STUDY REPORT ON THE UTILIZATION OF CESS FUNDS BY THE MAHAWELI COCONUT PLANTATION LIMITED FOR CULTIVATION OF COCONUT UNDER DRIP IRRIGATION

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SUBMITTED TO
THE MINISTRY OF PLANTATION INDUSTRIES
MAY 2003

EXECUTIVE SUMMARY AND RECOMMENDATIONS

This comprises two sections. The first section makes recommendations emerging from the study and the second section summarizes the seven chapters of the report.

RECOMMENDATIONS

To the best of our knowledge, this is the first and foremost drip irrigated coconut project in Sri Lanka. Hence, its historical value in terms of serving as a live demonstration for a countless visitors ranging from farmers to politicians - practitioners to academicians - scientists to policy makers, is immeasurable. So, the affluent coconut plantation we all see today under this project in the harsh Dry Zone is a tribute to the persevering efforts of the founders of the MCPL. If not for them, we wouldn't have a substance upon which a study of this nature to be built up. So, we off our hats and salute for the unenduring efforts of the MCPL to making the conceptual thinking a reality.

Producing a report of this sort by a group of public officers in scatterly located working places stood as an equally uphill task. However, we took the challenge and conducted the study with a good faith that the findings will help develop the project by means of improving its quality, strengthening its sustainability, while we also learn things.

We make no claims that this report is exhaustive and perfect, nevertheless it provides some useful and important insights to whoever desirous to embark on a comparable irrigated agricultural effort, importantly irrigated coconuts, in the Dry Zone.

With these initial remarks, our recommendations are presented in what follows.

1. Reduction of the Extended Pay Back Period

If coconut monocropping is to be continued with costly sophisticated drip irrigation system, the project takes an extended period of 16 years to pay back the accumulated costs, and 11 years to generate a positive net income. If the drip irrigated monocrop coconut cropping model is converted to a coconut-based intercropping model, the pay

pack period could be reduced to 8 years, enabling to achieve early sustenance. At least intercropping could be started now and the management of the MCPL should be motivated in this direction.

2. Marketing of the Farm Produce

One of the major draw backs of the project was the absence of a marketing strategy. Proper attention has not been given to this aspect in the FSR either. The failure of the intercropping program especially banana was mainly due to the absence of marketing plans. This situation will become worse when coconut attains production stage. It is strongly recommended to draw up a marketing plan for coconut as well as intercrops and value added products generated from the farm.

3. Optimization of Land Use

Although the avenue planting system of coconut has a low plant density as compared with triangular system, the majority of the land area of the project is planted in avenue system with the aim of continuous intercropping. But the majority of the land area is still under monocrop coconut, resulting in sub optimal land utilization. Hence, optimization of land use by intercropping is emphasized.

4. Less Dependence on CESS Fund

The MCPL has so far been heavily dependent on CESS Fund for its all spheres of activities, ranging from cultivation to staff salaries. The farm has achived a mortageable value at present. Therefore, the lease right of the farmland could be mortgaged to a bank and the required funds could be secured to make the MCPL less dependence on CESS Fund.

5. Inadequacy of Field Staff

It was observed that the single Project Manager could hardly handle all the activities of the project. This would be more true if the intercropping had been implemented. Ironically, the less emphasis of the project to take up intercropping may also a reflection of the inadequacy of field staff at managerial level.

The low profile field staff like field supervisors also appear to be insufficient to meet the increasing demand of the supervisory work in the field. Although not proven, there is also an indication that the low profile field staff cannot be retained, which may partly be due to less satisfactory working conditions and facilities. Motivation of this field staff is important since they implement the project at grass root. The necessity of higher number of field supervisors will be more pronounced with the initiation of intercropping.

6. Reduction of Overhead Costs

The MCPL's only coconut plantation is located at Pimburetheewa and a fully-fledged project office at the project site is well justified. However, maintenance of an another office parallelly at Colombo too seems less rational and costly. Perhaps, the more productive way would have been to strengthen the project office at Pimburetheewa transferring the existing resources in Colombo office.

7. Strengthening of IT Facilities

The inadequacy of communication and office equipment resulted in delaying fast communication, data management, planning and evaluation. Therefore, strengthening the site office by providing telephone, facsimile, e-mail, computer, photocopying facilities etc is necessary.

8. Introduction of Computer Data-base

A computer data base especially with regard to farm activities and management should be maintained in order to obtain data efficiently and effectively enabling the decision making more productive, efficient and economical.

9. Introduction of an Insurance Scheme

At present, only the vehicles are insured. But it is essential to insure all the valuable capital assets such as drip irrigation system, buildings etc. and the crop against fire, wild animals and scarcity of water in channels for the sustainability of the production.

10. Formation of a Technical Committee

It was observed that one of the reasons for many technical drawbacks with regard to intercropping, fertigation, land development, banana planting material, marketing of banana etc. were partly a result of the absence of a technical back up. Therefore, a formal committee to provide the necessary technical guidance and assistance is essential for this kind of novel venture. In addition to that, formal technical linkages with existing technical institutions like Research Stations of the Department of Agriculture in the area is very important.

11. Formation of a Corporate Plan

Now the project turns to its fifth year, so the FSR is no longer a contemporary document to the current context of the project. Therefore, a corporate plan indicating the future strategies and plans to make the project a financially viable and sustainable venture is necessary by now, and this should also be available to the shareholders.

12. Formation of a Project Monitoring and Evaluation Committee

Regular monitoring and evaluation of project activities is necessary for successful implementation of a project. Although financial projections and guidelines for physical processes have been provided in the FSR, they are outdated at present. Hence, interim projections and plans with regard to both financial activities and physical processes have to be updated based on the latest prevailing context. Formation of a Project Monitoring and Evaluation Committee is an integral component for this purpose.

CHAPTER BY CHAPTER SUMMARY OF THE MAIN REPORT

Chapter 1 discloses the rationale for formation of the MCPL, its founder policies and sets out the objectives of the study.

The declining land area under coconut due to a host of factors including fragmentation, together with the ever increasing demand for culinary coconut by the growing population in Sri Lanka result in a declining trend of surplus coconut to the processing industry, more importantly the DC industry. As an effort to increase the availability of raw materials to DC industry at least by some reasonable quantity, the DC Millers Association (DCMA) ventured into cultivation of 600 ha coconut under drip irrigation in system B of Mahaweli, which is located outside the traditional coconut growing regions in Sri Lanka.

The DCMA formed a company called " Mahaweli Coconut Plantations Ltd.", (MCPL), in 1997 as a joint venture with the Mahaweli Authority of Sri Lanka (MASL). Of the estimated total capital outlay of Rs 279 million for the proposed project, Rs 180 million obtained from the CESS Fund is expected to be the equity of DCMA. The value of the land vested in the company by the MASL constitutes the equity of MASL. DCMA secured the approval of the Cabinet of Ministers on 27 August 1997 to increase the CESS levied on export of DC from Rs 1000 per ton to Rs 2000 per ton for a period of three years commencing 1 March 1998, with the purpose of raising the equity of DCMA. The proceeds of the increased CESS have been channelled to the MCPL through the CDA since 23 October 1998 and the last fund release during the analyzed period of the report was on 1 August 2002. Total CESS release to that date was Rs 170 million, representing over 94 per cent of the originally decided total CESS release.

By November 2002, the project turned to its fifth year and over 94 per cent of total CESS has already been released, but not a single study has still been carried out to evaluate the performance of the project. So, the Secretary, Ministry of Plantation Industries (MPI) appointed a committee comprising a representative each from the MPI, Coconut

Development Authority (CDA), Coconut Cultivation Board (CCB) and Coconut Research Institute (CRI) to evaluate the financial performance and the physical progress of the work carried out by the MCPL using CESS Funds.

Chapter 2 presents the data collection procedure and the method of analsysis. Data comprises two types, actuals and projected. Actual data was collected by visiting to the MCPL Head Office, Narahenpita and the proejct site, Pimburetheththewa. The study period, culminating the submission of the final report, was 3.5 months, commencing 1 November 2002. Projections have been made for coconut yields and prices. The FSR indicates that coconut palms come into bearing in the sixth year and reach optimum production of 120 to 130 nuts per palm per year in 12 to 15 year duration. However, this yield level is rather optimistic and hence 100 coconut per palm per year was assumed to be a reasonable yield expectation. Prices of coconut have been forcasted using a decomposition model (Fernando and Jayalath, 2003). The projected costs for monocrop coconut in the FSR were readily used as the future cost of the coconut plantaion. Crop budgets of Fernando et. al. (1996/97) were used as the basis for determining input levels and crop yields of two intercrops, i.e. banana and papaw. Retial prices of banana and papaw previaled on 13 February 2003 at National Livestock Development Board (NLDB) farm, Marawila were used. The analytical approach involved the investigation of utilization of CESS Funds by the MCPL. This was achived by: a) analyzing the percentage distribution of total expenditure among catagaries/activities, b) comparing the actual expenditure with the estimates available in the FSR, and c) computing of pay back period for monocrop coconut and coconut-based intercrops under different time horizons.

Chapter 3 evaluates the financial performance of the project. Of the total CESS Funds released, capital items, cultivation program and general charges utilized 48%, 36%, and 16% respectively. Higher capital expenditure is obvious during early periods of agricultural projects. Since the irrigation installation cost was also included into capital expenditure, spending almost half of CESS on capital items is justifiable. As the project is being implemented in the Dry Zone, giving priority to irrigation is acceptable and hence the relative higher expenditure on capital items is further justifiable. When the

analysis is carried out differently, a third of the total CESS released to MCPL has been utilized for irrigation installation alone, which may appear to be a rather disproportionate allocation. If this extravagant expenditure on drip irrigation is expected to be paid back within a reasonable short repayment period, coconut should yield an unrealistically higher crop. This proves that drip irrigation in coconut should always be practiced in coconut-based farming systems, not in monocropped coconut cultivations.

Nearly half of the general charges was spent on salaries. Meanwhile, the Colombo Head Office staff has absorbed almost half of the salary expenditure while only the remaining half was destined at the Pimburethithewa field site staff, which is less justifiable for a agricultural field development project of this nature.

Moreover, a notable disproportionate allocation of salaries between staff of Colombo Head Office and Pimburethithewa field site was observed. A little over 25 per cent of expenditure on salaries was destined at a one single staff position in Colombo Head Office while the Project Manager position which is bulldozing the implementation component of the real field project has utilized only about 12 per cent of the salary expenditure of the MCPL.

Per ha cost including the cost for forest clearing, surveying and irrigation operation to complete the planting of coconut seedlings varied between Rs. 76,103 (minimum - Farm 3) and Rs. 91,333 (maximum - Farm 2) with a mean of Rs. 80,788, which is quite reasonable. However, if the irrigation installation cost is included the total cost/ha was Rs. 216,863.

Despite the FSR suggestion to grow 110 ha of banana under coconut, only 42 ha have been undertaken, representing only 38 per cent of the recommended extent.

The per ha cost (and hence per plant cost as well) of banana cultivation of the Dharmasena Farm where both the local knowledge and local planting materials have been

used was nearly 1.5 times lesser than that of the Block 4 Farm where both foreign hired knowledge and imported planting materials were used.

Although the FSR propose to grow 54 ha of papaw under coconut, no systematic papaw cultivation was implemented except allowing them to grow under teak and caliandra trees by just sowing seeds. Passion-fruits have not been planted although the FSR recommended to grow 36 ha.

A $\pm$ 10 % was agreed by the committee to use as a loosely- imposed criterion to assess the allowable deviation between actual expenditure and estimates. Anything beyond or below was considered as an indication of unsatisfactory financial management.

The actual total capital expenditure almost complied to the $\pm$ 10% deviation. Furniture/ office equipments constitute a one item of capital expenditure. Despite the fact that committee did not find any reasonable office equipment either in Colombo office or in field site at Pimburetheththewa, a notable positive deviation exists (74%) with respect to this item.

The total actual general chargers also comply to the $\pm$ 10 % deviation. However, a more closer examination of item wise actual expenditure under general charges has shown marked deviations in relation to estimates of the FSR, indicating a non satisfactory financial management.

Salary and EPF/ETF are two components under general charges. The MCPL over spent on salaries by 87 per cent more than the estimates, but at the same time under spent on EPF/ETF by 58 per cent, implying a contradiction.

The MCPL has also under spent on insurance by 97 per cent which is also a one item comes under general charges. The unspent money would have been used for insuring drip irrigation system, buildings, crops etc., in addition to vehicles.

As regards to total actual expenditure on cultivation program of coconut during the preliminary year, the deviation in relation to estimates of the FSR is as low as 16 per cent, but examination of item wise expenditure reveals notable deviations with respect to many expenditure categories. Total actual expenditure on first year up keep of coconut is nearly three times greater than that of the estimates. Equally, many categories of actual expenditure under first year upkeep shows marked deviations in relation to estimates. As regards to second year upkeeps, total actual expenditure is nearly two times higher than the total estimates. Item wise expenditure too did not comply to $\pm$ 10 per cent deviation. Neither the total actual expenditure nor the item wise expenditure, both for third year upkeep, were within $\pm$ 10 per cent deviation from estimates, in that, total actual expenditure is seven times grater than the estimates. Total actual expenditure for fourth year upkeep is 122 per cent higher than the estimates.

Examination of item wise actual expenditure for first year to fourth year upkeep reveals over expenditure has occurred mostly on weeding, fertigation and pest/disease control.

Computation of deviation of actual costs for intercrops cannot be done as the counter part estimates are not available in the FSR.

The analysis of the foregoing chapter reveals that the percentage deviation of:

a. Total actual capital expenditure,
b. Total actual general charges,
c. Total actual expenditure on cultivation program of coconut during the preliminary year, were all fallen nearly within $\pm$ 10 % from the respective counter part estimates.

However, the item wise actual expenditure of each a., b. and c. above exhibited notable positive or negative deviations in relation to estimates, implying non compliance to the $\pm$ 10 per cent deviation base. So, the compliance only by total expenditure to $\pm$ 10 per cent deviation is spurious.

Chapter 4 evaluates the physical performance of the project. The MASL has initially released some 600 ha of forestland from Mahaweli System B. The FSR recommends to cultivate this entire land with coconut, and intercrop 110 ha, 54 ha and 36 ha with banana, papaya and passion-fruits respectively. However, the project has cultivated only 545.301 ha of coconut and intercropped 42 ha with banana respectively during the analyzed period. This is 90.9 per cent and 21 per cent of recommended hecterage of coconut and intercrops respectively.

A soil survey was conducted for the originally identified land blocks, which were however scatterly distributed. The likely management problem in view of the scatter distribution of land blocks prompted the MCPL to secure alternative land from a one contiguous location, for which a soil survey was not carried out. The pervious soil survey covers only 204.29 ha which is only 35 per cent of total cultivated area (545.301). This may result in undesirable consequences of selecting unsuitable lands for coconut.

Initially the MCPL had purchased poly bag coconut seedlings from the Isolated Seed Garden (ISG), Ambakelle. But later the seedlings were raised at the project site having purchased seed nuts from the ISG and Maduru Oya Seed Garden (MOSG) as the transporting cost of poly bag seedlings found to be costlier.

Although the FSR envisages to plant only 200 ha of coconut on avenue planting system, permitting regular intercropping, and 400 ha according to triangular system to be maintained as monocrop, the MCPL has planted entire 545.301 ha under avenue system. But the MCPL has done only 42 ha of intercropping. These resulted in sub-optimal land use.

Bulky coconut trunk bases were observed. They are more prone to be cracked, prompting red weevil attack. One possibility for the observed bulky trunk bases might be the over feeding with fertilizer, so application of fertilizer according to Differential Fertilizer Recommendation (DFR) might be desirable.

The traditional double row system of banana cultivation with a mother plant and two suckers per clump tends to over crowd the inter row space of coconut in a short period of about two years. Therefore, this method is less suitable. The recent recommendation of "high-density single plant single row method" enables cultivation of banana under coconut continually which may be more appropriate to this cropping system.

The MCPL fertigates coconut using a special fertilizer mixture, at the rate of 3 kg per palm per year in 52 applications, at a price of Rs. 38 per kg.

A drip irrigation system has been installed covering the total extent of the plantation. The committee wishes to recommend that physical performances and operational efficiency of this irrigation system be evaluated based on standard methods used for evaluating such systems. The committee observed the presence of well-trained technicians for operation and maintenance of the irrigation system.

The permanent pest control fleet comprising ten laborers has effectively contained the black beetle problem, which is further evidenced by the low cost involved in supplying of vacancies.

A few incidences of Boron deficiencies were observed but not yet effectively contained.

Despite the greater efforts taken to manage the excessive growth of weeds, a few blocks has evidenced that the weed management is less satisfactory. The observed weed problem is partly because of the non-adoption of cover crop, wider spacing of coconuts without intercrops etc. Mulching around the base of coconut seedlings was hardly observed.

Chapter 5 outlines the effects of development carried out by the MCPL on environment. Although the FSR suggests to clear the forest according to blocks with a minimum damage to soil and forest, coconut is said to have been planted in Weerana blocks 1 and 2 after clearing 120 ha of forest in a short period in 2002. Maintenance of a ground cover is required to reduce soil temperature, evaporation and erosion but the land seems open to

the sun, heavy wind and rain. Soil conservation measures were not in place in many blocks. There were no contour drains in sloppy terrains, so they are prone to soil erosion. Forest patches have not been reserved for wild life habitats despite the FSR recommendations to do so. In summary, a general lack of compliance by MCPL to environmental management recommendations made by the FSR was observed.

Chapter 6 described and analyzed the staff deployment from managerial to lower level of the MCPL. The MCPL has nearly a fully-fledged office in Colombo. The presence of such a office in Colombo is relevant for plantation companies having several estates sparsely distributed in rural areas of the country. Whereas the MCPL has only a single coconut plantation centrally located in Pimburetththewa. Therefore, the maintenance and presence of a separate office in Colombo incurring a substantial expenditure is difficult to be justified.

On the other hand, activities of the project site seem suffer and hinder due to inadequate staff of almost all levels. The intensive management demands are emerging from the field project, especially when intercropping is commenced. It seems that a single Project Manager can hardly handle this workload without the assistance of Deputy Project Managers. Equally, six Field Officers appear to be not adequate. They are the people who directly responsible for an increased output of laborers. This is more so especially when intercropping is started.

Chapter 7 estimates the future costs, returns, employment generation, salary requirement and funding requirement of the project until costs and returns break even under two scenarios, namely: a) "project is continued as it is", b) "intercropping is commenced at least by now". If the project is to be continued "as it is", the pay back period is 16 years, i.e. the MCPL can offset all the accumulated costs by year 2014. Meanwhile, the project generates a positive net return in the 11^{th} year of the project (2009), implying that the MCPL does not need external funds after the year 2008.

There exists 246.22 ha of coconut where intercropping can be commenced at least by now (say April 2003) and can be continued for another four years. If this hecterage is planted with banana, the pay back period is shorten from 16 years to 8 years. This indicates that the MCPL can recover all its accumulated costs by the year 2006. Equally, a positive net income will occur at 6^{th} year (2004), indicating no external funding is required after 2003/2004 financial year. If the above hecterage is to be intercropped with papaya, the pay back period is reduced from 16 to 14 years, i.e. the total accumulated cost can be paid off by the year 2012. Here the project will have positive net income at 7th year (2005), suggesting external funds are not required after 2004/2005 financial year.

These findings suggest that the MCPL should be motivated for intercropping at least by now with the aim of reducing the long pay back period, thereby making less dependence on CESS as early as possible.

Likely future costs until project breaks even are presented in Chapter 7 under "as it is" as well as intercropping scenarios, but warrant no permits to present here due to space limitations. Projections of employment under monocropping and intercropping scenarios indicate that intercropping generates nearly 2 to 5 fold employment than coconut monocropping. On the other hand, these give an indication supplying of labor has to be assured before the MCPL embark on intercropping.

Annual funding requirements if:

a. Project is continued "as it is",
b. Coconut is intercropped with banana, and
c. Coconut is intercropped with papaw have been computed seprerately. In summary, external funds are required, if coconut monocropping is continued, until March 2008. The corresponding time frame with respect to banana and papaw intercrop scenarios are March 2003 and March 2004 respectively.

TABLE OF CONTENTS

List of Abbreviations and Acronyms

CCB	Coconut Cultivation Board
CDA	Coconut Development Authority
CESS	A tax collection on DC exports
CRI	Coconut Research Institute
DC	Desiccated Coconut
DCMA	Desiccated Coconut Millers Association
DFR	Differential Fertilizer Recommendation
DOA	Department of Agriculture
FSR	Feasibility Study Report
ISG	Isolated Seed Garden
MASL	Mahaweli Authority of Sri Lanka
MCPL	Mahaweli Coconut Plantation Limited
MOSG	Maduru Oya Seed Garden
MPI	Ministry of Plantation Industries
NLDB	National Livestock Development Board
YPM	Young Palm Mixture

LIST OF TABLES

LIST OF FIGURES

ACKNOWLDGEMENTS

The committee members wish to thank Mr H P S Dassanayake, CEO/Director, MCPL and his staff at the Head Office, Colombo for generously allowing us to access the data. We are also thankful to Pimburetheththewa Project Manager, Mr D Mahipala, and his staff for the co-operation extended during the field visits. Our gratitude is also due to Mr K A S Gunasekera, Secretary, MPI for originating the idea of the study and providing financial resources to make this report a reality. The support of Mr J W K Premaratne, Assistant Director (Planning), MPI and Mrs Malini Peiris, Senior Assistant Secretary, MPI is also acknowledged. We are grateful to Dr U P de S Waidyanatha, Chairman, CRB, Dr (Mrs) C Jayasekera, Director, CRI, Dr H A J Gunathilake, Head, Agronomy Division, CRI for their support. Mrs K V N N Jayalath, TO, Mr A D Samarajeewa, SRO, Mrs S R Samarajeewa, SRO, Mr I R Wickramanande, SRO, all in CRI, and Mr. Sagara Chandrakumara are acknowledged for their valuable help. A special word of thanks to Dr N L A Karunaratne, Senior Lecturer, University of Sri Jayawardenapura for volunteering to go through several drafts so meticulously. Finally, we express our heartfelt gratitude to the hard work and excellent contribution provided by Messrs M R N Fernando and M T E A Mallawa, two Contractual Research Assistants. They contributed tremendously in terms of collecting data from the massive records of the MCPL and putting them in order, analysing the data and painstaking work of typing and retyping of several drafts of the report with a greater endurance. Lastly, to those we miss out, thank you for your contribution.

The Committee Members

30 May 2003

CHAPTER 1
INTRODUCTION

1.1 Introduction

This chapter provides the background information as to why a company called Mahaweli Coconut Plantation Ltd. (MCPL) was established, and sets outs the objectives of the study. Section 1 introduces the aim of the chapter. Section 2 provides the background on the formation of the MCPL while Section 3 reviews the MCPL founder policy. Objectives of the study are set out in Section 4. The last Section outlines the organization of the report.

1.2 The Background of Formation of the MCPL

The area under coconut has been decreasing in Sri Lanka since 1973 at an approximate rate of over 4375 ha per year (Anon; 1997) due to various reasons including land fragmentation. Meanwhile the domestic consumption has been increasing due to population growth. These factors together affect to shrink the availability of surplus coconut to the processing industry, especially for the desiccated coconut (DC) industry. In an effort to circumvent this problem at least partly, the Sri Lanka Desiccated Coconut Millers' Association (DCMA) ventured into cultivation of coconut in the new lands - System B of Mahaweli - on the premise that the crop emerging from this new lands would meet the demand of culinary coconut in the North and East of Sri Lanka, thus facilitating the accumulation of excess coconut in the coconut triangle.

DCMA formed a company under the name and style "*Mahaweli Coconut Plantations Limited*", (MCPL), in 1997 as a joint venture with the Mahaweli Authority of Sri Lanka (MASL). The company was formed for the exclusive purpose of engaging in coconut cultivation and coconut-based intercropping systems. The total capital outlay of MCPL has been estimated to be Rs 279 Million, of which Rs 180 Million would be the equity of DCMA while the value of the land vested in the company will be the equity contribution of MASL to the joint venture.

1.3 Review of the MCPL Founder Policy

In order to facilitate the raising of capital of the company, DCMA proposed to increase the CESS levied on export of DC from Rs. 1000.00 per ton to Rs 2000.00 per ton, for a period of three years. The Hon. Minister of Public Administration, Home Affairs and Plantation Industries obtained the approval of the Cabinet of Ministers' on 27 August 1997 for this proposal.

In 3rd March 1998, the sub section (1) of 33 of Coconut Development Act No. 46 of 1971, was amended. Up to 28th February 1998, the CESS collection rate was Rs. 1000.00 per ton and new amendment increased this to Rs. 2000.00 per ton for a period of 3 years, commencing 1st March 1998. The program has been published in the Vide Gazette No. 1020/7 on 24th March 1998 and the increased levy comes to an end on 28th February 2001.

The proceeds of the increased funds of CESS has been channeled to the MCPL through the Coconut Development Authority (CDA) since 23rd October 1998 to utilize as MCPL's capital. The final installment during the analyzed period was released on 1st August 2002, and the total CESS release as on 1st August 2002 was Rs.170 Million.

The Agro-Enterprise Development Project (AgEnt) has prepared a Feasibility Study Report (FSR) for the proposed project (AgEnt Consultant Report No. 53) in 1997. This report forms the basis to the MCPL proposal a reality. The FSR has addressed the feasibility of the project with a reasonable rigor in terms of a range of aspects including land suitability, irrigation and drainage facilities, planting materials and planting, intercropping, plantation management, environmental impacts and, finally, the financial viability. However, there have been some lapses, which are highlighted as follows.

Despite the fact that intercropping is an integral component of the project, the FSR has no estimates for intercropping. A marketing strategy and a plan are major and critical components that should be addressed in a firm project proposal. But it has been neglected in the FSR. The FSR suggests to explore the possibility of offering the wild boars with

their habitats by leaving some isolated forest patches within the project site. Equally, it predicates pursuing the possibilities of using wild boars for mutual well being, which is not practically feasible with a juvenile coconut plantation. The FSR has not identified some expenditure categories for which however actual expenditure have incurred while the project was being implemented. This is also a notable drawback of the FSR.

The project was commenced in September 1998, so has been in operation using CESS funds over four years by November 2002. However, not a single study has been conducted during this period to evaluate either the financial or the physical performance of the project.

1.4 Objectives of the Study

The objectives of the study were to evaluate the financial performance and the physical progress of the work carried out by the MCPL using the CESS Funds.

A committee comprising the following members has been appointed by the Secretary to the Ministry of Plantation Industries in order to achieve the above objectives by completing the study.

Mr. Buddhi Jayasuriya	Deputy General Manager (Farming System Development), Coconut Cultivation Board
Mrs. Sudharma Karunaratne	Deputy Director (Planning), Ministry of Plantations Industries
Mr. N. M. Ariyadasa	Internal Auditor, Coconut Development Authority
Dr. M. T. Neil Fernando	Senior Agricultural Economist, Coconut Research Institute

The following two research assistants were recruited on contract to assist the committee.

Mr. M. R. N. Fernando	Research Assistant
Mr. M. T. E. A. Mallawa	Research Assistant

The scope of the committee as set out in the Terms of Reference (TOR) is as follows.

(i) Study and evaluate the financial performance of the Mahaweli Coconut Plantation Ltd., (MCPL) since its commencement of operation to date under the following aspects: (whether the Company has utilized total CESS Funds for the objective of the project be examined and any deviation should be specified).

(a) Capital expenditure
(b) Administrative and other overhead expenses
(c) Planting Programs, and
(d) Others

(ii) Study and evaluate the performance of the Company during the past period under the following items:

(a) Utilization of land
(b) Establishment of the Plantation and the irrigation system
(c) Post care practices
(d) Establishment of intercropping
(e) Maintenance, and
(f) Income generation

(iii) Evaluate the effects of development activities carried out by the MCPL on the environment

(iv) Examine the utilization of funds granted under each item of work, with any change of work plan

(v) Examine or adherence to the Coconut Research Institute recommendation in carrying out the cultivation

(vi) Analyze the staff deployment from management to lower levels

(vii) Make recommendations for the future of the project under the following sections:

  (a) The cost of the project

  (b) Optimum number of employment

  (c) Total salary requirement, and

  (d) Annual funding requirement

1.5 Organization of the Report

Executive summary and recommendations precede the main report which has seven chapters. Chapter 1 discusses the premise upon which the MCPL was formed, its founder policy and sets out objectives of the study. Second chapter discusses the data collection procedure and analytical approach. The financial perfomance of the project in terms of allocating CESS funds by the MCPL is investigated in Chapter 3. Chapter 4 evaluates the physical performance of the project. Chapter 5 assesses the environmental impact due to the developmental activities of the project. The staff deployment from management to lower levels is analyzed in Chapter 6 while Chapter 7 estimates likely future costs, returns, optimum number of employment and funding requirement of the project until it breaks even.

CHAPTER 2

METHODOLOGY OF DATA COLLECTION AND ANALYSIS

2.1 Data Collection

Data comprises two types, actuals and projected.

A) Actual data

Actual data was collected from MCPL Head Office at Narahenpita and the Project Site at Pimburetheewa. The most important data sources were the available official documents at the MCPL, i.e. the ledger, monthly accounts of the project, audited accounts in year 1998 to 2002, CESS Funds receiving file, map of the project and estimates of the FSR.

The following data was collected from the Head Office.

(a) Capital expenditure
(b) Administrative and other overhead expenses
(c) Cost of cultivation program
(d) Cost of establishment of the plantation and the irrigation system
(e) Cost of post-care practices
(f) Cost of establishment of intercropping
(g) Cost of maintenance
(h) Income generation, and
(i) Receiving of CESS Funds

The following data was collected from the Project Site at Pimburetheewa.

(a) Cultivation program
(b) Adherence to the recommendations of the Coconut Research Institute
(c) Utilization of land
(d) Establishment of plantation and irrigation system
(e) Post care practices

(f) Establishment of intercropping, and

(g) Maintenance

B) Projected Data

The project was commenced in 1998 and hence actual data are available only for 5 years by now (January 2003). Once the initial investment on coconut is made, its benefits and subsequent costs occur over a period of more than 60 years. So, the analysis of future costs, returns, employment and funding requirement of the project require projecting of costs and benefits for a period of at least 55 years to the future. However, according to the present value concept of benefits and costs, the projection to a distant future is less worth. Consequently, the planning horizon was limited to 25 years.

- **Yield projections**

(i) Coconut production

Two scenarios, namely "optimistic" and "reasonable" coconut yield scenarios were considered.

(a) Optimistic coconut yield scenario

The FSR assumes that coconut plants should come into bearing in the sixth year and reach optimum production in 6 to 9 years thereafter. The FSR also envisages that the optimum production would be 120 to 130 nuts per palm per year. The MCPL coconut density is 170 palms per ha. On this basis, a yield of 20400 to 22100 nuts per ha per year is expected in 12 to 15 years of planting and onwards. The expected yield level is rather optimistic, and hence the name "optimistic scenario". The projected coconut production of different land blocks under this scenario is shown in Appendix Table 2.1.

(b) Reasonable yield scenario

It is assumed that 100 nuts per palm per year would be a reasonable yield expectation under drip irrigation at Pimburetheththewa, and hence this is named as "reasonable yield scenario". Both the bearing age and the age at which optimum production takes place were assumed to be as same as in the "optimistic scenario" stated at (a) above.

(ii) Intercrop production

Projected data for intercrops were taken from "Crop budgets for banana and papaw" published by Fernando et.al. (1996/97).

- **Price projections**

(i) Coconut prices

Future coconut prices were forecasted using a decomposition model (Fernando and Jayalath, 2003).

(ii) Prices of intercrops

Retail prices of banana and papaw prevailed on 13 February 2003 at NLDB Farm, Marawila were taken.

- **Input projections**

(i) Coconut

Neither physical quantities of any input, eg. fertilizer, labour etc., nor their prices have been projected. The FSR has projected the future costs of the monocrop coconut with sufficient details and these projected cost figures were readily used for the analysis.

(ii) Intercrops

Physical quantities of inputs for banana and papaw available in Frenando et.al. (1996/97) were used.

- **Data collection techniques**

Data was collected by personally visiting at the Head Office of MCPL, Colombo. In addition, the committee visited the field site at Pimburetheththewa to investigate the physical performance of the project and to collect the supplementary data.

2.2 Method of Analysis

The analytical scheme comprises the following components.

i. Investigation of the allocation of CESS Funds by MCPL on different activities. This was achived by analysing the structure of total expenditure in Section 3.1

ii. Comparison between the actual expenditure vs. the estimates available in the FSR (Section 3.2)

The MCPL seems to had many financial estimates for the same project activity at different points of time. While the FSR had certain estimations, there were some other estimations by the MCPL for the same activity, when the project being implemented; there were some other financial estimations for the same project activity by MCPL and finally different estimates were submitted to the Secretary, MPI for the releasement of CESS Funds.

Therefore, the committee faced with difficulties what estimation to be used as the basis of comparison with actual costs. Finally, it was decided to base the estimations of the FSR for the comparison since it was the officially accepted document of the project.

- **Pay back period**

The pay-back period was considered as "the time from the beginning of a project until the net (undiscounted) value of the incremental production stream totals the amount of the (undiscounted) investment of capital" (Gittinger, 1982).

CHAPTER 3
FINANCIAL PERFORMANCE OF THE PROJECT

This chapter evaluates the financial performance of the MCPL project. This evaluation is carried out in two steps. Firstly, the structure of total expenditure is analyzed (Section 3.1) with the purpose of investigating the allocation of CESS Funds by the MCPL, and secondly, the actual expenditure is compared with the estimates of the FSR (Section 3.2).

3.1 Financial Performance

Although the MCPL has originally planned to start this project in 1997, it was started in 1998 due to delay in releasing the CESS Fund. The utilization of CESS Fund by the firm is evaluated on the basis of financial years (i.e. 1st April of the preceding year to 31st March of the succeeding year) because the data are available on this basis. The details of utilization of CESS Fund by the MCPL are available since the commencement of the project on 1st April 1998 to 31st March 2002, so the evaluation was conducted to that period[1].

[1] This period is synonymously called as "analyzed period" throughout this report.

Table 3.1 shows the actual expenditure of the project on the basis of financial years for the above period.

Table 3.1 : Total actual expenditure of the project (Rs)

Category	01.04. 1998 to 31. 03. 1999	01.04. 1999 to 31. 03. 2000	01.04. 2000 to 31. 03. 2001	01.04. 2001 to 31. 03. 2002	Grand Total	%
Capital Expenditure	13,647,946	18,940,037	24,167,361.74	13,441,479.77	70,196,824	47.85
General Charges	3,548,914	5,526,765	7,436,320.92	7,692,685.52	23,969,698.29	16.49
Cultivation Program						
Farm 1	3,286,468	1,786,798	2,655,682	2,904,156	10,633,104	7.24
Farm 2	-	6,704,839	3,026,614	2,815,222	12,546,674	8.55
Farm 3	-	-	6,303,779	3,323,328	9,627,107	6.56
Farm 4	-	-	-	9,978,467	9,978,467	6.80
Darmasena Banana	312,555	626,545	872,780	674,467	2,486,347	1.69
Block 4 Banana	-	52,401	4,304,083	2,669,997	7,026,480	4.78
Year End Total	20,795,884	33,637,383	48,766,621	43,499,801	146,699,689	100.00

As shown by Table 3.1, the total actual expenditure incurred by the MCPL since its commencement of operation on 1st April 1998 to 31st March 2002 was Rs. 146.7 million whereas the CESS Funds released by the CDA during the corresponding period was Rs. 145 million (see Appendix Table 3.1). The balance was met from the MCPL by their own.

Out of the total actual expenditure, the highest percentage (48%) was on capital items, followed by cultivation program (36%) and general charges (16%).

The above percentages are based on the sum of actual expenditure involved during the first four years, which could be considered as the project initiation period. It is quite natural that the capital expenditure during the initial period of agricultural projects of this nature is high relative to the other expenditure categories. Higher capital expenditure can further be justified because the irrigation installation cost was also included into it.

3.1.1 Capital Expenditure

Table 3.2 and Appendix Figure 3.1 show the details of actual expenditure on capital items during the analyzed period, while the break down in terms of financial years is provided in Appendix Table 3.2.

Table 3.2 : Composition of actual capital expenditure from 1 April 1998 up to 31 March 2002

Category	Expenditure (Rs.)	%
Buildings	3,657,917	5.21
Motor Vehicles	6,136,106	8.74
Furniture /Office equipments	2,096,690	2.99
Field equipments	8,405,779	11.97
Drip irrigation	49,900,333	71.09
Total	70,196,824	100.00

As shown by Table 3.2, the highest expenditure (71%) is on drip irrigation, followed by field equipments (12%). It is encouraging to see that the greater share of the capital expenditure of this agricultural project is on agriculture-related capital items, i.e. drip irrigation. As this agricultural project is implemented in the Dry Zone, giving the priority for irrigation is justifiable and hence the greater share of capital expenditure on irrigation is meaningful. However, the analysis could be carried out differently. The expenditure on irrigation could be computed as a percentage of total project expenditure. Even under this scenario, over a third of total CESS Funds released to MCPL has been utilized for irrigation installation alone which may appear to be a rather disproportionate allocation. If this extravagant expenditure on drip irrigation is expected to be paid back within a reasonable short repayment period, coconut should yield an unrealistically higher crop, which is not practical. This proves that drip irrigation in coconut should always be practiced in coconut-based farming systems, not in monocropped coconut cultivation.

3.1.2 General Charges

A detailed account of actual expenditure on general charges for the analyzed period is provided in Table 3.3. Meanwhile, Appendix Table 3.3 breaks down the actual general charges into financial years.

Table 3.3 : Composition of actual expenditure on general charges from 1 April 1998 to 31 March 2002

Category	Expenditure (Rs.)	%
Salaries	10,803,943	45.1
EPF/ETF	362,702	1.5
Overtime [a]	-	0.0
Holiday pay [a]	-	0.0
Gratuity	60,300	0.3
Welfare expenses	1,454,296	6.1
Supervisory vehicles	1,300,744	5.4
Electricity	280,360	1.2
Communication	401,182	1.7
Stationaries	725,973	3.0
Bungalow upkeep	633,995	2.6
Maintenance of buildings	1,281,670	5.3
Maintenance of equipment [a]		0.0
Maintenance of vehicles	1,365,876	5.7
Insurance	80,511	0.3
Sundries	5,218,147	21.8
Total	23,969,698	100.0

Note: a - Although expenditure was estimated under these categories in the FSR, actual expenses have not taken place with respect to them. However, authors are not aware whether the expenditure on these three items has been included under Sundries by the MCPL.

Of the general charges, nearly half the expenditure was on salaries[1].

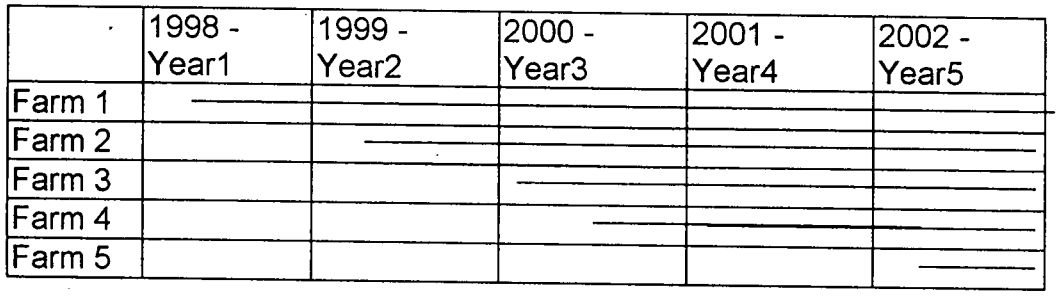
[1] This is discussed more fully in Sub-section 3.2.2.

3.1.3 Cultivation program

3.1.3.1 Coconut cultivation

Figure 3.1 shows the actual cultivation schedule of coconut in the project.

Figure 3.1: Actual cultivation schedule of coconut in MCPL



Coconut was first planted in the project in Farm 1 in September 1998, which is of its fifth year by 2002, as depicted in Figure 3.1. Thereafter planting was started successively in Farms 2, 3 and 4 together and 5, respectively in 1999, 2000 and 2002. Finally, the MCPL has planted 545.301 ha of coconuts with 10m x 5m spacing, amounting 94,886 seedlings, and they are at different ages.

The detailed break down of actual expenditure on the basis of financial years with respect to each Farm 1, Farm 2, Farm 3 and Farm 4 are given respectively by Appendix Tables 3.4, 3.5, 3.6 and 3.7.

Annual break down of actual expenditure (Rs/ha) involved in coconut cultivation program of the MCPL project is shown in Appendix Figure 3.2.

Cost involved until completion of planting of coconut seedlings

Planting of coconut seedlings was completed by the end of second year (i.e. by the end of the succeeding year of planting) in Farms 1 to 3, whereas it was first (preliminary) year itself with respect to Farm 4 (See Appendix Table 3.8). So, the per ha cost to complete the planting of coconut seedlings including the operational cost of irrigation was computed as in Table 3.4.

Table 3.4 : Cost to complete the planting of coconut

Farm	Rs/ha	
1	76,496	(49,554 + 26,942 of Appendix Table 3.8)
2	91,333	(62,927 + 28,406 of Appendix Table 3.8)
3	76,103	(49,823 + 26,271 of Appendix Table 3.8)
4	79,219	
Average	80,788	

Table 3.4 shows that this cost vary between Rs. 91,333/= per ha (maximum) and Rs. 76,103/= per ha (minimum) with a mean of Rs. 80,788/=per ha.

A detailed account on composition of this cost is provided in Appendix Tables 3.4 to 3.7. However, these cost items are also indicated below for easy reference.

They include the costs involved for activities, namely surveying, felling, lining and pegging, holing, filling, planting materials, planting, manure, supplying of seedling vacancies, fencing, weeding, cutting and maintenance of drains, pest and disease, tools, census, planting of wind belts, operational cost of irrigation, cost of watchmen, labour wages and establishment of cover crops.

The average cost involved in planting of coconut in the MCPL including the operational cost for irrigation[2] is Rs.80,788/= per ha, which is quite reasonable. It is however worth to examine the cost of planting of coconut including the installation and maintenance costs of drip irrigation (Table 3.5).

Table 3.5 : Cost of planting of coconut under various scenarios

Scenario	Rs/ha	Rs/coconut seedling
• Including irrigation maintenance cost[3]	98,749	525/=
• Including irrigation maintenance cost	216,863	1,269/=
+		
Irrigation installation cost		
• Cost of installation of drip system	117,124	685/=
• Cost of maintenance of drip irrigation system	14,848	87/=

[2] The irrigation installation and maintenance costs are not included here.
[3] It is difficult to establish coconut in the project area without supplementary irrigation. So, a "without irrigation" scenario was deliberately avoided.

As shown in Table 3.5, cost of planting a ha of coconut including the irrigation installation as well as irrigation maintenance cost was Rs.216,863.00. The corresponding cost per seedling was Rs. 1,269.00.

3.1.3.2 Intercrops

The FSR suggests to grow 36.5 ha of banana under coconut each in 1998 and 1999 and 37 ha in 2000, totaling 110 ha. However, only 42 ha of banana, representing only 38 percent of the recommended extent were actually planted by the MCPL.

The committee is of the view that this may be due to lack of planning on activities related to intercropping such as procument of planting materials, technology, sourcing of labor, marketing of intercrops etc.

A) Banana

Banana was planted under coconut only in two farms, namely Darmasena farm and Block 4 farm. Darmasena farm used the local planting materials and local knowledge in banana cultivation while the Block 4 used imported tissue culture banana suckers and foreign knowledge. Table 3.6 shows the details of these two farms.

Table 3.6 : Actual total expenditure for bananas

Farm	Extent (ha)	No. of plants	Expenditure (Rs)
Darmaena	10	5920[a]	2,486,347
			(01.04.1998 to 31.03.2002)
Block 4	32	18944[a]	7,026,480
			(01.04.1999 to 31.03.2002)

Note : a - These were estimated on the basis that 592 banana plants come per ha when they are planted in double rows of 8 ft X 8 ft triangular.

A. i.) Banana in the Darmasena Farm

The cost for fertilizer used for fertigation of banana was approximately half the total cost of production (Table 3.7)[4]. This may be due to the high cost of water soluble fertilizer mixture.

Tables 3.7 : Total expenditure for banana cultivation from October 1998 to September 2002 in Darmasena farm.

Activities	Cost (Rs) (Extent10 ha/5920 of plants)	%	Per ha (Rs)	Per Plant (Rs)
1. Holing	114,415	3.7	11,442	19.33
2. Fertilizer cost	1,551,548	50.17	155,155	262.09
3. Cost of suckers	152,002	4.91	15,200	25.68
4. Transport charges(Suckers)	6,739	0.22	674	1.14
5. Transport charges(Dolomite)	4.797	0.14	0	0.00
6. Sundries	5,764	0.19	576	0.97
7. Wages	473,146	15.3	47,315	79.92
8. Variable wages	75,500	2.44	7,550	12.75
9. Post care handling charges	101,922	3.3	10,192	17.22
10. Banana transport charges	146,378	4.73	14,638	24.73
11. Professional charges	2,000	0.06	200	0.34
12. Tools	2,250	0.07	225	0.38
13. Irrigation	91.572	3.3	9	0.02
14. General charges	233,033	7.54	23,303	39.36
15. Planting	37,896	1.23	3,790	6.40
16. Clump management	32,735	1.06	3,274	5.53
17. Weeding	58,492	1.89	5,849	9.88
18. Pest & Disease Control	633	0.02	63	0.11
Total	299,549	100	29,954	506

A.ii) Banana under coconut in the Block 4 Farm

Extra cost components, namely foreign professional charges (3.29%), import cost of tissue culture banana suckers from Israel (15%), packaging cost (16%), postcare handling (7.6%) and export handling have involved in this farm (Table 3.8)[5]. All these contributed significantly to raise the cost of banana cultivation.

[4] The detailed break down of the actual costs on financial year basis is presented in Appendix Table 3.9
[5] Appendix Table 3.10 shows a detailed account of expenditures on the basis of financial years.

Table 3.8 : Actual cost of banana cultivation in Block No. 4 (from April 1999 to September 2002)

Activity	Cost (Rs) (Extent 32 ha/18944 plants)	%	Per ha (Rs)	Per Plant (Rs)
Professional Charges (LOCAL)	6,120.00	0.09	191.25	0.32
Soil sampling	46,058.00	0.66	1,439.31	2.43
Transport of labor	235,867.00	3.36	7,370.84	12.45
Sundry	25,558.00	0.36	798.69	1.35
Wages	477,211.00	6.79	14,912.84	25.19
Variable wages	69,790.00	0.99	2,180.94	3.68
Fertilizer cost	1,162,144.00	16.54	36,317.00	61.35
Irrigation	417,232.00	5.94	13,038.50	22.02
Tools	34,121.00	0.49	1,066.28	1.80
Weed control	237,595.00	3.38	7,424.84	12.54
Pest and Disease	72,570.00	1.03	2,267.81	3.83
Post Care Handling	533,697.00	7.60	16,678.03	28.17
Export Handling	448,442.00	6.38	14,013.81	23.67
Uniform	3,397.00	0.05	106.16	0.18
Professional Charges (FOREIGN)	231,500.00	3.29	7,234.38	12.22
Banana Suckers Import Charges	1,056,610.00	15.04	33,019.06	55.78
General Charges	679,893.00	9.68	21,246.66	35.89
Samples	5,692.00	0.08	177.88	0.30
Supporters	89,344.00	1.27	2,792.00	4.72
Clump Management	32,241.00	0.46	1,007.53	1.70
Packaging	1,161,400.00	16.53	36,293.75	61.31
Total	7,026,480.00	100.00	219,577.50	370.91

The duration for which total costs were computed in Tables 3.7 and 3.8 are different in the two farms, as the dates of establishment are different. Hence the costs have to computed for a comparable period. Table 3.9 therefore compares the cost of banana cultivation in Darmasena farm and Block 4 farm only for a period of 1st two years of each farm.

Table 3.9 : Cost of banana cultivation.

Farm	Total cost for 1st two years (Rs.)	Cost (Rs/ha)	(Rs/Plant)
Darmesena farm (10 ha/5920 plants)	939,100	93,910	158/=
Block 4 (32 ha/18,944 plants)	4,356,484	136,140	229/=

It is clear that both per ha and per plant costs each were nearly 1.5 times grater in Block4 farm than Dharmasena farm. The committee was unable to collect sufficient information in relation to production and marketing of banana for overseas market. However, it will be useful to learn lessons through this experiment for the future innovations.

B) Papaya

FSR recommends to grow 54 ha of papaya under coconut, by phasing out 13.5 ha in a year, commencing 1999. However, papaya was planted only under teak and caleandra plants along the wind belts just by sowing papaya seeds. This was not a systematic cultivation and harvesting has also not been carried out systematically. The cost of harvesting was added to the maintenance cost of wind belts. No details are available on expenditure on papaya and only income record is available.

C) Passion fruit

Passion fruit was not cultivated so far although FSR recommends to grow 9 ha of passion fruit per year in four consecutive years, commencing 1999, totaling 36 ha.

3.2 Comparison between Actual Expenditure and Estimates

This sub-section compares the actual expenditure with estimates, using the "percentage deviation of the actuals in relation to estimates in the FSR[6]" as the indicator. The committee felt that a deviation of $\pm$ 10% is allowable, but anything beyond or below is a reflection of less satisfactory finance management. First, the capital expenditure is examined, followed by general charges, cultivation program, respectively under Sections 3.2.1, 3.2.2 and 3.2.3.

[6] Estimates of the FSR are for 600 ha. However, only 545.301 ha have been planted with coconut during the analyzed period. So the estimates were proportionately adjusted to 545.301 ha, aiming at a comparable basis.

3.2.1Capital expenditure - actuals vs estimates

Table 3.10 and Appendix Figure 3.3 show the estimated and actual capital expenditure incurred by the MCPL project from 1st April 1998 to year 31st March 2002.

Table 3.10 : Estimated Vs. actual capital expenditure (Rs) from 1 April 1998 to 31 March 2002

Category	Estimates (Rs)	Actuals(Rs)	% Deviation of actuals with respect to estimates
Buildings	4,576,920	3,657,917	-20.1
Motor vehicles	4,821,774	6,136,106	27.3
Furniture/Office eq.	1,202,666	2,096,690	74.3
Field equipment	570,027	8,405,779	1374.6
Drip irrigation	68,618,617	49,900,333	-27.3
Total	79,789,904	70,196,824	-12.0

Expenditure of non of the categories compiled to $\pm$ 10 per cent deviation, and hence nor the total expenditure. Literally, this means that the financial discipline of capital expenditure is less satisfactory. However, when we carefully examine category-wise, it is evident that some deviations are allowable with respect to certain categories. Under-expenditure of 20 per cent was observed for buildings. The reason may be the use of existing buildings of MASL in Pimburethhewa, so the deviation is acceptable. However, MCPL has over spent 27 and 74 per cent respectively for motor vehicles and furniture/office equipments. Of which, the over expenditure on motor vehicles may be justifiable in view of price escalations, but the over expenditure on furniture/office equipments is less justifiable especially because of no reasonable office equipments were observed by the committee either in Colombo office or in the project site. The markedly higher expenditure on field equipemnts is simply because the costs of water pumps (value is Rs. 7.8 million) which must have come under drip irrigation category have been included under field equipments. This is also reflected by under-expenditure on drip irrigation by 27 per cent.

3.2.2 General charges - actuals vs estimates

Table 3.11 and Appendix Figure 3.4 show the estimated and actual general charges of the MCPL project.

Table 3.11 : Comparison of general charges (Rs) from 1 April 1998 to 31 March 2002

	Estimate Charges (Rs./ 545.301ha)	**Actual charges (Rs./ 545.301 ha)**	**% Deviation of actuals with respect to estimates**
Salaries	5,787,631	10,803,943	86.7
EPF/ETF	868,141	362,702	-58.2
Overtime	376,330	0	-100.0
Holiday pay	248,149	0	-100.0
Gratuity	497,755	60,300	-87.9
Welfare expenses	2,810,529	1,454,296	-48.3
Supervisory vehicles	1,233,357	1,300,744	5.5
Electricity	289,010	280,360	-3.0
Communication	150,627	401,182	66.3
Stationaries	235,764	725,973	207.9
Bungalow upkeep	2,714,381	633,995	-76.6
Maintenance of building	235,377	1,281,670	444.5
Maintenance of equipments	2,937,880	0	-100.0
Maintenance of vehicles	1,147,576	1,365,876	19.0
Insurance	2,555,940	80,511	-96.9
Sundries	442,234	5,218,147	1080.0[A]
Total	22,530,681	23,969,698	6.4

A: The composition of sundries is found in Appendix Table 3.11

The deviation of the total general charges is mere 6 per cent, meaning that the financial management with regard to total general charges of the project is commendable. However, more closer examination of item wise expenditure reveals marked deviations with respect to many expenditure categories except supervisory vehicles, electricity and maintenance of vehicles, implying that the item wise expenditure on general charges does not reflect sound financial management at all. In fact, compliance of total expenditure to financial standards while item wise expenditure is not complying is not a sound financial control.

The MCPL has overly spent on salaries, nearly 87 per cent more than the estimates. The break down of salary expenditure is shown in Table 3.12.

Table 3.12 : Composition of salaries (Rs) from 1 April 1998 to 31 March 2002

Head Office - Colombo	Rs.	%	%
• Checkroll a/c	325792	3.0	
• Staff salary	431549	13.3	
• Minor staff salary	459095	4.2	
• Executive staff salary	2759500	25.5	
Sub Total	4975936		46
Project Site - Pimburaththewa			
• Project Manager (Present)	693770	3.3	
• Project Manager (Previous)	571138	6.4	
• Asst. Project Manager (Present)	355440	5.3	
• Asst. Project Manager (Previous)	214752	2.0	
• Salary	3992907	37.0	
Sub Total	5828007		54
Total	10803943	100	100

The first four categories, check roll a/c, staff salaries, minor staff salaries and executive staff salaries constitute the salaries of Head Office staff in Colombo which is 46 per cent while the rest constitutes the salaries of staff at project site which is 54 per cent (see Table 3.12). This implies that almost half the salaries the MCPL has paid has been absorbed by the staff of the Colombo office which is difficult to be justified for an agricultural project of this nature. Moreover, the salary denoted by "Executive staff salary" in Table 3.12 is found to be the salary of a staff position which is a little over 25 per cent of the total salary. The success of the project is naturally a function of the teamwork, so paying a reasonable salary for Colombo office Staff is acceptable. However, no one can exclude the claim that the real implementation of the project activities is in the hands of the Project Manager (PM) who is posted at the project site. Two PMs have been in the project during the analyzed period, the total salary of both of them constitutes only 9.7 per cent which is nearly a third of the salary of "executive staff salary" of the Head Office.

The MCPL has under spent on EPF/ETF by 58 per cent whilst over spent on salaries. This seems very contradictory for which three possible reasons may be provided. First, the expenditure on EPF/ETF have been over estimated. Second, payments have been made in

terms of allowances, and third, EPF/ETF have not been paid. The committee is however not certain which is/are the correct reason/s.

The MCPL has obtained the buildings from the MASL for the project site at Pimburethithewa. Unexpected expenditure on maintaining these buildings is more likely, but the over expenditure of 444 per cent, may not be justifiable.

Another notable issue is the under-expenditure on insurance. In addition to vehicles, all other capital items including water pumps, irrigation system, crops must have been insured using the money allocated under the allocation for insurance. The justification of the committee for this suggestions follows.

The risk of wild fire is one of the major threats in Dry Zone agriculture. The almost all irrigation lines are plastics. The other threat is wild elephants and pests. So, crop and irrigation system insurance is very important.

The estimate for sundries was based on certain petty expenditure categories identified in the FSR under sundries. However, certain other sundry expenditures actually incurred while implementing the project, which were also included by the committee under sundry charges. This is the reason for the observed striking deviation with regard to sundries.

3.2.3 Cultivation program - actuals vs. estimates

3.2.3.1 Coconut

The MCPL names the annual operations of the coconut cultivation program as follows.

- Preliminary year
- First year upkeep
- Second year upkeep
- Third year upkeep
- Fourth year upkeep
- Fifth year upkeep & on wards

Activities coming under each of the above years are provided under respective sub-headings in what follows.

A) Preliminary year activities

Preliminary year activities comprise the works that need to prepare the land for cultivation. They include such activities as surveying, felling, land clearing, holing and filling the planting hole with husks, but do not include planting of coconut[7].

Table 3.13 compares the estimated and actual expenditure during the preliminary year, i.e. from the 1 April 1998 to 31 March 2002.

- The total estimates are calculated by multiplying the estimated unit cost per ha by the total actual plantation extent during the analyzed period, which is 425.059 ha (=545.301-120.269 ha which is the extent of Farm group 5).

Table 3.13 : Comparison of estimated and actual costs during preliminary year

Activity	**Estimates for 425.059 ha (Farms 1,2,3 & 4 only)**	**Actual**	**% Deviation of actuals with respect to estimates**
	(Rs)	(Rs)	
1. Surveying	212,529	2,216,013	942.69
2. Felling	5,100,708	6,044,778	18.51
3. Lining and Pegging	244,408	107,476	-57.03
4. Holing	2,321,884	1,113,719	-52.03
5. Filling	1,957,056	1,880,044	-3.94
6. Planting materials	4,242,088	1,789,532	-57.81
7. Fencing	663,092	765,846	15.50
8. Weeding	1,268,376	819,352	-35.40
9. Planting Coconut	488,817	109,421	-77.62
10. Cover crop	955,426	76,460	-92.00
11. Planting timber	2,125,295	3,495,637	64.48
12. Cutting new drains	4,154,951	465,184	-88.80
13. Irrigation (Maintenance)	--	741,611	
14. Field watcher	--	182,789	
15. Variable wages	--	125,690	
Total	23,734,630	19,933,552	-16.01

[7] Although the MCPL theorizes so, coconut planting took place during the preliminary year too, especially in farms 3,4 and 5. So, a part of the cost of first year upkeep has also been included into the preliminary year in these farms.

Farm wise comparison of estimates and actuals of preliminary year activities with respect to farm group 1, 2, 3 and 4 are illustrated respectively in Appendix Figures 3.5 to 3.8.

As far as total expenditure of the project during the preliminary year is concerned, the deviation is as low as 16 per cent. However, this does not warrant commendation because examination of item wise expenditure reveals significant deviations with regard to many expenditure categories. If $\pm$ 10 per cent minimum allowable deviation is considered as the cut off level to judge the better financial management, only the 'filling' expenditure category complied.

It was observed that the MCPL has overly spent on surveying while under spent on cover crops by 92 per cent. Despite the emphasis of the FSR to establish the cover crop, it has not been done in any satisfactory level. This may be the reason for the observed under expenditure for cover crops.

The costs for maintenance of irrigation system, the variable wages and the watchmen charges were liable to ill comparison due to non-availability of estimates in the FSR.

B) First year upkeep

First year upkeep includes the activities during the first year, commencing planting of coconut seedlings.

Table 3.14 shows the estimated and actual expenditure for the 1st year up keep works done from year 1999 to September 2002.

Table 3.14 : Comparison of estimated vs. actual expenditure for 1st year Up-keep

Activity	Estimate for 298.54 ha (Farm 1, 2 & 3 only) (Rs)	Actual for 298.54 ha (Farms 1,2 & 3 only) (Rs)	% Deviation of actuals with respect to estimates	Actual cost Rs/ha
1. Fertigation	918,572	1,367,789	48.90	4,582
2. Supplying vacancies	272,418	501,209	83.99	1,679
3. Fencing	68,664	274,110	299.20	918
4. Weeding	343,321	3,272,433	853.17	10,961
5. Drains	68,664	79,200	15.34	265
6. Pest and disease	343,321	99,038	-71.15	332
7. Tools	149,270	100,811	-32.46	338
8. Census	8,583	4,285	-50.08	14
9. Saplon	51,573	3,575	-93.07	12
10.planting Timber	-	800,215	-	2,680
11. Irrigation (Maintenance)	-	951,872	-	3,188
12. Wind damage	-	21,440	-	72
13 Watchmen	-	397,077	-	1,330
14. High shade	-	21,440	-	72
15. Motor roads	-	64,799	-	217
16. Variable wages	432,883	99,670	-76.98	334
Total	2,657,269	8,058,963	203	26,661

Appendix Figures 3.9 to 3.11 illustrate the farm-wise comparison of estimates and actuals respectively, with respect to farm groups 1 to 3. The total actual expenditure is approximately three times greater than the estimates. Expenditure on non of the activities complied to $\pm$ 10 per cent deviation, so the financial performance is not satisfactory with respect to any expenditure category. MCPL has over spent on fertigation, supplying of vacancies, fencing, weeding and de-silting of drains, but under spent on other items. Actual expenditure on weeding is over 9 times greater than the estimates, which may largely be due to non adoption of cover crops as well as intercrops in recommended extents. Estimates were not available in the FSR with respect to such cost items as the costs for maintenance of irrigation system, motor roads, planting timber, the variable wages, wind damage, high shade, and the watchmen charges. So, they cannot be compared.

The actual cost for first year upkeep was Rs. 26,661 per ha (Table 3.14).

C) Second year upkeep

Second year upkeep includes the work done in the second year after planting of coconut seedlings.

Table 3.15 shows the estimates and actual expenditure for the 2nd year up keeps done from year 1 St April 2000 to 31st March 2002.

Table 3.15 : Estimates vs. actual expenditure for second year upkeep

Topics	Estimates for 298.54 ha (Farms 1,2 & 3 only) (Rs)	Actual for 298.54ha (Farms 1 ,2& 3 only) (Rs)	% Deviation of actuals with respect to estimates	Actual Cost (Rs./ha)
1. Fertigation	1,487,495	1,982,397	33.28	11473
2. Supplying vacancies	468,724	166,881	-58.44	966
3. Fencing	217,942	138,492	-36.45	802
4. Weeding	343,333	2,000,508	482.69	11578
5. Drains	-	37,560		217
5. Pest and disease	261,231	71,166	-72.76	412
6. Tools	149,275	59,291	-60.28	343
7. Census	8,583	1,343	-84.36	8
8. Planting timber	432,898	1,590	-99.63	9
9. Irrigation	-	1,792,587	-	10375
10. Wind damage	-	90,296	-	523
11. High shade	-	7,145	-	41
12. Motor roads	-	31,841	-	184
13 Watchmen	-	633,741	-	3668
14. Variable wages	-	391,360	-	2265
TOTAL	3,369,480	7,406,197	119.81	42,865

Farm wise comparison of actuals and estimates with respect to farm group 1 to 3 is illustrated respectively in Appendix Figures 3.12 to 3.14. MCPL has over spent on fertigation, weeding and de silting of drains, but the expenditure on other items was under the estimates. Total actual expenditure was approximately two times higher than the total estimates. Neither the item wise actual expenditure, nor the total actual expenditure were within the limits of $\pm$ 10 per cent deviation from estimates. Therefore, financial performance is not satisfactory. Actual weeding cost is greatly higher than the estimates during this period too, mainly because of non adoption of cover crops and intercrops in recommended extents. The costs for maintenance of irrigation system, motor roads, planting of timber, the variable wages, wind damage, high shade, and the watchmen charges cannot be compared due to non-availability of estimates in the FSR.

Second year up keep cost was found to be Rs. 42,865 per ha (Table 3.15).

D) Third year upkeep

The activities involved with maintenance of the coconut plantation during the third year, after planting of coconut seedlings comprise the third year upkeep.

Table 3.16 shows the estimates and actual expenditure for the 3rd year up keeps done from year 2001 to September 2002.

Table 3.16 : Third year upkeep cost (Rs) estimate vs. actual expenditure

Activity	Estimates (Rs)	Actuals (Rs)	%Deviation of actuals with respect to estimates	Actual cost (Rs/ha)
1. Fertigation	389,978	1,547,208	296.74	8,954
2. Supplying vacancies	8,423	-	-	-
3. Fencing	40,821	137,879	237.77	798
4. Weeding	99,352	849,279	754.82	4,915
5. Drains	-	11,864	-	69
6. Pest and disease	75,594	410,262	442.72	2,374
7. Tools	43,197	65,201	50.94	377
8. Census	2,488.	4,441	78.47	26
9. Irrigation	-	1,375,687	-	7,962
10. Wind damage	-	51,441	-	298
11. High shade	-	5,700	-	33
12. Motor roads	-	34,563	-	200
13 Watchmen	-	242,249	-	1,402
14. Re-Supplying	-	1,434	-	8
			-	
Total	659,852	4,737,208	617.92	27,417

Farm-wise comparison of actual and estimated third year up keep cost is illustrated in Appendix Figures 3.15 and 3.16 respectively with respect to Farm 1 and 2. Over expenditure took place with regard to all the activities except supplying of vacancies, which has not been functioned in the year. However, the higher expenditure for pest and disease is quite natural in these years of coconut plantation. Total actual expenditure is seven times greater than the estimates. Non of the expenditure categories complied to $\pm$ 10 per cent deviation standard, nor the total actual expenditure. All these suggest that the financial performance is not satisfactory during the third year up keep. Meanwhile the activities, namely irrigation, wind damage, high shade, motor roads, re-supplying and de-

silting of drains were not in the comparison due to non availability of estimated data in the FSR. As shown in Table 3.16, the actual cost during third year up keep was Rs. 27,417 per ha.

E) Forth year upkeep

Table 3,17 compares the actual expenditure and the estimated cost for the period from April 2002 to September 2002.

Table 3.17 : Expenses in the forth year from March to September 2002 (Estimates vs. Actuals).

Activity	Estimates (Rs) (Only for Farm 1)	Actuals (Rs) (Only for Farm 1)	% Deviation of actuals with respect to estimates	Actual cost (Rs/ha)
1Fertigation	427,884	822,095	92	12,352
2. Supplying vacancies	16806	0.00	-100	0
3. Fencing	35,765	1,316	-96	20
4. Weeding	76,166	222,046	192	3,336
5. Pest and disease	57,952	331,271	472	4,978
6. Tools	33,115	30,038	-9	451
7. Census	1,904	0.00	-100	0
8. Irrigation	0.00	542988		8,558
9. Wind damage	0.00	3772		57
10. High shade	0.00	8760		132
11. Motor roads	0.00	29869		449
12Watchmen	0.00	99681		1,498
13..Husk burring	943791.75	0.00	-100	0
Total	1,593,384	2,091,835	31	31,431

The same is graphically illustrated in Appendix Figure 3.17. Actual expenditure for fertigation, pest and disease control, weeding and tools were greater than the estimates and it was less than the estimates with respect to fencing. The higher expenditure for pest and disease in this year too is justifiable because young coconut plantations of this age are naturally prone to pest attacks. The total actual expenditure for the forth year upkeep was 31 percent higher than the estimates. Actual expenses of each and every activity were beyond or below the $\pm$ 10 per cent deviation from estimates except for tools. The total expenditure has also shown the same, indicating that the financial performance is poor. Some of the present operations were not estimated in the FSR, eg. cost for irrigation maintenance, wind damage, high shade, motor roads and watchmen. So, they are liable to ill comparison.

Although estimates have been made for supplying vacancies and burring of husks, these practices were not carried out in the field.

Some Rs.31, 431 per ha was the actual expenditure for fourth year up keep (see Table 3.17) which is quite reasonable.

The total estimated costs for the year have been exceeded to the date of costing.

3.2.3.2 Intercrops

A) Banana

i) Banana in the Darmasena farm

The MCPL has not estimated the cost for banana cultivation under irrigation, so there is no basis to compare the actual expenditure incurred for it.

ii) Banana in the Block 4 Farm

The costs for this also have not been estimated, so there is no basis to compare the actual costs involved in banana cultivation in this farm too.

Conclusion

The analysis of the foregoing chapter concludes that the actual expenditure with regard to certain activities are considerably higher than the estimates while it is the opposite with regard to certain other activities. These two opposing deviations eventually nearly reconciles the total estimates with total actuals which is however not a sound financial management.

Estimation of expenditure of the project was done in the FSR. However, this should not be considered an once and for all activity. Mid-term review of estimations has to be done, and revised estimates have to be made, if necessary, based on this review. Financial management has to be done according to the revised estimates. Moreover, mid-term review of performance of the project also have to be done. However, absence of a project monitoring and evaluation component precluded all these activities.

CHAPTER 4

PHYSICAL PERFORMANCE OF THE PROJECT

This chapter evaluates the physical performance of the project during the period under consideration. Section 4.1 describes about the utilization of land by the project. Establishment of the coconut plantation and intercrops is discussed in Section 4.2 while Section 4.3 devotes for discussing about the establishment of the drip irrigation system. Section 4.4 outlines the performances of post-care practices.

4.1 Utilization of Land

The MASL has initially released approximately 600 ha of forestlands from Mahaweli System B, of which the MCPL has originally planned to establish coconut along with intercrops, in each year as follows (Table 4.1).

Table 4.1 : Land utilization envisages in FSR

Year	ccoconut (ha)	Banana (ha)	Papaya (ha)	Passion - fruit (ha)
1997	60	0	0	0
1998	150	36.5	0	0
1999	150	36.5	13.5	9
2000	150	37	13.5	9
2001	90	0	13.5	9
2002	0	0	13.5	9
Total	600	110	54	36

However, the MCPL has cultivated only 545.301 ha of coconut and 42 ha of intercrops, respectively representing 90.9 per cent and 21 per cent of initially recommended hecterage of coconut and intercrops in the FSR.

Table 4.2 shows the actual field development program of coconut and intercrops.

Table 4.2 : Actual land utilization

Year	Coconut (ha)	Banana (ha)
1997	0	0
1998	66.23	10
1999	106.55	32
2000	126.31	*
2001	125.96	*
2002	120.28	*
Total	545.33	42

A soil survey was conducted for the originally identified land blocks in the FSR. These land blocks are scatterly located. Realizing that the scattered distribution of blocks will pose management problems for MCPL, the MCPL has given up them and obtained new lands from the MASL from a one contiguous place, for which a soil survey was not done. Of Table 4.3, a soil survey was conducted only for Horticulture A and B, Block 4, Block 83 and Block 85/87. On this basis, a soil survey was conducted only for 204.29 ha which is only 35 per cent of 586.85 ha, the total land provided by MASL. This may lead to some repercussions. One possibility might be the presence of a clay pan in the un-surveyed lands which leads to stunting of coconut palms in the future. Other possibilities are poor drainage, shallow soils and unsuitable soils e.g. gravel etc. Table 4.3 shows the actual land distribution while Appendix Table 4.1 shows the farm-wise aggregated details.

Table 4.3 : Actual land distribution of the MCPL project

Field No. according to MCPL	Field Name according to MASL	Farm category according to the present study	Land extent provided by MASL (ha)	Land Extent (actually grown) (ha)	Number of coconut plants
1	*Dharmasena farm*		24.45	22.168	4160
2	*Goat Farm*	*Farm 1*	29.75	29.683	5377
3	*Horticulture A*		54.23	14.38	2390
3A	Horticulture B		22.63	22.6	3845
4	Block 4	Farm 2	48.28	52.67	7900
5	Block 5		33.64	31.285	4969
4A	*Block 2*		11.5	10.39	1838
6	*Block 83*	*Farm 3*	25.15	25.1	4305
7	*Block 1*		36.22	35.828	6015
8	*Block 85/87*		54	54.99	9200
9	Kotawewa 1		36	46.535	6581
10	Kotawewa 2	Farm 4	40	35.06	7200
11	Kotawewa 3		51	44.37	9377
12	*Weerana1*	*Farm 5*	80	80.269	14514
13	*Weerana 2*		40	40	7257
Total			586.85[a]	545.328[a]	94928

Note: a - Rocky patches and uncultivatable spaces are the reason for the difference.

4.2 Establishment of the Coconut Plantation and Intercrops

4.2.1 Establishment of the coconut plantation

The MCPL has planted only 545.301 ha of coconut up to September 2002, which is less than the estimated 600 ha in FSR. Initially, the MCPL has purchased CRIC 60 (T x T) polybagged seedlings from the Isolated Seed Garden (ISG), Ambakelle, at the rate of Rs.60/= per seedling. Per seedling cost involved in transporting polybagged seedlings turned out to be high because of the low stacking rate of them in a lorry. Therefore, the MCPL confined the purchasing of polybagged seedlings from ISG only to meet the seedling requirement of Darmasena farm and later the company switched to buy only CRIC 60 seed nuts from ISG and Madaru Oya Seed Garden (MOSG) and raised polybagged seedlings in their own nurseries at project site. This enabled them to produce a seedling at a cost of Rs. 34.60, which is significantly less costlier than buying and transporting seedlings from ISG. The lesson is that maintaining an own nursery would be an integral component of a large project of this nature.

Avenue planting with 10m x 6m spacing is recommended by CRI for coconut cultivation where intercropping is feasible[1]. The density should then be 175 palms per hectare. Triangular planting with 8m x 8m x 8m spacing is recommended for coconut monocropping with a density of 180 palms per ha. The size of the planting hole recommended to be 1m x 1m x 1m.

According to the FSR, the MCPL was supposed to plant 200 ha of coconut along with intercrops and the balance 400 ha was to be maintained as monocrop coconut. But at present, the MCPL has intercropped only 42 ha and the balance is maintained as monocrop coconut. However, coconut was cultivated in all blocks according to the avenue system that is suitable for intercropping. The avenue system has a low planting density (175 palms) compared to the triangular system (180 palms). These together resulted in sub optimal land utilization by the MCPL.

[1] The committee is of the view that this spacing is not adequate for coconut in forest cleared virgin lands with drip irrigation. So, the committee recommends that this spacing be fine tuned.

The trunk bases of coconut palms appear to be bulky which may at least partly be due to luxury supply of water together with over feeding of fertilizer. The bulky trunks with cracks are more prone to red weevil damage. Application of fertilizer according to DFR may be recommended to avoid over feeding.

4.2.2 Establishment of intercropping

The FSR does not emphasize the need to have own nurseries to raise planting materials of intercrops, namely banana, papaw and passion fruits. Equally, the MCPL has not attempted to date to do so, although still the possibility exists.

a) Banana

The MCPL has cultivated 10 ha of banana in Darmasena farm in 1998 and 32 ha in block 4 in 1999. The total banana cultivated area was 42 ha which is far below the estimated 110 ha.

Banana cultivation in Darmasena farm was done by using the tissue cultured plant nursery. The cost of production of banana is low in Darmasena farm as compared with Block 4. This is due to low cost of banana planting materials and the local professional charges compared to imported planting materials and foreign expertise.

Banana cultivation in Block 4 farm was done by using Cavendish suckers imported directly from Israel with foreign professional knowledge. So the cost of suckers and the professional charges were also very high compared to Darmasena farm.

The spacing of banana intercropping was 3m x 2.5m in both farms and the drip irrigation system was adopted. Each plant receives water and fertilizer through drip irrigation. Now the MCPL has neglected this banana cultivation due to marketing problem.

The traditional 3m x 2.5m double row system of banana cultivation with a mother plant and two suckers per clump, over crowds the inter row space of coconut in a short period of about two years. So, this spacing of banana intercropping seems to be inappropriate. The high-density single plant single row method now recommended by the DOA which enables cultivation of banana under coconuts for a longer duration is more desirable.

b) Papaya

FSR has recommended cultivating 54 ha of papaya as an intercrop under coconut. But MCPL has planted papaya seeds along the wind belts by sowing the seeds and not as an intercrop with coconut. Wind belts were drip irrigated and papaya plants have been benefited from it. The suitable papaya variety for this area has not been selected and any cultivation practice was not carried out except harvesting. However, notable achievement is that the company has generated a substantial net income from papaya by incurring a small cost. Had the company invested some money on papaya and the crop was properly managed, the company would have been able to generate more income than now, as there is a very good local as well as international market for papaya.

c) Passion fruit

Although the FSR originally planned to cultivate 36 ha of passion fruit, the MCPL has not grown a single plant in the field for commercial purpose.

d) Teak

Teak was grown as wind belts, in every tenth inter row spacing of coconuts. Each wind belt consists of two rows of teak plants grown in triangular system with a spacing of 8' x 8' x 8'. Teaks are drip irrigated giving a single emitter to each plant. The total number of teak planted was 48,000. This tree stock must have a considerable future value.

4.3 Establishment of the Drip Irrigation System

Initially, Agri World Co Ltd. had installed the irrigation system in the MCPL and this was followed by Browns Co. Ltd.

There are nine pump houses, one for each division. Each coconut palm was provided with four emitters, 18 inches apart from each other. Each emitter releases water at the rate of 2 liters per hour. Each palm thus receives 8 liters of water for one hour. Irrigation is done during the dry months and the duration of irrigation depends on daily weather condition.

The MCPL buys a special type of fertilizer from CIC Company and applies through the drip irrigation system at the rate of 3 kg per coconut palm per year in 52 applications. The N:P:K ratio of this fertilizer is 19:15:23. The cost of the fertilizer is Rs. 38.00 per kg, which is too high compared to the recommended Young Palm Mixture (YPM).

The drip irrigation operation system in MCPL is commendable. A group of well-trained technicians are placed for operation and maintenance of the system.

The drip system was not in operation when the team visited the site. It is recommended to evaluate the physical performance and the operational efficiency of the drip irrigation system based on standard methods of evaluating such systems. Evaluation of the physical performance involves system design and actual performance, quality and standards of equipments used, efficiency, energy consumption. It is also recommended to carry out a benefit cost analysis. This evaluation is however beyond the expertise of the present committee.

The fossil fuel cost involved in operating the irrigation system is significant and hence it may be worth to explore the feasibility of generating dendrothermal power employing gasifire technology, using *in-situ* grown gliricidia as a feed stock.

4.4 Postcare Practices

A permanent fleet of ten laborers for pest control has effectively contained the black beetle problem, which is generally prevalent in seedling stage of coconut cultivations. The effectiveness of the pest control program is further evidenced by the low cost involved in supplying vacancies discussed in Chapter 3.

The incidence of Boron deficiency was observed in a few coconut palms and this problem appears to be not contained yet.

Excessive growth of weed seems to be a serious problem. This is mainly a result of avenue planting of coconuts without intercropping, insufficient cover cropping and absence of an integrated approach to contain the problem. An integrated approach to weed control should be practiced, which includes cultural, mechanical, chemical and biological measures.

Mulching around the base of coconut seedlings was not observed.

Application of organic matter was also not observed. Although an immediate need for addition of organic matter may not arise as the project was set in a virgin land, cultivation of Nitrogen Fixing Trees (NFTs) for organic matter addition is imperative to sustain the soil fertility. Therefore, cultivation of NFTs is recommended.

CHAPTER 5

IMPACT OF MCPL PROJECT ON ENVIRONMENT

The purpose of this chapter is to evaluate the effects of the project on environment. Section 5.1 discusses the FSR recommendations on environment protection while the level of compliance by the MCPL on FSR recommendations is assessed in Section 5.2

5.1 Feasibility Study Report (FSR) Recommendations on Environment Protection

The FSR was concerned about the environment factor (see Chapter 11 of FSR). It had suggested that the clearing of the jungle to be done with a minimum damage to the soil and forest area. Maintenance of a ground cover has been recommended to reduce soil erosion, temperature and evaporation. The FSR also suggests to retain as much tree cover as possible and conserve water in farm ponds. Commercial fish culture in the ponds was recommended. Planting of cane (*Calamus rattan)* in the main drainage lines was recommended to prevent gully erosion.

Minimum tillage, less soil disturbance and limited application of pesticides were envisaged to protect and enhance the earthworm activity.

Dried 'illuk' which is more prone to fire during dry months of August to September is a common issue in the Dry Zone. The FSR suggested to grow deep rooted dicot evergreen trees and bushes along the field boundaries to guard against wild fires.

It is recommended that wild animals such as deer, Samber Cervus and wild boars[8] should be allowed to live in small patches of forest left in harmony with the plantation.

It is also recommended to rare honeybee (*Apis indica)* to rare in the project plantation to enhance pollination of coconuts.

[8] However, the committee is of the view that wild boars cannot live in harmony with a young coconut plantation.

5.2 Compliance to Environmental Recommendations

According to the FSR, the land was allocated in non-contiguous blocks allowing forest patches in between. But change in the cultivation area to a contiguous block resulted in loosing of forest patches.

Due to large-scale de forestation during the preliminary year of planting, the lands were opened to the vagaries of weather. As a result, heavy growth of weeds was observed in most of the cultivation areas, such as Weerana Block which is newly planted in the year 2002. Some of the area in the same block is naked and exposed to the sun and heavy wind, leading to soil erosion. Most of the block are neglected without any soil conservation measures. There are no contour drains or bunds in slopy terrains, so these rolling terrains are prone to soil erosion.

Coconut was planted in Weerana Blocks 1 and 2 after cleaning 120 ha of forest land within a short period of two and half months.

Although the FSR recommends to leave forest patches as wild life habitats, the MCPL has not done so.

Drainage drains seem to be dug by back hoe machines based on eye estimations and there is no contour map. In sum, a general less compliance by the MCPL to the recommendations made by the FSR on environment was observed.

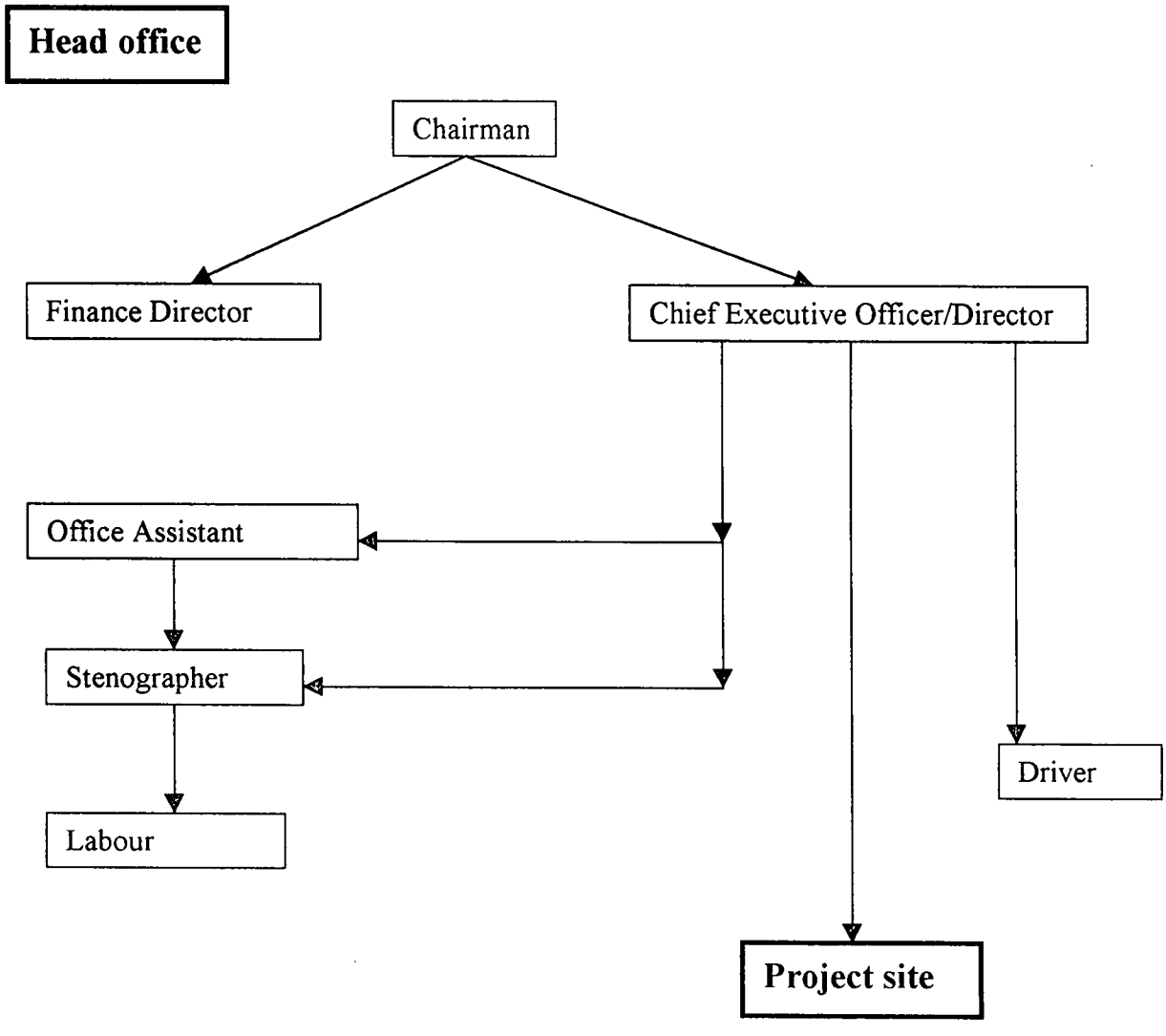
CHAPTER 6

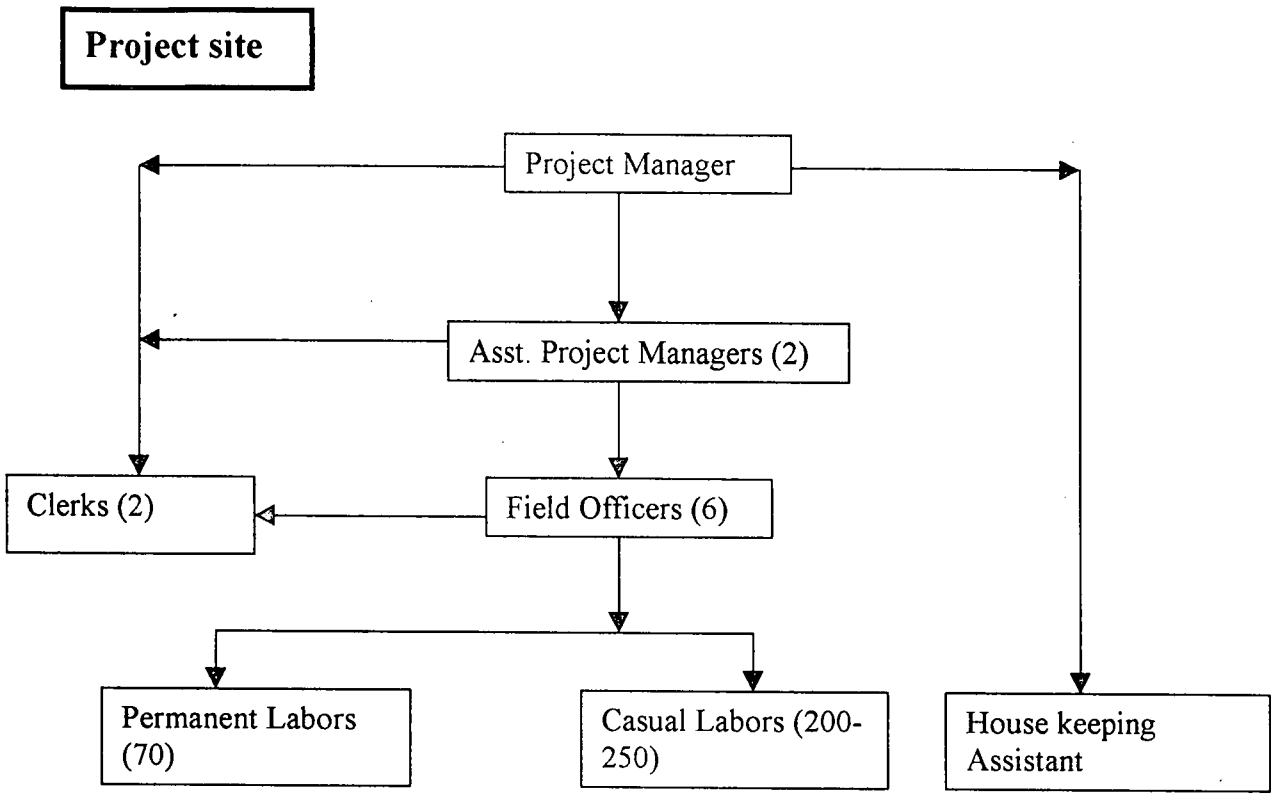
STAFF DEPLOYMENT OF THE PROJECT

The aim of this chapter is to describe and analyze the staff deployment from management to lower levels.

Figure 6.1 illustrates the organogram of the MCPL project, showing Colombo Head Office and Pimburaiththewa project site staff structure separately.

Figure 6.1 Organizational chart of the MCPL





The Head Office has three staff positions-which include Chairman, Chief Executive Officer (CEO) and Finance Director -and one non executive position, i.e. stenographer. In addition, two minor grade workers and a laborer are also in the Head Office.

The project site staff is headed by the Project Manager (PM), under him there are two Assistant Project Managers who in turn are the superiors of six Field Officers. There are two clerks to give clerical assistance to the project management and there is a House Keeping Assistant for PM.

The labor force consists of 70 Permanent Laborers and 200-250 Casual Laborers.

Unlike plantation companies having geographically scattered plantations, the MCPL has only a single coconut plantation at Pimburetththewa, for which the presence of a office in Colombo is less meaningful. It should be more appropriate to make the field site office fully-fledged even by transferring the resources held in Colombo office.

As regards to the field site staff, the committee noted the inadequacy of a single Project Manager to handle the management demand of the project especially when intercropping is commenced. Moreover, six Field Officers (FO) seem not adequate given their pivotal role of getting the work done by laborers. If intercropping is to be initiated, the committee's contention is that more FOs are required.

CHAPTER 7

FUTURE COSTS, RETURNS, EMPLOYMENT AND FUNDING REQUIREMENT OF THE PROJECT

This chapter deals with:

1. Future cost;
2. Employment generation;
3. Annual funding requirement of the project.

The estimates are made under following two scenarios for 1 and 2 above. Estimates for employment generation (item 2 above) are made for monocrop coconut and intercropping.

(a) Scenario - Assuming the project is continued "as it is" today

(b) Scenario - Assuming intercropping is started at least by now.

Section 7.1 estimates the likely cost of the project for the future until the project breaks even. Section 7.2 provides estimated optimum number of employment and total salary requirement. Section 7.3 provides the annual funding requirement of the project, until the project breaks even. All the above three aspects are investigated under the (a) and (b) two scenarios indicated above.

The MCPL has adopted avenue planting of coconuts enabling coconut-based intercropping continuously. An area of 246.22 ha has one and two years old coconut plantations where intercropping is feasible for another four financial years, commencing 1 April 2003.

7.1 The future cost of the project

a. Assuming the project is continued "as it is"

The project has cultivated 42 ha of banana under coconut, commencing 1998. At the time of committee's visit on 2 December 2002, the MCPL has nearly abandoned this intercrop cultivation although the company has been harvesting whatever the banana bunches yielding from the abandoned cultivation. It is reasonable to consider that the project had properly maintained the banana cultivation only until the financial year ending 31 March 2002, and given up thereafter. So, under the "project is continued as it is " scenario, the committee considers that the 42 ha of banana under coconut was continued for four years (from 1 April 1998 to 31 March 2002). Thereafter, the plantation is assumed to be continued as a monocrop coconut.

If monocrop coconut is to be continued like this, the pay back period of the project would be 16 years, which means the MCPL can recover all the accumulated costs incurred for the project by 2014 (see Table 7.1 and Figure 7.1).

Table 7.1 : Costs and benefits of the project if continued "as it is"

Year Number	Year	Total actual cost of the project (Rs)	Total estimated cost of the project (Rs)	Revenue of the project-100 Scenario	Profit (Rs)	Cumulative profit (Rs)
1	up to 31.3.1999	20,795,884			-20,795,884	-20,795,884
2	up to 31.3.2000	33,637,383		-	-33,637,383	-54,433,267
3	up to 31.3.2001	48,766,621		2,176,032	-46,590,590	-101,023,857
4	up to 31.3.2002	43,499,801		4,996,748	-38,503,053	-139,526,909
5	up to 31.3.2003		31,307,698	149,520	-31,158,178	-170,685,088
6	up to 31.3.2004		33,295,899	1,439,842	-31,856,057	-202,541,145
7	up to 31.3.2005		41,736,984	4,638,114	-37,098,870	-239,640,015
8	up to 31.3.2006		47,503,775	10,439,178	-37,064,597	-276,704,612
9	up to 31.3.2007		52,344,301	21,862,755	-30,481,546	-307,186,159
10	up to 31.3.2008		55,276,423	38,360,990	-16,915,433	-324,101,591
11	**up to 31.3.2009**		58,364,400	59,007,694	**643,294**	-323,458,297
12	up to 31.3.2010		62,955,488	84,446,930	21,491,442	-301,966,856
13	up to 31.3.2011		67,879,187	115,257,807	47,378,620	-254,588,236
14	up to 31.3.2012		73,093,998	146,577,922	73,483,924	-181,104,312
15	up to 31.3.2013		78,193,405	181,331,919	103,138,514	-77,965,798
16	**up to 31.3.2014**		83,120,891	213,882,308	130,761,417	**52,795,619**

Figure 7.1: Pay back period under "100 scenario"

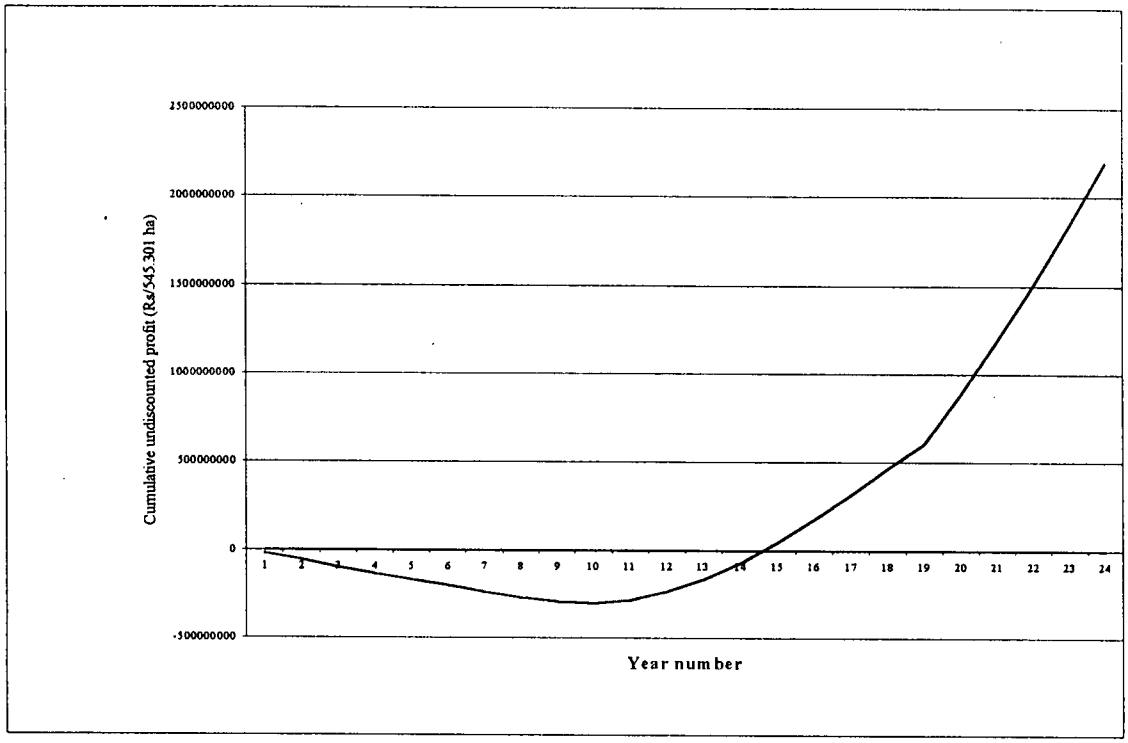


Table 7.1 shows that the project generates a positive net income from the 11th year of the project (2009). This means the MCPL does not need external funds commencing year 2009.

The cost estimates of Table 7.1 are based on the estimates available in the FSR. As shown in Table 7.1, actual costs peaked in the third year and then drops. The reason for this observed trend is because the first three years include the establishment cost of coconuts and intercrops.

b. Assuming "intercropping is started at least by now" scenario

The MCPL can intercrop 246.22 ha with banana or papaya, which has a potential of generating a substantial income to the company.

i. Intercropping with banana

Table 7.2 shows the costs and benefits of continuing the project under three stages.

Table 7.2 : Costs and benefits of the project if intercropping is continued with banana from 1 April 2003 to 31 March 2007

Stage I : 545.301 ha of coconut, and of which 42 ha was intercropped with banana up to 31.3.2002 and 545.301 ha of monocrop coconut from 1.4.2002 to 31.3.2003

Stage II : 545.301 ha of coconut, and of which 246.22 ha will be intercropped with banana from 1.4.2003 up to 31.3.2007

Stage III: 545.301 ha of monocrop coconut from 1.4.2007

Stage	Year number	Financial year	Total actual cost (Rs)	Total estimated cost (Rs)	Revenue (Rs)	Profit (Rs)	Cumulative profit (Rs)
I	1	up to 31.3.1999	20,795,884		-	-20,795,884	-20,795,884
	2	up to 31.3.2000	33,637,383		-	-33,637,383	-41,591,768
	3	up to 31.3.2001	48,766,621		2,176,032	-46,590,590	-75,229,151
	4	up to 31.3.2002	43,499,801		4,996,748	-38,503,053	-121,819,741
	5	up to 31.3.2003		31,307,698	149,520	- 31,158,178	-160,322,793
II	**6**	**up to 31.3.2004**		56,322,682	96,192,035	**39,869,353**	-191,480,972
	7	up to 31.3.2005		47,407,361	148,412,912	101,005,551	-151,611,619
	8	up to 31.3.2006		52,681,341	150,221,288	97,539,947	-50,606,068
	9	**up to 31.3.2007**		58,105,940	142,898,243	84,792,303	**46,933,879**
III	10	up to 31.3.2008		55,276,423	38,360,990	-16,915,433	131,726,183
	11	up to 31.3.2009		58,364,400	59,007,694	643,294	114,810,750
	12	up to 31.3.2010		62,955,488	84,446,930	21,491,442	115,454,044
	13	up to 31.3.2011		67,879,187	115,257,807	47,378,620	136,945,486
	14	up to 31.3.2012		73,093,998	146,577,922	73,483,924	184,324,105
	15	up to 31.3.2013		78,193,405	181,331,919	103,138,514	257,808,030
	16	up to 31.3.2014		83,120,891	213,882,308	130,761,417	360,946,544

Stage I - From the beginning of the project, until 31st March 2002, the project had been continued with 545.301 ha of coconut, and of which, 42 ha was intercropped with banana. Then, from 1 April 2002 up to 31 March 2003, the 545.301 ha of coconut are maintained as a monocrop.

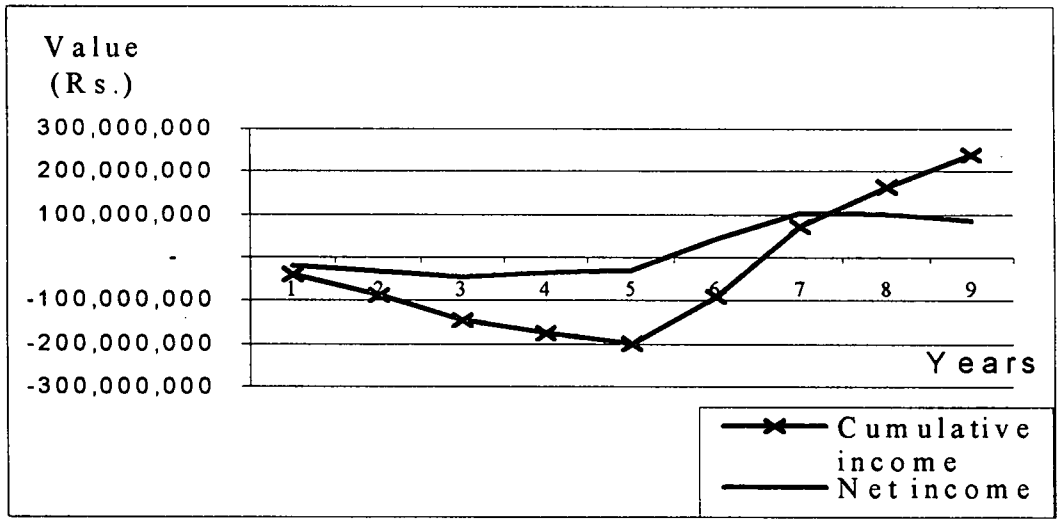
Stage II- Of the 545.301 ha of monocrop coconut, 246.22 ha will be intercorpped with banana on 1 April 2003 and this cropping system will be continued for four years, ending 31 March 2007.

Stage III- By 1 April 2007, the 545.301 ha of coconut will again be continued as a monocrop.

As the project turns from the Stage I to the Stage II, a sudden jump of expenditure can be observed which is due to the cash intensity of the intercrop. Similarly, expenditure drops when the project turns from the Stage II to the Stage III, which is because the plantation returns to monocrop coconut state.

If the MCPL intercrops 246.22 ha with banana, the pay back period can be reduced from 16 years to 8 years (see Table 7.2 and Figure 7.2).

Figure 7.2 : Pay back period -intercropping (with banana) scenario



This means the company can recover the all accumulated costs by the year 2006. Meanwhile the company will have positive net income at 6th year (2004) of the project. Therefore, the MCPL does not require external funds after 2003/2004 financial year.

ii. Intercropping with papaw

If the MCPL is to intercrop the 246.22 ha with papaya, the pay back period could be reduced from 16 to 14 years, implying that the total accumulated costs can be off set by the year 2012 (see Table 7.3 and Figure 7.3).

Table 7.3 : Costs and benefits of the project if intercropping is continued with papaw from 1 April 2003 to 31 March 2007

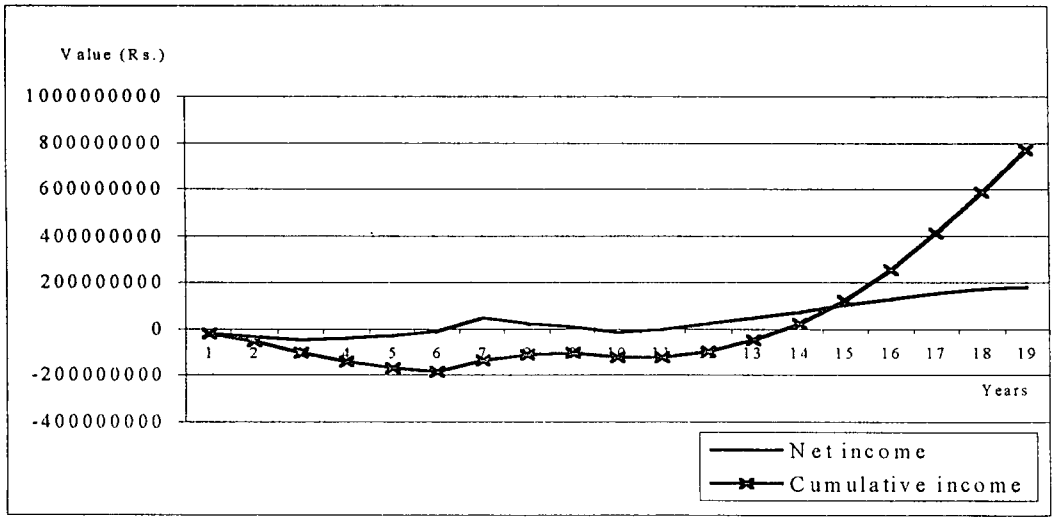
Stage I : 545.301 ha of coconut, and of which 42 ha was intercropped with banana up to 31.3.2002 and 545.301 ha of monocrop coconut from 1.4.2002 to 31.3.2003

Stage II : 545.301 ha of coconut, and of which 246.22 ha will be intercropped with papaw from 1.4.2003 up to 31.3.2007

Stage III: 545.301 ha of monocrop coconut from 1.4.2007

Stage	Year number	Financial year	Total actual cost (Rs)	Total estimated cost (Rs)	Revenue (Rs)	Profit (Rs)	Cumulative profit (Rs)
I	1	up to 31.3.1999	20,795,884			-20,795,884)	-20,795,884
	2	up to 31.3.2000	33,637,383			-33,637,383)	-41,591,768
	3	up to 31.3.2001	48,766,621		2176031.5	-46,590,590)	-75,229,151
	4	up to 31.3.2002	43,499,801		4996748.11	-38,503,053)	-121,819,741
	5	up to 31.3.2003		31,307,698	149519.6351	-31,158,178)	-160,322,793
II	6	up to 31.3.2004		56,322,682	47070563.26	-9,252,119)	-191,480,972
	7	**up to 31.3.2005**		47,407,361	100462629.1	**53,055,268**	-200,733,090
	8	up to 31.3.2006		52,681,341	83448331.94	30,766,991	-147,677,822
	9	up to 31.3.2007		58,105,940	67493476.19	9,387,536	-116,910,831
III	10	up to 31.3.2008		55,276,423	38360990.36	-16,915,433)	-107,523,295
	11	up to 31.3.2009		58,364,400	59007693.99	643,294	-124,438,728
	12	up to 31.3.2010		62,955,488	84446929.57	21,491,442	-123,795,434
	13	up to 31.3.2011		67,879,187	115257806.7	47,378,620	-102,303,992
	14	up to 31.3.2012		73,093,998	146577922.2	73,483,924	-54,925,373
	15	**up to 31.3.2013**		78,193,405	181331919.5	103,138,514	**18,558,552**
	16	up to 31.3.2014		83,120,891	213882307.8	130,761,417	121,697,066

Figure 7.3 : Pay back period - intercropping (with papaw) scenario



Meanwhile the MCPL will have positive net income at 7th year of the project which is 2005. This means the MCPL does not require funds after 2004/2005 financial year.

These findings suggest that the appropriate measure to reduce the funding period is to advise the MCPL to practice intercropping (The MCPL can select the suitable intercrop species according to their resource availability).

7.2 Employment generation

The number of employments generated by different cropping systems are discussed. We assume here also that the intercropping is started by 1st April 2003 and lasts for four years.

As shown in Table 7.4, intercropping demands more labor relative to coconut monocropping which will act as a source of employment for agricultural laborers.

For instance, on average the coconut-based papaw and banana systems respectively generate 3.5 and 2 times greater employment as compared with monocrop coconuts.

Table 7.4 : Labor requirement (in man days) under different cropping systems

Year	Coconut Monocropping (MD/545.301 ha)	MDs for coconut 545.301 ha, of which, 246.22 ha of papaw	MDs for coconut 545.301 ha, of which, 246.22 ha of banana
up to 31.3.1999	28830		
up to 31.3.2000	6146		
up to 31.3.2001	8643		
up to 31.3.2002	8598		
up to 31.3.2003	10627		
up to 31.3.2004	11537	54126	36482
up to 31.3.2005	14719	36013	26278
up to 31.3.2006	13533	33610	23267
up to 31.3.2007	15867	34728	27427
up to 31.3.2008	16645		
up to 31.3.2009	18357		
up to 31.3.2010	18980		
up to 31.3.2011	19758		
up to 31.3.2012	20536		
up to 31.3.2013	23027		
up to 31.3.2014	21638		

Note: MD - Man days.

- **Total salary requirements for labour force in different cropping systems**

Total salary requirement for labour force in different cropping systems, assuming the wage rate as Rs. 200.00/day, is as shown in Table 7.5.

Table 7.5 Total salary requirement for labour force under different cropping systems

Year	Coconut Monocropping (Rs/545.301 ha)	Rs/Coconut 545.301 ha, of which 246.22 ha of papaw	Rs/Coconut 545.301 ha, of which 246.22 ha of banana
up to 31.3.1999	5,766,079.79		
up to 31.3.2000	1,229,123.00		
up to 31.3.2001	1,728,612.89		
up to 31.3.2002	1,719,581.92		
up to 31.3.2003	2,125,310.65		
up to 31.3.2004	2,307,372.54	10,825,107.22 (4.7)	7,296,331.43 (3.2)
up to 31.3.2005	2,943,738.81	7,202,606.15 (2.4)	5,255,695.37 (1.8)
up to 31.3.2006	2,706,521.75	6,722,025.24 (2.5)	4,653,432.54 (1.7)
up to 31.3.2007	3,173,435.73	6,945,575.38 (2.2)	5,485,392.29 (1.7)
up to 31.3.2008	3,329,073.73		
up to 31.3.2009	3,671,477.31		
up to 31.3.2010	3,795,987.71		
up to 31.3.2011	3,951,625.70		
up to 31.3.2012	4,107,263.70		
up to 31.3.2013	4,605,305.28		
up to 31.3.2014	4,327,656.18		

Note: Figures in brackets show how many times the labor salaries are more in coconut-based intercropping systems in relation to coconut monocropping.

The increase of total salary requirement for labor force in intercropping systems in relation to coconut monocropping system holds the same relationship as in the case of employment for obvious reasons.

7.3 Annual funding requirement

Annual funding requirement is analyzed under two scenarios, i.e.

a) Assuming the project is continued "as it is"
b) Assuming "intecropping is started at least by now"
    i. Banana
    ii. Papaw

a) Assuming the project is continued "as it is"

If coconut monocropping is to be continued, total income, total cost and net return of the project are shown in Table 7.6.

Table 7.6 : Income, cost and net return - coconut monocropping
(Rs/545.301 ha)

Year	Income of the project (Rs)	Total Cost of the Project (Rs)	Balance (Rs)
up to 31.3.1999	-	20,795,883.68	- 20,795,883.68
up to 31.3.2000	-	33,637,383.24	- 33,637,383.24
up to 31.3.2001	2,176,031.50	48,766,620.50	- 46,590,589.00
up to 31.3.2002	4,996,748.11	43,499,801.44	- 38,503,053.33
up to 31.3.2003	149,519.64	31,307,698.29	- 31,158,178.65
up to 31.3.2004	1,439,841.76	33,295,899.27	- 31,856,057.51
up to 31.3.2005	4,638,113.96	41,736,983.75	- 37,098,869.79
up to 31.3.2006	10,439,177.54	47,503,775.48	- 37,064,597.94
up to 31.3.2007	21,862,754.69	52,344,300.89	- 30,481,546.20
up to 31.3.2008	38,360,990.36	55,276,423.42	- 16,915,433.06
up to 31.3.2009	**59,007,693.99**	**58,364,400.00**	**643,293.99**

External funds have to be provided until the project generates positive net returns, i.e. until 31st March 2008. Although the cumulative cost is not covered, after the above date the project becomes self-financing. After which therefore no external funds are required. However, monthly cash flow pattern of the year in which project becomes self-financing has to be investigated to decide which month of that year the external funding could be terminated.

b) Assuming "intercropping is started at least by now"

i. Banana

If 246.22 ha out of 545.301 ha of coconut are to be intercropped with banana, the likely cost, income and net return of the whole MCPL project are shown in Table 7.7.

Table 7.7 Income, costs and net returns : coconut with banana intercropping

Year	Income (Rs) (coconut + Banana)	Cost (Rs) (Coconut + Banana)	Balance (Rs)
up to 31.3.1999	-	20,795,883.68	- 20,795,883.68
up to 31.3.2000	-	33,637,383.24	- 33,637,383.24
up to 31.3.2001	2,176,031.50	48,766,620.50	- 46,590,589.00
up to 31.3.2002	4,996,748.11	43,499,801.44	- 38,503,053.33
up to 31.3.2003	149,519.64	31,307,698.29	- 31,158,178.65
up to 31.3.2004	**96,192,034.96**	**56,322,682.36**	**39,869,352.59**

The project commences to generate positive net returns during the financial year commencing 1st April 2003, so external funding is required only until 31st March 2003 under this scenario. However, the monthly cash flow pattern of the self financing year has to be investigated as in the pervious case to decide on the likely months external funding can be terminated.

ii. Papaw

If 246.22 ha out of 545.301 ha coconut are to be intercropped with papaya, the MCPL will start to generate positive net returns during the year commencing 1st April 2004 (see Table 7.8). This means that the external funding is required under this scenario only until 31st March 2004, subject to cash flow pattern considerations as in the pervious two cases.

Table 7.8 Costs and returns : coconut with papaw intercropping

(Rs per 545.301 ha of coconut + 246.22.ha of papaw)

Year	Income (Rs) (coconut + Papaya)	Cost (Rs) (Coconut + Papaw)	Balance (Rs)
up to 31.3.1999	-	20,795,883.68	- 20,795,883.68
up to 31.3.2000	-	33,637,383.24	- 33,637,383.24
up to 31.3.2001	2,176,031.50	48,766,620.50	- 46,590,589.00
up to 31.3.2002	4,996,748.11	43,499,801.44	- 38,503,053.33
up to 31.3.2003	149,519.64	31,307,698.29	- 31,158,178.65
up to 31.3.2004	47,070,563.26	59,556,379.49	- 12,485,816.23
up to 31.3.2005	**100,462,629.11**	**52,992,561.72**	**47,470,067.39**

This takes an end of the report. The committee deliberately included the recommendations at the beginning of the report with the intention of drawing the immediate attention of readers on recommendations.

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APPENDICES

(Appendix numbers correspond to the chapters to which the material refers)

APPENDIX 2

Appendix Table 2.1 : Nut production of the MCPL under optimistic yield scenario

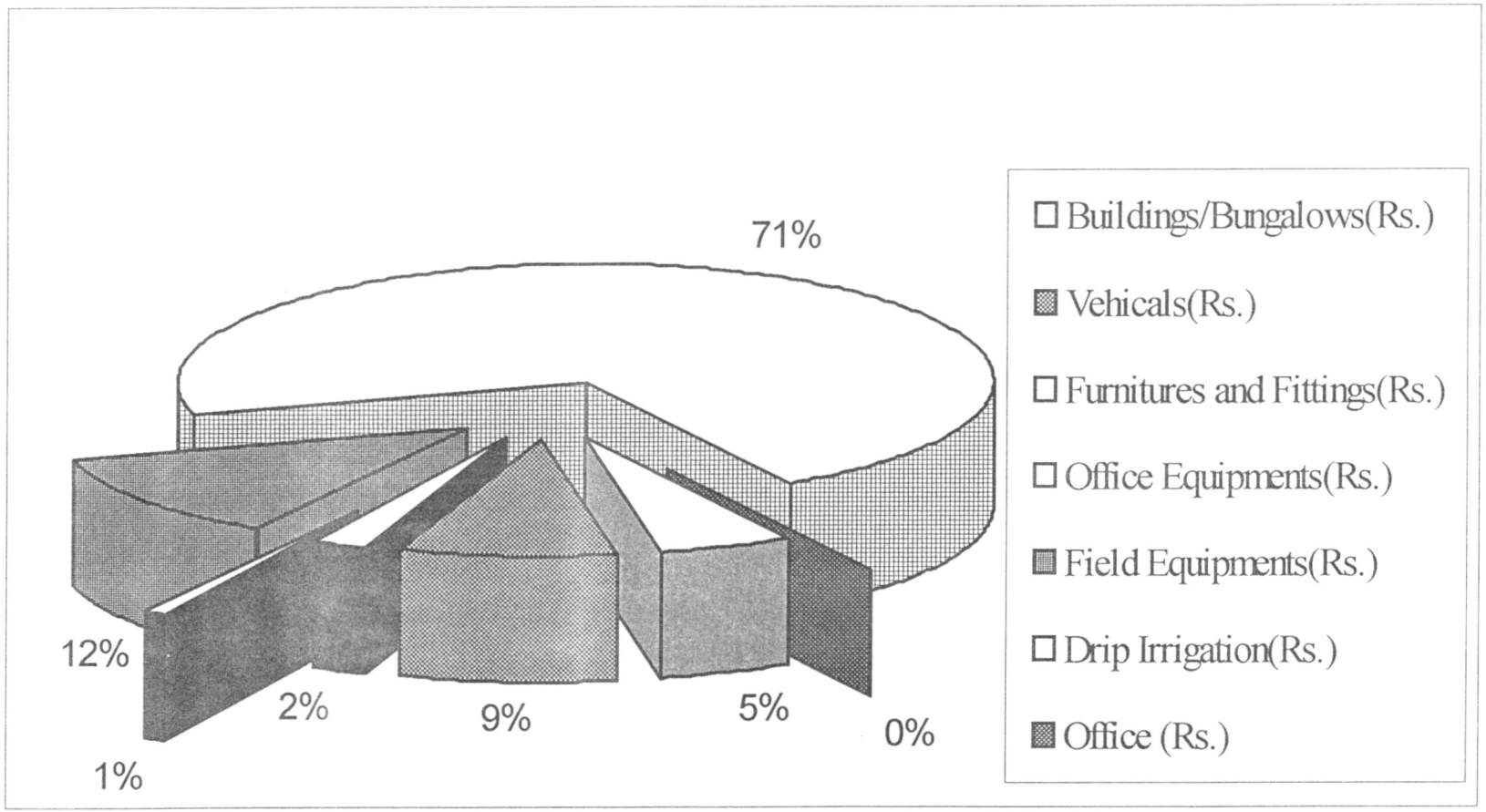
Year No.	Calendar year	Coconut production (nuts/ha) (1 ha = 170 palms)	Farm					Total nut production of MCPL Farm
			F1 (nuts/66.231 ha)	F2 (nuts/106.55 ha)	F3 (nuts/126.5 ha)	F4 (nuts/125.96 ha)	F5 (nuts/ 120.26 ha)	
1	1998							
2	1999							
3	2000							
4	2001							
5	2002							
6	2003	259	17154					17154
7	2004	1875	124183	27596				151780
8	2005	3292	218033	199781	32712			450525
9	2006	4792	317379	350763	236813	32624		937578
10	2007	9440	625221	510588	415780	236175	31147	1818910
11	2008	10784	714235	1005832	605230	414660	225488	2965445
12	2009	13697	907166	1149035	1192272	603600	395896	4247969
13	2010	16410	1086851	1459415	1362019	1189062	576286	5673634
14	2011	19223	1273159	1748486	1729931	1358353	1135254	7245182
15	2012	22500	1490198	2048211	2072583	1725274	1296884	8633149
16	1013	22500	1490198	2397375	2427865	2067004	1647201	10029642
17	2014	22500	1490198	2397375	2841750	2421329	1973467	11124118
18	2015	22500	1490198	2397375	2841750	2834100	2311758	11875180
19	2016	22500	1490198	2397375	2841750	2834100	2705850	12269273
20	2017	22500	1490198	2397375	2841750	2834100	2705850	12269273
21	2018	22500	1490198	2397375	2841750	2834100	2705850	12269273
22	2019	22500	1490198	2397375	2841750	2834100	2705850	12269273
23	2020	22500	1490198	2397375	2841750	2834100	2705850	12269273
24	2021	22500	1490198	2397375	2841750	2834100	2705850	12269273
25	2022	22500	1490198	2397375	2841750	2834100	2705850	12269273

APPENDIX 3

Appendix Table 3.1: CESS Funds released by CDA to MCPL

Date	Cheque No.	Amount Released (Rs.)
23.10.1998	412049	6,250.000
13.11.1998	537710	6,250,000
29.03.1999		4,000,000
18.05.1999	540112	8,500,000
01.10.1999	929960	15,000,000
29.11.1999	929970	15,000,000
23.03.2000		10,000,000
26.06.2000		10,000,000
21.11.2000	934100	10,000,000
13.12.2000	934413	10,000,000
14.03.2001	934440	10,000,000
15.05.2001	934462	10,000,000
02.08.2001	934487	10,000,000
11.09.2001	934560	5,000,000
29.09.2001	934566	5,000,000
05.11.2001	934581	5,000,000
01.02.2002	934609	5,000,000
Sub total as at 31st March 2002		145,000,000
12.04.2002	934952	5,000,000
31.05.2002	939494	10,000,000
18.07.2002	939536	5,000,000
01.08.2002	939538	5,000,000
Total		170,000,000

Appendix Figure 3.1 Composition of actual capital expenditure (from 1st April 1998 to 31st March 2002)



Appendix Table 3.2: Total actual capital expenditure of the project on the financial year basis

	01.04.1998 to	01.04.1999 to	01.04.2000 to	01.04.2001 to	Total
Category	31.03.1999	31.03.2000	31.03.2001	31.03.2002	
Buildings/Bungalows(Rs.)	426,045	1,047,705	1,087,927	1,082,238	3,643,917
Vehicles (Rs.)	3,501,500	1,713,606	72,000	849,000	6,136,106
Furniture and Fittings (Rs.)	828,272	304,050	9,,608	330,241	1,472,171
Office Equipment (Rs.)	498,820	96,473	11300	17,925	624,518
Field Equipment (Rs.)	930,676	2,130,129	3,525,607	1,819,366	8,405,778
Drip Irrigation (Rs.)	7,462,632	13,634,073	19,460,919	9,342,708	49,900,333
Office (Rs.)	0	14,000	0	0	14,000
Total	13,647,946	18,940,036	24,167,361	13,441,479	70,196,824

Appendix Table 3.3 :Total actual general charges of the project on financial year basis

	01.04.1998 to	01.04.1999 to	01.04.2000 to	01.04.2001 to	Total
Category	**31. 03. 1999**	**31. 03. 2000**	**31. 03. 2001**	**31. 03. 2002**	
Salaries	1,072,969	3468665	3800613	2461695	10803942
EPF/ETF	96,396	30795	97608	137902	362701
Overtime	0	0	0	0	0
Holiday pay	0	0	0	0	0
Gratuity	0	60,300	0	0	60,300
Welfare expenses	0	40,403	137,907	1,275,984	1,454,296
Supervisory vehicles	170,554	206,125	405,576	518,488	1,300,743
Electricity	19,176	76,523	87,509	97,150	280,359
Communication	25,216	18,982	192,611	164,372	401,182
Stationers	84,548	145,646	240,229	255,549	725,973
Bungalow upkeep	81,789	101,475	64,902	385,827	633,994
Maintenance of Buildings	267,990	317,733	358,635	337,310	1,281,669
Maintenance of Equipment					
Maintenance of vehicles	154,945	273,701	428,156	509,073	1,365,875
Insurance	80,511	0	0	0	80,511
Sundries	1,010,729	952,165	1,664,924	1,590,327	5,218,146
Total	3,064,823	5,692,518	7,478,676	7,733,680	23,969,698

Appendix Table 3.4 : Expenditure involved in plantation management of farm 1 on financial year basis

Details	01.04.1998 to 31. 03. 1999	01.04.1999 to 31. 03. 2000	01.04.2000 to 31. 03. 2001	01.04.2001 to 31. 03. 2002	Total
1. Surveying	58065.60	0.00	0.00	0.00	58065.60
2. Felling	489796.68	0.00	0.00	0.00	489796.68
3. Lining and Pegging	37546.50	0.00	0.00	0.00	37546.50
4. Holing	235979.50	0.00	0.00	0.00	235979.50
5. Filling	241000.10	0.00	0.00	0.00	241000.10
6. Planting materials	535497.58	0.00	0.00	0.00	535497.58
7. Planting	291.00	0.00	0.00	0.00	291.00
1. Cost of manure	0.00	176595.52	447277.04	789714.48	1413587.04
2. Supplying vacancies	0.00	47956.67	105454.49	0.00	153411.16
3. Fencing	275350.65	10556.53	39183.65	132936.34	458027.17
4. Weeding	350048.40	1024200.00	761719.65	676423.80	2812391.85
5. Drains (Cutting and Maintenance)	20872.50	66820.00	0.00	11744.43	99436.93
6. Pest and disease	0.00	76679.00	21424.63	315014.50	413118.13
7. Tools	0.00	16104.25	8438.68	34254.78	58797.71
8. Census	0.00	4285.00	0.00	4440.60	8725.60
9. Saplon	0.00	0.00	0.00	0.00	0.00
10. Planting timber	32562.34	32622.73	1590.14	0.00	66775.21
11. Irrigation	734483.00	231307.96	608191.20	669382.22	2243364.38
12. Wind damage	0.00	0.00	0.00	50840.60	50840.60
13. High shade	0.00	0.00	0.00	5470.00	5470.00
14. Motor roads	0.00	0.00	0.00	29868.91	29868.91
15. Supplying	0.00	0.00	0.00	0.00	0.00
16 Watchmen	90621.22	0.00	271042.47	184065.28	545728.97
17. Variable wages	125690.00	99670.00	391360.27	0.00	616720.27
18. Cover crop	58663.30	0.00	0.00	0.00	58663.30
Total	3,286,468.37	1,786,797.66	2,655,682.22	2,904,155.94	**10,633,104.19**

Appendix Table 3.5 : Details of expenditure in Farm 2 on financial year basis

Details	01.04.1999 to 31. 03. 2000	01.04.2000 to 31. 03. 2001	01.04.2001 to 31. 03. 2002	Total
1. Surveying	526302.50	0.00	0.00	526302.50
2. Felling	2454266.51	0.00	0.00	2454266.51
3. Lining and Pegging	36142.24	0.00	0.00	36142.24
4. Holing	225530.60	0.00	0.00	225530.60
5. Filling	203891.82	0.00	0.00	203891.82
6. Planting materials	826526.11	0.00	0.00	826526.11
7. Planting	26305.48	0.00	0.00	26305.48
1. Cost of manure	0.00	392118.47	691498.49	1083616.96
2. Supplying vacancies	0.00	374218.84	36351.42	410570.26
3. Fencing	354811.20	140049.25	76013.32	570873.77
4. Weeding	434636.66	1026850.57	808607.79	2270095.02
5. Drains (Cutting and Maintenance)	596497.50	0.00	37560.00	634057.50
6. Pest and disease	0.00	21333.69	49101.64	70435.33
7. Tools	0.00	47446.19	50073.05	97519.24
8. Census	0.00	0.00	1342.50	1342.50
9. Saplon	0.00	3575.00	0.00	3575.00
10. Planting timber	5630.45	37739.00	0.00	43369.45
11. Irrigation	393836.00	707315.95	729928.83	1831080.78
12. Wind damage	0.00	0.00	52296.25	52296.25
13. High shade	0.00	0.00	3005.00	3005.00
14. Motor roads	0.00	0.00	31841.43	31841.43
15. Supplying	0.00	0.00	0.00	0.00
16 Watchmen	452021.51	275966.82	247602.10	975590.43
17. Variable wages	128880.00	0.00	0.00	128880.00
18. Cover crop	39560.00	0.00		39560.00
Total	6,704,838.58	3,026,613.78	2,815,221.82	**12,546,674.18**

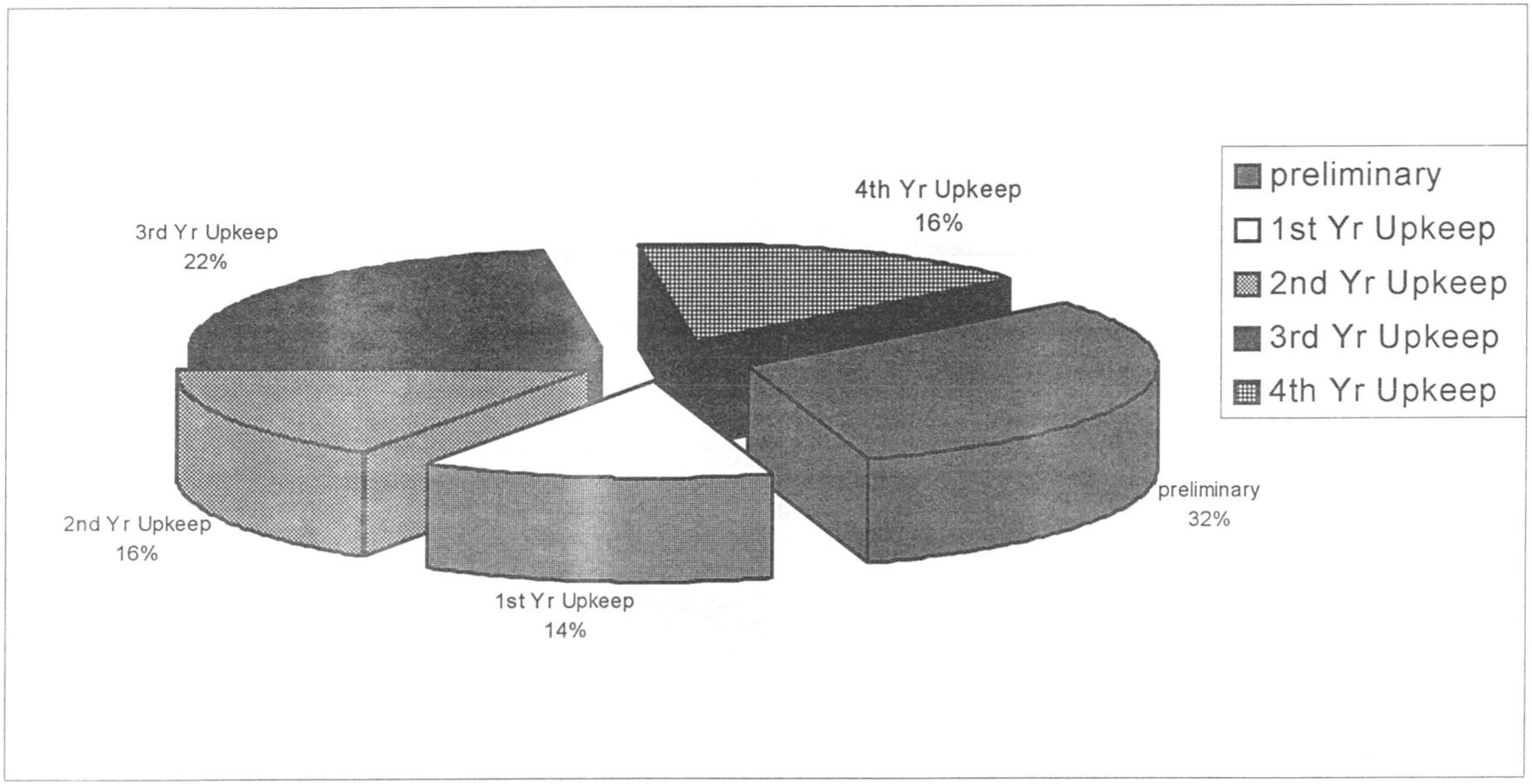
Appendix Table 3.6 : Details of expenditure in Farm 3 on the basis of financial years

Details	01.04.2000 to 31. 03 .2001	01.04.2001 to 31. 03. 2002	Total
1. Surveying	815775.60	0.00	815775.60
2. Felling	3575245.90	0.00	3575245.90
3. Lining and Pegging	19765.00	0.00	19765.00
4. Holing	294825.00	0.00	294825.00
5. Filling	611116.21	0.00	611116.21
6. Planting materials	235834.69	0.00	235834.69
7. Planting	0.00	0.00	0.00
1. Cost of manure	0.00	799075.15	799075.15
2. Supplying vacancies	0.00	79033.95	79033.95
3. Fencing	135568.21	123504.12	259072.33
4. Weeding	30446.53	1221382.01	1251828.54
5. Drains (Cutting and Maintenance)	422158.31	12380.00	434538.31
6. Pest and disease	0.00	1025.00	1025.00
7. Tools	0.00	37260.75	37260.75
8. Census	0.00	0.00	0.00
9. Saplon	0.00	0.00	0.00
10. Planting timber	144300.00	0.00	144300.00
11. Irrigation	7128.27	729853.32	736981.59
12. Wind damage	0.00	13248.00	13248.00
13. High shade	0.00	21440.00	21440.00
14. Motor roads	0.00	64798.51	64798.51
15. Supplying	0.00	0.00	0.00
16 Watchmen	0.00	220326.98	220326.98
17. Variable wages	0.00	0.00	0.00
18. Cover crop	11615.00	0.00	11615.00
Total	6,303,778.72	3,323,327.79	**9,627,106.51**

Appendix Table 3.7 : Details of expenditure in Farm 4 on financial year basis

Details	01.04.2002 to 31. 03. 2002	Total
1. Surveying	977326.96	977326.96
2. Felling	1979736.15	1979736.15
3. Lining and Pegging	50165.03	50165.03
4. Holing	582915.30	582915.30
5. Filling	1027928.42	1027928.42
6. Planting materials	1018200.14	1018200.14
7. Planting	109130.80	109130.80
1. Cost of manure	0.00	0.00
2. Supplying vacancies	0.00	0.00
3. Fencing	354927.77	354927.77
4. Weeding	438857.96	438857.96
5. Drains (Cutting and Maintenance)	22153.39	22153.39
6. Pest and disease	0.00	0.00
7. Tools	0.00	0.00
8. Census	0.00	0.00
9. Saplon	0.00	0.00
10. Planting timber	3318775.00	3318775.00
11. Irrigation	0.00	0.00
12. Wind damage	0.00	0.00
13. High shade	0.00	0.00
14. Motor roads	0.00	0.00
15. Supplying	0.00	0.00
16 Watchmen	0.00	0.00
17. Variable wages	92167.88	92167.88
18. Cover crop	6182.50	6182.50
Total	**9,978,467.30**	**9,978,467.30**

Appendix Figure 3.2 : Actual per ha cost in coconut cultivation program



Appendix Table 3.8 : Actual total expenditure of coconut cultivation program in Rs

Farm	Extent (ha)	Age of plantation (years)	Cost for fisrt year of each farm		Cost for second year of each farm		Cost for third year of each farm		Cost for fourth year of each farm		Total
			Per farm	Per ha	Per farm	Per ha	Per farm	Per ha	Per farm	Per ha	
1	66.231	4	3,286,468	49,554	1,786,798	26,942	2,655,682	40,097	294,156	43,849	10,633,104
2	106.55	3	6,704,839	62,927	3,026,614	28,406	2,815,222	26,422	-	-	12,546,674
3	126.5	2	6,303,779	49,832	3,323,328	26,271	-	-	-	-	9,627,107
4	125.96	1	9,978,467	79,219	-	-	-	-	-	-	9,978,467
5[A]	120.26										

A – This farm does not come under the analyzed period because it was commenced after this period.

Appendix Table 3.9 : Detailed expenditure on banana cultivation on financial year basis

Banana Cultivation

Darmasena Farm

Year of Cultivation - 1998

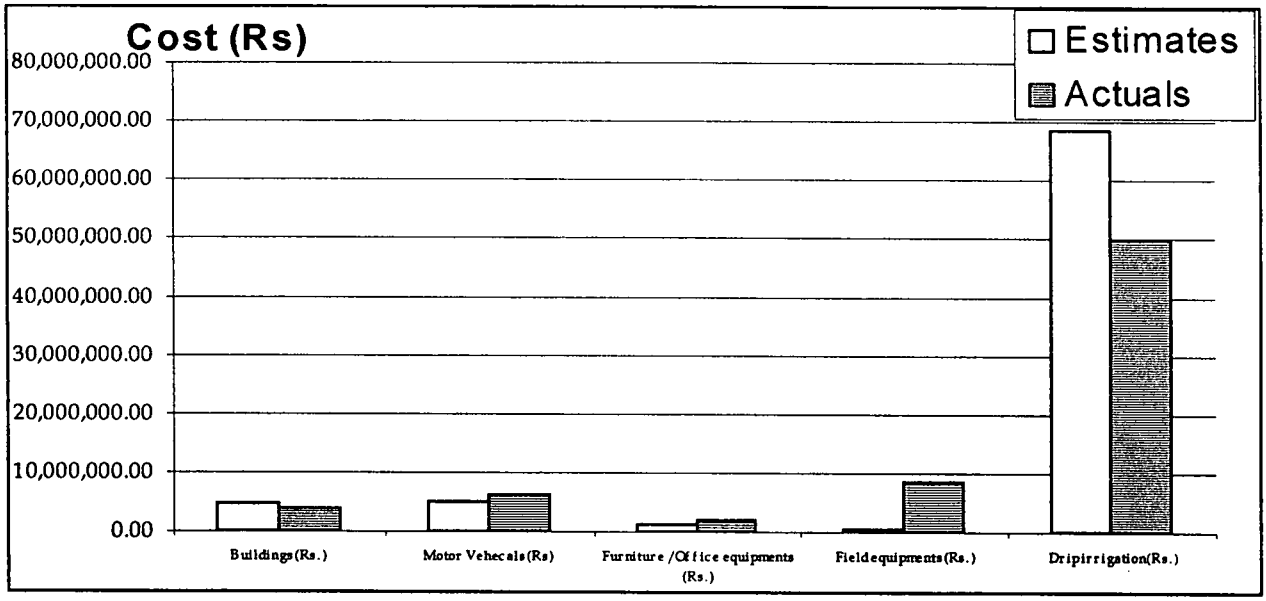
Details	01.04.1998 to 31. 03. 1999	01.04.1999 to 31. 03. 2000	01.04.2000 to 31. 03. 2001	01.04.2001 to 31. 03. 2002	Total
Preliminary Work -	1822.50	0.00	0.00	0.00	1822.50
Holing	114415.00	0.00	0.00	0.00	114415.00
Application of manure	36868.00	431533.73	321063.35	251627.10	1041092.18
Quarator/Dolomite	0.00	0.00	0.00	0.00	0.00
Cost of suckers	105177.00	46825.00	0.00	0.00	152002.00
Transport charges(Suckers)	1381.03	5358.00	0.00	0.00	6739.03
Transport charges(Dolomite)	2216.49	2580.50	0.00	0.00	4796.99
Sundries	0.00	5633.00	131.00	0.00	5764.00
Wages	45115.00	97890.82	330140.00	0.00	473145.82
Variable wages	5560.00	12400.00	39260.00	16560.00	73780.00
Post care handling charges	0.00	600.00	24524.39	61510.00	86634.39
Banana transport charges	0.00	23724	90995.91	13167.50	127887.41
Professional charges	0.00	0.00	2000.00	0.00	2000.00
Tools	0.00	0.00	2250.00	0.00	2250.00
Irrigation	0.00	0.00	62415.36	29156.84	91572.20
General charges	0.00	0.00	0.00	200507.23	200507.23
Planting	0.00	0.00	0.00	37895.5	37895.50
Clump management	0.00	0.00	0.00	12175	12175.00
Weeding	0.00	0.00	0.00	51235	51235.00
Pest & Disease Control	0.00	0.00	0.00	632.5	632.50
Total	312,555.02	626,545.05	872,780.01	674,466.67	**2,486,346.75**

Appendix Table 3.10 : Details of expenditure on banana cultivation on the basis of financial year

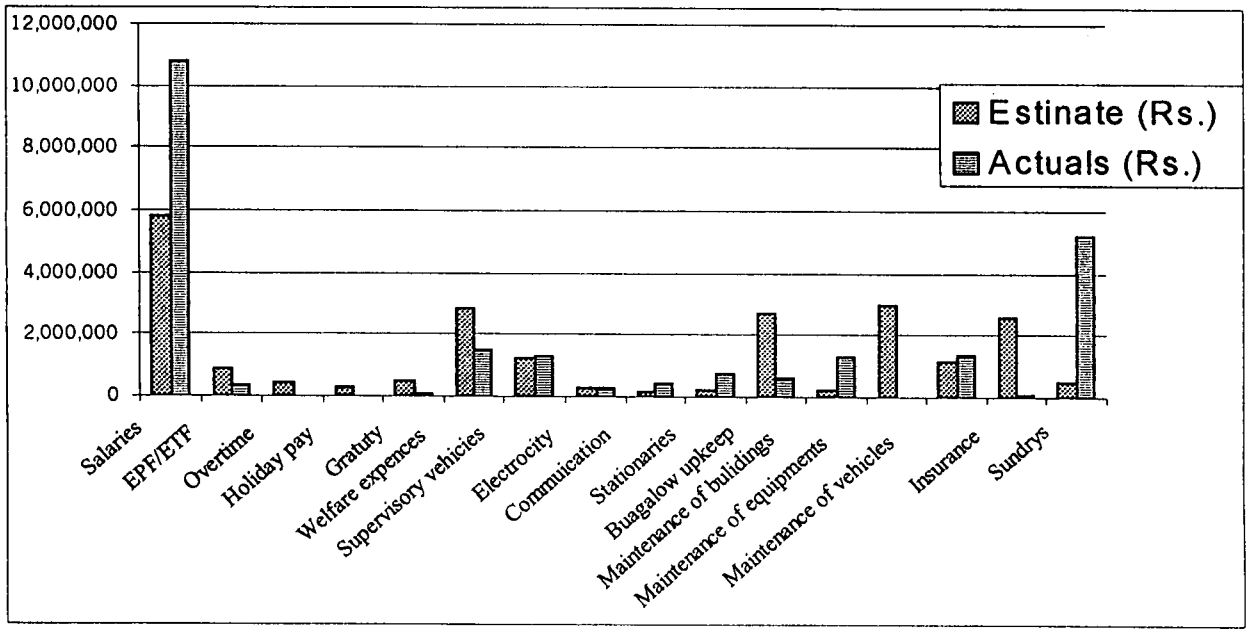
Block 4 banana

Year of Cultivation 99 **Details**	**01.04.1999 to 31. 03. 2000**	**01.04.2000 to 31. 03. 2001**	**01.04.2001 to 31. 03. 2002**	**Total**
Professional Charges (LOCAL)	6120	0.00	0.00	6120.00
Soil sampling	46057.5	0.00	0.00	46057.50
Transport of labour	223.2	235643.65	0.00	235866.85
Sundry	0.00	25558.11	0.00	25558.11
Wages	0.00	477210.83	0.00	477210.83
Variable wages	0.00	45320	24470	69790.00
Cost of manure	0.00	790938.49	371205.1	1162143.59
Irrigation	0.00	220598.2	196634.02	417232.22
Tools	0.00	34121	0.00	34121.00
Weed control	0.00	9974.7	227620	237594.70
Pest and Disease	0.00	54432.78	18137.4	72570.18
Post Care Handling	0.00	288041.26	245655.91	533697.17
Export Handling	0.00	448441.56	0.00	448441.56
Uniform	0.00	3397	0.00	3397.00
Professional Charges (FOREIGN)	0.00	231500	0.00	231500.00
Banana Suckers	0.00	1056610.4	0.00	1056610.40
General Charges	0.00	376603.62	303289.05	679892.67
Samples	0.00	5691.51	0.00	5691.51
Supporters	0.00	0.00	89343.7	89343.70
Clump Management	0.00	0.00	32240.98	32240.98
Packing	0.00	0.00	1161400.47	1161400.47
Total	52,400.70	4,304,083.11	2,669,996.63	**7,026,480.44**

Appendix Figure 3.3 : Estimated vs. actual capital expenditure from 1st April 1998 to 31st March 2002

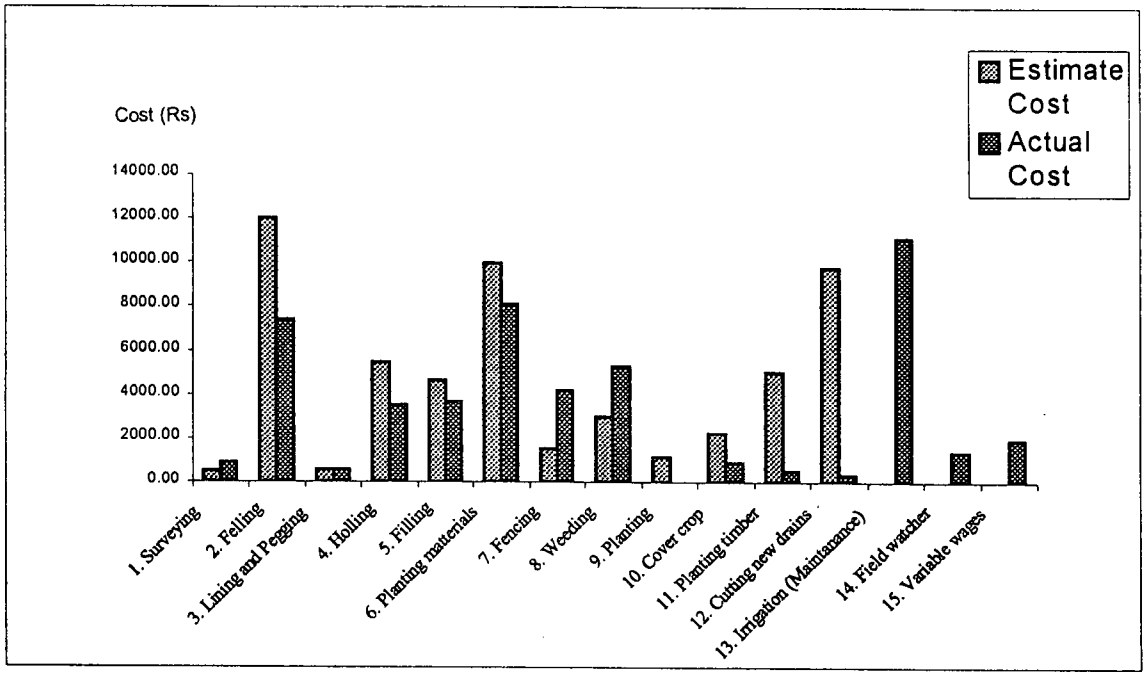


Appendix Figure 3.4 : Comparison of general chargers -actuals vs. estimates (1st April 1998 to 31st March 2002)

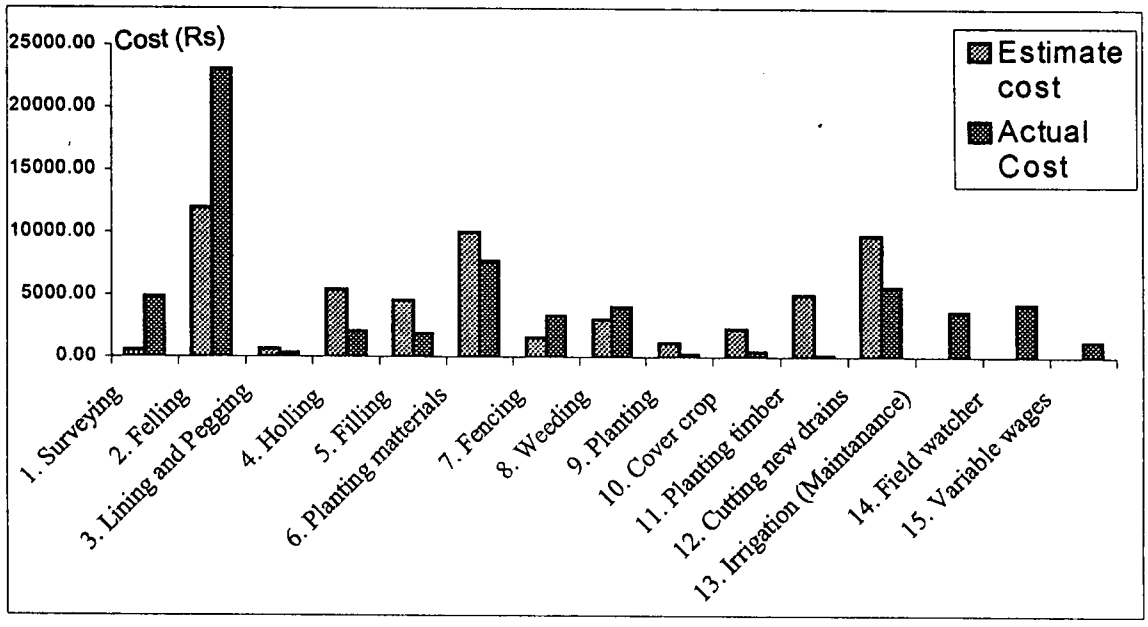


Appendix Table 3.11 : Items included under sundries
Visiting to project
Stamp duty
E.S.P.S
C.P.P.S
Payee Tax
Advertisement
Audit Fees
Accounting Charges
Health Camp
Secretarial Fees
Feasibility report
Income tax
BOI Project application Fees
AGM
Director report
Opening Ceremony
Allowance
Contingencies
Medical
Transport of Labour
Audit fees
Bank Charges
Variable Charges

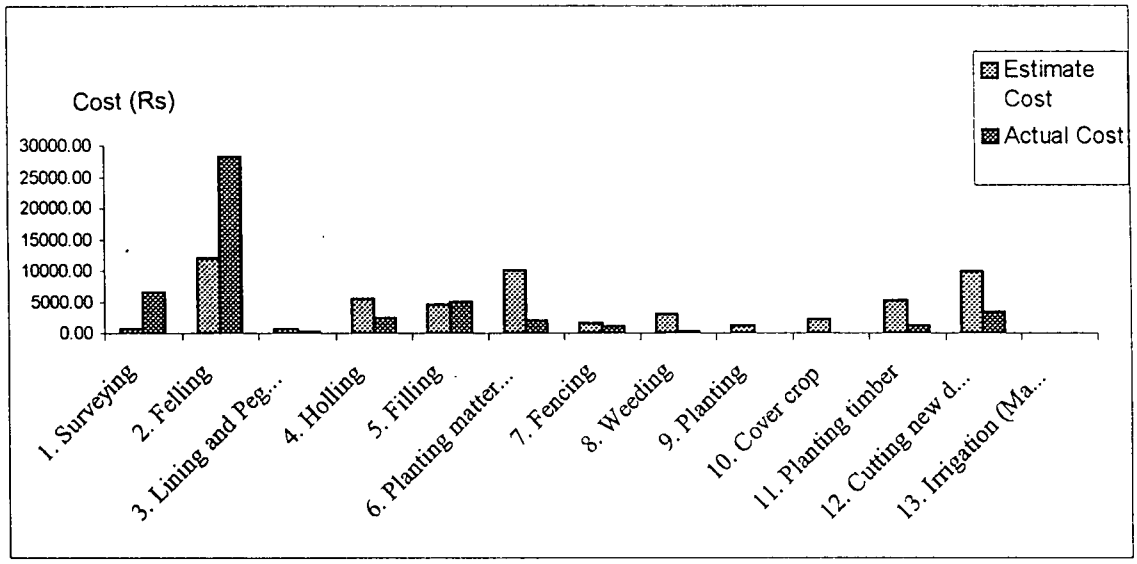
Appendix Figure 3.5 : Cost comparison for preliminary year of work at Group 1 Farm



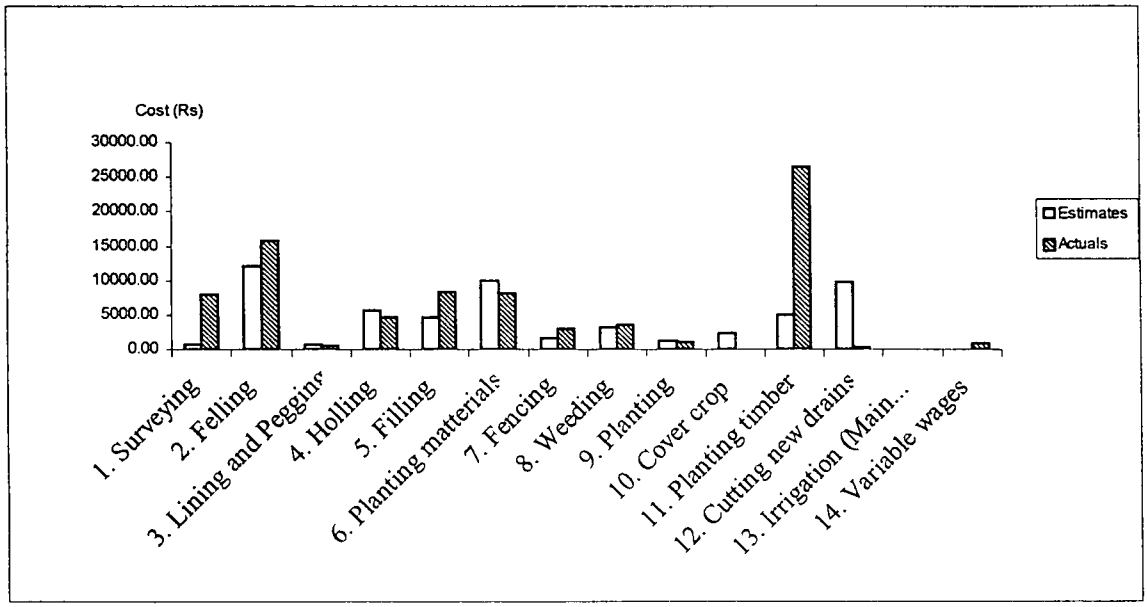
Appendix Figure 3.6 : Cost comparison for Preliminary year of work at Group 2 Farm



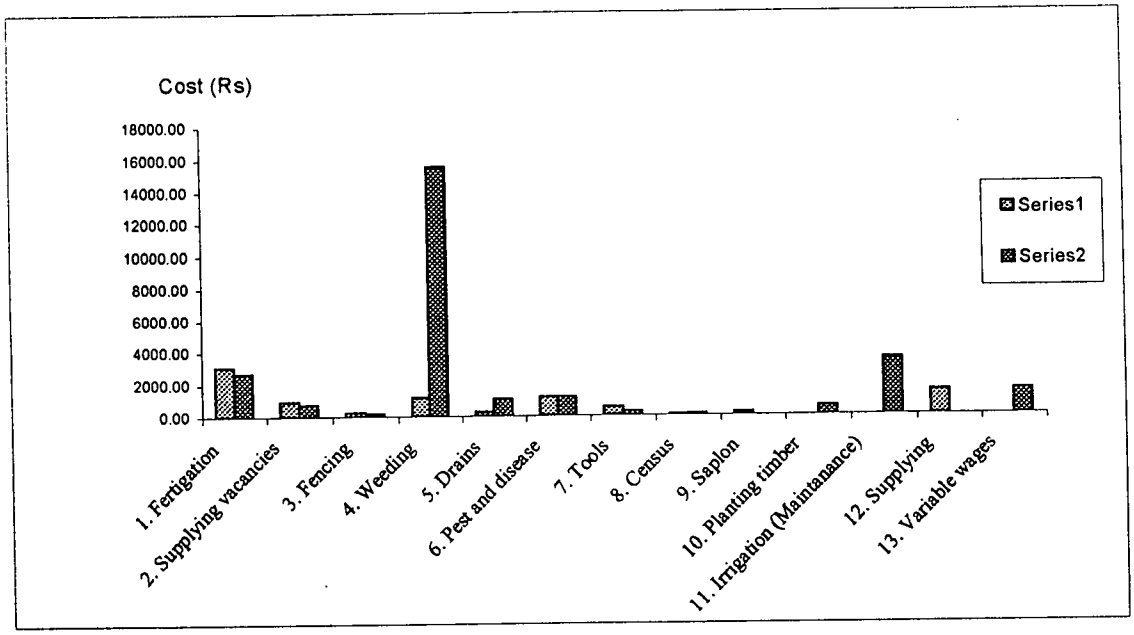
Appendix Figure 3.7 : Cost comparison for preliminary year of work at Group 3 Farm



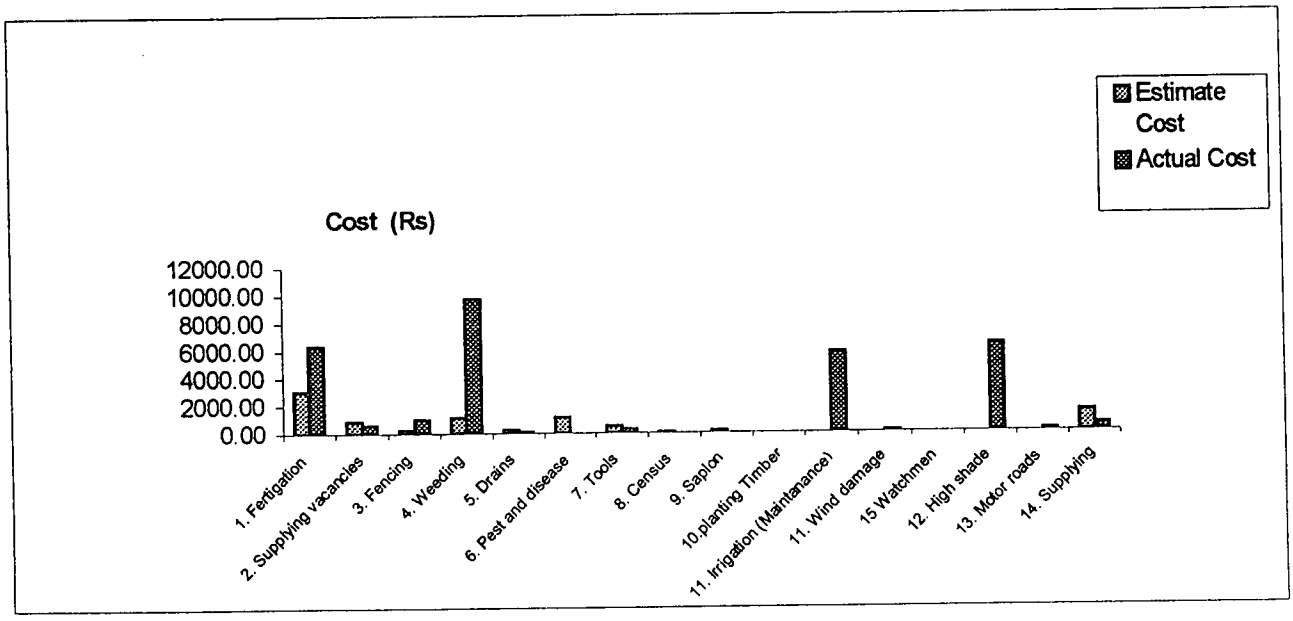
Appendix Figure 3.8 : Cost comparison for preliminary year of work at Group 4 farm



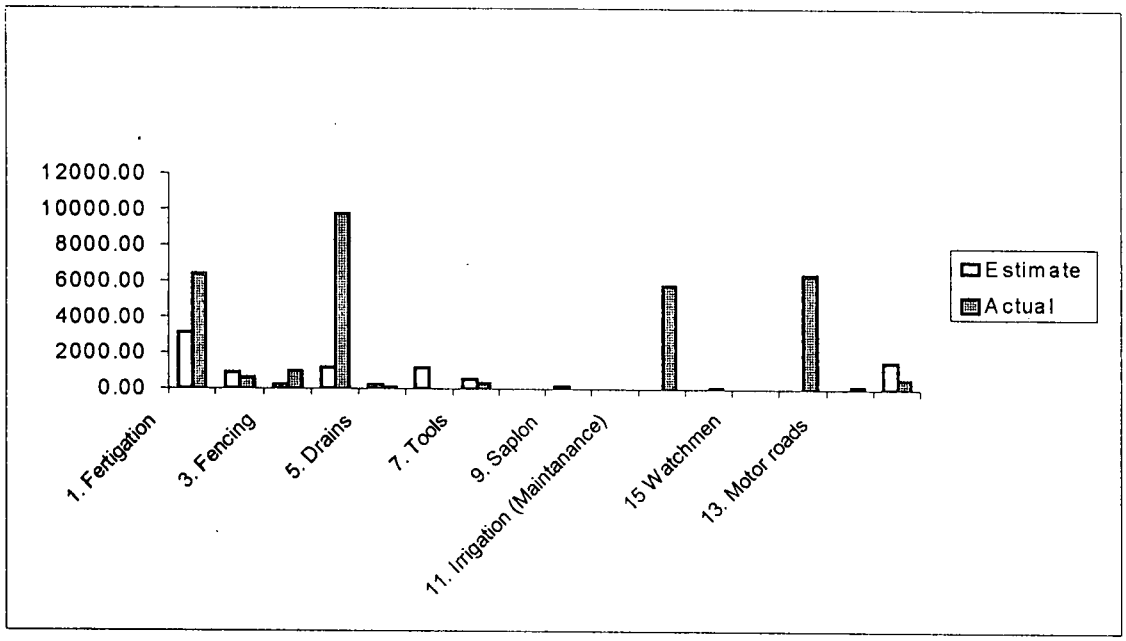
Appendix Figure 3.9 : cost comparison for first year upkeep at Group 1 Farm



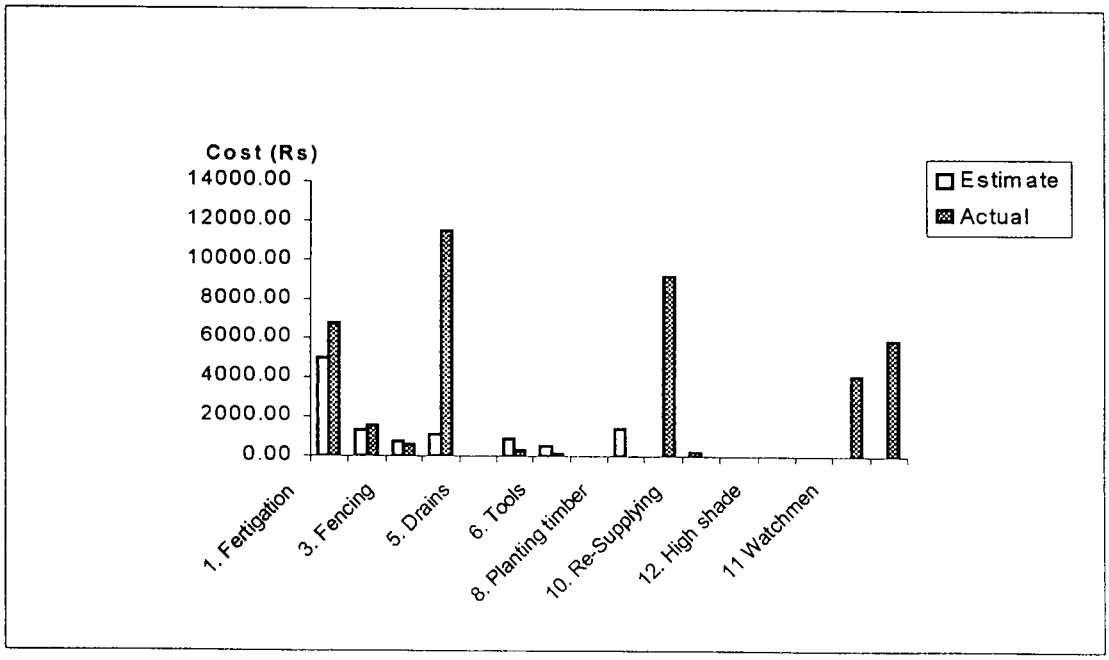
Appendix Figure 3.10 : Cost comparison for first year upkeep at Group 2 Farm



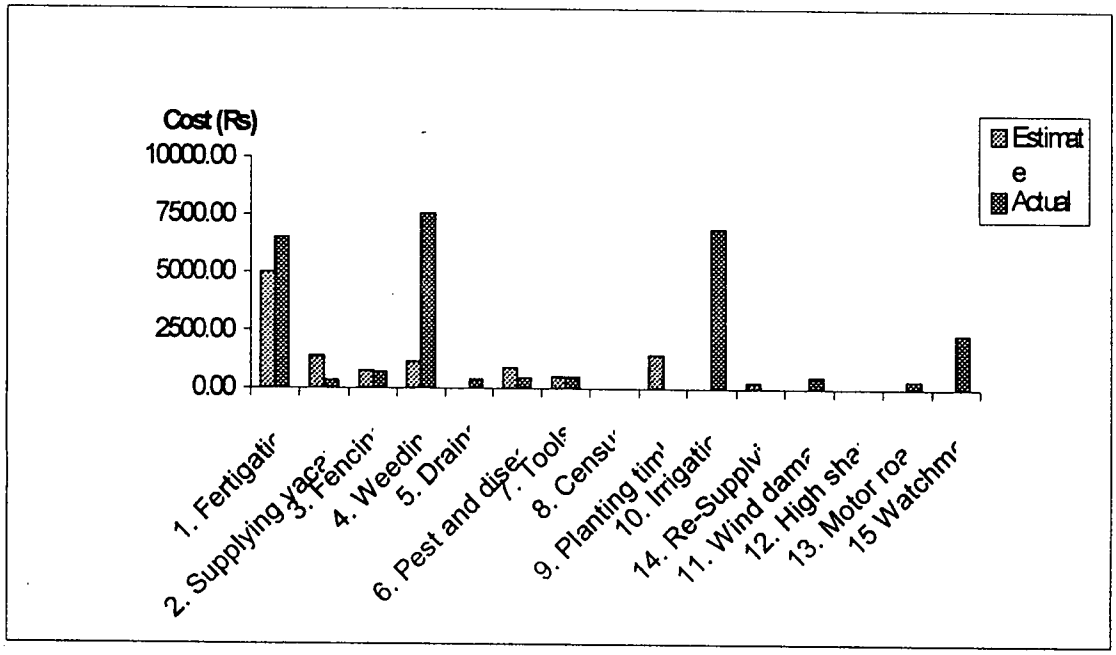
Appendix Figure 3.11 : Cost comparison for first year upkeep at Group 3 Farm



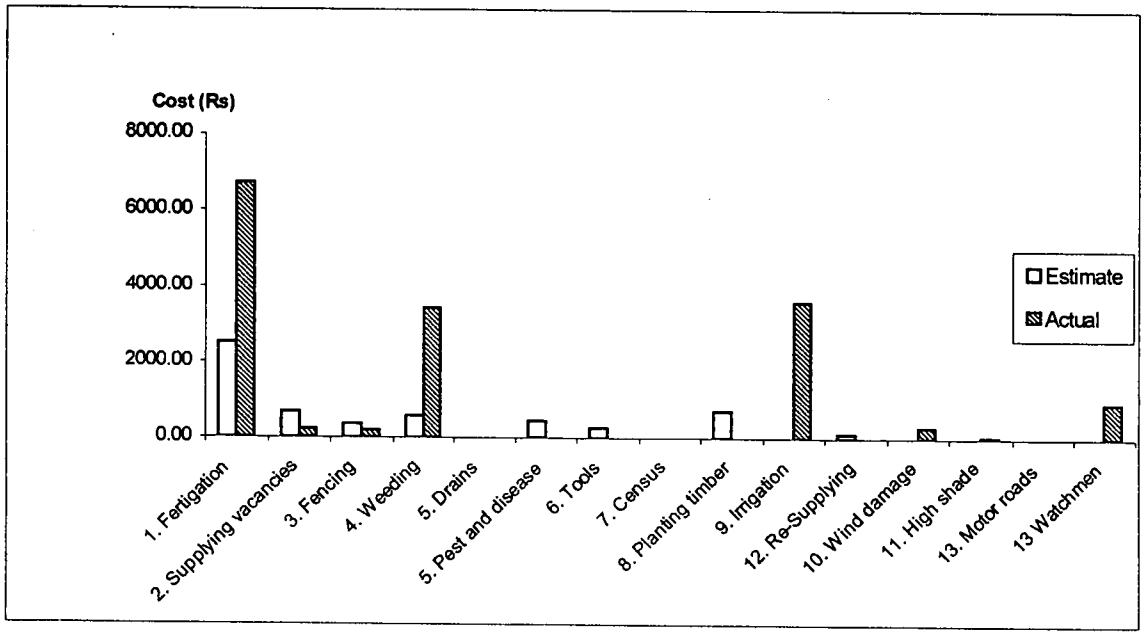
Appendix Figure 3.12 : Cost comparison for second year upkeep at Group 1 Farm



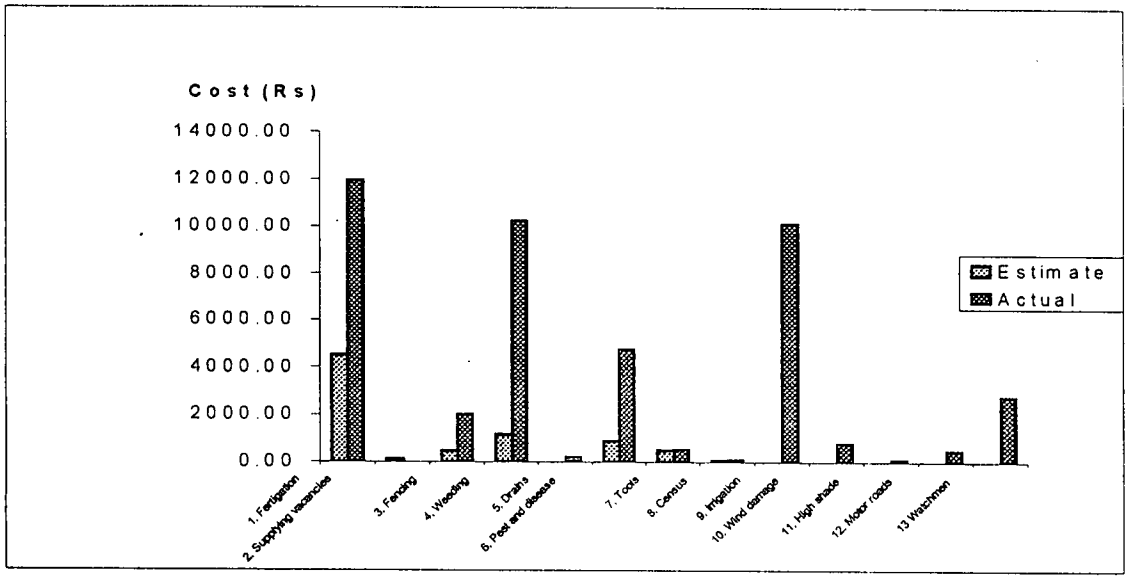
Appendix Figure 3.13 : Cost comparison for second year upkeep at Group 2 Farm



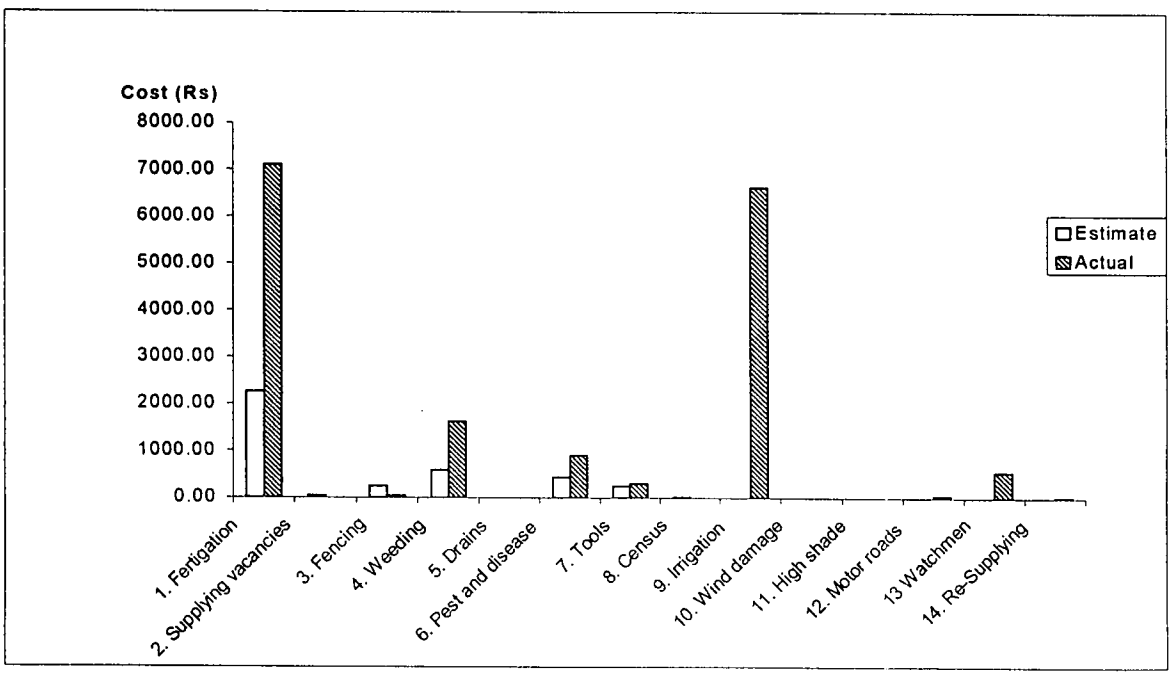
Appendix Figure 3.14 : Cost comparison foe second year upkeep at Group 3 Farm



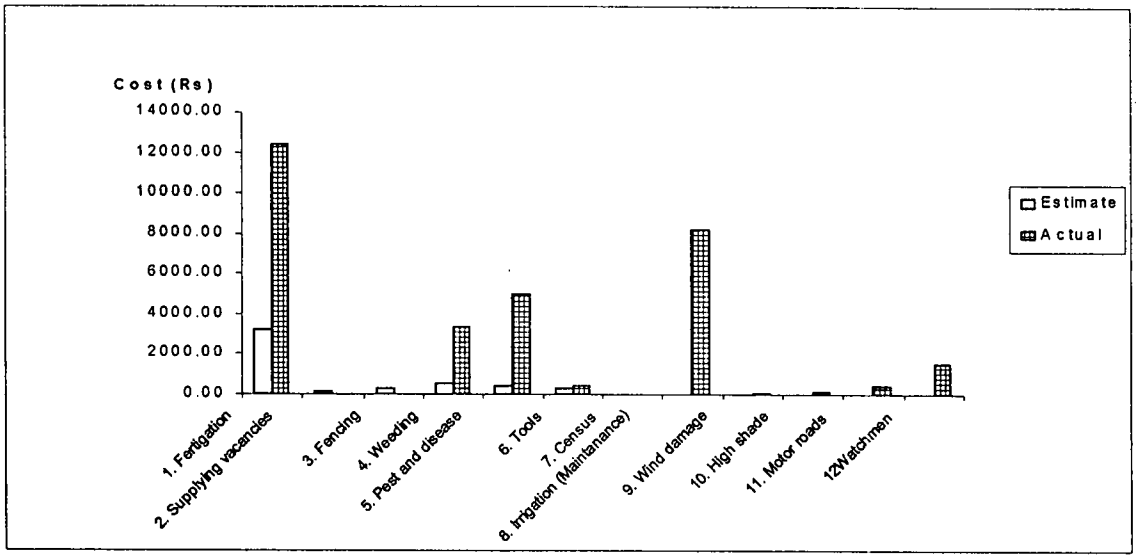
Appendix Figure 3.15 : Cost comparison for third year up keep at Group 1 Farm



Appendix Figure A 3.16 :Cost comparison for third year upkeep at Group 2 Farm



Appendix Figurer 3.17 cost comparison for fourth year upkeep at Group 1 Farm



APPENDIX 4

Appendix Table 4.1 : Actual farm-wise land distribution of the MCPL project

Farm	Names of the Blocks	Extent (ha)	Cultivated Year	No. of coconut Palms
Farm 1	Dharmasena Farm, Goat farm and Horticulture A	66.231	1998	11,927
Farm 2	Horticulture B, Block 4 and Block 5	106.55	1999	16,714
Farm 3	Block 1, Block 2, Block 83 and Block 85/87.	126.3	2000	21,358
Farm 4	Kotawewa 1,Kotawewa 2 and Kotawewa 3	125.96	2001	23,158
Farm 5	Weerana 1, Weerana 2	120.26	2002	21,771