle is more apparent in the regimented labor use during harvest. Since gherkin grades are determined by the size of the fruit with the smallest fruit (generally less than 2 inches in length) commanding the highest price, daily harvesting is essential. For this reason, inexperienced farmers usually obtain a high price for only a low percentage of the harvested crop. For instance, less than 20 percent of the harvested gherkins were considered first or second grades during Maha 1989/90 in System B (Gleason 1990a). The central importance of labor in the production process is illustrated by farmers' complaints that the gherkins grew at such a rapid pace that they were unable to harvest the smallest and most valuable fruits. Not surprisingly, one study (Adikaramge et al. 1993) found that the family size of gherkin growers in the sample surveyed was higher than the national average. The same survey documented that no less than eight full-time laborers were required per acre of gherkins cultivated. Indeed, one of the criteria used by the contracting company when selecting gherkin growers is the availability of family labor.

Labor is mobilized largely[8] through domestic sources. Reliance on family labor enables farmers to avoid both the search for often scarce salaried labor and the cost of labor shirking. In addition, paying a salary on a regular basis to a hired worker may be in many cases beyond farmers' limited financial resources. However, a limited amount of hired labor is usually necessary for most growers to supplement family labor, especially at critical points of the farming season when overlapping claims on the labor of household members are highest. Labor-allocation conflicts among crops often arise not only between the traditional crop (paddy) and the contracted commodity, but also among non-traditional, generally labor-intensive, crops.[9]

Labor intensity of the contracted crops may help explain why these crops are not grown on "commercial farms".[10] Two labor mobilization issues are particularly relevant in this regard. First, owing to the labor intensity of the contract crops, the costs of production on commercial farms will depend in large part on hired labor. The critical importance of labor in the production process raises the possibility of labor shirking under the wage relationship. As emphasized by all contracting companies interviewed for this study, the complexity and labor intensity of growing gherkins and tobacco make it considerably difficult to produce on large farms using hired labor, due to the insurmountable difficulties associated with labor monitoring and the high costs of applying an effective labor-incentive system.

Second, the unit cost of production on a commercial farm may, in many instances, exceed the unit price that many smallholders are willing to accept for producing the commodity under consideration. The differential is due to the fact that, for a given technology, productivity of family labor is generally higher than that of hired labor, and that unpaid family labor is generally valued by farmers at a level below prevailing wage rates[11]. For this reason, contracting is seen as a cost-effective solution to the wage-based alternative.

2.2.3. Reduced Risk

A third principal reason for a private firm to select smallholder contracting as a means of commodity procurement is that companies prefer the flexibility and easy-exit option that contracting offers over commercial farming. Limiting capital outlays by not investing heavily in land improvement and related infrastructure, such as irrigation and drainage facilities, provides the companies with greater flexibility to terminate their operations at a minimum loss should political or economic circumstances warrant such a decision. Investments on commercial farms involved in contract crops will be restricted in such

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[8] More than 80 percent of total labor used in gherkin production is from domestic sources (see Table 2.4 above). Detailed data on labor use in tobacco production could not be obtained. However, interviews with tobacco farmers and the tobacco companies indicate that labor used in tobacco production is mostly from domestic sources.

[9] Some Mahaweli farmers interviewed for this study grew paddy as well as gherkins, tobacco, and onions -- three of the most labor-intensive crops -- during the same season.

[10] "Commercial farms" in the Mahaweli are 10 to 20-ha farms set up on MASL land by private investors in the early 1990s. Investors were to be given leases for up to 30 years. Emphasis was to be placed on export-oriented farming, including nucleus farms and outgrower schemes. It was expected that such farms would pioneer the adoption of high-value crops with export- and employment-generation potential in the Mahaweli.

[11] It is interesting to note in this context that a widely accepted explanation of the often-encountered negative relationship between farm size and productivity in many developing countries is small farms' easier access to reservoirs of cheaper family labor.

circumstances to what is necessary to support research trials and/or small and simple processing facilities and equipment.

Economic circumstances constraining higher investment include those associated with uncertainty and risk due to the market volatility characterizing many of the high-value export crops. Companies' reluctance to make the needed investment may also be due to the continuing concern that MASL may reverse its commercial-farming promotion policies to prevent the emergence of large income disparities in rural areas. Such concerns have been heightened by a perceived discrepancy between proclaimed policies and actual implementation. As part of MASL schemes to promote commercial farming in the Mahaweli, potential investors were to be given long-term leases to 10- to 20-ha farms earmarked for this purpose. However, with rare exceptions, the Mahaweli authorities have accorded "annual permits" to cultivate the land, but no long-term titles were granted.

CHAPTER 3
MANAGEMENT OF THE CONTRACT

3.1. PROCUREMENT ARRANGEMENTS

Outgrower schemes in the Mahaweli are formal or informal arrangements between smallholders and a contracting company whereby farmers receive inputs and technical assistance to produce a specific commodity. These arrangements are subject to the tie-in provision that output be sold to the contracting company, which retains responsibility for marketing the commodity in the domestic or export market.

Acreage specifications (generally 1/4 acre for gherkins and 1/2 acre for tobacco)[12] are designed to keep the production process within the resource limitations of the participating farm household, particularly in relation to labor. Outgrowers lend to the production process land and management. However, since the labor intensity of the contracted crops is a central characteristic of production contracting (see Chapter 2), labor inputs represent the most fundamental contribution by farmers.

Payments to farmers are based on fixed prices established at the beginning of the planting season. Output is sold at a predetermined price calculated according to the company's perception of the state of the market at next harvest based upon current price levels.[13] For each commodity, prices vary by grade. Grades are meticulously described according to size, shape, color, texture, and other equally specific requirements (see Annex F).

While outgrowers are responsible for all on-farm operations, the company provides a wide range of extension services and inputs. These include planting material, fertilizer, and pesticides. Inputs distributed to farmers are assessed at harvest and recovered from the value of the commodities purchased by the company. Inputs are provided in kind rather than in cash partly because the input supply system is insufficiently reliable, particularly in the more remote areas. Imperfections in the local input markets are particularly important for certain inputs such as planting material and chemicals due to the companies' need to acquire the appropriate crop variety from growers and/or the fact that some of the inputs are crop- and even variety-specific. Also, being a fungible good, cash can easily be diverted to other crops or simply be used by recipients to pay household expenses.

Additional loans, repayable in three yearly installments, are provided to flue-cured tobacco farmers to construct curing barns. No such loans are provided to burley tobacco farmers. Unlike flue-cured tobacco, burley tobacco is cured by air in a tobacco shed. A burley tobacco shed is a simple shed constructed with low-value timber and has a cadjan-thatched roof requiring limited capital investment.

It is interesting to note that in the event of adverse weather conditions or outbreaks of disease or any other factor not ascribed to a deliberate effort to defraud the company, farmers are forgiven for all or part of the loans.

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[12] The resettlement scheme in the Mahaweli has generally provided farmers with 1 ha of lowland for farming and 0.25 ha of highland for homestead.

[13] This pricing formula is used in the production of gherkins and tobacco throughout Sri Lanka. For certain other schemes, such as those involving tomato and passion fruit production outside the Mahaweli, contracts specify an alternative formula based on a going price within some agreed upon range.

Viewed from this perspective, contract farming in the Mahaweli is an institutional response t imperfections in the credit system. Similar to most Mahaweli farmers, local gherkin and tobacco grower are small-scale producers with limited financial resources. The great majority of these farmers are unabl to mobilize operating capital through formal credit channels either because there are no credit program available to them or because the transaction costs of obtaining a loan are high relative to the size of th needed loan. Inputs supplied through credit, with their value explicitly subtracted from the crop paymen made by the contracting company, provide an alternative arrangement to farmers. Thus, a major functio of contract farming in the Mahaweli is the institution's ability to alleviate imperfections in the credi market by assuming the risk of lending to participating farmers. This conclusion suggests that a numbe of public interventions in the credit market — more specifically, those designed to guarantee loan provided by the contracting companies to participating farmers — may not be desirable, as they may undermine one of the foundations of the contract farming arrangement.

Since the effectiveness of the contract farming operation depends on the careful monitoring of inpu application and cultivation methods, the company has a strong commitment to extension. Field officers representing the company in each growing area are in regular contact with farmers, giving advice and ensuring that the appropriate production methods are followed.

Even though most gherkin and tobacco farming operations are carried out directly between farmers and company field staff, contract farming in the gherkin sector is brokered through agents in certain areas. To reduce the supervision and other transaction costs related to finding many small farmers and furnishing them with inputs and technical assistance, companies do not contract directly with individual producers in those areas. Instead, an agent is identified to serve as an intermediary between the company and the participating farmers. Although a number of variations can be detected, the agent is typically a trader or a farmer/trader who earns a commission paid by the company for his recruiting and coordinating services.

The agent also performs an agricultural extension role by virtue of his function as a titular contractor who is responsible for the collective performance of the contract producers under his supervision. Such a function entails a high degree of involvement in technical assistance activities induced by the necessity to interact with farmers to keep them abreast of quality requirements and related needs in terms of physical and management inputs. It is interesting to note that, due to the higher degree of management intensity required in the tobacco outgrower schemes, no independent agents acting as intermediaries between farmers and the contracting companies can be identified in any of the tobacco contract farming schemes.

Contracting through agents may be preferred in certain gherkin farming schemes because it may offer advantages over direct arrangements with growers. First, by cultivating the trust of both farmers and the contracting company, agents may bring an element of trust between two parties who do not know each other. Generally, an agent has sufficient experience, bargaining skills and social standing to effectively bring together sellers (farmers) and buyers (the contracting companies) from different locations and social settings. Second, contracting with small farmers through an agent may, in certain instances, enable the contracting company to circumvent the prohibitive costs of accounting for all inputs and outputs of each grower. Third, in the event of default the company may not have any leverage on farmers to recuperate its losses. Recruiting through the agent, who must show judgement in selecting growers, reduces the incidence of opportunistic behavior associated with contracting with a multitude of small farmers.

Gherkin growers generally attend to the handling and transportation of their own produce to ensure that it reaches the nearest collection station in optimum condition. Since most local farmers do not possess any mechanized means of transportation, collection stations are conveniently located within 2-3 kilometers of each producing site. The fresh gherkins are transported by the contracting company from its collection stations to a processing center located within the growing area. The processed gherkins are shipped to Colombo where they are exported.

Due to the relatively large number of participating farmers in tobacco schemes, cultivation supervisors providing a link between field officers and management are responsible for the presentation of the crop and the grading prior to buying. Each production area is the responsibility of an area manager who ensures that production targets and overall quality are maintained.

When the cured tobacco is ready to be sold, farmers bring the tobacco in bundles to the various purchasing centers, by prior appointment. Even though the company may provide transportation to farmers in the more remote areas, the vast majority of farmers are responsible for delivering their tobacco to the buying stations. These are located in growing centers throughout the area.

The tobacco purchased from farmers is initially dispatched to stripping factories located in major centers, where cleaning and stripping (removing the stem of the tobacco) are performed. Hand-stripped tobacco is dispatched to the main factory for redrying and storage prior to blending, re-drying and prizing.

3.2. ENFORCEMENT OF THE CONTRACT

It must be emphasized from the outset that despite the existence of a number of difficulties associated with contract management in the two major outgrower crops in the Mahaweli, mistrust between contracting companies and farmers is not widespread. Firms operating in a specific region do not perceive farmers as opportunistic individuals ready to offer their produce to any purchaser providing them with the best terms at any one time despite their agreements with the contracting company; nor do producers view company representatives as unscrupulous and unreliable individuals willing to break their agreements with farmers under any pretext.

Interviews with farmers reveal that performance of the contracting companies has, nonetheless, been adversely affected by a number of practices ranging from tardy payment to downward revision of agreed upon prices. One study (Adikaramge, et al. 1993) reports, for instance, that the reputation of one of the contracting companies was severely damaged during the month of September 1992 when gherkin prices were unilaterally revised downwards after the season had gotten underway. There is consensus, however, that such occurrences are uncommon. A more frequent practice has been the questionable weighing and quality evaluation criteria applied to farmers' produce by certain company representatives or agents.

Regarding farmer opportunism, the most critical issue is associated with "leakages," or farmers' propensity to sell produce outside of the contractual arrangement. Interviews with company representatives indicate that certain farmers consciously accept a contract for the purpose of obtaining inputs, while planning to sell a portion of their harvest outside the contract at a higher price.[14] The

[14] A buyer outside the contract is willing to pay a higher price because no allowance is made in such a price for repayment of inputs. It should also be noted that the differential between contract and alternative prices may be accentuated by a given company's unfair practices in relation to quality evaluation criteria or payment periods.

contracting companies justifiably argue that farmer opportunism in all its forms reduces the advantages of contracting because it raises procurement costs while lowering the prospects for obtaining the desired quantity of produce.

The extent of the leakage will depend on whether alternative markets exist. In the extreme case where there is only one buyer, such as in the tobacco outgrower schemes throughout Sri Lanka, leakages are nonexistent. Although leakages remain manageable in the gherkin industry due to the limited number of companies involved in the gherkin trade, under a set of circumstances, the commitment between the contracting company and its farmers will be readily broken. To match supplies with orders at the last minute, one practice followed by certain exporters has been to give one of their agents or employees a target quantity of gherkins to meet within or outside existing contracts. The need to meet such targets has induced certain field personnel or agents to infringe on other companies' arrangement with farmers.

At the other end of the spectrum, where a variety of alternative outlets exist (such as in certain tomato and passion fruit schemes outside the Mahaweli), leakages have been rampant and the contracting companies have had great difficulties in procuring supplies from farmers. In those instances, market forces have made contract enforcement impossible, and the contracting company has lost control over the crop. This phenomenon is prevalent in certain seasons when local market prices reach many times those negotiated by the contracting company, thus offering income opportunities to farmers that far outweigh any consideration of a guaranteed price. A key factor in these cases is whether the processing company can establish an effective input supply system, a reliable agricultural extension service, an efficient produce-collection system, and other arrangements that provide farmers with sufficient incentives to maintain a durable relationship with the factory, rather than sell on the open market.

These and other findings demonstrate that the success of contract farming arrangements is not only an outcome of the inherent characteristics of certain crops, but is also heavily dependent on the marketing system for those crops. For instance, while a negligible proportion of fruits and vegetables are grown under contract in Sri Lanka, this proportion is significantly higher in other countries where the processing industry is at a later stage of development. Conversely, while only a low proportion of tobacco is produced under contract in the United States, for instance, all tobacco production in Sri Lanka is performed under contract. Such differential is due to the fact that while the tobacco industry in the United States is organized around a highly competitive marketing system, each of the two tobacco varieties in Sri Lanka is sold through a single marketing channel that offers no opportunity for contract leakage.

Experience from Sri Lanka and other countries suggests that many of the commodities produced under contract are not in demand at the local level, for contracted commodities with high regional and local demand raise special problems of leakages that may undermine the relationship between growers and contracting firms. Though not a necessary condition to the success of outgrower operations,[15] most contract farming schemes are oriented toward export markets. Whether the commodity is produced for sale in the domestic or export market, a narrow and short marketing channel based on a very limited number of exchanges in the region prior to shipping the commodity to national or export markets will reduce the scope for opportunistic behavior by farmers.

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[15] For instance, even though all flue-cured tobacco is produced under contract in Sri Lanka, the crop is processed for domestic consumption.

Many of the schemes examined for this study use formal written agreements signed by both a company representative and the participating farmer.[16] Formal agreements are most prevalent in the early years of the contract farming schemes. Less formal arrangements may replace the written agreements in subsequent years as the two parties become familiar with each other and as participating farmers gain knowledge of the farm technology associated with the contracted crop.

A written contract is a somewhat complex document containing a number of stipulations, including: acreage specifications; grades and prices; the precise time of day at which produce must be delivered; transportation arrangements; procedures for deducting inputs received by farmers from the value of produce supplied to the company; and farmer's commitment not to sell produce to competing buyers.

Whether these contracts are written or oral, no legal recourse is available to the contracting company (at least to recover the value of any inputs delivered to farmers) when farmers default on their commitment. It must be noted, however, that even if the contract were legally binding, few companies in Sri Lanka would wish to be perceived as trying to seize small farmers' assets. Against such a political and social background, contracts are simply viewed as a formal mechanism that lays the foundation for the mutual trust, common interest and commitment between the company and the participating farmer.

The ability of the tobacco companies to secure farmers' commitments is a direct result of the absence of alternative market outlets for tobacco. Most gherkin companies manage to maintain reasonably low rates of farmer default (a 10 percent default rate was cited by two of the companies interviewed for this study). However, most gherkin companies accept such losses as part of the cost of contracting. When a farmer defaults on contract provisions with a clear intention to defraud the company, the company will simply drop the farmer from the scheme in subsequent years after absorbing the loss.

Experience from the Mahaweli has shown that joint responsibility of loan repayment does not compel individual farmers to repay their loans. For instance, buy-back contracts have been used for a number of crops under a USAID-funded project. Buy-back arrangements are contracts between a private company and farmer organizations. Under these arrangements, a local bank extends credit for agricultural inputs to farmer organizations, not to individual farmers. The private company purchases the crop and deposits the value of output into the farmer organization's account. After deducting all or part of the loan, the bank pays the balance to the farmer organization, which will be responsible for distributing the proceeds to the participating farmers. However, the joint responsibility created by participating in the marketing scheme through farmer organizations has not prevented farmers from selling outside the buy-back arrangement and from defaulting on loans received. For instance, significant leakages occurred among cantaloupe farmers during Yala 1993, as produce was sold to non-participating buyers to bypass the bank's repayment mechanism (Gleason and Lalith 1993).[17]

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[16] Three sample contracts, two for gherkins and one for tobacco, are provided as Annex E.

[17] In addition to their limited role in reducing contract leakages, buy-back contracts have at least two other potential shortcomings. *First*, they reduce the prospect for privatizing extension services for selected crops. As documented in one report (Gleason and Lalith 1993), buy-back arrangements have required unsustainable levels of project interventions in the area of extension. Extension services, an integral part of the agreements between farmers and the contracting companies in other schemes, have been entirely project-funded under the buy-back arrangements. The sustainability of this effort is all the more questionable because the extension program is so intensive that 35 project-supported extension personnel were assigned to less than 20 ha. *Second*, a number of inputs have been purchased and distributed by the project, thus bypassing the private local supply system.

It is often argued that low default rates are a function of fairness and price competitiveness offered to farmers. However, a company's success in achieving low default rates is critically dependent on a number of other factors, including the company's ability to monitor contract farmers. The contracting companies' field officers play a central role in this regard.

In addition to his role in providing extension services to participating farmers and in monitoring potential supplies through frequent estimates of the standing crop, the field officer makes regular visits to farmers both to protect the company against the fungibility of credit provided by the contracting company[18] and to monitor whether part of the crop is sold outside the contract.[19]

The need to monitor farmers' opportunistic behavior in certain schemes may help explain the differential in the farmer/field-officer ratio among the various tobacco and gherkin contract farming schemes. While a tobacco field officer supervises a higher number of outgrowers (generally about 250 outgrowers on 50 ha) due to the absence of competing buyers, the ratio of participating farmers to field officers is much lower in most gherkin schemes.[20] This ratio is even lower in the more established schemes (as low as 10:1 in some schemes visited) partly because transactions that are repeated on a regular basis enhance the company's knowledge of farmers' economic behavior, thus reducing the need for more intensive monitoring by the contracting company.[21]

A variety of other mechanisms are often used by agents to improve contract enforcement. The sale of farm output to the agent is encouraged not only through provision of the inputs needed to produce the contracted crop as prevalent in all contract farming schemes, but also through an array of other incentives such as extending loans not related to the production of the contracted crop.[22]

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[18] Credit provided to farmers can be easily diverted to other crops or simply to household consumption. .

[19] Interviews conducted for this study indicate that no inputs are provided to small-scale tomato growers due to unmanageable contract leakages. Even though limited extension services are provided to the participating farmer, these are primarily used to assess available supplies to the factory.

[20] For instance, Sunfrost employs 50 extension officers for a total of 5,000 farmers (Gunaratne 1994), for a ratio of 100:1.

[21] Since the need for intensive extension support is greatest in the early years of the scheme when farmers are learning new skills and technological packages, it is evident that the field-officer/farmer ratio will also decline as outgrowers become more familiar with the new farm technology associated with the contracted crop.

[22] These and similar interlinkages reflect the complexity of certain agents' gaming behavior to secure farm output from participating farmers. One study describes such complexity as follows: "the relationship between the farmers and the agents is not merely a farmer-buyer relation. The agent's role varies from purchasing gherkins to providing loans to the growers. It is accurate to say that many agents act as the leaders as well as close friends of the growers." (Adikaramge, et al. 1993)

on employment in the Mahaweli, especially in certain areas such as Uda Walawe where surplus labor averages 36 percent of the total days available.[25]

Table 4.1. Cost of Fertilizer and Chemicals for Selected Crops, Maha 1992/93

Crop (1)	Cost of Fertilizer and Chemicals	
	Rs./Ha	% of Total Cost
Gherkins	17,586	58
Tobacco (2)	16,924 (3)	___
Brinjal	11,720	51
Chilies	10,892	50
Okra	10,220	52
Red Onions	7,590	40
Paddy		
Polonnaruwa	4,799	___
Anuraradapura	2,647	___
Kalawewa	5,836	___
System B	4,147	37
Average	4,357	___
Greangram	1,733	37
Cowpeas	850	17

Notes: (1) System B (Maha 1992/93), except when otherwise indicated;
(2) Hangurankete-Walapane area, Maha 1988/89;
(3) 1988-89 figure adjusted for inflation (average of 20 percent per year).

Sources: Computed from data in Gleason, Lalith and Weerasinghe 1993, and Department of Agriculture 1994. Data for tobacco provided by the Mahaweli Environment Unit.

It is sometimes argued that outgrowers in the Mahaweli have faced only one or a few active buyers in a market structure featuring monopsony,[26] asymmetric information and considerable inequality in terms

[25] Two important caveats should be put forward when examining the impact of contract farming schemes on surplus labor in the Mahaweli. First, estimates of surplus family labor are made more complex by seasonal peaks, where labor surplus is significantly lower (6.5 percent in Uda Walawe during the Yala harvest and the Maha planting). Second, there appears to be an element of structural unemployment (a mismatch in the labor market) in the Mahaweli areas that may help explain the reported labor shortages amid reported unemployment (Finucane 1994).

[26] A market situation in which a single buyer confronts many small suppliers.

of bargaining power, and that such market characteristics have enabled the private companies to extract large economic surplus produced by peasant labor. However, empirical evidence does not corroborate such a perception.

Table 4.2. Net Returns for Selected Crops, Maha 1992/93

Crop (1)	Net Returns (2) (Rs./ha)
Tobacco (3)	78,784
Gherkins	67,450
Red Onions	46,472
Chilies	43,329
Brinjal	28,752
Okra	22,184
Paddy	
Polonnaruwa	8,685
Anuraradapura	12,288
Kalawewa	25,145
System B	17,068
Average	15,796
Greangram	12,444
Cowpeas	8,553
Baby Corn (3)	5,302

Notes: (1) System B, except when otherwise indicated;
(2) figures do not include family labor;
(3) Yala 1993.

Sources: Computed from data in Gleason, Lalith and Weerasinghe 1993, Gleason and Lalith 1993, and Department of Agriculture 1994.

Table 4.2 demonstrates that net farm income[27] has increased significantly through participation in contract farming schemes. At slightly less than Rs. 70,000, net returns per ha for gherkins are 12 to 13 times higher than for baby corn, 7 to 8 times higher than for cowpeas, and 3 to 8 times higher than for paddy. Net returns for gherkins are even higher (1.5 to 2 times) than for red onions and chilies — two highly protected crops in Sri Lanka. Net returns for tobacco are higher than for any other crop, including gherkins.[28]

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[27] Net income is defined here as the difference between total revenue (gross income) and total costs, not including family labor.

[28] Data on returns *per labor day* could not be obtained for all the crops under consideration. A more complete data set would have provided more meaningful comparisons, especially that returns per labor day in paddy production, as well as wage rates in the Mahaweli, have reportedly at best kept up with inflation.

Several studies corroborate the results summarized in Table 4.2. One such study (Pach 1991) evaluated approximately 600 farmers growing gherkins for Forbes Agricultural Services. Growers with gross income from gherkin production higher than income from paddy production numbered 523 (or 87 percent of total farmers), while more than 80 percent of outgrowers earned a higher net income per acre from gherkins than from paddy production.

A survey carried out in five major gherkin growing areas (Kurunegala, Puttalam, Anuradhapura, Matale and Ratnapura) revealed that one-half of the respondents earned more than Rs. 3,000 per month[29] and that most of the earnings were due to gherkin production. Only about 25 percent of income was obtained from all other crops combined (Adikaramghe et al. 1993).

Taking into consideration the crop cycle, net income from gherkin production is even higher than indicated by the results outlined above. Since a gherkin crop takes 45 days to mature, a grower can produce three crops in one year, while only two paddy crops for instance can be grown during the same period. Income from gherkin production is also steadier due to the fact that the crop is harvested daily over a relatively long period and that payments to farmers are made on a regular basis (generally every 10 days).

In assessing the impact of contract farming on farm income in the Mahaweli, reference should be made to the wide variation in the net amounts paid by the contracting companies to individual farmers. There is evidence (Annex H and Pach 1991) to indicate that a large proportion of farmers earn less than the average income derived from gherkins, suggesting the need for further investigation to identify factors (such as availability of family labor, water availability, land quality, and better access to extension services) associated with the higher income farmers.

Another important impact of contract farming schemes in the Mahaweli has been the injection of additional cash into the local economy generated by the loans provided by the contracting companies to flue-cured tobacco farmers for barn construction. According to CIT records, approximately 3,000 barns have been constructed to date in Anuradhapura, Polonnaruwa and System C, for an amount averaging Rs. 20,000 to Rs. 80,000 for each barn.

It is analytically difficult to separate changes attributable to contract farming as distinct from changes initiated by other economic and social forces preceding or running parallel to contractual relations. However, available evidence suggests that the income increase generated by the contract farming schemes has favorably affected the Mahaweli economy. Interviews conducted for this study suggest, for instance, that increased employment and income opportunities have enabled many farmers to build permanent structures on their farms and start small businesses. Cash injected into the local economy has also stimulated the demand for consumer goods and services, with beneficial effects on other sectors of the local economy.

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[29] Average per capita income is estimated at about Rs. 13,000 in the Mahaweli areas, and at Rs. 25,000 in Sri Lanka. In System B, the average 1992 net farm income was about Rs. 19,000. Assuming that net farm income is 60 percent of total income and an average household size of 4.5, average per capita income would amount to about Rs. 7,000. (For a more detailed discussion on income level in the Mahaweli, see Finucane 1994.)

4.2. TECHNOLOGY TRANSFER

Contract farming has strengthened the private input supply system by making available to farmers a variety of planting material, fertilizers and agricultural chemicals. The contracting companies' extension resources have also been a welcome addition to existing government agricultural extension infrastructure in the newly settled areas.

Private sector contributions to the local agricultural extension system has been driven by the contracting companies' need to transfer to farmers a number of new technologies and skills necessary to the successful implementation of the contract farming effort. These include a wide range of technologies and skills related to water management, pest and disease control, postharvest quality control, use of improved plant varieties, and use of chemical fertilizers. For instance, certain companies have provided farmers with a detailed handout indicating cultivation tasks on a daily basis, including specific names of chemicals to be applied against specific pests and diseases.

These and other improved farming practices might not have been adopted without an ongoing contractual framework. As illustrated by the large number of smallholders in the Mahaweli who have mastered novel and relatively complex crop technologies, contract schemes have been a conduit through which new cultivation practices and postharvest techniques have been rapidly introduced. Such a favorable outcome has been possible because these schemes have been designed in such a way that farmers themselves must carry out all production and most postharvest tasks.

As the vast majority of outgrowers cultivate other crops in addition to the contract farming crop, many of the new technologies associated with the contracted crops have been used in the cultivation of non-contracted crops. Interviews with farmers suggest that since much of the new technology is not so specialized that it applies only to a single crop, the new farming practices have spread to a wider segment of crops and producers. For instance, judicious use of fertilizer and other agricultural chemicals and the use of proper spacing and ridging techniques in contract farming production have led many farmers to apply such techniques to certain traditional crops, as well as to a variety of fruits and vegetables such as onions and chilies.

Such a spillover effect has also been possible because investors have recognized the vital role that extension has to assume if technologies are to be successfully introduced. Since private contract farming schemes have been unable to rely on existing government extension services for technology transfer (either because government extension agents are too few in number or because they have little or no training in the production of the contracted commodities), contract extension systems have consisted entirely of private agents with crop-specific training.

Two essential aspects of an agricultural extension system are the quality of the support provided and the frequency with which it is given. For this reason, the extent to which a contracting company is willing to invest in such services has generally been a primary determinant of its success among participating farmers.[30] In one study (Adikaramge et al. 1993), about 60 percent of farmers interviewed cited extension as the most important factor for selecting a company relative to all other factors, including sorting and grading (25 percent), reliability (13 percent), and even price (47 percent).

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[30] The most successful gherkin contracting company, Sunfrost, employs 50 agricultural extension officers supervised by 20 managers, all of whom are graduates with a knowledge of agriculture and agrochemistry (Gunaratne 1994).

CHAPTER 5
TOWARDS A SUSTAINABLE CONTRACT FARMING STRATEGY IN THE MAHAWELI

Economic development in the Mahaweli has emphasized income and employment generation activities, a smallholder-oriented strategy, and greater reliance on the private sector. A major finding of this study is that contract farming has made important contributions to each of those objectives. However, sustainability of these contributions will not be achieved without a concentrated effort to increase competitiveness of existing and new contract farming enterprises.

To provide remunerative returns to both producers and the private companies, the contract farming industry must be competitive in two ways. First, it must be competitive with other industries within Sri Lanka in mobilizing resources needed for its functioning. A contract farming enterprise will be competitive in this context if it enables participants to obtain higher returns relative to those obtained from alternative sources.[31] Second, the enterprise must also be competitive in absolute terms against similar industries from rivals in other countries. Determinants of competitiveness range from physical, technical and social infrastructure, such as transport and communication infrastructure and postharvest technology, to macroeconomic and sector policies, such as trade, price and exchange rate policies.[32]

Competitive advantage is derived from inherent attributes, but can be generated through government subsidies or protection. It must, however, be noted that subsidies and protective policies are not sustainable due to their high costs to the agricultural and national economy (see Section 5.6 below).

Two basic categories of competitive advantage which an industry may have vis-a-vis its international rivals can be identified: a differentiated product commanding premium prices and filling profitable market niches; and lower costs of production and delivery enabling the industry to underprice competitors and/or obtain higher returns for a given price level. In the absence of any agricultural commodities with an established niche in the international market, Sri Lanka's competitive advantage must be promoted through lower costs of production and marketing.

Sustainable interventions to increase competitiveness of the contract farming industry in the Mahaweli include efforts to: (1) facilitate the establishment and efficient management of contract farming schemes, especially at the early stages of the contract farming scheme; (2) develop an improved water management system to accommodate contract farming crops; (3) improve infrastructural services of primary importance to contract farming; (4) intensify support to local organizations, including farmer organizations and exporter associations; (5) conduct a detailed study on other crops that may be cultivated under contract farming arrangements; and (6) reduce policy distortions that discriminate against contract farming crops. These six areas of intervention will be examined in turn below.

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[31] On a geographical level, the extent to which resources in the contract farming sector will be attracted into the Mahaweli will depend on whether returns are more remunerative in the Mahaweli relative to other regions in Sri Lanka.

[32] Exchange rate policies merit particular mention in relation to competitiveness in international markets. A high value of the currency in international exchange means that it is difficult to export. For example, if the exchange rate were (over)valued at Rs. 35 (instead of, say, Rs. 45) to the U.S. dollar, exporters selling $1 of a Sri Lankan commodity in world markets would be able to buy only Rs. 35, rather than Rs. 45, of that commodity in Sri Lanka - thus reducing Sri Lankan exporters' ability to compete with rivals in other countries.

5.1. FACILITATE THE ESTABLISHMENT AND EFFICIENT MANAGEMENT OF CONTRACT FARMING SCHEMES IN THE MAHAWELI

Competitiveness of the Mahaweli in attracting private investors may be enhanced through alternative forms of assistance that would reduce the contracting companies' transaction costs in managing their outgrower schemes. A major component of the transaction costs incurred by the contracting companies is managerial costs. These include the costs of information (particularly those involving the identification of a suitable location and the screening and selection of growers), negotiation of exchange agreements with participating farmers, and monitoring to ensure that those agreements are complied with.

MASL can support the companies' efforts to minimize transaction costs by facilitating the establishment and efficient management of contract farming schemes in the Mahaweli. The generation of a relationship based on reciprocity, mutual interest and trust between farmers and the contracting companies should be a major objective of this support.

It is anticipated that such support will be particularly effective since the institutional infrastructure is more developed in the Mahaweli than elsewhere in Sri Lanka, due to the numerous resettlement programs that have been recently implemented in the Mahaweli systems.

MASL efforts to promote successful contract farming schemes will not be fully realized without close cooperation between EIED and the Mahaweli Economic Agency (MEA). MEA's Block Managers and Unit Managers[33] will indeed play a vital role in helping the companies identify suitable contract farmers. The assistance of the Resident Project Manager and the Block Manager will be necessary to identify suitable land and buildings for the companies to establish their offices, stores, brining yards and other processing facilities.

Field interviews reveal that while senior MASL officials are generally supportive of private-sector investments in agriculture and agribusiness, many lower-level staff, especially at the field level, are only eager to question the integrity of private-sector companies and cast a shadow over their activities. Significant efforts will, therefore, be needed to increase awareness of MEA field staff that promoting outgrower schemes in their project areas will be beneficial to both the contracting companies and participating farmers.

Effective support from EIED and MEA field staff is not likely to be forthcoming without the active commitment of the most senior managers in Colombo. Since commitment notified through letters or circulars to field personnel is not likely to be sufficient, support should be demonstrated through active participation and monitoring.

To achieve this objective, it is recommended that pre-seasonal meetings be organized in potential contract farming areas. The Managing Director or the General Manager of MEA could chair the first of these meetings. Later meetings could be chaired by the Resident Project Managers as the required systems

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[33] Units and Blocks are used in the Mahaweli for administrative purposes. A Unit Manager is given responsibility for all activities connected with the post-settlement of approximately 100 families. The Block Manager is responsible for about 20 units consisting of 2,000 to 2,800 ha. A number of senior staff assist the Block Manager through the Unit Manager, including the Irrigation Engineer, the Agricultural Officer, the Land Officer, the Community Development Officer, the Marketing Officer and the Administrative Officer.

begin to fall into place. Participation of representatives of the companies involved in the contracting farming activities would be essential. The Director of EIED and a MED representative would also attend, along with staff from the relevant Field Business Centre. Other key field staff would be invited, including Block Managers, Unit Managers, as well as Agricultural Officers and Field Assistants operating in the targeted area.

Meetings would be convened in the project areas during preparation for the cultivation season. Topics for discussion may include: number and scale of outgrower schemes envisaged; identification of areas where water is not a major constraint; identification of suitable farmers; identification of input-distribution and produce-collection centers; and any other assistance that may be requested by the contracting companies.

Arbitration and settlement of dispute may also be needed later in the growing season, especially during the first year of the contract farming program where a certain degree of confusion regarding quality, grade and other parameters may arise among farmers with no experience growing the contracted crop. Playing a facilitating role by intervening in negotiations between growers and the contracting companies to work out differences between the two parties would help remove misunderstandings when they occur. The Field Business Centres may play a leading role in this regard.

In preparation for field meetings, an initial meeting, chaired by the Director of EIED, should be held in Colombo on a yearly basis. Participants may include: the Managing Director, General Manager and Senior Agronomist, MEA; EIED Deputy Managers; representatives of the companies; representatives of the Planning & Monitoring Unit, MASL; and representatives of the Water Management Secretariat.

At this meeting, the companies may be informed of MASL commitment to assist investors willing to initiate or expand contract farming activities in the Mahaweli and the forms of assistance that MASL is willing to provide.

It is recommended that the Director of EIED appoint a Contract Farming Coordinator who would be in charge of all coordination and monitoring activities, including: serving as liaison with the contracting companies throughout the year; convening meetings as required; collecting reports and data from the field; and reporting on progress and remaining constraints.

As detailed in a previous chapter, contract-farming schemes in Sri Lanka exhibit complex organizational configurations. The appropriate structure will depend upon a variety of factors, including the characteristics of the specific commodity under consideration, the marketing system for that commodity, and a host of other technical and institutional factors. It is, therefore, extremely important to emphasize that MASL assistance should be limited to facilitating the establishment and efficient functioning of contract farming schemes. In effect, MASL support would be both inefficient and counterproductive if interventions were designed with an intent to regulate, or otherwise provide favorable treatment to particular institutional arrangements and discriminate against others.

5.2. DEVELOP AN IMPROVED WATER MANAGEMENT SYSTEM TO ACCOMMODATE CONTRACT FARMING CROPS IN THE MAHAWELI AREAS

The irrigation systems in the Mahaweli are designed to cater to the cultivation of rice paddy, the dominant crop in Sri Lanka. The flexibility of individual farmers in cropping and water control is, as a result, constrained by a water delivery system based on the continuous flow required for rice.

In contrast to rice, contract-farming crops are more difficult to irrigate due to the special techniques they require in water management, including water quantity, timing and spacing of irrigation according to soil moisture content, soil depth, and growth stage. Difficulties associated with the inherent characteristics of the contracted crops are exacerbated by the fact that many non-paddy crops are generally cultivated in isolated patches in the irrigated tracts. An ideal solution would be for a group of farmers to cultivate the contracted crops close to a particular source of water (a reservoir or a canal). However, getting an appropriate group of farmers to cultivate the contract farming crop at a desired site will not always be possible. Since companies tend to select farmers according to their experience in the cultivation of non-paddy crops, it is difficult to identify a sufficient number of experienced farmers within a specific location.

These and similar constraints point to the conclusion that appropriate steps should be taken to respond to the water management implications that are likely to arise from growing contract farming crops. In particular, ways should be sought to cater to variable water demand so as to match water requirements with crop needs, soil types, and topographical land classes. Reducing the limitations of the irrigated facilities and drainage capabilities of the Mahaweli will improve system flexibility. The enhanced flexibility will enable participating farmers to make decisions on quantity of water to be applied, as well as dates for land preparation, fertilizer and chemical applications, and other suitable contract farming practices. It should also be noted that increased flexibility of the irrigation system will help achieve crop diversification — a major agricultural development objective in Sri Lanka.

5.3. IMPROVE INFRASTRUCTURAL SERVICES OF PRIMARY IMPORTANCE TO CONTRACT FARMING OPERATIONS

Although agro-climatic considerations and the availability of water resources will usually dictate the companies' choice of production site, there may be several other factors that influence their decision. Chief among these is the availability of suitable physical infrastructure.

Even though private companies engaged in contract farming activities in Sri Lanka generally do not lack the capacity to make relatively large investments in infrastructure, the scale of their enterprises in any given region will not justify such an investment. To minimize the cost of input distribution, crop collection, commodity processing and other marketing costs, a typical company will therefore tend to select areas with an adequate infrastructural base.

There is consensus among the contracting companies that the Mahaweli is at a disadvantage relative to other areas in Sri Lanka in terms of physical infrastructure.

Interviews with the private companies operating in the Mahaweli reveal that the lack of an adequate telecommunication network, particularly the lack of a functioning telephone system, is a major factor in the companies' reluctance to invest in the Mahaweli. In the absence of telephone facilities in the area, one company (Agrotech) had to invest in a radio telecommunication arrangement under which it pays a rental fee of Rs. 42,000 per year, in addition to communication charges. It is evident that an improved telephone network would be instrumental in reducing communication costs between company field personnel and front office management in Colombo. Due to the export-oriented nature of the dominant contract farming crops, the companies' flexibility in responding to opportunities in the international market would also be greatly enhanced with improved access to more timely and up-to-date information on field operations.

Due to the perishability of the contract farming crops grown in the Mahaweli, processing facilities must be located in the production areas. Hence, access to land with reliable power and water supplies is of vital importance to investors. A major challenge for most companies has been to secure building facilities with adequate water and power supply, and when access to such facilities has been possible, MASL approval of long-term leases has been both non-transparent and time consuming.

Interviews with the private companies operating in the Mahaweli also suggest that the road network is the least important constraint to more efficient marketing. Given that domestic transport costs do not represent a large component of the marketing margin for the commodities under consideration, the road network in the Mahaweli is not significantly different in terms of quality and density from the road network in other regions.

The above findings suggest that priority should be given to assisting potential investors in their efforts to secure title to land and building facilities with power and water supply and an adequate telephone system.

5.4. INTENSIFY SUPPORT TO LOCAL ORGANIZATIONS

Viable local organizations are critical to the development of contract farming. For the purpose of this study, an organization is defined as a group of economic entities who agree to act collectively in order to further their joint and own private interests. Associations can be formed by farmers, processors, domestic traders, exporters or any other category of market agents to undertake joint activities and common practices. Farmer organizations and exporter associations merit particular mention in relation to contract farming in the Mahaweli.

It has been argued in Chapter 3 that the institutional arrangements underlying contract farming schemes in the Mahaweli are designed to minimize transaction costs between farmers and the contracting companies. Farmer organizations can lower transaction costs for the contracting companies by disseminating information about production and marketing requirements among farmers, but also by providing information on the competence of prospective participants. A farmer organization can, in addition, be used as a low-cost channel of information due to its ability to synthesize knowledge about the creditworthiness of its members. Equally important, just as they can lower transaction costs for non-members by settling disputes or otherwise bringing social pressure to bear on offending members, farmer organizations can serve to exercise or counter market power for members through collective negotiations with the contracting companies.

As detailed in several studies (e.g., Gleason 1991; Kumar, et al. 1994), many farmer organizations have entered into agreements on behalf of members to produce a variety of crops (gherkins, soybeans, cantaloupes, chilies and okra) for a variety of private-sector companies (Pickle Packers, Sunfrost, and CIC) and public-sector institutions (the Ministry of Health) throughout the Mahaweli (Ellawewa, Damina, Vijjayabapura, Maguldamana, Mahadamana, and Kulukele).

However, there is agreement among observers that despite the significant progress that has been made, only a limited number of farmer organizations possess sufficient organizational capability to carry out their functions. For this reason, it must be noted that while the model developed under schemes involving farmer organizations may apply to many other situations, alternatives arrangements based on direct negotiations with farmers through company staff or agents are likely to work far more effectively in the foreseeable future.

Strong local organizations can also be used by the public sector to channel technical support to the contract farming institution. A typical public-sector intervention to strengthen contract farming in the Mahaweli is provided by the technical assistance channeled to the gherkin industry through the MED project in the area of adaptive research.

In 1993, the gherkin exporting companies formed the Gherkin Exporters' Association to request technical assistance from EIED. The request for assistance resulted in a visit made by a plant breeder and an extension specialist with expertise in gherkin production at North Carolina State University. Three priority areas were identified: improving spraying techniques; introducing bees for pollination; and varietal screening. A major conclusion was that yield stability could be achieved by growing few recommended varieties within each locality instead of relying on a single variety throughout the area.

While accepting the responsibility for implementing all tasks related to spraying and pollination, the Gherkin Exporters' Association sought to share the cost of research on varietal screening. It was then agreed that all research costs, including input costs, training, technical assistance and data collection costs, were to be shared by MED and the exporters on a 50-percent basis. Colombo University was to participate in the research effort through greenhouse experimental work.

A number of positive features in this intervention as briefly outlined above should be noted. First, contracting companies in Sri Lanka have not been satisfied with the quality and applicability of agricultural research conducted by public institutions in the high-value sector. However, private companies have primarily relied on available research results and could not develop their own programs. The difficulty stems from the inability of a potential investing firm to benefit sufficiently from research in which it has any proprietary interest to justify investment. This difficulty is due to the well-known fact that research has public-good properties in that it is difficult to exclude parties benefiting from its results without contributing to its costs. By supporting private research in the gherkin industry, MED intervention has succeeded in internalizing certain externalities,[34] thus allowing for private provision of a public good.

Second, the companies' willingness to finance the research effort ensures that research will remain focused on what the industry needs and that the results will be disseminated rapidly.

Third, MED's intervention has provided an institutional mechanism linking the private sector with the scientific and technical community in Sri Lanka. An important feature of this institution-building effort is that it has set the stage for Colombo University to be more responsive to future private-sector needs by expanding its capacity to conduct research on a broader range of agricultural commodities.

Fourth, collaboration among the contracting companies in the area of agricultural research may have paved the way to other interventions with mutual benefits to all parties. Based on interviews with officials from several companies, future cooperation may include product promotion, which at present is unlikely to be a worthwhile effort for any individual company, but may be profitable for the whole industry if costs could be spread and profits internalized. Collaboration among the contracting companies may also be expanded to developing a program to promote and protect the industry's reputation for quality and reliability in the face of increased competition with foreign suppliers.

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[34] An externality may be defined as the case where an action of an economic agent affects (positively or negatively) another economic agent in a way that is not reflected in the marketplace. Using the example of agricultural research as outlined above, internalization involves the process of making all benefiting parties contribute to its cost.

5.5. CONDUCT A DETAILED STUDY ON OTHER CROPS THAT MAY BE CULTIVATED UNDER CONTRACT FARMING ARRANGEMENTS

To identify other crops that may be cultivated under contract, it is recommended that an in-depth study be conducted on the production and marketing system for other crops with characteristics similar to those found in crops presently grown under contract, as well as for a selected number of fruits and vegetables suitable for processing. Processing potential merits particular emphasis in selecting the crops to be investigated, since experience in Sri Lanka, as well as worldwide evidence, indicate that most agricultural commodities produced under contract are destined for processing.

Potential commodities to be studied include baby corn, asparagus, tomatoes, and cashews. Baby corn may be a particularly promising crop for several reasons, including a strong export market potential. It must, nevertheless, be noted that when the crop was introduced to System B during Yala 1993, it was confronted with serious production problems, including relatively low profitability (see Table 4.2) generated by low yield.

Asparagus offers a number of features similar to those found in gherkins, such as perishability, export potential, and the limited opportunities for leakages due to the insignificant size of the domestic market for the commodity.

Even though tomato production has considerable potential in the Mahaweli, it has yet to be demonstrated that the crop can be grown in sufficient quantities and of a quality that will meet processing standards. There are a number of other constraints that will make cultivation of tomatoes under contract a complex undertaking, not the least of which is the difficulty of developing a business relationship with a large number of outgrowers[35] and programming their planting and harvesting schedules to provide consistency of supply to the factory.

Interviews with Agrotech officials indicate that the company is interested in producing large quantities of cashews under contract with Mahaweli farmers. However, preliminary observations suggest that such outgrower schemes would be confronted with major challenges originating from a sizable domestic market in which strong competition among buyers may render spot market transactions more efficient than contract farming arrangements.

In addition to identifying crops suitable for contract farming cultivation, a major objective of the proposed study should be the development of an action plan to implement conclusions and recommendations. To achieve sustainability of project interventions, potential areas of support identified in this study should build on the model developed by MED in channelling technical assistance to the gherkin industry in the area of adaptive research.

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[35] A MED study estimates that more than 1,000 outgrowers are needed to ensure adequate supplies of tomatoes to a processing factory

5.6. REDUCE POLICY DISTORTIONS THAT DISCRIMINATE AGAINST CONTRACT FARMING CROPS

There are currently a number of commodities subject to quantitative restrictions in Sri Lanka, including wheat, wheat flour, maize, big onions, red onions, chilies and potatoes. Imports of the protected crops are authorized only in case of crop failure or during seasonal shortages.

As detailed in a previous chapter, many of the protected crops have now become among the most profitable crops cultivated by farmers. As a consequence, chilies and onions, for instance, are now two of the most widely cultivated crops in the Mahaweli, as they have become the first choice among farmers wishing to diversify from paddy.

Several reports have highlighted this result. For instance, investigating the crop combinations that would maximize farm income given a set of resource constraints, research studies have found that the optimal solutions obtained from linear programming analysis generally feature cropping patterns where protected crops such as onions are prominent (Gleason 1990; Bandara 1993).

In addition to the fundamental and well-known costs associated with trade restrictions,[36] worldwide research indicates that pricing policies have a vital impact on crop mix. Since farmers generally grow more than one crop, as one crop price increases, producers will tend to shift labor and land into that crop and out of alternative crops. Thus, by artificially improving the cost-competitiveness of the protected crops, import restriction policies in Sri Lanka have reduced the incentive to invest in alternative activities, including contract farming operations. Adopting more crop-neutral pricing policies would enhance efficiency in the agricultural sector, stimulate the production of existing and new contract farming crops, with beneficial effects on many farmers, the contracting companies and the national economy.

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[36] Briefly stated, the economic costs of protection include direct resource allocation costs and indirect costs that derive from the nature of the import restriction and its administration. In addition to these static efficiency losses, high price policies for the protected crops will artificially induce investment into the production of the protected crops and hence divert resources that may be more valuably invested in the production of alternative commodities. Consequently, the static efficiency losses would be compounded into more significant dynamic efficiency losses through progressive distortions in the crop composition and cost structure of the agricultural economy.

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ANNEX A. NUMBER OF CONTRACT FARMERS IN THE MAHAWELI, BY SYSTEM (1991 - 1994)						
Year/System	**B**	**C**	**G**	**H**	**UW**	**Total**
1991	410	577	---	---	94	**1,081**
1992	870	567	---	540	1212	**13,189**
1993	660	1566	803	1728	2378	**7,135**
1994 (June, 1994)	408	1041	1271	2169	1402	**6,291**
Source: MED Survey of Outgrower Companies						

ANNEX B. NUMBER OF CONTRACT FARMERS IN THE MAHAWELI, BY CROP (1991 - 1994)				
Crop/Year	**1991**	**1992**	**1993**	**1994**
Gherkin	766	989	3,408	3,709
Tobacco, Soya bean, Maize		1,641	3,207	2,435
Chilies		100	60	49
Seed Paddy			80	56
Baby Corn		135	380	
Ash Pumpkin				13
Tomatoes				8
Ornamental Fish				21
Total	**1,081**	**3,189**	**7,135**	**6,291**
Source: MED Survey of Outgrower Companies				

ANNEX C. NUMBER OF CONTRACT FARMERS IN THE MAHAWELI, BY CROP, SYSTEM AND COMPANY (1992-93)

Company	Crop	In 1993					Total 1993	Total 1992
		B	C	G	H	UW		
Ace Processing	Banana, Okra, Baby Corn					120	120	
Aitken Spence	Gherkin		231			193	424	323
CIC	Baby Corn	260					260	135
	Seed Chili				60		60	100
	Seed Paddy				80		80	---
CTC	S. bean. Maize, Tobacco		235		1148		1,383	540
Forbes	Gherkins		300				300	243
Sunfrost	Gherkin	400	300				700	360
Heron	Gherkin					30	30	---
Pickle Packers	Gherkin			803	140	211	1,154	237
VVL	Gherkin		500		300		800	240
Inta Bex Lanka	Tobacco					1824	1,824	1011
TOTAL		**660**	**1,566**	**803**	**1,728**	**2,378**	**7,135**	**3,189**

Source: MED Survey of Outgrower Companies

ANNEX D. GHERKIN CULTIVATION IN SRI LANKA: NUMBER OF FARMERS AND AREA CULTIVATED

Company	Mahaweli		Non-Mahaweli		Total		Farmers	
	1992	1993	1992	1993	1992	1993	1992	1993
	Acre						Number	
Forbes International Services	150	90	750	1,410	900	1,500	3,600	6,000
Sunfrost Ltd.	75	100	1,312	1,750	1,387	1,850	5,500	7,400
Pickle Packers & Growers	---	125	---	400	---	525	---	1,312
Vanatha Vineard	---	50	---	200	---	250	---	1,000
Aitken Spence	---	105	1,143	1,160	1,143	1,265	4,570	5,060
Total	**225**	**470**	**3,205**	**4,920**	**3,430**	**5,390**	**13,670**	**21,772**

Source: Kumar, et al. 1994

ANNEX E
SAMPLE CONTRACTS BETWEEN THE CONTRACTING COMPANIES AND PARTICIPATING FARMERS

(Translated from Sinhalese)

E.1. SAMPLE CONTRACT 1: GHERKINS

AGREEMENT

This agreement made and entered into by and between the Forbes (Ceylon) Limited incorporated under the Companies Act of 1982 having its registered office at 46/38, Navam Mawatha, Colombo 2 (hereinafter called and referred to as the "Company" in the context, so requires or admits here and includes the Forbes (Ceylon) Limited, its successors and assigns by its authorized officer ..... of the one part and ..... of ..... (hereinafter called and referred to as the cultivator) which terms of expression when the context, so requires or admits and includes the said ..... witnesseth as follows:

where the said company has engaged a cultivator for the cultivation of ..... acres limited for one season for the purpose selling out the produce of the said cultivation to the said company and whereas the company has agreed to buy the produce depending on the quantity in terms of the producers hereinafter referred to .....

This agreement witnesseth as follows:

1.1 The outgrower agrees to cultivate gherkins for and on behalf of the company commencing from ..... to ..... in an extent of ..... acres for only one season.

1.2 The outgrower undertakes not to sell the aforesaid produce to any other organization or agent other than the said company.

1.3 The produce will be selected in quantities determined by the company and the company reserves the right to make changes in consultation with the outgrower.

1.4 The produce collected per day has to be handed over on the same day at the scheduled time.

1.5 The outgrower has to pay the workers employed for the cultivation of gherkins, and the outgrower further agrees to identify to the company any statutory payment or payment of any other nature due to the said employees.

1.6 The outgrower agrees to the deduction of expenses relating to gherkin seeds and fertilizer supplied by the company from the income generated by the produce supplied to the company.

1.7 In the above, transport facilities are provided by the company and the outgrower agrees to pay Rs. ..... per kilogram of gherkin transported.

1.8 The company agrees to pay the outgrower on the agreements and conditions herein laid down in lieu of produce supplied to the said company.

The prices to be paid during the season are:

a) Rs. 22/- per kilogram
b) Rs. 14/- per kilogram
c) Rs. 60/- per kilogram
d) Rs. 6/- per kilogram
e) Rs. 1/- per kilogram

1.9 The company reserves the right to totally or proportionally reject the produce discovered to be unsuitable in quality and quantity by the project manager.

1.10 The company reserves the right to reject or refuse the produce which was not given on the same day of harvest at the scheduled time.

1.11 The requirements of gherkin seeds and the fertilizer will be decided by the company and the same will be supplied accordingly to the outgrower.

1.12 If the outgrower fails to abide by the terms and conditions of this agreement, the company reserves the right to terminate the agreement.

2. In the event of any notice to be served on either party, under this agreement a letter sent under registered cover to either party by the other is deemed to be legal service of such document.

3. Subject to the article 1.12 of this agreement, the agreement can be terminated by giving seven days notice by each party to the other.

In witness whereof the parties to this agreement have hereby set their hands to this agreement and to another of the same.

Signed at ..... on this ..... day, ... month of .....

.....

Project Manager
for Forbes (Ceylon) Limited

E.2. SAMPLE CONTRACT 2: GHERKINS

Branch Office
Medarata Farmers Planning Unit
26, Kurunegela Road Junction
Dambulla
Tel.: 066-8283, 066 8286

Ekensco Growers and
Exporters Limited
126 - B7, Y.M.B.A. Building
Colombo 1

AGREEMENT FOR THE GROWING OF GHERKINS

Authorized Area: .....

Code Number: .....

1. Full Name of Grower .....

   Address: .....

   Identity Card No. .....

2. Full Name of Grower .....

   Address: .....

   Identity Card No. .....

3. Extent of land in cultivation: .....

4. The net value of the goods issued: Rs. .....

I do hereby opt to grow gherkins according to the conditions and recommendations laid down by the above mentioned company with effect from ..... month ..... 1994.

a. All the produce except the wastage will be bought by the company in accordance with the standards laid down by the company.

b. The company will provide the seeds, fertilizer, manure and agro-chemicals. The value of these inputs will be deducted from the value of the produce.

c. Free advice will be provided by the field officers of the company.

d. The crops should be harvested according to standards established by the company.

e. The gherkins have to be handed over to the provincial purchasing centre before 6.00 a.m. daily.

f. The company is not required to buy the spoiled or diseased gherkins.

g. It should be noted that the growers are liable if the agreement is violated by selling the products to buyers or agencies during the season. If so, we are not bound to take the responsibility for their products or compensation thereof

h. Payments are made every ten days

i. The fullest cooperation should be extended to the outgrower during the period of growing.

j. The outgrower should take care of the crop and take the harvested gherkins to the collecting centre without exposing it to water.

k. The standards and prices of gherkins are given below. These prices are valid for only three months. The selection of gherkins is only done according to the standards of the company.

Grade	Price Rs./cts	Extent Diameter	Number of fruits/kg
1st	26.00	16 millimeters	160 - 300
2nd	12.00	21 millimeters	60 - 160
3rd	8.00	28 millimeters	30 - 60
4th	3.00	45 millimeters	10 - 30
5th	1.00	The crooked and more than one-inch long	

Both parties should abide by the rules and regulations imposed by the Divisional Manager, Bakamuna Office of the Sri Lanka Mahaweli Authority.

Both parties are entrusted with the powers to take legal action if the outgrower or the company engaged in gherkin cultivation act in contrary to the above conditions.

.....
Signature of the farmer

.....
Signed on behalf
of the Company

.....
Date on which the
document was signed

at ..... Sudarsaha Hall, Somik Junction, Track 19, Kottapitiya

E.3. SAMPLE CONTRACT 3: TOBACCO

CULTIVATION OF AIR-CURED TOBACCO FOR INTABEX (LANKA) LIMITED

I, _____ wish to register as a tobacco grower in your company and would like to cultivate air cured cigarette tobacco under the terms mentioned below during the period from _____ _____ to _____ in the _____ acre land which is legally vested in me.

1. From the Company:

   (a) I agree to accept the seedlings @ Rs _____ per 1000 seedlings and fertilizer @ _____ per kg or any prices fixed by the Company for seedlings and fertilizer in due course which will be determined by the Company according to the acreage.

   (b) I know that all instructions concerning planting, growing and curing of tobacco are given free of charge at the appropriate time and I agree to adhere to and carry out all such instructions.

   (c) I agree to accept the quantity of insecticides and pesticides determined by the Company for the prices fixed by them.

   (d) The seedlings will be planted on my land with not more than _____ plants per acre with a gap of _____ cm. I am aware that the cured tobacco will be purchased by the Company for prices stated in paragraph (2) below.

2. To the best of my knowledge:

   (a) The Company will purchase tobacco for the following rates if the tobacco is within the grades mentioned.

X1 - Rs....	C3 - Rs....	T2 - Rs....
X2 - Rs....	C4 - Rs....	S1 - Rs....
X3 - Rs....	B1 - Rs....	S2 - Rs....
X4 - Rs....	B2 - Rs....	S3 - Rs....
X5 - Rs....	B3 - Rs....	ND - Rs....
C1 - Rs....	B4 - Rs....	Y1 - Rs....
C2 - Rs....	T1 - Rs....	Y2 - Rs....

   (b) Tobacco leaf should meet the measurement requirements described with not more than 15% moisture content. Leaf with fungus, damaged leaf, green leaf or tips will not be purchased.

   (c) At the beginning of the crop season, samples of the grades referred to herein will be displayed by the purchasing officers.

3. Considering your invitation,

(a) I abide by the other conditions stipulated in this agreement letter, I have agreed to sell all air cured tobacco to the Company during the period from _____ to _____ .

(b) I agree not to plant seedlings other than the seedlings supplied by the Company.

(c) I agree to use the fertilizer which is approved by the Company for the tobacco cultivation.

(d) I agree to plant tobacco seedlings at my own expense in the land recommended by the Company and also to use the fertilizer approved by the Company. The unused fertilizer will be returned at the rates stated in paragraph (1) (a) referred to above.

(e) I agree to pick and air cure the tobacco which has been cultivated in the registered land and supply the same to the purchasing center at _____ my expenses after grading the tobacco as per paragraph (2) (b) referred to above.

(f) I agree to allow the officials of the Company and the Department of Agriculture to inspect the tobacco when required.

(g) I agree to clear the aforesaid land after the tobacco crop is harvested.

(h) I hereby permit the Company to make all recoveries from the values of the tobacco leaf supplied by me with respect to the inputs (seedlings, fertilizer, insecticides, pesticides etc.) given to me by the company.

Yours faithfully,

_____

Signature of the Grower

Company Registered No. _____

Name: _____

Address: _____

ANNEX F. INTABEX TOBACCO GRADES

GRADE	DESCRIPTION
X1	Minimum length 38 cm, thin bodied, spotty leaf from lower stalk position, without other blemish, even cinnamon color.
X2	Similar to X1 but may be slightly shorter and have sight blemish.
X3	Similar to X2 but may be darker in color.
X4	Similar to X3 but may be still darker and have more blemish. Minimum length 23cm.
C1	Minimum length 38cm, similar to X1 but from middle stalk position with slightly heavier texture.
C2	Similar to C1 but may be slightly shorter and have slight blemish.
C3	Similar to C2 but may be darker in color with slightly more blemish. Minimum length 22cm.
B1	Minimum length 38 cm. slightly bodied even tan colored leaf from upper stalk position, preferably spotted but without blemish.
B2	Similar to B1 but may be shorter and have slight blemish.
B3	Darker, heavier bodied leaf with moderate blemish. Minimum size 23 cm.
T1	Short narrow leaf from the top stalk position of even tan to dark tan color without blemish.
T2	Similar to T1 but heavy bodied with moderate blemish.
S1	Thin spotty but otherwise unblemished strips or scrap from lower stalk position of even cinnamon color with no stem or foreign matter. All scrap must be passed over a 1/2 inch wire mesh.
S2	Similar to S1 but may be even tan color and have sight blemish.
S3	Similar to S2 but may be darker in color with slightly more blemish but must not contain green or sucker leaves or any leaf that is moldy or perished.
ND	Any leaf or scrap which does not fall within the above specifications but still of some commercial value.
Y1	Slightly mottled or yellow leaf from low and middle stalk position which falls within the first and second grades.
Y2	Slightly mottled or yellow heavier bodied leaf with only moderate other blemish.

Graded leaf for baling is tied in "hands" with butts having a diameter of 2.5cm and the butt of the folded "tie-leaf" pulled through to the opposite side of the hand.

Source : Intabex

ANNEX G
GHERKIN CULTIVATION
SUNFROST EXTENSION HANDOUT
TO PARTICIPATING FARMERS

(Source: Gleason 1990a)

Following this planting program will increase yields and optimally use chemicals. However, please remember that in the course of executing this program, if a pest or fungal disease appears or any other action for healthy plant growth, those steps should be taken in addition to the procedure laid down in this program. For example, the program calls for a fungicide to be applied against downey mildew (yellow spots) every seven days. But if dew is heavy or if it is generally raining, the fungicide should be applied every five days, and if heavy rain continues the fungicide should be applied every three days. Likewise, if a fertilizer deficiency is noted, more than the recommended amount of fertilizer should be applied. There may be other instances when you will need to deviate from the planting program.

1. First select land with sufficient drainage. The soil should be loosened up to a depth of 1.5 feet.

2. Ridges and drains should be prepared so as to drain off water well. Apply the basal fertilizer mixture into the ridges mixing well with the soil. After this is accomplished, planting is done.

3. Within the first week of planting, the trellis should be put up. It should be 6 feet high.

4. Do not water daily the first three or four weeks, every two or three days will be enough. Heavy watering results in poor yields.

5. After the first 14 days, application of chemicals such as metasistox, aloran, navacron, and lebeside should be stopped.

6. When the plant is 7 days old, spraying of fungicides (antracol, dythene, manset) should begin.

7. Plucking should be done daily.

8. When applying fertilizer, care should be taken not to allow the fertilizer to be contaminated with either the stems or leaves of the plants. Fertilizer should be applied on wet soil about two to three inches from the plant.

PLANTING PROGRAM FOR GHERKINS

DAY	TASK
1	Watering
2	Watering
3	Spray tamaron, watering
4	
5	Weeding
6	Watering
7	Watering, spray antrcol or manset
8	

9	Fertilizer application
10	Watering
11	
12	Spray lebycid
13	Weeding
14	Watering
15	Spray fungicide
16	Train creepers
17	Watering
18	Train creepers
19	Weeding
20	Watering, train creepers
21	Spray fungicide, fertilizer application
22	Spray pesticides (tokuthian, dypterex)
23	Train Creepers
24	Watering
25	Train creepers
26	Weeding, watering
27	Watering, spray fu..gicide
28	Watering, train creepers
29	
30	Watering, spray fungicide

From here onwards, watering and picking fruits should be carried out daily. However, inspect the soil to determine if watering is necessary. Try this experiment: take some soil in your hand and squeeze it. If the soil remains in a ball after it is released, watering is not necessary. For this test, the soil should be taken from a depth of about two or three inches and not from the surface.

Weeding should be done once per week. Training creepers to the trellis should be done at least once in four days. Creepers should always be trained in one direction only. The fertilizer mixture should be used at least once in 14 days.

31	Watering, harvesting, train creepers
32	Spray pesticides, harvest, watering
33	Harvest, weeding, watering
34	Harvest, spray fungicide, watering
35	Harvest, train creepers, watering
36	Harvest, watering, fertilizer application
37	Harvest, watering
38	Harvest, watering
39	Harvest, train creepers, watering
40	Harvest, weeding, watering
41	Harvest, spray fungicide, watering
42	Harvest, spray pesticides, watering
43	Harvest, train creepers, watering
44	Harvest, watering
45	Harvest, watering
46	Harvest, train creepers, watering
47	Harvest, train creepers, watering

48 Harvest, spray fungicides, watering
49 Harvest, watering, fertilizer application
50 Harvest, train creepers, watering
51 Harvest, watering
52 Spray pesticides, harvest, watering
53 Harvest, watering, train creepers
54 Harvest, weeding, watering
55 Harvest, spray fungicide
56 Harvest, watering
57 Harvest, watering
58 Harvest, train creepers
59 Harvest, watering
60 Harvest, train creepers, watering
61 Harvest, weeding, watering
62 Harvest, spray pesticides, spray fungicide
63 Harvest, watering, fertilizer application
64 Harvest, watering
65 Harvest, train creepers, watering
66 Harvest, watering
67 Harvest, watering
68 Harvest, weeding, watering
69 Harvest, spray fungicides, watering
70 Harvest, train creepers, watering
71 Harvest, watering
72 Harvest, watering, spray pesticides
73 Harvest, watering
74 Harvest, train creepers, watering
75 Harvest, weeding, watering
76 Harvest, spray fungicide, watering
77 Harvest, watering, fertilizer application
78 Train creepers, watering
79 Harvest, watering
80 Harvest, watering
81 Harvest, watering
82 Harvest, watering
83 Harvest, watering
84 Harvest, watering
85 Harvest, watering
86 Watering, spray pesticides
87 Harvest, watering
88 Harvest, watering
89 Harvest, watering
90 Harvest, watering

ANNEX H
AMOUNTS PAID TO FARMERS BY FOUR GHERKIN COMPANIES, YALA 1994

Company	No. of Farmers and Percent of Total	Total	Amount (Rs.)						
			Less Than -1000	-1000 To 0	0 To 1000	1000 To 3000	3000 To 6000	6000 To 9000	Over 10,000
Forbes	No. of farmers	273	01	23	25	45	91	55	33
	Percent of total		0.37	8.46	9.19	16.5	33	20.22	12.13
Wanatawilluwa	No. of farmers	170	3	17	32	55	21	26	16
	Percent of total		1.76	10	18.82	32.35	12.35	15.29	9.41
Aitken Spence	No. of farmers	280	79	64	41	42	18	18	18
	Percent of total		28.21	22.86	14.64	15	6.43	6.43	6.43
Sun Frost	No. of farmers	179	0	40	25	40	32	26	16
	Percent of total			21.62	13.51	24.86	17.3	14.65	8.65
TOTAL	No. of farmers	902	83	144	123	182	161	125	83
	Percent of total		9	15.9	13.5	20.7	17.7	14.2	9

Source: MED Survey of Outgrower Companies

ANNEX I
LIST OF PERSONS CONTACTED

Private Companies

Aitken Spence

Nilantha Wickremasekara, Finance Manager

Chas P. Hayley

Jagath C. Dahanayake, Director/General Manager

Ceylon Tobacco Co

Ananda Jayawardena

CIC

R. Bopeaaratchi

CPC Lanka Limited

Haridas Fernando, Agriculture Manager

Forbes & Walker

S. Rabindranath

Informatics

Samantha Rajapakse, Director/Export Market
H B Tennakoon

Intabex

Samaratunge, General Manager

Pickle Packers

Wilhelm Balthazaar

Sunfrost

Anil Wickremasinghe

Vanathawilluwa Vineyards

Nimal Visvakula

Other Organizations

Export Development Board

Daya Wijewardena, Director/Export Agriculture
J. N. S. Dias, Deputy Director
M. Z. M. Farhad, Assistant Director

MARD Project

Ed Reinaur, Marketing Specialist

Mahaweli Systems

Mangala Perera, Field Officer, Sunfrost
Lal Ranjith, Field Officer, Pickle Packers
W. Indrasiri, Filed Business Consultant, MED
M.H.H. Bandara, Assistant Manager, EiED
Ms. A.P.L.D. de Silva Agriculture Officer MEA System G
N.A. Rohana Jayaratne Agriculture Officer MEA System G
P.. Siriwardena, Sunfrost
G.S.Prathapsinghe, Sunfrost
T.M.L.S. Kumara, Pickle Packers
W.A.K. Muthugala, Pickle Packers
Warnakulasuriya, Deputy RPM, MEA
S.D. Galkotuwa, Block Manager, MEA
A. Somaratne, Agriculture Officer, MEA Uda walawe
Sugath Wijesinghe, Unit Manager
G. Ariyasena, Field Assistant
R. Siripala, Unit Manager

MED/EIED PUBLICATIONS AVAILABLE

Local Market for Pickled Products (December 1990)

Non Farm Small Scale Enterprise Credit on Selected Mahaweli Systems, Geoffrey Peters and M.W. Panditha (December 1990)

Crop Profiles - Spices, Herbs and Aromatics, L. Denzil Phillips (July 1991)

Study of the Tourism Development in the Uda Walawe (July 1991)

Potential for Silver Skin Onions in the Mahaweli, Walter Nueberg (August 1991)

Nursery Development of Papaya and Mango, Papaya Growers' Guide and Technical Notes for Business Plan for Mixed Fruit Cultivation Investment, Ben Hatfield (November 1991)

Dehydrated Fruit Processing Opportunities and Trends in Sri Lanka, Wanchai Somchit, (November 1991)

An Evaluation of the Entrepreneur Development Programmes, Dr. Susan Exo and Hina Shah, (December 1991)

Aromatics PIP Interim Report on Trials Establishment, Dr Thomas Davies (December 1991)

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Integrated Fruit Drying, juicing, Pulping project - Prep Feasibility Study, Michael Smedley, Ben Hatfield and Wanchai Somchit (December 1991)

Cold Chain Requirements for Uda Walawe, Fredrick E. Henry (March 1992)

Field Manual for Processing Tomatoes, Peter Florance (March 1992)

Processing Tomato Trials in Mahaweli System H, Peter Florance (March 1992)

Processing Tomato Trials in Mahaweli System C, Peter Florance (March 1992)

Dried Fruit Processing in the Mahaweli, Dr. Kamal Hyder (September 1992)

Feasibility Study on Commercial Potential of Snake Venoms in Mahaweli Systems. Anslem de Silva, (January 1993)

Census of Mahaweli Enterprises and Employment (January 1993)

Most publications are priced at Rs.100/-. The publications are available at the MED Office at 8th Floor, Unity Plaza, Colombo 4. (inquiries, Ph. 508682-4)

An EIED publication entitled - "Information Available for the Mahaweli Investor", is also available at the MED Office.

MAHAWELI BUSINESS CENTRES

3, Middeniya Road
Angunukolapelessa
Tel: 047-28234

Resident Project Manager's Office
Bakamuna
Tel: 066-6601
Fax: 066-6601

Resident Project Manager's Office
Dehiattakandiya
Tel: 027-2332
Fax: 027-2353

Resident Project Manager's Office
Embilipitiya
Tel: 047-30013
Fax: 047-30013

Jaya Mawatha
Bulnewa
Galnewa
Tel: 025-9515
Fax: 025-9515

MASL Block Office
Girandurukotte
Tel: 055-7316

Resident Project Manager's Office
Riverside
Kotmale
Tel: 0542-205
Fax: 0542-205

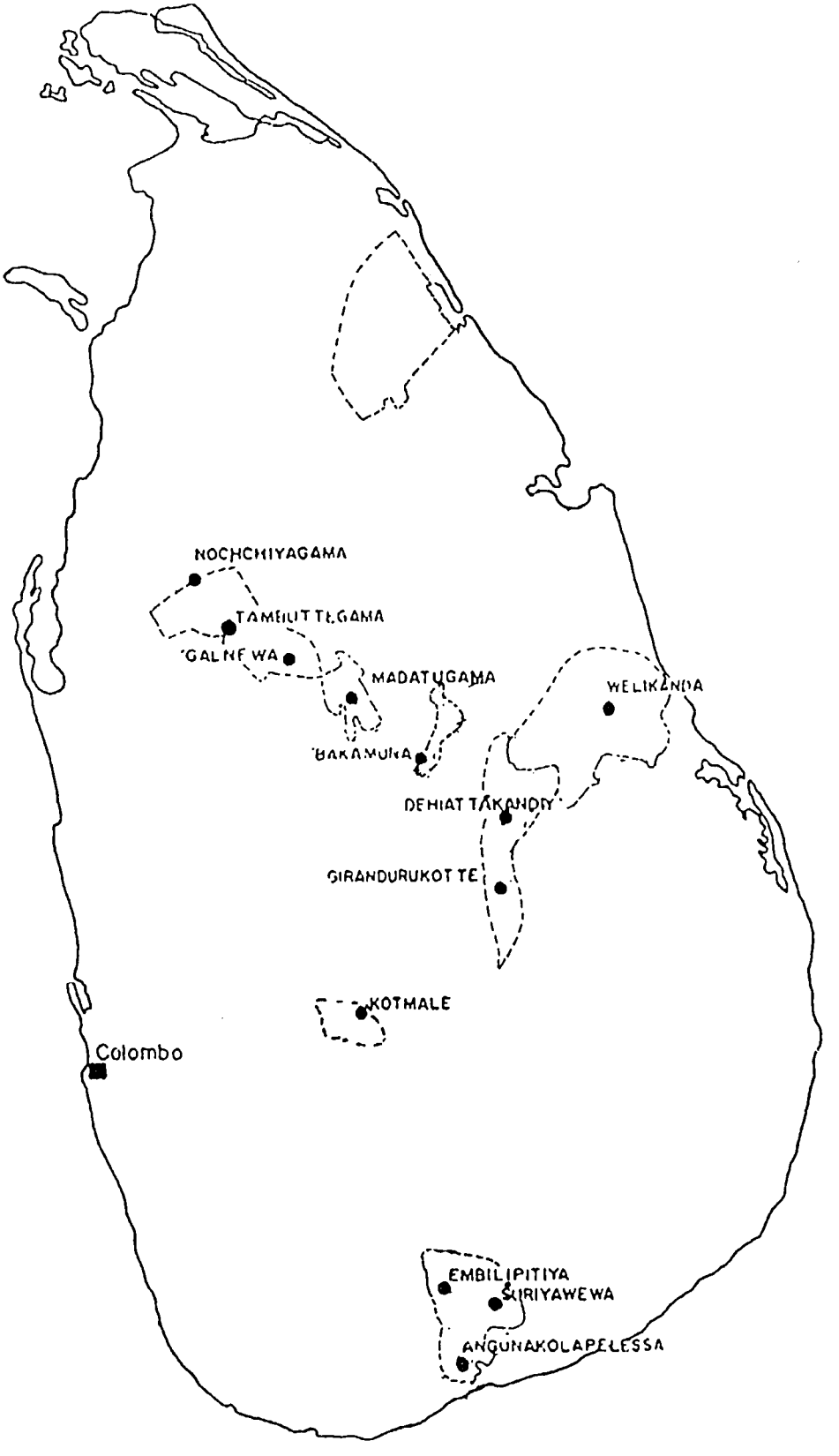
Andiyagala Road
Madatugama
Tel: 025-4244
Fax: 025-4244

Puttalam Road
Nochchiyagama
Tel:025-7821
Fax:025-7821

Saman Building
Ambalantota Road
Sooriyawewa

Resident Project Manager's Office
Tambuttegama
Tel:025-6354
Fax:025-6354

Resident Project Manager's Office
Welikanda
Tel: 027-2065



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