

PAPERS LAID No	12
Speaker N. A.	Clerk
Deputy Speaker	C. H. ...
Clerk N. A.	Papers
Deputy Clerk	Library
P. C. A.	Press

Coffee Research Foundation

An official organisation under the Coffee Board of Kenya



**ANNUAL REPORT
AND
ACCOUNTS
1991 - 1992**

657-3
CRF

ANNUAL REPORT AND ACCOUNTS OF THE COFFEE RESEARCH FOUNDATION (CRF) FOR THE YEAR ENDED 30TH SEPTEMBER 1992

STATEMENT BY THE CHAIRMAN OF THE BOARD

1.1 Introduction

The current Board of the Coffee Research Foundation (CRF) was reconstituted on 7th March 1991. Four Board meetings were held during the year under review. In addition, Board members attended regular quarterly meetings as well as sub-committee and special meetings, when necessary, of the following standing committees:

1. Finance/Tender Committee
2. Coffee Research Advisory Committee (CRAC)
3. Staff Committee

The Annual General Meeting of Subscribers was held on 12th November 1992.

1.2 Research Activities

The main research activities for the year under review have been outlined in this report. As has been the case in the previous year, major emphasis was laid on protecting crops against diseases and insect pests. Two new fungicides and one Tank Mixture of copper and an organic product already in use were recommended for the control of coffee Berry Disease (CBD) during the year under review. Also recommended was another lot of two new fungicides for the control of Leaf Rust Disease. Two Coppers and one antibiotic mixed with copper have been recommended for Bacteria Blight of Coffee (BBC) control. However, screening and evaluation of new fungicides is in progress as indicated in this report.

The CRF continued to focus on research aspects geared towards lowering the cost of producing coffee. These included continued work on production and release of Ruiru 11 by seed as well as by Vegetative Propagation (VP) method. Plans are also underway to use Tissue Culture as a supplementary method of producing Ruiru 11. In the meantime, it should be noted that the cumulative acreage under Ruiru 11 from the time the programme started in 1986/87 to September 1992 is about 4,330 hectares. Vegetative Propagation through top working was used on coffee orchards on experimental basis in certain areas near the Coffee Research Station (CRS).

Emphasis continues to be laid on the integrated method of pest control with particular emphasis on Biological Control using locally available parasitoids and predators of the pest. The target pests for Biological Control include: Scale insects, Antestia bugs, Giant loopers. Efforts are also being made to include other pests such as Leafminers, Berry borers and Berry moths in our future studies for Biological Control.

The Economics Section continued to monitor the cost of coffee production in Kenya. The average cost of production in the Small holder Sector during 1990/91 was KSh. 45,500/- (forty five thousand, five hundred) per tonne of clean coffee compared to KSh 53,040/- (fifty three thousand and forty) in the Estate Sector during the same year.

Work continued in providing routine services to coffee growers in the areas of soil and leaf analysis as well as Advisory and Training. Farmers' education through Agricultural Society of Kenya (ASK) Shows and Field Days continued.

1.3 Staff Matters

As indicated elsewhere in this report, there were no Senior Staff recruited during the year to replace those who left the CRF. On the other hand, two Senior Staff members left the CRF during the year. Training of staff continued mainly for Senior Staff who included two Research Officers for Ph D and one for MSc degrees. Four Research officers travelled outside the country to attend either conferences or courses during the year as part of their training and research awareness in modern techniques. Those who benefitted from the local and overseas training are indicated in this report.

1.4 Finances

There was an increase in Research Reserve Fund during the year under review from a deficit of KSh. 6,573,749 in 1991 to a surplus of KSh. 2,660,991 in 1992. The increase in revenue was due to increase in crop revenue and Main Subvention from Coffee Board of Kenya. Total income rose by 41.85% from KSh. 81,534,203 in 1991 to KSh. 115,667,606 in 1992.

1.5 Future Plans

The CRF is looking for ways and means of growing coffee cheaply by introducing Vegetative Propagation of Ruiru 11 variety in addition to seed production.

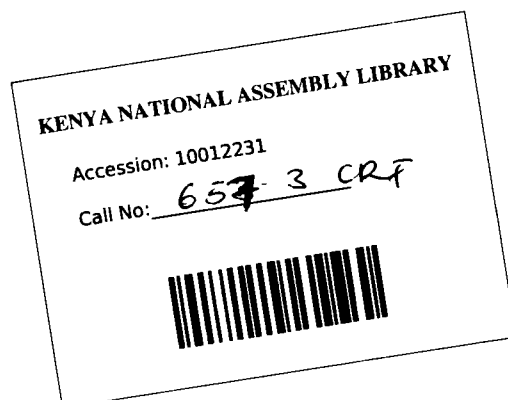
Another aspect of reducing the cost of growing coffee is by Tissue Culture method. The CRF is therefore planning to build appropriately designed facilities for Tissue Culture work at the CRS. One key personnel has been trained on Tissue Culture techniques outside the country in order to transfer the latest modern technology to the CRF. In the meantime, the seed production method has been refined by improving fruit set by 15%. Therefore about two metric tonnes of seed were produced during 1991/92 as opposed to only about one tonne produced in 1990/91.

The CRF also refined the DUDU BANK project work which was started in 1990. Additional insect predators and parasitoids have been collected from coffee in the field, reared at the Coffee Research Station (CRS) Ruiru, for distribution into the farmers' fields. The idea is to promote Biological Control on Kenya coffee instead of using expensive insecticides. This will also promote a clean environment.

All the above plans on Vegetative Propagation, Tissue Culture and Biological Control of insect pests will need additional finances to implement. Therefore, it is hoped that more funds will be made available for the planned research activities mentioned in this report. There is also need to find money for buying the equipment needed for the newly built laboratories.

There are plans to build a Hostel complex comprising of (1) lecture theatre (2) dining hall (3) students' hostel and (4) staff flats in future. The complex will be funded by the grant obtained from the World Bank funds under the Second Coffee Improvement Project (SCIP 11) sponsored by the government.

Abraham M. Mwangi
CHAIRMAN



COFFEE RESEARCH FOUNDATION

BOARD OF DIRECTORS



Mr. A.M. Mwangi
Chairman



Dr. Wilson R. Opilé
Director of Research



Mr. M. Njiru



Mr. J.E. Muhia
Secretary



Mr. P. Mwangi



Mr. S.C. Muchiri



Mrs. N.N. Kaminchia



Miss B.W. Kingori



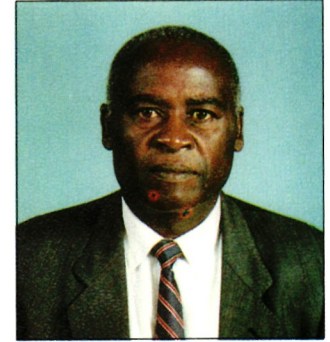
Mr. R.M. Wamakau



Rev. E. Kabii



Dr. B.W. Ngundo



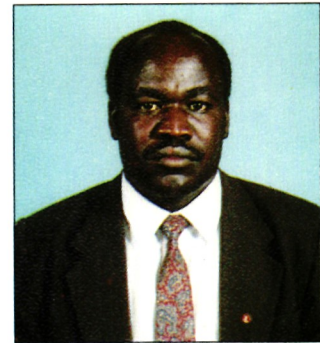
Dr. M. Isiakho



Prof. K. Waithaka



Mr. S.M. Kibathi



Mr. J.O. Apuoyo

COFFEE RESEARCH FOUNDATION

HEADS OF SECTIONS



Mr J.E. Muhia
Chief Accountant Co- Secretary



Mr. P.K. Michori
Deputy Director of Research



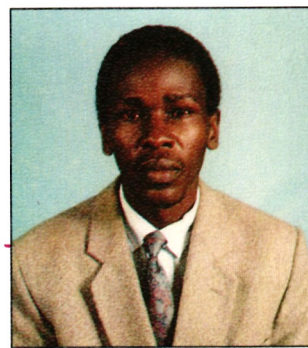
Mrs. D.M. Masaba
Plant Pathology



Mr. M.P.H. Gathaara
Crop Physiology



Mr. J. Mburu Njoroge
Head, Field Experimental Agronomy(CRF)



Mr. C.O. Agwanda
Plant Breeding



Mr. J.N. Mburu
Chemistry (Acting)



Miss A.W. Wainaina
Entomology (Acting)



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



Mr. C.B. Nyakeri
Internal Auditor



Mr. J.M. Maina
Senior Estates Officer



Mr. E.K. Maina
Administrative Manager



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

**ANNUAL REPORT AND ACCOUNTS OF THE COFFEE RESEARCH FOUNDATION
FOR THE YEAR ENDED 30TH SEPTEMBER 1992**

Registered Office: Coffee Research Station
P.O. Box 4 Ruiru, Kenya
Telephone: Thika
21047/21092
22652/22653

**2.0 BOARD OF DIRECTORS AS AT 30
SEPTEMBER 1992**

Mr. A.M. Mwangi - Chairman
Mr. M Njiru
Mr. P. Mwangi - Chairman, Coffee Board
of Kenya

Dr. M. Isiaho
Mr. R.M. Wamakau
Rev. E. Kabii
Mr. S.C. Muchiri
Dr. M.W. Oggema - Ministry of Agriculture
Dr. Cyrus C. Ndiritu - Director, Kenya
Agricultural Research
Institute (KARI)

Mr. E. Kandie - Director of Agriculture
Ministry of Agriculture

Dr. Wilson R. Opile' - Director of Research
Coffee Research
Foundation

Mr. J.E. Muhia - Secretary

Co-opted Members

Prof. D.M. Mukunya - Dean, Faculty of
Agriculture, University
of Nairobi

Mr. S.M. Kibathi
Mr. J.A. Odoyo

Mr. M. Njiru and Dr. M.W. Oggema were due to
retire by rotation and being eligible, were re-
elected.

Four meetings were held during the year as
follows:-

- One Hundred eleventh Board Meeting held on
14 November, 1991.
- One Hundred twelfth Board Meeting held on
13 February, 1992.
- One Hundred thirteenth Board Meeting held on
14 May, 1992
- A Special Board Meeting held on
13 July, 1992.
- One Hundred fourteenth Board Meeting held on
20 August, 1992.

The Annual General Meeting of the Subscribers
was held on 12th November, 1992.

**2.1 COFFEE RESEARCH ADVISORY
COMMITTEE AS AT 30 SEPTEMBER 1992**

Dr. B.W. Ngundo - Chairman
Mr. A.M. Mwangi - Chairman, CRF Board
Dr. Wilson R. Opile' - Director of Research CRF
Mr. M. Njiru - Kirinyaga (Small Scale)
Pro. Kimani Waithaka - Faculty of Agriculture,
University of Nairobi

Mr. W. Kisaka - Trans Nzoia (Large Scale)
Mr. J.K. Kinoti - Coffee Board of Kenya
Mr. J.M. Mathenge - Solai/Subukia
(Large Scale)

Mr. J.O. Mabeya - Kisii (Small Scale)
Mr. A.G. Mwereria - Meru (Small Scale)
Mrs Mary Ntipilit - Kajiado (Small Scale)
Mr. J.K. Mbatha - Chairman, Pesticides
Chemicals Association (K)

Mr. M.M S. Kagwanja - Embu (Small Scale)
Mr. M. Mugho - Taita/Taveta (Small Scale)
Mr. J.A. Odoyo - South Nyanza
(Small Scale)

Mr. B. Latebo Psirmoi - Bungoma (Small Scale)
Mr. J.M. Nzioki - Machakos (Small Scale)
Mr. W. Wambu - Murang'a (Small Scale)
Mr. C N. Maina - Technical Manager, SCIP
Mr. H.M. Mwangi - Ministry of Co-operative
Development

Mr. A.M. Michaelides - Ruiru (Large Scale)
Dr. A.M.W. Oggema - Ministry of Agriculture
Mrs N.N. Kaminchia - Ministry of Agriculture
Mr. H. Harries - Thika (Large Scale)
Mr. J.M. King'angi - Kenya Planters'
Co-operative Union

Mr. J.E. Muhia - Chief Accountant/Co
Secretary, CRF

Dr.(Mrs) D.M. Masaba - Ag Deputy Director of
Research,CRF/Secretary

Four meetings were held during the year as
follows:-

- One Hundred and eighty second Meeting on
24 October, 1991.
- One Hundred and eighty third Meeting on
30 January, 1992.
- One Hundred and eighty fourth Meeting on
23 April, 1992
- One Hundred and eighty fifth Meeting on
23 July, 1992.

**ANNUAL REPORT AND ACCOUNTS OF THE COFFEE RESEARCH FOUNDATION
FOR THE YEAR ENDED 30TH SEPTEMBER 1992**

3.0 Staff

3.1 Promotions

The following Senior Staff promotions were approved by the CRF Board to take effect from 1 October 1991 according to respective schemes of service:

Mr. J. Maina, Bld Cons Tech II, (MKIB), (MICWK), Senior Estates Officer was promoted to Chief Estates Officer.

Miss M.W. Rugano, Personal Secretary I, was promoted to Senior Personal Secretary.

Mrs. A.K. Kiara, Personal Secretary I, was promoted to Senior Personal Secretary.

Mr. E. J. Muthamia, Dip Agric (Egerton), Senior Field Officer II, was promoted to Senior Field Officer I.

Mr. M.G. Waweru, C&G - SLT I, Senior Field Officer II was promoted to Senior Field Officer I.

Mr. J.P. Maingi, Cert Agric (Embu), Field Officer II was promoted to Senior Field Officer II.

Mr. S.W. Mureithi, Dip Farm Management (Egerton), Field Officer II was promoted to Senior Field Officer II.

Mr. G.K.W. Machora, Dip Agric (Egerton), Field Officer II was promoted to Senior Field Officer II.

Mr. S.K. Kiguongo, Field Officer III, was promoted to Field Officer II.

3.2 Appointments

Dr. (Mrs) D.M. Masaba, BSc & MSc (Makerere), Ph D (reading), Principal Research Officer (Pathologist) and Head of Plant Pathology Section was appointed Acting Deputy Director of Research w e f 23 January 1992.

Mr. A.K. Mwithia, BSc Agric, MSc (Agric Econ), was appointed to look after the affairs of the Economics Section w e f 1 November 1992.

Miss A.W. Wainaina, BSc (Zoo/Bot), MSC (Zoology), was appointed to look after the affairs of Entomology Section w e f 17 February 1992.

3.3 Recruitment

There were no Senior Staff recruitments during the year under review.

3.4 Departures

Mr. G.K.W. Machora, Dip Agric (Egerton), Field Officer in Research Liaison Training & Advisory Section resigned from CRF service w e f 6 April 1992.

Mr. S.N. Onchoke, BSc, MSc (Economist) left the CRF and Proceeded to Australia to undertake a Ph D degree course on a private scholarship w e f February 1991.

Miss M.W. Kinuthia, BSc, MSc (Entomologist), left the CRF and proceeded to the University of Adelaide, South Australia, to undertake a Ph D degree course on a private scholarship w e f February 1992.

3.5 Training

Mr. P.K. Michori, BSc, MSc, Senior Principal Research Officer and Deputy Director of Research, proceeded to University of Reading, U.K. w e f 23 January 1992 to finalise, submit and defend his Ph D thesis.

Mr. F.O. Bolo, Senior Administrative Assistant was sponsored by the CRF to attend a one year CPS III course at the Kenya Institute of Administration w e f 6 January 1992

Mrs. J.W. Kahia, BSc, MSc, Senior Research Officer (Crop Physiology), was sponsored by the CRF for a three months' training attachment at the Tissue Culture Laboratory at Wye College w e f 11 March, 1992.

Mr. J.N. Wamatu, BSc, MSc, Research Officer (Plant Breeding), was awarded a fellowship to attend the 22nd International Course on Applied Plant Breeding for three months in the Netherlands by the Netherlands Government w.e.f. 14 March, 1992.

Miss A.W. Wainaina, BSc, MSc, Research Officer (Entomologist) attended the International Course on Techniques of Insect Rearing for the Development of Integrated Pest and Vector Management Strategies from 16 March to 3 April 1992 at Duduville, Nairobi. The course was organised by the International Centre of Insect Physiology and Ecology (ICIPE).

Mr. G.M. Kairu, BSc, MSc, Senior Research Officer (Pathology) proceeding to Imperial College, U.K. w e f 16 April, 1992 to finalise, submit and defend his Ph D thesis.

Mr. J.T. Thuo, Research Officer, Chemistry had his degree thesis entitled: "Analysis of the Levels of Heavy Metals in Soil, Plant, Water, Sediment and Urine Samples around the Athis River Region" approved by the University of Nairobi.

Mr. A.K. Mwiha, Research Officer (Economics) had his MSc degree thesis entitled: "The Economics of Dairy Cattle Breeding by Small Scale Farmers" approved by the University of Nairobi.

Mr. N.K. O. Olang'o, Research Officer (Chemistry) had his MSc degree thesis entitled: "Objective Evaluation of Quality Changes in growing and stored sweet potatoes" approved by the university of Nairobi.

Mr. J.K. Mburu, Research Officer (Agricultural Engineer), Chemistry Section, had his MSc degree thesis entitled: "De-Watering and Drying Characteristic of Coffee Pulp" approved by the University of Nairobi.

3.6 Conferences/Workshops

Dr. Wilson R. Opile', Director of Research, attended a workshop on Coffee Productivity Centres in Brussels from 3 - 4 October 1991. The workshop was organised by the Inter African Coffee Organisation (IACO) and financed by the European Economic Community (EEC).

Dr. Wilson R. Opile', Director of Research, attended the Annual Brighton Crop Protection Conferences (Pests and Diseases) in Britain from 18 - 29 November 1991. He was sponsored by the CRF.

Dr. Opile', also attended a preparatory meeting for a Seminar on promoting coffee productivity in Africa at the Technical Centre for Agricultural and Rural Co-operation (CTA) Brussels Branch Office on 11 and 12 February 1992.

Dr. Opile', attended a Seminar on "Promoting Research on Productivity and Quality of Coffee in Africa" in Lisbon, Portugal from 22 - 26 June, 1992. The seminar was organised by the CTA Brussels Branch Office.

Dr. Opile' also attended a seminar on Coffee Research and Development in Kampala, Uganda and presented a paper on Development and Promotion of Coffee in Kenya from 13 - 15 July, 1992. The Seminar

was organised by the Uganda Coffee Development Authority.

Dr. Wilson R. Opile', Director of Research, attended a follow-up committee meeting of the CTA/ IACO Seminar held in Lisbon, in Abidjan Cote D'Ivoire from 30 August to 7 September 1992.

Mr. J.N. Mburu, BSc, MSc, Acting Head, Chemistry Section, attended a one-week Workshop at Safari Lodge Hotel. The Workshop was organised by the Ministry of Agriculture.

Mr. C.O. Omondi, BSc, MSc, Research Officer (Plant Breeder), attended the United Nations Industrial Development Organisation (UNIDO) Expert Group Meeting at the International Institute for Tropical Agriculture (IITA) in Ibadan, Nigeria from 12 - 21 December 1991. The theme of the meeting was "Application of Biotechnology to Food Processing in Africa".

Mr. H.M. Mugo, BSc, Research Officer (Entomologist) attended the 22nd Annual ICIPE Research conference in Duduville, Nairobi from 27 - 30 April 1992

Mr. H.M. Mugo also attended a seminar on Biological Control of Insect Pests organised by the International Institute of Biological Control (IIBC) of Muguga at the Silversprings Hotel, Nairobi from 3 - 16 May, 1992.

Mr. M.K. Nyaga, BSc, MSc, Senior Advisory Officer and Head of Research Liaison, Training & Advisory Section, attended the International Course on Basic Principles of Planning Integrated Plant Protection Measures in Germany from 7 May to June 1992. He was sponsored to attend the course by the German Foundation for International Development (DSE).

Mr. M.P.H. Gathaara, BSc, MSc, Head of Crop Physiology Section and Secretary of the CRF Training Committee, attended the 9th Training Needs Assessment Workshop for the Agricultural and Natural Resources Sector organised by the Ministry of Manpower Development and Employment in Kisumu from 24 - 28 August 1992.

3.7 Attachments

Two Malawian Nationals Messrs Boniface Msiska, BSc Agriculture and Dickson Mainjeni, Diploma in Agriculture working in Research Institutions under the Ministry of Agriculture in Malawi, underwent a one-month training attachment at the CRF from 23 May to 26 June 1992 on all aspects of coffee production in Kenya.

Part-time Lecturers

Mr. J.M. Njoroge, BSc, MSc, Senior Research Officer and Head of Agronomy Section was appointed part-time lecturer to teach Crop Science (Beverage and Medicinal Crops) to MSc in Horticulture students w e f 21 April 1992.

WRO/ao

3.9.92

4.0 RESEARCH ACTIVITIES

4.1 Plant Pathology

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

Eight new fungicides were screened in the laboratory during the year under review for their effect on Coffee Berry Disease (CBD) and Coffee Leaf Rust (CLR). Among these, two (Manro Coc ex-Metchem (K) Ltd and Nordox Super Ex-Farmchem Ltd) have been selected for field evaluation against both CBD and CLR. In addition, three fungicides (Dorado 25% wp, Dorado 480 EC ex-Kenya Swiss, and Chlorothalonil ex-ISK Biotech) have been selected for field evaluation against CBD alone.

Field evaluation of five new fungicides and one tank mixture (Octave + Copper) for control of CBD was carried out in Kiamumbi Estate during 1990/91. Considering the results of three years evaluation, two of these products namely, Shirlian (Fluazinum) and Octave Super (Prochloraz Mn/Cu) as well as a tank mixture of Octave + Cobox were recommended for CBD control in Kenya. A second evaluation trial was sited at Jacaranda Estate. Amongst the products which were tested, only evaluation of Radam-60 is still in progress.

Another trial was conducted to evaluate the performance of the recommended organic and copper fungicides in tank mixtures against CBD. Delan + Cobox, Octave and Copper Nordox, Octave and Kocide 101 were tested against Daconil as a standard. The disease incidence at one site was low and the effects of the treatments were not **conclusive**. The trial is continuing at Ngoigwa Estate. It was however noted that all the candidate treatments were comparable to Daconil in disease control at

Marigu Estate where the disease incidence was high.

Evaluation of 50% copper formulations against CBD was done in the field at Kiamumbi Estate. The results obtained so far indicate that Cuprado-s (1.0%), Oxycop Flow (1.4%) and a tank mixture of Kocide DF + Daconil (0.4 + 0.3%) gave significant control of CBD when compared to the standard Copper Nordox.

After considering results from three years evaluation, SAN 619F (0.05%) and Dacobre 500 (0.7%) have been recommended for CLR control in Kenya. Four new coppers namely Percopper, Kopox, Cuprado-s and Coptox were evaluated for CLR control in the field at Azania and Bradgate Estates. The evaluation trial is continuing for the second year.

Field evaluation of a ground applied systemic fungicide (Armour-G) against CLR was conducted at Azania and Jacaranda Estates. The results so far obtained indicate that Armour-G applied at 38 g/tree once or twice per year or applied at 19 g/tree twice per year gave control of CLR comparable to the Standard Copper Nordox. The trial will continue into the second year.

Another experiment was conducted in order to determine the timing of application of the systemic fungicides 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.

Kasumin Bordeaux (Kasugamycin antibiotic + copper) has been recommended for the control of Bacterial Blight of Coffee (BBC) at the rate of 0.4% after considering the results from three years tests in the field. Similarly, Parasol and Champion (both of which are Cupric hydroxides - Blue Coppers) have each been recommended for BBC control in Kenya at the rate of 0.7% after considering three years field test results.

Trials on integrated control of BBC using cultural and chemical methods is still in progress and is in its third year at Berea Estate.

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

A study has been conducted concerning potential for Biological Control of CBD using Epiphytic Microflora. A range of filamentous fungi, yeasts and bacteria living in association with Colletotrichum

Coffeanum (lately being referred to as C. kahawae) have been identified. Most of the species of filamentous fungi isolated from coffee surfaces showed inhibitory effects on the infection progress of C. kahawae. It was concluded that the antagonistic filamentous fungi may be contributing to the reduction of CBD especially in coffee farms where chemical control is not practised. Further work is in progress.

An experiment was set up to investigate the pattern of colonization of coffee bark by C. kahawae. The CBD pathogen was occasionally isolated from potted seedlings but not from stumped plants. The effect of this early colonization by the pathogen on the onset of disease in the individual will continue to be monitored.

Screening for resistance to CBD was carried out on 534,000 coffee seedlings from the Coffee Breeding Programme and the results were used by the Coffee Breeding Section.

A total of 105 samples of fungicides from Estates and Co-operative Societies were analysed in order to determine if the percentage of the active ingredients in them conformed to the recommended products. The results indicated that seventeen samples of Captafol (Moduna) and one of Daconil were substandard. The sample owners were alerted and it is hoped that they took the necessary action.

4.2 Coffee Breeding

The Breeding Section continued to maintain museum plots on routine basis. These composed of plots 5 and 13 at the Coffee Research Station and the Ethiopian Collection (Ex-Food and Agriculture Organisation (FAO), 1964 and Ex-Institute of Scientific Research For Development through Co-operation - ORSTOM, 1970) planted in fields B1 and B14 at Oaklands Breeding Station.

Evaluation of breeding lines for yield, quality and disease resistance was carried out on the fields already established in Oaklands Breeding Station. The results indicate that there was exploitable variation for yield but not for disease resistance. Lack of significant variation for disease resistance could have arisen because of low disease pressure since no significant infection was noticed even on the susceptible SL 28.

Work continued on various crossings and selection programmes involving making of further crosses and selfings. One objective of the study is to identify good specific combiners that would impart high level of disease resistance, yield and cup quality into the hybrid Ruiru 11. The other objective is to derive plants which are homozygous for the three CBD resistance genes in order to develop a true-breeding

seed variety that could have resistance that is stable for a relatively longer period of time as compared to the current lot of Ruiru 11.

Ruiru 11 adaptation trial was expanded by two sites to include Mariene Substation in Meru and Taita Farmers Training Centre. Treatments of SL 28 and Ruiru 11 genotypes were planted at each of the sites. The trial is in progress.

The on-farm trials were set up with the Coffee Breeding Unit (CBU) hybrids and Ruiru 11. The objective is to evaluate the disease resistance materials under different management conditions and different agro-ecological zones. The idea is to acquaint the farmers with the characteristics of compact hybrid varieties. The results so far obtained at the low altitude site (1479 m asl) at Kakuzi indicate that variation for yield and bean quality were highly significant ($p \leq 0.001$). It has been noted from the results that a potential exists for identifying genotypes suitable for specific conditions.

Two trials comprising 24 entries at Busia FTC and 16 Entries at Siaya FTC were set up to evaluate the performance of Arabusta hybrids and their backcross progenies to Arabica in the low altitude Robusta growing regions. The trees are now in second cycle of production and selection will be done in favour of high yield genotypes with leaf rust resistance and better quality.

Seed output of Ruiru 11 rose from 1.7 million in 1990/91 to 3 million in 1991/92. The increase was as a result of the prevailing weather conditions that allowed the use of irrigation to control flowering in the pollen supply gardens. Over 13 million flowers were emasculated and pollinated for purpose of hybrid seed production and from these, a total of 6.5 million seeds are expected.

Multiplication of Ruiru 11 hybrid by Vegetative Propagation (VP) continued on commercial basis in order to supplement seed production as a source of Ruiru 11 planting materials. Clonal multiplication by rooting cuttings, grafting Ruiru 11 scions onto seedlings of traditional cultivars and converting mature old varieties into Ruiru 11 by topworking in the field were undertaken. A total of 20,000 (twenty thousand) rooted cuttings and 10,000 (ten thousand) grafted seedlings were distributed to farmers during the year.

It should be noted that propagation of Ruiru 11 by seed and by VP during the year enabled the CRF to distribute one million planting materials during the year under review. This brings the cumulative total number of Ruiru 11 planted in the field to 10.8 million seedlings from the time the programme started in 1986/87 to date.

Therefore the cumulative acreage under Ruiru 11 to date is approximately 4,300 hectares assuming that coffee growers have used the recommended plant spacing of 2 x 2 m giving 2,500 Ruiru 11 plants per hectare.

4.3 Agronomy

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

A trial started in 1987 at Ruiru, Koru and Namwela on nitrogen requirements of three recommended planting densities (1329, 2658 and 5320 trees/ha) was concluded. Cumulative results over nine years from 1983 - 1991 indicate that yields increased with tree density. However the medium tree density of 2658 trees/ha appeared adequate and the yield response to nitrogen applications tended to be optimal at 100 kg N/ha.

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 400 trees/ha) continued. The fertilizer rates used were 80, 260 and 320 kg M/ha. Results obtained so far indicate that yields increased with increasing densities. No significant differences on yields was observed on various rates of fertilizer application except at Ruiru where 160 kg N/ha tended to be optimal at 1476 kg/ha of clean coffee.

A project was initiated in 1986 in order to find out the best method of replacing the existing coffee varieties with Ruiru 11. As reported last year, the highest yields were obtained where old coffee (French Mission) was completely replaced or partially replaced at 50%. The trial is in progress.

An experiment was initiated in October 1978 when *Desmodium intortum* as a leguminous cover crop, was interplanted in "French Mission" coffee spaced at 3.05 x 3.05 m. The coffee was undergoing change of cycle. The objective was to assess the effect of *Desmodium* cover in yields under the influence of different nitrogen fertilizer rates. During the ten year period, it was noted that coffee under Napier grass mulch treated with 60 and 120 kg N/ha performed better than under *Desmodium* cover crop. The trial was concluded this year.

A trial was started in 1989 to find out the effect of deflowering on coffee yield of Ruiru 11. Results so far indicate that removal of one primary (first order branch) after every three nodes resulted in the highest yields amongst the other deflowering treatments. There were overbearing cases noticed.

Deflowering tended to increase percentage Grade A beans.

Various annual crops were planted amongst Ruiru 11 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 the adverse effects recorded in the first year of coffee production.

Other studies of intercropping involved using perennial fruit trees planted amongst Ruiru 11 and SL 28 at Kitale and Ruiru 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 65 kg SL 28, 14 kg SL 28 kg K7 seeds were sold to coffee growers.

Meteorological records continued to be compiled routinely. These include records done at Ruiru, Mariene (Meru), Koru and Kisii for 1991 plus cumulative long term averages.

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

During the year under review, the Chemistry Section continued to analyse soil and leaf sample from coffee farmers at a nominal charge and also from Research Sections. A total of 7705 soil samples, 4251 leaf samples and 31 fertilizer and manure samples were analysed. The advisory soil samples were received from 144 Estates and 861 Smallholders while leaf samples came from 242 Estates and 539 Smallholders. An overall increase of 53% was recorded over last year's figure of leaf analysis. Similarly there was an increase of 20% in the number of soil samples analysed this year compared to last year.

A study was conducted on the effect of composted coffee husks (Cofuna) on growth of young seedlings as compared to cattle manure. The results showed that cattle manure is better than Cofuna in promoting coffee seedlings growth. Cofuna is therefore not a good substitute for cattle manure, during coffee establishment.

Fertilizer-Farm Yard Manure substitution trial at CRF Azania Estate near Juja has been conducted since 1983 over two five-year change of cycles. The yield results from 1983-1991 show that good yields of over 2000 kg/ha clean coffee would be obtained if manure is applied alone at a rate of two 'debes' (20 Litre measure) per year.

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. Coffee is spaced at 2 x 1.25 m. The results showed that moderate application of lime (250 kg/ha per year) was found to interact positively with N (50-100 kg/ha) and P (40-80 kg/ha) to increase % grade 'A' beans. It was also noted that, maximum amount of %grade 'A' beans were obtained where moderate lime, (250 kg/ha), N(50 kg/ha), P (40 kg/ha) and high potassium (100 kg/ha) were applied during the year.

The Pesticides Unit received 169 samples from farmers for checking their active ingredients compared to 140 samples received last year. Of these, 19 samples were of substandard quality and the farmers were given the feedback. During the year under review, the Unit also developed a number of chromatographic methods for detecting active ingredients in various chemical formulations recommended for use on Kenya coffee. So far, it has been possible to include Sumithion (Fenitrothion), Delan (Diathinon), Lebaycid (Fenithion), Dursban and Folimat (Omethoate). Methodologies for Alicarb, Furadan and Octave could not be developed due to lack of pesticide standards.

A study on distribution, dissipation and accumulation of copper-based biocides applied on coffee was started in 1985. The objective of the study was to find out if the levels of copper has increased in 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 in Kenya. The results indicate that no significant build up of available copper was noted in both the top and subsoils. It was evident that the levels of leaf copper was dependent on available copper in the top soil.

A project was initiated in 1991 in order to determine the factors which influence 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 not been identified. The results obtained so far indicate that a well composted pulp is obtained by frequent turning (weekly) of the heap as well as covering the piles so that the composition of pulp is protected from adverse weather conditions such as wetness. The pulp has good nutrient status except for its high potassium content.

4.5 Crop Physiology

The 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 irrigation. The results so far obtained using overhead system of irrigation indicate that there was no significant effect of the irrigation treatments used namely, 0, 38, 51 and 76 mm of water applied at intervals of 21, 28 or 35 days. On the other hand, 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.

A trial was conducted to assess the effects of established shade trees on coffee tree growth, yield and quality. The results obtained were similar to the ones reported last year. That is, total chlorophyll content, leaf water potential, transpiration and stomatal conductivity decreased as the distance from the shade tree increased. There was no clean coffee yield differences noted between treatments, either closer to or away from the shade trees.

A study on micropropagation of Ruiru 11 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 10 mg/ 1 Benzyladenine (BA). These 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 Naphthalene acetic acid (NAA) was used at 200 mg/1. Over two hundred plants have been weaned from this procedure after the plantlets were transferred into a Vermiculite soil mixture (1.1).

Results so far obtained also indicate that plantlet regeneration from somatic embryogenesis is possible. However, more work needs to be done in order to refine the protocol.

4.6 Entomology

The Entomology Section normally go out into the field to advise coffee farmers to continue with Integrated Pest management methods of control of harmful insects. In addition, the Section is conducting trials on Biological control of target insect pests while evaluation of various insecticides against coffee insect pests continue.

A trial was started in 1991 at CRF Azania Estate and Delmonte Thika for evaluation of systemic NTN 33893 against Leafminer (Leucoptera sp.) The results obtained so far indicate that NTN continue to be effective in controlling leafminer larvae when applied at 1.5 ml/tree as compared to the recommended standard application of Disyston or Tafethion. NTN 33893 is also being evaluated against Aspidiotus sp. The trial is in progress.

Evaluation of three chemical products, namely Dursban 4, Dursban 48H and selecron 72EC against Leafminer were conducted at Delmonte Kenya Limited at thika. Fenitrothion 50% EC was used as standard. The initial results were reported last year. It has been observed during the year under review that Dursban 4 was more effective than the other products. However, the results indicated that all the other products were effective in controlling Leafminer even at the lowest rates of 20 ml/20 litres of water. Selecron was effective at 15 ml/20 litres water.

Mass rearing of indigenous predators and parasitoids (Natural Enemies - N.E.) aimed at controlling certain coffee target insect pests biologically. The project started in May 1990. The rearing is done under laboratory conditions followed by release of the N.E. back to coffee farmers' fields. The current target pests include Antestia bugs, Giant loopers (*Ascotis selenaria reciprocaria* Walk), Green scales (*Coccus* spp.), Fried egg scales (*aspidotus* spp.) and Berry moth (*Prophantis smaragdina* Butler). Some of the N.E. have been reared on the hosts with some success. Efforts are being made to determine the parameters needed for rearing the N.E. under controlled laboratory conditions. The efficacy of parasitoids after release is also being evaluated on Antestia bags. The trial is in progress.

4.7 Agricultural Economics

Agricultural Economics section devoted its resources on the following three main projects in both the smallholder and Estates Sectors.:

1. Evaluation of the effects of low coffee prices on production and profitability
2. Economics of coffee production
3. Adoption rates of the hybrid Arabica variety Ruiru 11

The withdrawal of the Economic clauses of the International Coffee agreement (ICA) on July 1989 made the coffee prices to fall to the lowest point which has not been realized for the last 16 years. In Kenya the average coffee prices dropped by 27% between 1988 and 1989 pool years to stand at KSh. 37,200 per metric tonne by the close of 1989/90 pool year. The prices have, however improved to stand at KSh. 49,600 by the end of 1990/91 pool year. This being an improvement of 33% over the 1989/90 prices.

A survey carried out in May to July 1991 covering 240 smallholders revealed that the level of profitability improved. Coffee productivity in the Smallholder Sector stabilized at 0.57 tonnes per hectare. However, the results of the survey indicated that coffee enterprise was only viable at farm level if a farmer was able to produce at least 800 kg of clean coffee per hectare (4.2 kg of cherry per tree) per year.

The yield level of 0.57 tonnes of clean coffee per hectare per annum was maintained by use of less inputs in the Smallholder Sector. Fertilizers were substituted for by 'boma' manure which was being used by 70% of the smallholders covered during the study conducted in the year. This input substitution effect made the cost of coffee production in the Smallholder Sector drop by 5% from KSh. 27,380 per hectare in 1989/90 to KSh. 25,960 per hectare (KSh. 45,500 per tonne of clean coffee) during 1990/91 period. Labour accounted for 40% of the total production cost followed by fertilizers and manure which accounted for another 36% of the total cost. Fungicides and insecticides plus herbicides accounted for only 5% to 2% respectively.

The amount of 'mbuni' produced during the year increased from 16% to 23% in the Smallholders Sector. The average cost of producing 'mbuni' was KSh. 32,640 (per tonne of clean coffee equivalent) as compared to a payout price of KSh. 16,800 which indicated a loss to the farmers concerned during the year. It was therefore concluded that 'mbuni' production at the farm level is economically unviable and should be discouraged. Production of 'mbuni' can also lead to a decline in coffee quality since 'mbuni' is very inferior compared to washed coffee.

The average cost of coffee production per hectare in the Estates was KSh. 64,160 during the year under review. This is equivalent to a cost of KSh. 53,040 per tonne of clean coffee produced. It was noted that the cost of producing irrigated coffee was higher by about 30% compared to unirrigated coffee. In general the average cost of producing coffee in the Estate Sector during 1990/91 year increased by 16 - 28% compared to the previous year. This was mainly due to inflationary increase of prices of inputs and interest rates following deregulation of input prices in the country.

A study on profitability in the Estates Sector revealed that majority of irrigated Estates covered under the study made some profits during 1990/91. However, the non-irrigated Estates operated at a loss during the same period. It was clear from the study that investment on irrigation is economically a worthwhile undertaking. The overall conclusion is that coffee business remained economically unviable undertaking but the magnitude of losses registered declined by 32% when 1989/90 figures were compared to 1990/91 period.

During the Smallholder survey conducted in 1991, a number of issues covering various aspects of hybrid Arabica coffee Ruiru 11 adoption and performance were investigated. The results of the investigation showed that the rate of adoption over the years had slowed down compared to the initial years of 1986/87 when Ruiru 11 was launched.

About 15% of the farmers adopted Ruiru 11 in 1990 compared to 19% in 1989. Those farmers who adopted Ruiru 11 had preferred a spacing of about 2x2 m (6x6 ft.) and 92% of the farmers who opted to adopt Ruiru 11 had used new land. Ruiru 11 was also rated as being resistant to both CBD and CLR with a number of farmers reporting any disease incidence in their Ruiru 11 plants being too low to be of any significance.

The study of Ruiru 11 therefore revealed that the adoption rate has declined from 40% when Ruiru 11 was introduced in 1986/87 to 15% in 1990. The low level of coffee payout prices and the problems associated with costs of producing coffee could have contributed to the decline in adoption of Ruiru 11 during the year under review.

4.8 Research Liaison, Training and Advisory Section (R.L.T.A.S.)

The role of RLTA Section is to provide, encourage and maintain contact between coffee farmers, researchers, coffee agencies and other people interested either individually or as a group in the production aspects within the coffee industry. The Section also liaises with coffee extension workers in both the ministry of agriculture and of the Co-operative development and Coffee Board of Kenya concerning dissemination of research information and feedback from the field. This is done through training, production of publications, participation in Agricultural Shows and Field Days in farmers' plots, making advisory visits to farmers, conducting lectures to farmers who visit the Station and participation in the audio visual media.

The Section was able to conduct four courses for coffee Extension Officers and three other courses for Factory Managers.

The total number of those who attended both courses was 83. In addition, the Section conducted coffee workshops for coffee extension Officers in eleven coffee growing districts. Eight Seminars were also conducted in collaboration with Kenya National Federation of Co-operatives in five coffee growing districts and in the Co-operative College.

The number of various publications sold during the year under review dropped to 704 compared to 970 last year. The drop may be due to the financial constraints experienced by the farmers during the year.

The Advisory visits made to farmers this year either on request or planned by the Coffee Research Foundation, were 191 compared to 217 last year. Issues on crop husbandry practices, processing and production costs featured prominently during the discussions made on advisory visits. Where need arose, soil and leaf samples were taken back to Coffee Research Station for tests and advice was given to the farmers on the basis of results obtained following the samples analyses.

Twelve field Days were conducted in eight coffee growing districts. These were done either at the invitation of the District Agricultural Officers of the areas concerned or the principals of the Farmers' Training Centres (FTCs). General decline of coffee husbandry was noted during the visits. Farmers and extension agents felt that the high cost of producing coffee had narrowed the farmers' income and had thus contributed to neglect of coffee trees.

The RLTA staff of the CRF attended a total of 11 Agricultural society of Kenya Shows in the Republic. Exhibits and demonstrations depicting various aspects of coffee husbandry practices, processing and costs of growing coffee were displayed by both the CRF staff and the Coffee Board of Kenya.

There were 98 students from the University of Nairobi and Kenyatta who visited the Coffee Research Station. In addition, 440 students visited the Station from 12 Secondary Schools and 55 were Trade Visitors who came together under the "COFFEE SAFARI" Programme of the Coffee Board of Kenya, from various overseas coffee buyers. Many farmers also visited the Station either individually or in small groups organised by the Co-operative Societies.

The sale of traditional coffee seeds was 123 kg this year compared to 166 kg last year. The demand for Ruiru 11 planting materials (i.e. seeds, pregerminated seedlings, vegetatively propagated seedlings) increased over the period as has been indicated under the Coffee Breeding Section of the main report.

One hundred volumes of journals were bound and kept in the Library for use during the year. Inter-Library borrowing of books was enhanced during the year under review. In this connection the CRF has been borrowing books from Kenya Agricultural Research Institute (KARI), Kenya Industrial Research Development Institute (KIRDI) and Kabete Campus of the University of Nairobi.

WRO/ao
8.3.93

5.0 Income and Expenditure Summary

The income/Expenditure and the Balance Sheets as at 30 September 1992 are attached hereto. The Foundation's income for the year to 30 September 1992 was K£ 5,783,380 compared to K£ 4,070,470 for the previous year. Expenditure of K£ 5,129,565 was incurred during 1991/92 compared to K£ 4,628,599 incurred in the previous year.

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

Foundation's Coffee Berry Disease Unit	
	K£
Staff Remuneration, Labour Wages	
Travelling and General Upkeep	228,932
New Equipment	<u>98</u>
	<u>229,030</u>

The above Expenditure for the two units was reimbursible by the coffee Board of Kenya over and above the Main Subvention. The Budget for the year 1992/93 in respect of these projects stand at K£ 340,470 and K£ 225, 725 respectively.

The bank Balance was K£ 260,758 as at 30 September 1992.

6.0 Acknowledgement

This opportunity is taken to thank the Coffee Board of Kenya, the Ministry of Agriculture, the Ministry of Research, Science and Technology, the Ministry of Co-operative Development, the Kenya Planters' Co-operative Union, the Agrochemical companies dealing with coffee pesticides in Kenya and the entire coffee farming community and their agents for supporting research during the year. The co-operation received from them and the Government of Kenya is very much appreciated by the CRF Board.

**REPORT OF THE AUDITOR-GENERAL (CORPORATIONS) ON THE
ACCOUNTS OF THE COFFEE RESEARCH FOUNDATION
FOR THE YEAR ENDED 30TH SEPTEMBER 1992**

I have examined the accounts of the coffee Research Foundation for the year ended 30th September 1992 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 purpose 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 30th September 1992 and of its surplus and source and application of funds for the year ended on that date.

A.J. OKOTH
AUDITOR-GENERAL (CORPORATIONS)

11th November, 1993

**COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)**

**Income and Expenditure Account/Research Reserve
for the year ended 30th September, 1992**

	<u>1992</u>	<u>1991</u>
	<u>KShs</u>	<u>KShs</u>
Surplus for the year	(13,330,529)	(11,138,006)
Provision for taxation	(69,077)	(66,015)
Capital expenditure incurred On land owned by Coffee Board of Kenya or Government of Kenya	(4,026,712)	(1,722,600)
	(9,234,740)	(12,926,621)
Research Reserve brought forward	6,573,749	6,352,871
	(2,660,991)	(6,573,749)

**COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)**

Balance Sheet as at 30th September, 1992

		1992	1991
	Note	KShs	KShs
ASSETS EMPLOYED			
Fixed assets	2	24,052,137	24,353,300
INVESTMENTS			
Quoted Investments at Cost - Schedule 11		1,601,445	1,437,015
CURRENT ASSETS			
Coffee Board of Kenya		12,642,922	4,649,709
Stocks		2,545,843	2,165,596
Debtors and Deposits	4	5,008,162	5,086,918
Cash and Bank Balances		5,837,621	8,451,537
		26,034,548	20,353,760
CURRENT LIABILITIES			
Creditors; Accruals and provisions	3	26,481,293	32,247,125
Taxation		43,532	45,215
		26,524,825	32,292,340
NET CURRENT ASSETS		(490,277)	(11,938,580)
Total Net Assets		25,163,305	13,851,735
FINANCED BY:			
Coffee Research Reserve Fund	5	2,000,000	2,000,000
Capital Reserve		20,502,314	18,425,485
Research Reserve		2,660,991	(6,573,750)
		25,163,305	13,851,735

Accounts were approved by the Board of Directors on

Mr A. M. Mwangi Chairman

Dr. Wilson R. Opile Director

**COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)**

Statement of changes in Financial position for the year ended 30th September, 1992

	1992	1991
	KSHS	KSHS
SOURCES OF FUNDS		
Surplus for the year before taxation	13,330,529	(11,138,006)
Adjustment for items not involving the movement of funds:-		
Depreciation	3,995,722	4,188,751
Profit on Sale of fixed assets	(254,232)	-
Shares Adjustments	(164,430)	-
Funds generated from operations	16,907,589	(6,949,255)
OTHER SOURCES		
Proceeds on Capital of Fixed Assets	391,500	-
Increase in Capital Reserve	2,076,829	111,218
Total Funds Available for Application	19,375,918	(6,838,037)
APPLICATION OF FUNDS		
Tax paid	69,077	69,503
Purchase of Fixed Assets	3,831,826	4,292,617
Development Expenditure	4,026,712	1,722,600
	7,927,615	6,084,720
Total Applications	11,448,303	(12,922,757)
MOVEMENT IN WORKING CAPITAL		
Decrease in Creditors and Accruals	(5,767,515)	15,606,258
Increase in Debtors and Deposits	(7,914,457)	1,524,391
Increase/Decrease in Stocks	(380,247)	(343,905)
	(14,062,219)	16,586,744
	(2,613,916)	3,663,987
MOVEMENT IN NET LIQUID FUNDS		
Increase/Decrease in Cash and Bank Balances	(2,613,916)	3,663,987
Decrease in Bank Overdraft		

COFFEE RESEARCH FOUNDATION (A COMPANY LIMITED BY GUARANTEE)

Notes to the Accounts for the year end 30th September, 1992

1. 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 and net realised value.

(c) Depreciation

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

Farm Machinery	20%
Farm Equipment	15%
Furniture Office and Laboratory Equipment	12.5%
Office Equipment	12.5%

(d) Investments

Investments are stated at cost

(e) Research Reserve

Where the Foundation Finances and development 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 fund.

COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)

Notes to the Accounts for the year ended 30th September, 1992

(ALL AMOUNTS IN KENYA SHILLINGS)

1. FIXED ASSETS

	Furniture and office equipment	Laboratory equipment	Farm equipment	Vehicles and tractors	Farm machinery	Miscellaneous equipment	Total
	12½%	12½%	15%	20%	20%	7½%	
Written down value as at 1st October 1991	4,958,112	11,175,747	1,235,494	5,626,481	883,284	474,182	24,353,300
additions during the year	95,052	1,943,382	124,043	678,600	-	990,749	3,831,826
As at 30th September 1992	5,053,164	13,119,129	1,359,537	6,305,081	883,284	1,464,931	28,185,126
Disposals	-	-	-	137,268	-	-	137,268
Depreciation ofr the year	5,053,164	13,119,129	1,359,537	6,167,813	883,284	1,464,931	28,047,858
	631,810	1,639,891	203,931	1,233,563	176,657	109,870	3,995,722
As at 30th September 1992	4,421,354	11,479,238	1,155,606	4,934,250	706,627	1,355,061	24,052,136
As at 30th September 1991	4,958,112	11,175,747	1,235,494	5,626,418	883,284	474,182	24,353,300

3 TAXATION

Taxation has been 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, 1992

	KShs
4. CASH AND BANK BALANCES	
Continental Bank of Kenya Limited	3,104,252
Cash in hand and Bank	5,619,231
Bungoma District Co-operative Bank	218,390
	8,941,873
Provision for doubtful debts:-	
Continental Bank Balance under receivership	3,104,252
	5,837,621

The Foundation felt that this amount with Continental of Kenya Limited might not be recovered, hence a provision of 100% was made in 1985/86 Accounts.

	KSHS	KSHS
5. CAPITAL RESERVE		
Capital Reserve as at 1st October, 1991		18,425,485
Capital Additional in Special Funded Programmes:		
a) Equipment		
- BBCRU	1,690,950	
- FCBDURU	1,950	
- Coffee Rehabilitation Programme	11,564	
- Plant Breeding	321,110	2,025,574
b) Develoments		
- SCIP		51,255
		20,502,314

**COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)**

Detailed Income and Expenditure Account for the year ended 30th September, 1992

	1992	1991
	KSHS	KSHS
INCOME		
Coffee Board of Kenya:-		
Main Subvention Payments	69,402,419	47,299,936
Reimbursement of Plant Breeding Expenses	12,222,340	8,919,480
Reimbursement of SCIP Expenses	5,650,980	4,183,600
	87,275,739	60,403,016
Reimbursement of FCBDRU Expenses	5,635,360	3,425,981
Reimbursement	3,982,860	4,303,063
	9,418,220	7,729,044
Coffee Proceeds	15,931,840	11,333,633
Dividends and Interest on Investments/Sundry Income	183,281	142,372
Sundry Income	2,858,526	1,935,138
	18,973,647	13,411,143
Total Income	115,667,606	81,543,203
EXPENDITURE		
Recurrent Expenditure	94,457,523	86,960,905
Miscellaneous Expenses	3,988,064	1,381,553
Depreciate	3,995,722	4,188,751
Audit Fees	150,000	150,000
Total Expenditure	102,591,309	92,681,209
Surplus from the Operations	13,076,297	(11,138,006)
Profit on Sale of assets	254,232	-
SURPLUS FOR THE YEAR	13,330,529	(11,138,006)

**COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)**

Schedule of Recurrent Expenditure Schedule 1

		FINANCED BY SPECIAL FUNDS						FINANCED BY CRF		TOTAL	
	FCBDRU YEAR ENDED	SOIL ANALYSIS YEAR ENDED	PLANT BREEDING YEAR ENDED	BBCRU YEAR ENDED	SCIP YEAR ENDED	CRF YEAR ENDED	YEAR ENDED	YEAR ENDED	YEAR ENDED	YEAR ENDED	
	30.9.91	30.9.91	30.9.91	30.9.91	30.9.91	30.9.91	30.9.91	30.9.91	30.9.91	30.9.92	
Maintenance and generalupkeep	741382	-	5986844	583917	796227	15043788	17008560	23152108	24326644		
Travelling and Touring Expenses	781792	-	712386	642426	1234538	11631628	11102302	15002770	27491468		
Staff Remuneration and Labour Wages	1572851	-	4932236	1335223	4303952	36414080	36601710	48558342	40562582		
Equipment Purchase	6000	-	79960	1410	-	-	-	87370	202557		
Capital Development	-	-	19563	-	-	-	-	19563	5125		
	3102025	-	11730989	2562976	6334717	63089446	64712572	86820153	94457523		
		158173	13845007	4950647	6210516						

**COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)**

Fixed Assets Financed and Developed by the Foundation

A. ATTRIBUTABLE TO THE COFFEE BOARD OF KENYA

1. LAND AND DEVELOPMENTS

Koru Land LR 11253	KSHS	KSHS	
	35,480	-	
Koru Developments	94,380	129,860	
Azania Estate LR 10084	77,384	-	
Azania Developments	2,888,980	2,966,364	

2. BUILDINGS

	WDV	Additions	Total	Depreciation	WDV	KSHS
Farmhouse and Workshop	30,992	-	657,866	2.5%	30,992	
Coffee Factory and Developments	657,866	-	16,447	9,441	641,419	
Water Installation and Pump House	377,643	-	377,643	52,597	368,202	
Dairy Cattle Sheds & Dips	1,661,216	442,644	2,103,860	883	2,051,263	
Domestic Houses and Staff Amenities	35,309	-	35,309	598,084	34,426	
Maim Office, Library and Lecture Hall	21,280,921	2,642,451	23,923,372	101,545	23,325,288	
Laboratories	4,061,794	-	4,061,794	358,940	3,960,249	
Coffee Developments	14,338,067	19,927	14,357,994	43,107	13,999,054	
Road Repairs	802,587	92,690	1,724,277	22,860	1,681,170	
	914,399	-	914,399		891,539	
	44,129,802	4,026,712	48,156,514	1,203,904	46,952,610	46,952,610

50,048,834

**COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)**

SCHUDULE 111

B. ATTRIBUTABLE TO THE GOVERNMENT OF KENYA

1. LAND	COFFEE	LAND	DEVELOPMENT	TOTAL
	Kshs		Kshs	KShs
Jacaranda Estate 312 acre LR/116/1 & 116/3	80,680		314,300	394,900
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
	<u>185,980</u>		<u>687,540</u>	<u>873,520</u>
 2. BUILDINGS	 W D V		 DEPRECIATION	
	30.9 91		12½%	30.9 92
Main Office Lecture Hall and Garage	12,065		1,508	10,557
Laboratories	43,050		5,381	37,669
Farm Office Stores and Workshop	20,349		2,543	17,806
Coffee Factories	11,885		1,485	10,400
Water Installation and Pump Houses	7,865		983	6,882
Dairy Cattles Sheds and Dips	4,140		517	3,623
Domestic Houses and Staff Amenities	186,859		28,078	150,831
Museum and Library	2,542		317	2,225
	<u>288,755</u>		<u>40,762</u>	<u>247,993</u>
 3. FURNITURE, EQUIPMENT AND STORES				
Furniture and Office Equipment	755		94	661
Laboratory Equipment	1,617		202	415
Farm Equipment	1,509		188	1,321
Vehicles and Tractors	288		36	252
Miscellaneous Equipment	719		89	630
Farm Machinery	1,284		160	1,124
Expenditure Stores	871		108	763
Consumable Stores	99		12	87
	<u>7,142</u>		<u>889</u>	<u>6,253</u>

**COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)**

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 Co. Ltd.	114,840	178,002
3775	5.00	A Bauman (K) Ltd.	18,875	13,212
20540	5.00	Car & General (K) Ltd.	102,700	80,106
7834	10.00	BAT (K) Ltd.	78,340	313,360
84060	20.00	Kenstock Ltd. 12.5% Deffered Loan Stock	84,060	66,197
5000		Kenya Government 6% Stock 1992 at 90.75	91,180	-
5800		Kenya Government 6% Stock 1997 at 66%	99,920	-
-	-	KPCU Deferred Stock	509,920	-
-	-	KPCU 10% Unsecured		-
13308	10.00	Redeemable Loan Stock 1991/KOCU 10% Unsecured Loan	133,080	-
3983	10.00	Stock 1996/2000	39830	-
			1,601,445	-
			1,601,445	-

**COFFEE RESEARCH FOUNDATION
(A COMPANY LIMITED BY GUARANTEE)**

SCHEDULES 111 - NOTES

- (i) Meru Sub-Station LR 780 and 806 - That piece of land situated seven miles south of township on the main Meru/Chogoria Road containing the building 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 11A has 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 General's 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 111B were to be leased to the Coffee board of Kenya for a period of 21 years from 1st October 1963 at a peppercorn rental, subject to the condition that the use be restricted to research and related activities only, ownership reverting to the Government in the event that the assets are not required for such purposes.