Coffee Research Foundation

An official organisation under the Coffee Board of Kenya

ANNUAL REPORT AND ACCOUNTS 1993 — 1994

ANNUAL REPORT AND ACCOUNTS OF THE COFFEE RESEARCH FOUNDATION (CRF) FOR THE YEAR ENDED 30 SEPTEMBER 1994

STATEMENT BY THE CHAIRMAN OF THE BOARD

1.1 Introduction

The current Board of the Coffee Research Foundation (CRF) was reconstituted on 3 March 1994. Four Board meetings were held during the year. In addition, Board members attended regular quarterly meetings as well as sub-committees and special meetings of the following standing committees: (1) Finance/Tender Committee (2) Coffee Research Advisory Committee (3) Staff Committee and (4) Technical Evaluation Committee.

The Annual General Meeting of Subscribers was held on 8 December 1994.

1.2. Capital Development

Construction of the Hostel Complex which started in August 1993 is expected to be completed and handed over to the Foundation in January 1996.

1.3 Research Activities

The main Research Activities for the year under review have been outlined in this report. Major emphasis continued to be laid on protection of the coffee crop against diseases, insect pests and reduction of production costs. Two new fungicides and one tank mixture of copper and an organic product at a new rate were recommended for the control of Coffee Berry Disease (CBD) during the year under review. Also recommended was a ground applied systemic fungicide for the control of Coffee Leaf Rust.

The CRF continued to put emphasis on use of biointensive pest management strategy. Natural Enemies of the coffee insect pests were collected from coffee in the fields, reared in the CRS Laboratory and released into the farmers' fields. This project was given priority and the aim was to promote biological control of insect pests on Kenya coffee and minimize use of insecticides thereby reducing the cost of coffee growing and promoting a clean environment.

Breeding and selection work aimed at improving commercial coffee varieties for disease resistance, yield and quality continued. The idea was to obtain better yield targets and lower coffee production costs. The cumulative acreage under Ruiru 11 as at September 1994 was estimated to be about 7820 hectares. Ruiru 11 is planted at a spacing of 2 m x 2 m giving about 2500 plants per hectare.

Blind liquoring of cup quality of Ruiru 11 continued during the year and the results continued to confirm that the cup quality of Ruiru 11 is as good as that of the traditional varieties such as SL 28.

The Agricultural Economics Section undertook research geared towards the evaluation of the effects of coffee prices and liberal marketing policies on coffee production profitability and farm income; economics of coffee production; adoption and performance of Ruiru 11 and a review of input marketing and distribution. The favourable world prices resulted into higher producer prices in the country and the implementation of the liberalization policies and the favourable economy led to the sustenance of average coffee prices above the 1992/93 level of about US$100 per 50 kg bag to US$150 per bag. The average cost of production in the smallholder sector was KShs.23,178/- per ha (KShs. 64,000/- per metric tonne) while the average cost in the Estate sector was KShs.93,300/- per ha (KShs. 108,000/-) per tonne of clean coffee.

Provision of routine services to coffee growers in the areas of soil and leaf analysis as well as advisory work and training continued. Education of farmers through Agricultural Society of Kenya (ASK) shows and Field Days continued.

1.4 Staff Matters

As indicated elsewhere in this report, two Senior Staff members were recruited during the year while one Senior Staff member left the CRF. Staff training continued. One Research Officer completed his Ph.D. degree training while two Research Officers left for Germany to undertake Ph.D. degree studies. Those who benefited from local and overseas training are indicated in this report.

1.5 Finances

Total income generated during 1993/94 financial year totalled KShs. 164,500,758 of which KShs. 110 million was the Coffee Board of Kenya contribution. The rest — KShs. 53,439,500/- was generated internally through coffee proceeds and dividends and a further KShs. 1,061,258 being Kenya Government's contribution.

Total expenditure for 1993/94 rose from the previous year's expenditure of KShs. 137,706,231 to KShs. 189,664,886 — an increase of 37.7% as a result of rising staff costs. As there was no corresponding increase in income, a deficit of KShs. 24,891,145 has been posted in 1993/94 financial year.

The deficit of KShs. 24,891,145 has depleted the Research Reserve brought forward from 1992/93 to negative (—22,066,911).

1.6 Future Plans

The CRF is still continuing to search for ways and means of producing coffee at minimum cost. Vegetative propagation of Ruiru 11 variety and other important varieties was carried out in addition to seed production. The CRF approached external donors through the government for funding for the construction of a Tissue Culture facility at the Coffee Research Station (CRS). The government has indicated that funds have already been earmarked for this project under STABEX.

It is hoped that more funds will be availed for the planned activities mentioned in this report and for purchasing laboratory equipment and furnishing of the new Hostel Complex.

A M Mwangi
Chairman, Coffee Research Foundation Board.

COFFEE RESEARCH FOUNDATION
BOARD OF DIRECTORS

Mr. A.M. Mwangi
Chairman

Dr. Wilson R. Opile
Director of Research

Mr. S.C. Muchiri

Mr. J.E. Muhia
Secretary

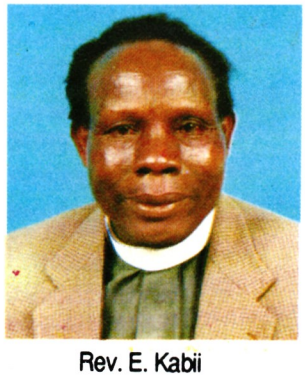
Mr. P. Mwangi

Mr. J.A. Odoyo

Mrs. N.N. Kaminchia

Miss B.W. Kingori

Mr. R.M. Makara



Rev. E. Kabii

Dr. A.M. Mailu

Dr. M. Isiakho

Prof. D.M. Mukunya

Mr. J.M. Nzioki

Mr. J.M. Mugho

Mr. S.K. Waruingi

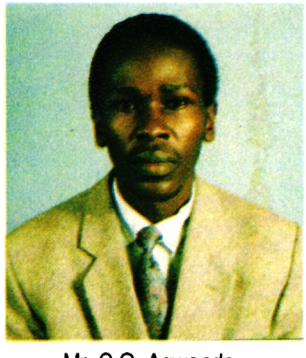
COFFEE RESEARCH FOUNDATION
HEADS OF SECTIONS

Mr. J.E. Muhia
Chief Accountant Co-Secretary

Dr. P.K. Michori
Deputy Director of Research

Dr. (Mrs.) D.M. Masaba
Plant Pathology

Mr. M.P.H. Gathaara
Crop Physiology

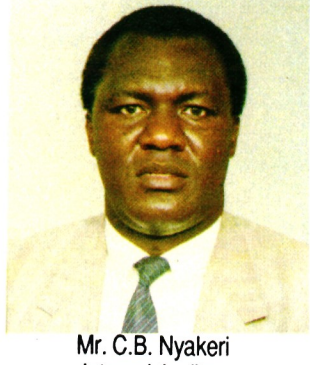


Mr. C.O. Agwanda
Plant Breeding

Mr. J.N. Mburu
Chemistry

Mr. H.M. Mugo
Entomology

Mr. A.M. Karanja
Agricultural Economics (Acting)



Mr. C.B. Nyakeri
Internal Auditor

Mr. J.M. Maina
Chief Estates Officer

Mr. E.K. Maina
Administrative Manager

Mr. M.K. Nyagah
Research Liaison Training & Advisory

Dr. J. Mburu Njoroge
Field Experimental Agronomy

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Registered Office: Coffee Research Foundation
P.O. Box 4 Ruiru, Kenya
Telephone: 54027/54048/54132 THIKA
Fax: 54133

2.0 BOARD OF DIRECTORS AS AT SEPTEMBER 1994

Mr. A.M. Mwangi	Chairman
Mr. R.M. Makara	
Mr. P. Mwangi	Chairman, Coffee Board of Kenya
Dr. M. Isiaho	
Mr. J.M. Nzioki	
Rev. E.M. Kabii	
Mr. S.C. Muchiri	
Dr. M.W. Oggema	Ministry of Agriculture
Dr. Cyrus C. Ndiritu	Director, Kenya Agricultural Research Institute (KARI)
Mr. J.P.K. Mbandi	Director of Agriculture, Ministry of Agriculture
Dr. Wilson R. Opile'	Director of Research, Coffee Research Foundation
Mr. J.E. Muhia	Secretary
Mr. J.A. Odoyo	

Co-opted Members

Prof. D.M. Mukunya	Dean, Faculty of Agriculture, University of Nairobi
Mr. S.K. Waruingi	
Mr. J.M. Mugho	

Mr. A.M. Mwangi and Mr. J.P.K. Mbandi were due to retire by rotation and being eligible were re-elected.

Five meetings were held during the year as follows:

- One hundred and nineteenth meeting on 11 November 1993
- Special meeting on 3 March 1994
- One hundred and twentieth meeting on 7 April 1994
- One hundred and twenty first meeting on 12 May 1994
- One hundred and twenty second meeting on 11 August 1994

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2.1 Coffee Research Advisory Committee as at 30 September, 1994

Prof. D.M. Mukunya	—	Chairman
Mr. A.M. Mwangi	—	Chairman, CRF Board
Dr. Wilson R. Opile	—	Director of Research, CRF
Dr. A.M. Mailu	—	KARI
Mr. S.S. Cheruiyot	—	Kericho (Small Scale)
Mr. R. Omanyala	—	Busia (Small Scale)
Mr. Elisha Onyango	—	South Nyanza (Small Scale)
Mr. J. Kanyiri	—	Nyeri (Small Scale)
Mr. R.M. Makara	—	Kirinyaga (Small Scale)
Mr. William Kisaka	—	Trans Nzoia (Large Scale)
Mr. J.K. Kinoti	—	Coffee Board of Kenya
Mr. J.M. Mathenge	—	Solai/Subukia (Large Scale)
Mr. S. Mokua	—	Kisii (Small Scale)
Mr. Julius Karicho	—	Meru (Small Scale)
Mrs. Mary S. Ntipilit	—	Kajiado (Small Scale)
Mr. J.K. Mbatha	—	Pesticides Chemicals Association (K)
Mr. E.K.S. Mbogo	—	Embu (Small Scale)
Mr. Walter Wambu	—	Murang'a (Small Scale)
Mr. J.G.M. Muasya	—	General Manager, SCIP
Mr. H.M. Mwangi	—	Ministry of Cooperative Development
Mr. A.M. Michaelides	—	Ruiru (Large Scale)
Mr. Jane A. Otadoh	—	Ministry of Agriculture, Livestock Development and Marketing
Mr. J.P. Nduati	—	Ministry of Agriculture, Livestock Development and Marketing
Mr. J.M. King'ang'i	—	Kenya Planters' Cooperative Union
Mr. J.E. Muhia	—	Chief Accountant/Co. Secretary, CRF
Dr. P.K. Michori	—	Deputy Director of Research, CRF/Secretary

Four meetings were held during the year as follows:-

- One hundred and ninetieth meeting on 26 October 1993
- One hundred and ninety first meeting on 20 January 1994
- One hundred and ninety second meeting on 3 May 1994
- One hundred and ninety third meeting on 21 July 1994

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(1 October 1993 to 30 September 1994)

3.0 STAFF

3.1 Promotions

There were no staff promotions during the year under review.

3.2 Appointments

Mr. J.N. Mburu, B.Sc., M.Sc., Senior Research Officer, was appointed substantive Head of Chemistry Section w.e.f. 1 October 1993.

3.3 Recruitments

Mr. R.M. Nuthu joined CRF service as Security Officer (Administration) w.e.f. 16 June 1994.

Mr. D.K. Gitau, Higher National Diploma (Clin. Med. & Surg. (Paediatrics), joined CRF Service as Clinical Officer w.e.f. 1 August 1994.

3.4 Departures

Mrs. A.W. Ndungi, Research Officer and Head of Entomology Section, left CRF Service w.e.f. 30 June 1994.

3.4. Conferences/Workshops/Symposia

Dr. Wilson R. Opile', Director of Research and Chairman of the African Coffee Research Network (ACRN) attended the "International Federation of Organic Agriculture Movements (IFOAM) — Africa" Continental meeting held in Nairobi from 10 — 16 January 1994 as a representative of the Inter African Coffee Organisation (IACO).

Dr. Wilson R. Opile' also attended the 1993 Brighton Crop Protection Conference in London between 22 — 25 November. He thereafter travelled to Abidjan, Cote d'Ivoire to attend the IACO General Assembly held between 29 November and 3 December 1993.

Dr. Wilson R. Opile' attended a meeting on Conservation of Coffee Genetic Resources in Africa held in Nairobi between 23 — 26 May, 1994. The meeting was organised by the International Board for Plant Genetic Resources (IBPGR).

Dr. Wilson R. Opile' also attended a meeting organised by the Coffee Anthracnose Network in Africa (CARNA) in Dschang, Cameroon between 20 — 28 June 1994. He was invited to attend the meeting in his capacity as the Chairman of the African Coffee Research Network (ACRN).

Dr. Wilson Opile' in his capacity as Chairman of the ACRN attended the ACRN Workshop on "Improvement of the Cultivation Techniques on Coffee Plants" held in Nairobi from 6 — 10 December 1993.

Dr. P.K. Michori, B.Sc. M.Sc. Ph.D., Deputy Director of Research, attended the fifth International Congress for Computer Technology in Agriculture held at Churchill College, Cambridge, Britain between 29 June and 15 July 1994 at the invitation of the Royal Agricultural Society of England (RASE).

Dr. (Mrs.) D.M. Masaba, B.Sc., M.Sc., Ph.D. — Head of Plant Pathology Section attended the East African Framework for Action (FFA) on

Agriculture Research Workshop in Kampala, Uganda from 22 — 25 November 1993.

Dr. (Mrs.) Masaba also attended the Coffee Anthracnose Network in Africa (CARNA) meeting in Dschang, Cameroun in her capacity as Chairperson of CARNA between 20 — 28 June 1994.

Dr. (Mrs.) D.M. Masaba attended a Senior Management Seminar on Liberalization of the Coffee Industry held at Machakos Garden Hotel between 2 — 5 November 1993.

Dr. J.M. Njoroge, B.Sc., M.Sc., Ph.D., Head of Experimental Agronomy Section attended a Workshop on Biological Management of Soil Fertility in Kenya organised by the Tropical Soil Biology and Fertility Programme (TSBF) at the National Agricultural Re-search Laboratories (NARL) Nairobi between 4 — 5 October 1993.

Mr. J.K. Kimemia, B.Sc., M.Sc., Senior Research Officer (Agronomist), attended the IFOAM Workshop in Nairobi from 10 — 16 January 1994.

Mrs. A. Ndungi, B.Sc., M.Sc. (Entomologist) and Mr. H.M. Mugo, B.Sc. (Entomologist) attended the 24th Annual Research Conference organised by the International Centre for Insect Physiology and Ecology (ICIPE) at Duduville, Nairobi from 9 — 12 May 1994.

Mrs. A.W. Ndungi, Head of Entomology Section attended the Entomological Society of Kenya's (ESK) Scientific Symposium and First Annual General Meeting held at NARL on 26 November 1993.

3.6 Training

Dr. G.M. Kairu, B.Sc., M.Sc., Ph.D., (Plant Pathologist) successfully completed his training for the degree of Doctor of Philosophy at Imperial College of Science, Technology and Medicine, University of London w.e.f. 28 March 1994.

Mr. A.M. Karanja, B.Sc., M.Sc. (Agricultural Economist) attended a six months training course on "the Bridge between Research and Farming" organised by the International Centre for Development Oriented Re-search in Agriculture (ICRA) in Wageningen, the Nether-lands between January and July 1994.

Mr. C.O. Omondi, B.Sc., M.Sc., (Plant Breeder) travelled to Germany to undertake a Ph.D. degree study on a split programme w.e.f. April 1994. He was awarded a scholarship by the German Academic Exchange Programme (DAAD).

Mrs. L.W. Njeru, attended the International course on Basic Principles of Planning Integrated Plant Protection Measures held in Feldafing near Munich in the Federal Republic of Germany from 13 May to 8 June 1994. She was sponsored by the German Foundation for International Development (DSE) to attend the course.

Mr. J.N. Wamatu, B.Sc., M.Sc. (Plant Breeder), was awarded a scholarship by DAAD to undertake a Ph.D. degree study at the Humboldt University in Berlin for a period of three years w.e.f. September 1994.

Mrs. V.M. Kiarie and Miss T.K. Kenyanya (Secretaries) underwent a six months' refresher training course at Valley Secretarial College from May 1994. The CRF had sponsored them to attend the course.

3.7 Part-Time Lectureship

Dr. J.M. Njoroge was appointed part-time lecturer to teach at the Nairobi University's Crop Science Department in April 1994.

4.0 RESEARCH ACTIVITIES

4.1 Plant Pathology

The Pathology Section continued with work on evaluation of pesticides for the control of three major coffee diseases. Disease control by cultural methods and use of resistant varieties was also carried out. The section also offered advisory services involving diagnosis and monitoring of minor and/or a new coffee disease situation as well as checking the quality of the recommended fungicides on the market.

Two new fungicides fluquinconazole and ASC 67098, were screened in the laboratory during the year under review for their effect on Coffee Berry Disease (CBD) and Coffee Leaf Rust (CLR). ASC 67098 has been selected for field evaluation against CBD.

Field evaluation of five new fungicides for control of CBD was carried out at Kiamumbi Estate during 1992/93. One of these products, namely Helmonil 75% was recommended for CBD control in Kenya.

A second trial of four new fungicides was carried out at Jacaranda Estate. Considering the evaluation results for three years, Kocide DF was recommended for the control of CBD.

Tank mixtures of Delan and copper and Octave & Copper were evaluated at Kiamumbi Estate, Delan/copper tank mixture were found to control CBD at a lower rate of Delan (0.12 + copper (0.06) and the new rates have been recommended for CBD control in Kenya.

Another trial involving tank mixtures of Fluazinum and Copper and Fluazinum and Daconil was sited at Jacaranda Estate. All treatments reduced CBD but the highest cost: benefit ratio was given by Fluazinum (0.1%) on its own followed by the Fluazinum/Copper tank mixture. The evaluation continued into the second year.

New coppers were evaluated for their performance against CLR at Murera and Azania Estates. The three coppers, namely Kocide DF, Copper Nordox Super and Manro Coc reduced coffee rust and will continue evaluation in the second year.

A second lot of three new coppers were evaluated against CLR at Bradgate Estate. The new coppers controlled CLR and the trial is continuing into the second year.

Field evaluation of a ground applied systemic fungicide (Armour-G) against CLR was conducted at Azania and Jacaranda Estates. The results obtained indicate that Armour-G applied at 38 g/tree once or twice per year, or applied at 19 g/tree once or twice per year gave control of CLR comparable to the standard Copper Nordox. Armour-G has been recommended for CLR control at 19 g/tree and applied only once in two years on the ground.

Another experiment was conducted in order to determine the timing of application of the systemic fungicide Alto 100 SL (SAN 619F) and Anvil. The trial is in progress using various curative programmes in comparison with Bayleton 25% WP applied as a curative product and Copper Nordox (0.35%) applied on recommended protective schedule. Treatments applied on curative programmes controlled rust better than those on protective schedule and are being considered for recommendation.

Two new coppers, Kocide DF and Funguran-OH, were evaluated for Bacterial Blight of Coffee (BBC) control at Ceres and Meruai Estates. The two coppers were comparable in performance to Kocide 101 and still continue to be evaluated for a third year.

A trial on integrated control of BBC using cultural and chemical methods was still in progress at Berea Estate and will continue into the 3rd year.

Long term effects of copper sprays to control BBC and CBD on cropping and tree growth has been monitored for the last nine years. All treatments controlled both CBD and BBC. However, no symptoms of copper phytotoxicity on shoot emergence and growth extension were recorded during the year.

Screening for resistance to CBD was carried out on 850,600 coffee seedlings from the Coffee Breeding programme and the results were used by the Coffee Breeding Section.

A total of 111 samples of fungicides from Estates and Co-operative Societies were analyzed in order to determine if the percentage of the active ingredients in them conformed to the recommended products. The results indicated that three of the samples were substandard.

4.2 Coffee Breeding

The Breeding Section continued with Breeding and selection work aimed at improving commercial coffee varieties for disease resistance, yield and quality. The idea is to obtain better yield targets compared to the existing varieties. The coffee germplasm preserved in the museum plots 5 and 13 at the Coffee Research Station's Jacaranda Farm and the Ethiopian Collections (EX-FAO, 1964 and EX-ORSTOM, 1970) planted in fields B1 and B14 at Oaklands Breeding Station continued to be maintained on routine basis.

Hybridization and selection work were continued by making relevant crosses, selfings and test-crosses as well as by evaluating progenies of similar crosses made in the past. The objective of these programmes is to improve the commercial cultivars (such as SL28, SL34 and K7) for Coffee Berry Disease (CBD) resistance, yield and quality. Up to 1310 test-crosses and 739 selfings were made on individual trees selected from advanced breeding lines in order to identify genotypes homozygous for CBD resistance genes at a minimum of two resistance loci. Selfings of 885 genotypes made in the previous years were planted in fields B25, B26 and B27 for the same purpose.

Evaluation of first back crosses (BC1) planted in field B20a continued in its second year of production. Yield in kg/tree for 1993 as well as the cumulative yield for 1990-93 showed no significant variation amongst genotypes. Likewise, no variation was observed for field resistance to CBD. Variation for bean grades and leaf rust resistance were significant and therefore warranting further selection work to improve these characters. In similar trial involving selfings of the BC1 planted in field B22, significant variation was observed for yield and leaf rust resistance with liquor quality comparing well with that of the standard SL28. Selection in this field will be in favour of genotypes which combine higher yield, better bean grades, good cup quality with non-segregation for CBD susceptibility.

The adaptation trials with cultivar Ruiru 11 were observed during their third year of production in Kisii, Koru and Jacaranda sites while Taita and Meru sites were in their second year of production. Variations were observed for cumulative yield depending on location and genotypes.

Similar observations were made for liquor quality where performance of genotypes varied from class 1 (excellent liquor) to class 4; depending on genotype and location. The adaptation trials were expanded by an additional site at Machakos Farmers' Training Centre to bring the total to six.

Hybrid seed output was 3.2 million seeds. Over 10 million flowers were emasculated and pollinated for the purpose of hybrid seed production during the same year.

Vegetative Propagation of Ruiru 11 continued as a supplementary source of Ruiru 11 planting materials. This involved rooting stem cuttings and grafting on SL28 rootstocks. A total of 120,000 rooted stem cuttings and 100,000 grafted seedlings were raised and distributed to farmers. Additional clonal gardens have been established at Koru, Mariene and Kisii Substations as well as at Namwela and Kitale demonstration plots. The clonal gardens shall be sources of vegetative propagation materials for the coffee districts represented.

4.3 Agronomy

During the year under review, research work was conducted on fertilizers, spacing, pruning, intercropping coffee with annual crops as well as perennial fruit trees, and replacement methods of established coffee with the hybrid coffee Ruiru 11, and weed control in coffee.

The trial initiated at Ruiru, Kisii, Koru, and Meru in 1986 to determine the effects of NPK fertilizer rates on yields of Ruiru 11 at various densities (2400, 3200 and 4000 trees/ha) continued. The fertilizer rates used were 80, 260 and 320 kg N/ha. Results obtained so far indicate that yields increased with increasing densities. At high N rates, addition of P and K to balance the nutrition may be necessary. The trial is in the second coffee cycle.

A trial was started in 1989 at Kiamworia to find out the coffee yield of Ruiru 11 in response to planting hole size and rates of cattle manure applied. The hole size of 60 cm x 60 cm and application of farm yard manure at a rate of 25% gave the highest yield.

Various annual crops were planted amongst young Ruiru 11 trees in 1987 at Mariene, Kisii and Koru. Except for the coffee trees intercropped with sweet potatoes at Mariene, all other trees intercropped with food crops had recovered from adverse effects recorded in the first year of coffee production. The trial is in the second cycle at Mariene and Koru.

Other studies of intercropping involved using perennial fruits trees such as macadamia planted amongst Ruiru 11 and SL 28 at Kitale and Ruiru in 1989. The objective was to screen various fruit trees as suitable intercrops with coffee for both fruits and shade effect. Coffee intercropped with guavas and bananas produced the lowest yields. The study is still in progress.

The processing unit of Agronomy Section continued to process seed from the traditional varieties for sale. During the year under review only 125 kg of SL 28 was distributed to the farmers.

Meteorological records continued to be compiled routinely. These included records done at Ruiru, Mariene (Meru), Koru and Kisii.

4.4 Chemistry (Soil Fertility, Plant Nutrition, Coffee Quality, Processing and Residue Analysis)

During the year under review, the Chemistry Section continued to analyze soil and leaf samples from coffee farmers at a nominal charge and also from Research Sections. A total of 2527 soil samples, 1060 leaf samples and 27 fertilizer and 69 manure samples were analyzed. The advisory soil samples were received from 144 Estates and 74 smallholders while leaf samples came from 120 Estates and 16 smallholders. An overall decrease of 26% was recorded over last year's figure of leaf analysis. Similarly, there was a decrease of 23% in the number of soil samples analyzed this year compared to last year. This may be due to the fact that coffee prices were very low and farmers were not enthusiastic to buy coffee fertilizers.

In addition to the ongoing trial at Azania another site at Mariene was initiated to continue the study on manurial effects of coffee pulp and cofuna on mature Arabica coffee conventionally and hedge-row spaced respectively. Initial soil and leaf analysis results showed that the soil was moderately acid at Azania and strongly acid at Mariene. No major soil fertility changes occurred at Azania following one year of treatment. The study continues. Other sites were planned for Koru and Kisii.

A trial was started in Mariene (Meru) in 1989 in order to determine the effects and interactions of Magmax, Nitrogen, Phosphate and Potash in coffee yields and quality on acid soils of Meru. The coffee was spaced at 2 m x 1.25 m but this spacing was altered in 1991 by removing three middle trees in a North-South direction. An effective spacing of 2.0 m x 1.5 m was generated. The trial was subjected to a change of cycle in December 1993 to renew the bearing heads and improve the bearing potential.

The Pesticides laboratory received 100 samples from farmers for checking their active ingredients compared to 94 samples received last year, indicating an overall increase of 6.6%. During the year under review, the laboratory also developed a chromatographic method for analyzing active ingredients in Breston 60 EC recommended for use on Kenya coffee. So far, it has been possible to include Sumithion (Fenitrothion), Delan (Dithianon), Lebaycid (Fenthion), Dursban and Folimat (Omethoate) and now lately Brestan 60 EC.

Training in the use of High Performance Liquid Chromatography (HPLC) was recommended for the Analytical Chemist and one Technician.

A study on distribution, dissipation and accumulation of copper-based biocides applied on the coffee was started in 1995. The objective of the study was to determine if the copper levels has increased in the coffee tissues and soils as a result of frequent use of the biocides to control Coffee Berry Disease, Bacterial Blight of Coffee and Leaf Rust diseases which are of economic importance in Kenya's coffee industry. The results so far showed gradual build up in total and available copper in both the top soil and sub soil with control plots showing lower copper levels than the copper-treated plots. For instance copper Kocide 101 gave higher total copper while Nordox yielded higher available copper. Thus the copper residue build-up may depend on treatment.

Further work to determine any consequential occurrence of copper phytotoxicity was commenced during the year under review. Internodal lengths were measured at the third and fourth nodal positions of selected middle primary branch. The results showed no outright pattern so far; the work continues.

The Quality Chemist was attached at the Coffee Board of Kenya Liquoring Unit for training in Liquoring routines. Concurrently, the training of quality technicians and a liquoring panel continued

at the Kenya Polytechnic and CRF Liquoring laboratory respectively. This formed part of the development of the liquoring laboratory.

The Quality Laboratory received 62 bean parchment samples from CRF and coffee traders for moisture and the usual quality appraisal. Some coffee farms affected by the off flavours were accorded advisory services by the Quality staff.

Work on instrumental bean colour measurement was continued using Lovibond Tintometer (model E). The usage of the instrument was still constrained by lack of a rotary sample holder adopted for irregularly coloured beans. Some colour descriptions by this method were reported for samples submitted by the Pathology Section. The method will hopefully be adopted for quality reporting on research samples.

The off-flavours about which the coffee trade launched a vigorous complaint during the 1992/93 pool year was explored through an elaborate survey, covering the 'affected' farms as well as the coffee exporting firms.

Those off-flavours were commonly described as 'hard', 'hardish', 'musty' or 'tainted'. These descriptions were alien in the Kenya coffee flavour descriptions. A survey was thus taken up to establish the nature, extent and causes of the alleged Kenya Coffee quality slump in general in the coffee growing zones. The results of the survey were published in Kenya Coffee bulletin in December 1993.

The studies on the off-flavours were continued to determine the role of the fungicides (used in coffee) in regard to development of the off-flavours. Different rates of Octave, Delan and Daconil were tested. High rates of Daconil was suspected potential in causing off-flavours. Moderate to high levels of Octave caused the off-flavour while Delan was a least likely cause at the normal rates of application.

A survey on the quality of Kenya coffee was initiated in the key coffee growing areas of Kenya. The aim was to appraise the status of Kenya coffee quality by utilizing specially designed questionnaires for collecting the information related to coffee quality. The data so far collected will be analyzed and reported.

A project was initiated in 1991 in order to determine the factors which influenced the composting process of coffee pulp. Well composted coffee pulp is useful as manure and soil conditioner. However, the most suitable composting method to improve on its handling, transportation and distribution on the farm has to be innovated. Changes in pH, temperature and volume of composting piles were used as the parameters to follow composting process. Complete composting was achieved when the temperature started to fall, pH reached 9.0 and volume fell to a minimum — one third the initial volume. Turning frequency of the piles was another added parameter in following the compost formation. Turning frequencies of daily, twice and once a week yield mature compost after 36, 50 and 71 days respectively. The constraining factors were mainly lack of measuring instruments.

A trial was laid down at several factory sites to determine the effect of prolonged soaking of parchment with daily washing and daily or weekly sampling. The samples were dried and hulled. The liquoring results showed that soaking duration significantly affected parchment quality. The quality declined with soaking time and location of the trial did not affect quality trend.

4.5 Crop Physiology

This programme of the Crop Physiology Section was directed towards water use studies, tissue culture of Hybrid variety of Arabica coffee (Ruiru 11) and studies on the effect of established shade on growth, yield and quality of coffee.

Studies were conducted on physiological, growth and yield parameters of Ruiru 11 as influenced by drip and overhead irrigation. The results so far obtained using overhead system of irrigation indicate that there were no significant differences between irrigation treatments used namely, 38, 51 and 76 mm of water applied at intervals of 21, 28 or 35 days in respect to physiological parameters e.g. stomatal conductivity leaf temperature. However there were significant differences between irrigated and unirrigated trees. Yield results indicated that the best rate x interval treatment was 76 mm at 28 days intervals. Irrigation increased clean coffee by 76% over three years. Studies using under tree system of irrigation showed that there was a significant decrease in growth extension when 100 mm of water was applied at 21 days interval. However under the drip system the best treatment in terms of yield was 50 mm at 21 day interval. It increased clean coffee from 1361 kg to 4130 kg per ha. i.e. over 200 % in 1994.

A trial was conducted to assess the effects of established shade trees on coffee tree growth

yield and quality. The results obtained indicated that total chlorophyll content, leaf water potential, transpiration and stomatal conductivity decreased as the distance from the shade tree increased. Regression analysis of yield on distance from shade tree irrespective of compass direction was negative (r — 0.74). The effect of shade was limited to 8.6 mm from the shade trees.

A study of micropropagation of Ruiru 11 and other improved varieties continued. The aim of the project is to work out a viable alternative method for propagation of Ruiru 11 through nodal culture and somatic embryogenesis. Orthotropic nodes were cultured in a medium containing 10mg/1 Benzyladenine (BA). These were maintained under one thousand lux illumination in a 16—hour photoperiod. Shoots started developing within four weeks. The shoots were then excised and rooted after developing two nodes. The highest rooting frequency of 80% was obtained when Naphtalene Acetic Acid (NAA) was used at 200mg/1. Over five hundred plants have been weaned from this procedure after the plantlets were transferred into a vermiculite soil mixture.

One cm^2 leaf explants gave callus when cultured in Murashige and Skoog (Ms) medium containing 5 mg/12.4 — Dichlorophenoxy acetic acid. Embroyogenesis was achieved with each embryo passing through the sequential stages of embryo formation (i.e. globular, heart-shaped and torpedo-shaped). Each leaf explant gave 70—100 embryos. During the year over 1,000 embryos were obtained. The torpedo-shaped embryos were given an auxin dip and transferred into a MS medium without growth regulators for further development into plantlets. An attempt is being made to wean the rooted plantlets using different potting mixtures. Twenty plantlets have been transplanted in the field.

4.6 Entomology Section

The Entomology Section continued rendering Advisory Services to coffee farmers where required in regard to coffee insect pests with particular emphasis on use of Biointensive pest management strategy. Biocontrol was the sectional priority activity while evaluation of various insecticides and ecological studies on both major and minor coffee insect pests still continued.

Two trials started in 1990 at Del Monte and Azania coffee estates to evaluate insecticides against Leafminer *(Leucoptera sp)* were concluded. At Del Monte and Azania, systemic insecticides NTN 33893 5 GR and NTN 33893 200 SL effectively controlled the Leafminer larvae as compared to the recommended standard application of Disyston 10 GR. The NTN 3893 5 GR and 200 SL at the rates of 20 g and 1.5 ml per tree respectively were recommended for use against the Leafminer. Foliar application of Basudin 600 EC, Sumicombi Alfa 26.25%, Azocord 250 EC and Tafethion 50% EC was evaluated at Del Monte against Leafminer. Fenthion 50% M.L. was used as the standard. Basudin, Sumicombi Alfa, Azocord and Tafethion at the rates of 20 ml, 16 ml, 30 ml and 20 ml per 20 litres of water respectively were recommended for Leafminer control.

The systemic insecticides; NTN 33893 5 GR and NTN 33893 200 SL were also evaluated against Fried egg scale *(Aspidiotus sp)* at Jokimu and Rukera coffee estates. Temik 15 GR and Furadan 10 GR were used as the standards. The two formulations of NTN 33893 were found to be effective in controlling the *Aspidiotus* as the standards. The trial is still in progress.

Evaluation of three insecticides; Dursban 4, Dursban 48 H and Selector 72% EC against Leafminer were conducted at Del Monte. Fenitrothion 50% EC was applied as the standard. The results obtained indicated no significant difference between the rates of Dursban 48 H, Dursban 4 and Selector 72% EC. The trial is still in progress.

Three insecticides; Reldan 50% EC, Dursban 24 ULV and Fenitrothion 3% Dust were evaluated against Coffee Berry Borer (CBB) at Kisii, Kirinyaga and Embu. Dursban 48% EC was used as the standard. The results obtained indicated that Reldan 50% EC, Dursban 24 ULV and Fenitrothion 3% dust at 15 ml and 50 ml per 20 litres of water and 15 g/tree respectively were effective in controlling the CBB. The trial is still in progress.

The intensive biocontrol work of major coffee insect pests initiated in 1990 progressed. The targeted insect pests were Antestia bugs *(Antestiopsis spp),* Giant Looper *(Ascotis seleneria reciprocaria),* coffee insect scales *(Coccus alpinus* and *Aspidiotus sp),* Leafminer *(Leucoptera sp.)* and Berry moth *(Prophantis smaragdina).* Mass rearing of indigenous natural enemies (N.E.; predators and parasitoids under the laboratory conditions was successfully attained. The bulked N.E. were released back to coffee farmers' fields. The efficacy of Antestia egg parasitoids and predators of coffee scales (Ladybird beetles) were carried out in the the field and laboratory respectively. The project is still in progress.

4.7 Agricultural Economics

During the year under review, the Agricultural Economics Section undertook research on both the Estate and Smallholder sectors covering four main areas, (1) The Evaluation of the effects of coffee prices and liberal marketing policies on Coffee production profitability and farm income (2) Economics of coffee production (3) Adoption and performance of Ruiru 11 (4) Review of input marketing and distribution.

During the year 1993/94, the world coffee market continued to be governed by supply and demand conditions. A Coffee Retention Plan (CRP) under the auspices of Association of Coffee Producing Countries (ACPC) was created. The reduced coffee supply and mid-year reports of frost in Brazil led to an upsurge in World Coffee prices.

The favourable World prices were translated to high producer prices in the country. The continued implementation of liberalization policies in the Coffee sector and the favourable domestic economy performance; led to sustenance of average coffee prices above the 1992/93 level of about US $ 100 per 50 kg bag to US $ 150 per bag.

The new out of pool marketing system became more popular with producers. About 80% of all coffee being sold under this system while the remaining 20% was sold through the pool system.

The Kenyan currency was floated in the last quarter of 1993 after a couple of major official devaluations by an overall of 65%. Analysis of the impact of these foreign exchange policy changes on smallholder profitability using a representative input cost structure was carried out. After the waiver of Presumptive Income Tax.

In January 1994, imposition of a new milling charge at a rate of KShs. 2800/- per tonne of parchment, the break-even exchange rate was calculated to be KShs. 45/- to the US$.

The trend in coffee quality in the Co-operative Sector was analyzed for the period 1980 to 1992. The analysis indicated a gradual decline in coffee quality over the period. Proportion of coffee in classes 1—3 declined while there was a marked increase of coffee in classes 4—6 and 'mbuni'. For instance, the proportion of 'mbuni' doubled from about 9% in 1980 to 18% in 1992.

The average farm gate cost of coffee production in the smallholder sector increased by a margin of 27% in 1992/93 to stand at KShs. 64,000 (sixty four thousand) per tonne of clean coffee (KShs. 23,178/- per hectare). The total cost of coffee processing at the same time averaged KShs. 11,000/- (eleven thousand) per tonne. This high processing cost contributed substantially to low percentage payout to farmers. In some societies the payout was as low as 50%.

In the Estate sector, the average production cost in 1992/93 was estimated at KShs. 93,300/- (ninety three thousand, three hundred) per hectare equivalent to KShs. 108,000 (one hundred and eight thousand) per tonne of clean coffee. During this period most of the irrigated estates made profits while the non-irrigated estates made losses. This is due to differences in productivity, which averaged 1.4 tonnes and 0.6 tonnes in the irrigated and non-irrigated estates respectively.

A survey covering 37 coffee nurseries and 153 farms (121 smallholder and 32 estates) was carried out in the first half of 1994. Preliminary results from the survey indicated that Ruiru 11 adoption picked up after introduction in 1985 upto 1989 after which there was a gradual decline in both small and large scale sectors. Estimates from the survey and returns from various coffee districts put the proportion of coffee area under Ruiru 11 at between 2% and 3%.

A review of agro-chemical marketing system in the co-operative sector was also undertaken using supply side surveys for the period 1984 to 1989. Over the period reviewed Co-operatives remained an important retail outlet for most farm inputs. Their extensive network, proximity to farmers and their willingness to incorporate inputs in their credit schemes explained their popularity. However, an analysis of yearly stock carry-overs indicated figures as high as 38% thereby putting into question the capacity of co-operatives in inputs demand fore-casting.

The market structure of input suppliers in the co-operative sector was also analyzed. During the reviewed period three firms had a market share of over 35% while the remaining 65% was shared among nearly 50 firms. This showed that monopolistic tendencies in the market were unlikely. However, fertilizer supply was dominated by a few firms.

4.8 Research Liaison Training and Advisory Section (RLTAS)

The role of the RLTAS is to provide, encourage and maintain a continuous contact between coffee farmers, researchers, coffee agencies and other

people interested either individually or in groups in the research production and processing aspects within the coffee industry.

To effectively reach the farmers, the section liaises with coffee extension staff in the Ministries of Agriculture, Livestock Development and Marketing, Cooperative Development, the Co-operative Movement Managing Agencies and Coffee Board of Kenya (CBK) field services personnel in disseminating research information and receiving feedback from the field. Farmers, particularly estate owners do have a direct contact with the section.

Information flow is effected through training, provision of publications, participation in Agricultural shows, and coffee farmers' field days, making advisory visits to farms, visits by farmers to the Station and demonstration sites located in all major coffee growing areas and through audio visual media.

Within the year, the Section was internally able to conduct two courses for Nursery Managers, one for Pest Testers, six for Factory Managers and one for Farm Managers. Externally, there were eleven training workshops conducted in eleven coffee districts where 154 coffee extension workers participated.

CRF participated in eleven seminars organised by Coffee Board of Kenya on Liberalization of the coffee industry, the Project Co-ordination and Management Unit (PCMU) for Secretary Managers, the Kenya National Federation of Co-operatives (KNFC) for Society Management Committee and one for Coffee Extension Officers on inputs.

There were two local and one foreign students on attachment at CRS.

There was a sharp increase in the number of the various publications sold, from 336 the previous year to 906 during the year under review. There was also an increase in the number of leaflets and circulars distributed to growers particularly those on Ruiru eleven (11), technical circulars, handouts and Coffee Research Activities of which a total of 9600 copies were given out.

The number of advisory visits increased from 229 in 1992/93 to 281 this year. These were either requested or planned visits by the farmers, coffee managing agencies and the extension staff. Like in the previous year, there was a noticeable demand for farm visits. This could be attributed to recent changes in liberalization of the economy where farmers are getting better payment for their produce.

Thirty six coffee farmers' field days were conducted in thirty two coffee districts across the country where about 21,300 farmers participated. CRF held a field day at Kisii and over 1700 farmers, extension staff and other guests attended. In the CRF demonstration plots located at Bukura, Namwela, Kitale, CRF, Kirinyaga and Mariene, a total of 2800 farmers were attended to during their visits. Common observations and notes during the field days and the visits are improved coffee husbandry practices as compared to previous years.

The RLTAS staff of CRF attended eleven (11) Agricultural Society of Kenya Shows and seven (7) District Harambee Shows. The CRF and CBK staff were able to interact with farmers and other interested participants in all aspects of coffee husbandry, processing, marketing and the future of coffee farming as a business.

CRF was able to receive a total of 1425 visitors at CRS, its substations and demonstration sites who paid visits individually and as groups apart from those who attended the organized open/field days in these sites as reported above. These visitors were either farmers, students/pupils and foreigners with various interests on coffee.

The sale of traditional coffee seeds namely K7, SL28 and SL34 was 125 kg compared to 36 kg in 1992/93 year. There was a high demand for Ruiru 11 planting material as noted under the Coffee Breeding Unit section of the main report.

CRF continued its co-operation with other local institutions in inter-library loaning of books particularly with the Kenya Agricultural Research Institute (KARI), the Universities, Kenya National Library Services (KNLS) and Kilimo Library.

The current CRF Library requires expansion to accommodate the many publications we have and modern equipment for collecting, organizing, storage and dissemination of information.

Within the year, CRF received two teams of visitors from Centre for Agriculture and Biosciences International (CABI) who were interested in establishing a collaborative database linkage for all libraries in Kenya. A project proposal was written and submitted to CABI team for consideration for funding.

5.0 Income and Expenditure Summary

The Income/Expenditure and the Balance sheet as at 30 September 1994 are attached hereto. The Foundation's Income for the year to 30 September 1994 was K£ 8,225,037 compared to K£ 6,794,425 for the previous year. Expenditure of K£ 9,483,244 was incurred against K£ 6,885,311 in the previous year.

Special Expenditure in respect of the Coffee Berry Disease Unit and Bacterial Blight of Coffee Project was as follows:

Foundations Coffee Berry Disease Unit:

	K£
Staff Remuneration Labour Wages,	
Travelling and General Upkeep	351,035
New Equipment	—
	351,035

Foundations Bacterial Blight of Coffee Project:

Staff Remuneration, Labour Wages, Travelling and General Upkeep	265,011
New Equipment	375
	265,386

The above Expenditure for the two units was reimbursable by the Coffee Board of Kenya over and above the Main Subvention. The Budget for the year 1994/95 in respect of these projects stand at K£ 270,650 and K£ 476,132 respectively. The Bank Balance was K£ 1,381,483 at 30 September 1994.

REPORT OF THE AUDITOR-GENERAL (CORPORATIONS) ON THE ACCOUNTS OF THE COFFEE RESEARCH FOUNDATION FOR THE YEAR ENDED 30 SEPTEMBER, 1994

I have examined the accounts of Coffee Research Foundation for the year ended 30 September 1994 in accordance with Section 29 (2) of the exchequer and Audit Act, (Cap 412). I have obtained all the information and explanations that I have required for the purposes of the audit. Proper books of account have been kept by the Foundation and the accounts are in agreement therewith.

In my opinion, the Balance Sheet and the Income and Expenditure Account, when read together with the notes thereon, present a true and fair view of the state of financial affairs of the Foundation as at 30 September 1994 and of its deficit and source and application of funds for the year ended on that date.

W.K. Kemei
Auditor-General (Corporations)

19 January 1996

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

Balance Sheet as at 30th September 1994

	Note	1994	1993
ASSETS EMPLOYED			
Fixed Assets	2	46,209,788	29,195,688
INVESTMENTS			
Quoted Investments at Cost Schedule II		2,671,967	1,489,725
CURRENT ASSETS			
Coffee Board of Kenya		11,398,776	20,261,385
Stocks		7,586,163	6,486,225
Debtors & Deposits	6	6,143,810	5,144,779
Cash & Bank Balances	4	27,629,679	10,138,584
		52,758,428	42,030,972
CURRENT LIABILITIES			
Creditors, Accruals and Provisions	7	74,577,994	24,202,358
Withholding and Corporation Tax		2,625	60,978
		74,580,619	24,263,336
NET CURRENT ASSETS		(21,822,191)	17,767,636
Total Net Assets		27,059,564	48,453,049
FINANCED BY:			
Coffee Research Reserve Fund		1,400,000	2,000,000
Capital Reserve	5	47,726,475	25,468,747
Research Reserve		(22,066,911)	20,984,302
		27,059,564	48,453,049

Accounts were approved by Board of Directors

Mr. A.M. Mwangi ..... Chairman

Dr. Wilson R. Opile ..... Director

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

Income and Expenditure Account/Research Reserve
for the year ended 30th September, 1994

	1994 KShs.	1993 KShs.
Surplus for the year	(24,891,145)	28,182,275
Provision for withholding and Corporation Tax	(29,515)	(85,307)
Capital Expenditure incurred on land owned by Coffee Board of Kenya or Government of Kenya	(18,130,553)	(9,773,657)
	(43,051,13)	18,323,311
Research Reserve brought forward	20,984,302	2,660,991
	(22,066,911)	20,984,302

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

Detailed Income and Expenditure Account for the year ended 30th September, 1994

	1994 KShs.	1993 KShs.
INCOME		
Coffee Board of Kenya		
Main Subvention payments	74,300,300	70,412,047
Reimbursement of plant Breeding Expenses	15,696,200	17,441,947
Reimbursement of SCIP Expenses	7,675,100	9,859,705
	97,671,600	97,713,699
Reimbursement of FCBDRU Expenses	7,020,700	6,810,440
Reimbursement of FBBCRU Expenses	5,307,700	4,514,560
	12,328,400	11,325,000
Government of Kenya Contribution Towards Coffee Rehabilitation/Programme	1,061,258	—
Coffee Proceeds	48,786,790	49,239,766
Dividends and Interests on Investments	275,869	202,185
Sundry Income	4,376,841	7,407,856
	54,500,758	56,849,807
Total Income	164,500,758	165,888,506
EXPENDITURE		
Recurrent Expenditure	170,535,187	126,821,442
Special Services	10,282,047	5,939,031
Depreciation	8,667,652	4,765,758
Audit Fees	180,000	180,000
Total Expenditure	189,664,886	137,706,231
(Deficit/Surplus from the operations	(25,164,128)	28,182,275
Profit on sale of Assets	272,983	—
SURPLUS FOR THE YEAR	(24,891,145)	28,182,275

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

SOURCE AND APPLICATION OF FUNDS

Surplus/(Deficit) for the year before taxation	(24,891,145)
Adjustment for items not involving the movement of funds:	
Depreciation	8,667,652
Profit on sale of fixed assets	(272,983)
Funds generated from operation	(16,496,475)
OTHER SOURCES	
Proceeds on sale of fixed assets	286,000
Total funds available for application	(16,210,476)
APPLICATION OF FUNDS	
Purchase of fixed assets	6,786,636
Development Expenditure	16,254,921
Payment of tax	26,890
	23,068,447
	(39,278,923)
MOVEMENT IN WORKING CAPITAL	
Increase in stock	1,099,938
Increase in creditors	(50,006,378)
Decrease in debtors & deposits	(7,863,578)
Increase in cash balance	17,491,095
	(39,278,923)

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

Notes to the Accounts for the year ended 30th September, 1994

ACCOUNTING POLICIES

(a) Accounting convention

The Accounts are prepared under historical cost convention.

(b) Stocks

Stocks of consumable Stores are valued on a "first-in, first-out" basis at the lower of cost or net realisable value.

(c) Depreciation

Depreciation is calculated to write off the cost of Fixed Assets on a diminishing balance basis over estimated useful lives at the following annual rates:

Farm Machinery	20%
Vehicles & Tractors	20%
Farm Equipment	15%
Furniture Office and Laboratory Equipment	12.5%
Misc. Equipment	7.5%

(d) Investments

Investments are stated at cost

(e) Research Reserve

Where the foundation Finances and develops assets, of a permanent nature on land owned by the Government or the Coffee Board of Kenya, the gross cost of these assets is debited to this reserve.

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

Notes to the Accounts for the year ended 30th September, 1994
ALL AMOUNTS IN KSHS.)

2. FIXED ASSETS

	Furniture and Office Equipment	Laboratory Equipment	Farm Equipment	Vehicle and Tractors	Farm Machinery	Miscellaneous Equipment	TOTAL
	12½%	12½%	15%	20%	20%	7½%	
Written Down Value as at 1 October 1993	5,401,609	12,460,571	1,633,152	6,093,800	565,302	2,889,784	29,044,218
Additions during the year	1,902,778	890,607	4,308,288	—	—	803,000	7,904,673
Valuations of vehicles	—	—	—	17,941,566	—	—	17,941,566
As at 30 September 1994	7,304,387	13,351,178	5,941,440	24,035,366	565,302	3,692,784	54.890,457
Disposals	—	—	—	13,017	—	—	13,017
	7,304,387	13,351,178	5,941,44	24,022,334	565,302	3,692,784	54,877,440
Depreciation for the year	913,049	1,668,898	891,216	4,804,469	113,061	276,959	8,667,652
As at 30th September 1994	6,391,338	11,682,280	5,050,224	19,217,880	452,241	3,415,825	46,209,788
As at 30 September 1993	5,401,609	12,460,571	1,784,622	6,093,800	565,302	2,889,784	29,044,218

One vehicle KTX 598 which had been fully depreciated was sold during the year

3. TAXATION

Taxation has been provided on Income from Investments at the Corporation rate

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

Notes to the Accounts for the year ended 30th September, 1994

4.	**CASH AND BANK BALANCES**			**KShs.**
	Cash in hand and at Bank			27,629,679
				27,629,679

5.	**CAPITAL RESERVE**			**KShs.**	**KShs.**
	Capital Reserve as at 1st October 1993				25,468,747
	Additional values on Revaluation of Vehicles				17,941,566
	Shares Adjustments				1,182,242
	Capital Addition in Special Funded Programmes:-				
	(a) Equipment	—	BBCRU	7,500	
		—	FCBDRU	—	
		—	Coffee Rehabilitation Programme	30,596	
		—	Plant Breeding	1,079,941	1,118,037
	(b) Development	—	Plant Breeding		2,015,882
					47,726,474

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

Notes to the Accounts for the year ended 30th September, 1994

6. SUNDRY DEBTORS	KShs.
Coffee Board of Kenya	
Coffee Proceeds receivables	9,998,775
Deposit	1,400,000
	11,398,775
Ministry of Labour	142,060
Deposits	28,180
I C I P E	43,901
Continental Bank	2,814,252
Coffee Seedlings	168,845
Unpaid Cheques	63,875
Staff Debtors — Petrol	28,609
Staff Loans and Advances	1,036,145
Safari Imprest	1,555,150
Soil Analysis Services	19,682
Welfare Bus	10,815
Telephone Charges	13,903
Bungoma Union Bank	218,390
	6,143,810

7. The foundation felt that the amount of KShs. 3,014,252 with Continental Bank of Kenya might not be recovered, hence a provision of 100% was made in 1985/86 Accounts. However, in 1992/93 the liquidators paid CRF KShs. 200,000 leaving a balance of KShs. 2,814,252.

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

Schedule of Recurrent Expenditure

	FINANCED BY SPECIAL FUNDS										FINANCED BY CRF			
	CBD		SOIL ANALYSIS		PLANT BREEDING		BBCRU		SCIP		CRF		TOTAL	
	YEAR ENDED		YEAR ENDED		YEAR ENDED		YEAR ENDED		YEAR ENDED		YEAR ENDED		YEAR ENDED	
	30.09.93	30.09.94	30.09.93	30.09.94	30.09.93	30.09.94	30.09.93	30.09.94	30.09.93	30.09.94	30.09.93	30.09.94	30.09.93	30 09.94
Maintenance and general Upkeep	693,208	968,578	10,000	5,804	6,317,738	9,311,379	4,609	456,933	1,296,676	2,019,617	26,734,488	41,475,115	35,513,086	54,237,426
Travelling and Touring Expenses	1,041,788	1,816,211	—	—	1,434,093	2,032,619	837,902	1,595,040	1,598,829	2,421,289	19,008,040	32,758,399	23,920,652	40,623,558
Staff Remuneration and Labour Wages	3,481,057	4,235,911	131,178	—	8,087,791	7,619,688	1,723,217	3,248,247	5,463,945	6,054,988	43,534,082	51,381,450	62,421,270	72,540,284
Equipment Purchased	268,000	—	—	—	1,280,500	1,079,941	1,595,850	7,500	1,500,255	30,596	—	—	4,644,605	1,118,037
Capital Development	—	—	—	—	—	2,015,882	—	—	—	—	—	—	321,825	2,015,882
	5,484,053	7,020,700	141,178	5,804	17,441,947	22,059,509	4,617,945	5,307,720	9,859,705	10,526,490	89,276,610	125,614,964	126,021,439	170,535,187

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

SCHEDULE II
Schedule of Investments

No. of shares	Nominal value of shares		At Cost KShs.	Middle Market KShs.
14260	5.00	Consolidated Holdings Ltd.	71,300	51,336
25740	10.00	E.A. Breweries Ltd.	257,400	622,050
5742	20.00	E.A. Power & Lighting Company Ltd.	114,840	178,002
3775	5.00	A. Bauman & Company Limited	18,875	13,212
19718	5.00	Car & General (K) Limited	98,590	80,106
15668	10.00	B.A.T. (Kenya) Limited	156,680	313,360
4203	20.00	Kenstock Ltd. 12.5% Deffered Loan Stock	84,060	66,197
5810	—	Kenya Government 6% Stock 1997 at 86%	99,932	—
—	—	K.P.C.U. Deffered Stock	599,930	—
—	10.00	Redeemable Ordinary Shares K.P.C.U. Ltd. 1991/95	1,131,010	—
3935	10.00	Stock 1996/2000	39,350	—
			2,671,967	—

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

Fixed Assets Financed and Developed by the Foundation

A. ATTRIBUTABLE TO THE COFFEE BOARD OF KENYA

		KShs.	KShs.
1.	**LAND AND DEVELOPMENTS**		
	Koru Land LR 11253	34,480	
	Koru Developments	94,380	128,860
	Azania Estate LR 10084	77,380	
	Azania Development	2,888,984	2,966,364

2. **BUILDINGS**	WDV	Additions	Total	Depreciation	WDV	
				2.5%	30.9.94	
Farmhouse Workshop	625.384	514,964	1,140,348	28,509	1,111,839	
Coffee Factory and Developments	358.997	981,882	1,340,879	33,522	1,307,357	
Water Installations and Pump House	6.265,723	3,272,129	9,537,852	238,446	9,299,406	
Dairy Cattle Sheds & Dips	33.566	—	33,566	840	32,726	
Staff Amenities	26.258,323	10.898,601	37,156,924	928,924	36,228,000	
Main Office. Library and Lecture Hall	3.980.363	—	3,980,363	99,510	3,880,853	
Laboratories	14.936.691	—	14,936,691	373,418	14,563,273	
Coffee Developments	1,491,746	2,187.977	3,679,723	91,994	3,587,729	
Road Repairs	869.251	275,000	1,144,251	28,607	1,115,644	
	54.820.044	18.130,553	72,950,597	1,823,770	71,126,827	71,126,827
						74,222,051

COFFEE RESEARCH FOUNDATION
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SCHEDULE III

B. ATTRIBUTE TO THE GOVERNMENT OF KENYA

1. LAND

	Coffee KShs.	Land Development KShs.	Total KShs.
Jacaranda Estate 312 acres LR/116/1 & 116/3	80,680	314,300	394,980
Rukera Estate 251 acres LR 116/2	77,100	258,500	335,600
Meru Sub-Station 57 acres LR 780 and 80-6	14,420	61,540	75,960
Kisii Sub-Station 45.6 acres	13,780	53,200	66,980
	185,980	687,540	873,520

2. BUILDINGS

	WDV 30.9.93	Depreciation 12.5%	30.9.94
Main Office Lecture Hall and Garage	9,237	1,155	8,082
Laboratories	32,960	4,120	28,840
Farm Office Stores and Workshop	15,580	1,948	13,632
Coffee Factories	9,100	1,138	7,962
Water Installation and Pump Houses	6,022	753	5,269
Dairy Cattle Sheds and Dips	3,170	397	2,773
Domestic Houses and Staff Amenities	143,064	17,883	125,181
Museum and Library	1,947	244	1,703
	221,080	27,638	193,442

3. FURNITURE EQUIPMENT AND STORES

Furniture and Office Equipment	578	73	505
Laboratory Equipment	1,238	155	1,083
Farm Equipment	1,156	145	1,011
Vehicles and Tractors	220	28	192
Miscellaneous Equipment	551	69	482
Farm Machinery	984	123	861
Expendable Stores	668	84	584
Consumable Stores	76	10	66
	5,471	687	4,784

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SCHEDULE III — NOTES

(i) Meru Sub-Station LR 780 and 806 — Those pieces of land situated seven miles south of township on the main Meru/Chogoria Road containing the buildings commonly known as Meru Coffee Research Sub-Station together with the necessary curtilage.

(ii) Kisii Sub-Station Block 2.136 — That piece of land situated within Kisii township containing buildings commonly known as Kisii Research Sub-Station together with the necessary curtilage.

(iii) The building included in Schedule IIIA have been valued by the Ministry of works and additions have been shown at cost.

(iv) Appropriate amendments to the coffee rules have been prepared and submitted to the Attorney Generals Department pending enactment of the necessary legislation. The following (v) applies.

(v) In accordance with Sessional Paper No. 3 of 1963. Land and buildings in Schedule IIIB were to be leased to the Coffee Board of Kenya for a period of 21 years from 1st October 1963 at a peppercon rental, subject to the condition that the use be restricted to research and related activities only, ownership reverting to the Government in the event in that assets are not required for such purposes.