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வார्षிக வார்வாவ
ஆண்ட றிக்கை
ANNUAL REPORT



வ்வால் சர்வ்வேவ்வ மவ்வ்வவ
தெவ்வவை ஆரவ்வச்சி றிவ்வையம்
COCONUT RESEARCH BOARD

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Ministry of Plantation Industries

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Our Vision

To be the centre of excellence in coconut research, technology development and technology transfer in the region

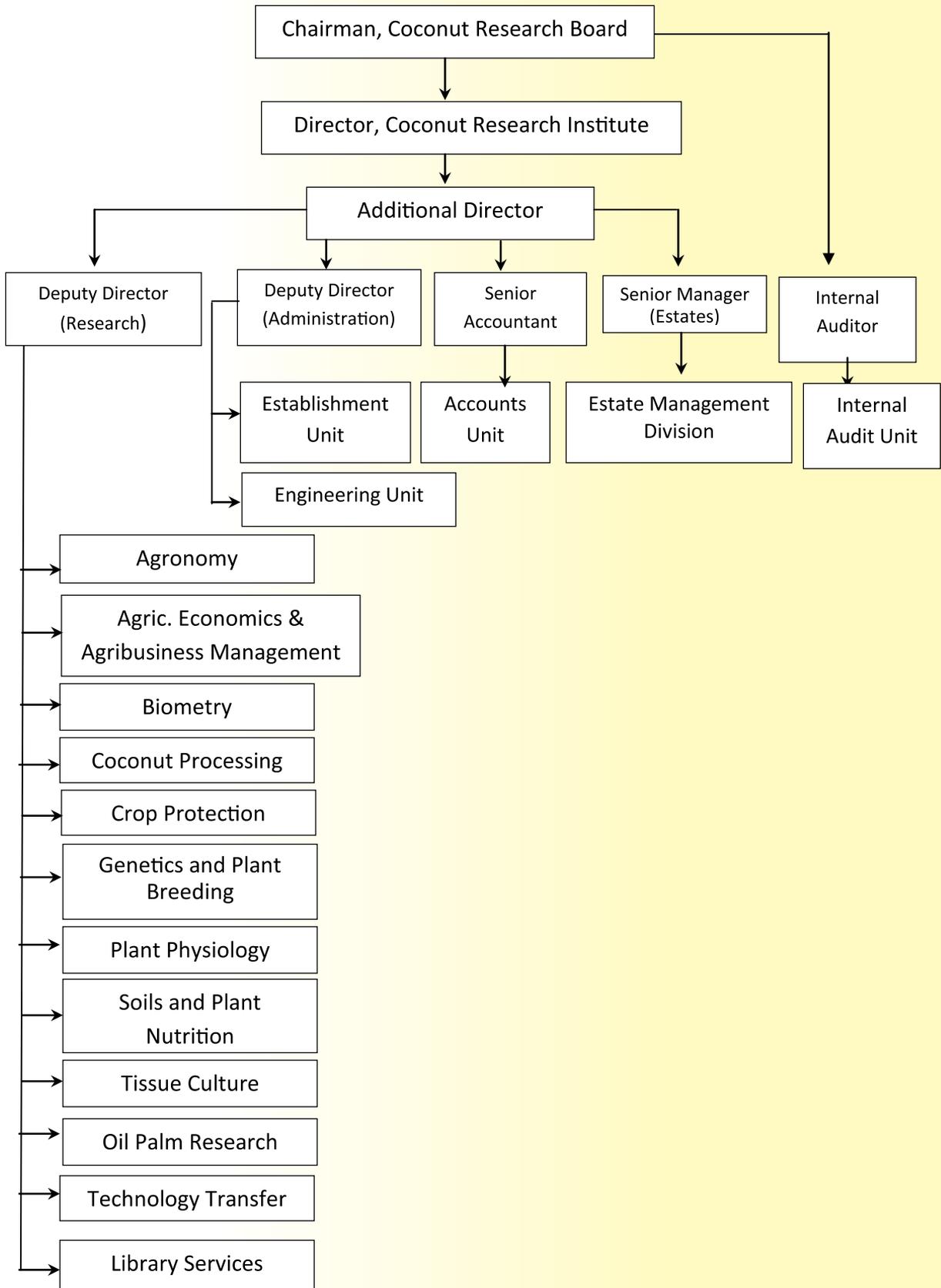
Our Mission

Generate knowledge and technology through excellence in research towards increasing productivity and profitability of coconut

Our Mandate

1. Conduct and further scientific research on growth and cultivation of coconut palm. Growing other crops and engage in animal husbandry in coconut plantations and prevent and cure of diseases and pests
2. Conduct and further scientific research on processing and utilization of coconut products and value addition
3. Establish and maintain institutes' seed gardens and experimental stations
4. Train advisory and extension workers to assist the coconut industry
5. Guide and advise coconut industry on all matters of technical nature
6. Conduct R & D activities for development of the oil palm industry

ORGANOGRAMME OF THE INSTITUTE



THE COCONUT RESEARCH INSTITUTE

SHORT ANNUAL REPORT – 2013

The Coconut Research Institute was founded in 1929 as the Coconut Research Scheme under the Coconut Research Ordinance No. 24 of 1928. The scheme established its headquarters at Bandirippuwa Estate, Lunuwila with three Technical Divisions namely Genetics, Chemistry, and Soil Chemistry. Following the enactment of the Coconut Research Act No.37 in 1950, it was renamed as the Coconut Research Institute of Ceylon. The Coconut Development Act, No.46 promulgated in 1971, the Coconut Research Board was set up in 1972 to function as the Board of Management of the Coconut Research Institute.

The Coconut Research Board

The governing body of the Institute is the Coconut Research Board. In terms of the Coconut Development Act, the Board consists of 11 members, appointed by the Minister-in-charge. One member is appointed as the Chairman of the Board. The members hold office for three years and are eligible for reappointment.

The Members of the Board

Three year term of the previous Board ended in May 2013 and a new Board was appointed in September 2013.

Members of the previous Board

Chairman Prof. H.P.M. Gunasena, B.Sc. (Agric. Peradeniya), PhD (Reading, UK), D.Sc. (University of Rajarata, Sabaragamuwa and Wayamba), FNAS (SL)

Director Dr. H.A.J.Gunathillake, B.Sc. Agric, PhD (Wales, UK)

Mr. K G Sriyapala, B.Sc. Agric., Director General, Department of Agriculture

Mr. Sarath Keerthiratna, ME (Uni. of Moratuwa), Chairman, Coconut Cultivation Board

Mr. H S P Perera, B.A (USJP), Chairman, Coconut Development Authority

Ms. A Munasinghe, B.Sc. Agric., Treasury Representative

Dr. J D Samarasinghe, PhD (UK), Chairman, Sri Lanka Council for Agricultural Research

Mr. P W Kumara, L.L.B., M..A. (Uni. of Kelaniya) Executive Director, Sri Lanka Council for Agricultural Research

Mr. W R A N S Wijayasinghe, Senior Assistant Secretary, Ministry Representative

Dr. Dan Seevarathnam, CEO, Dip. (Plantation Management), D.Sc (Uni. of Wayamba), Watawala Plantation Ltd

Mr. J V R Dias, Dip (Mechanical Engineering), Former President, Coconut Grower's Association of Sri Lanka

Secretary-to-the-Board - Dr. L C P Fernando, BSc Agric, PhD (Queensland, Aus.)

Members of the new Board

Chairman Prof. H.P.M. Gunasena, B.Sc. (Agric. Peradeniya), PhD (Reading, UK), D.Sc. (University of Rajarata, Sabaragamuwa and Wayamba), FNAS (SL)

Director Dr. H.A.J.Gunathillake, B.Sc. Agric, PhD (Wales, UK)

Dr. R Wijekoon, BSc (Agric), M.Sc. (UK), PhD (Australia), Director General, Department of Agriculture

Mr. Sarath Keerthiratna, ME (Uni. of Moratuwa), Chairman, Coconut Cultivation Board

Mr. Aruna Gunawardena, Chairman, Coconut Development Authority

Ms. T Y L Munasinghe, BSc (Agric), Treasury Representative

Mr. G G N Gunarathne, B.A (Uni. of Peradeniya), Senior Assistant Secretary, Ministry Representative

Mr. L Godamunne, B.A (Hons, University of Ceylon), Dip (Business Mgt., IMEDE), President, Coconut Growers' Association of Sri Lanka

Mr. A Gallege (Attorney-at- Law)

Secretary-to-the-Board Dr. L C P Fernando, BSc Agric, PhD (Queensland, Aus)

The Audit and Management Committee

Altogether four meetings were held during the year to discuss the Audit & Management Plan of the Institute. A new committee was appointed on 7th August 2013.

The members of the previous Audit committee are;

Name	Record of Attendance (Jan. –July 2013)
Dr. J D Samarasinghe (Chairman)	2/2
Mr. W R A N S Wijayasinghe	1/2
Ms. Anoja Munansinghe	0/2
Dr. H A J Gunathilaka, Director	2/2
Dr. L C P Fernando, Additional Director & Convener	2/2
Ms. Lalani Gunatileke, Observer/Superintendent of Audit	2/2
Mr. P W A Fernando, Internal Auditor	2/2

The members of the new Audit committee are:

Name	Record of Attendance (Aug.-Dec. 2013)
Ms. Y T L Munasinghe (Chairman)	2/2
Mr. G G N Gunarathne	2/2
Dr. R. Wijekoon	0/2
Dr. H A J Gunathilaka, Director	2/2
Dr. L C P Fernando, Additional Director & Convener	2/2
Ms. Lalani Gunatileke, Observer/Superintendent of Audit	2/2
Mr. P W A Fernando, Internal Auditor	2/2

Chairman's Message



The annual report 2013 reflects the achievements of the Coconut Research Institute in various activities that have been undertaken in the year under review. One of the main reasons for many achievements has been the consolidating and strengthening of the human resources base of the institute at all levels. The institute has been fortunate in filling many vacancies that existed in the research officer cadre and many positions of Senior and Principal Research Officers.

Many new innovations were developed and disseminated to the stakeholders during the year which were the contributions of all research divisions. Many of these innovations were field tested and recommended to the growers. Some of these recommendations included the correction of Magnesium deficiency in coconut plantations, application of dolomite for coconut palms in the dry and intermediate zones, production of coconut chips and flakes, making instant “pol sambol”, intercropping of cashew in the dry and intermediate zones and some proposals on pricing policies of coconut for consideration by the ministry. The research programme was fine-tuned with considerable inputs from external reviewers. Also, an intensive research management system was introduced for monitoring and evaluation of research at frequent intervals. As the manufacturing industries are rapidly moving towards newer products as demanded by the importing countries of the world, more emphasis was given to the research programmes on processing and product development. In particular, increasing in demand for virgin coconut oil in the world market prompted the institute to undertake collaborative research with medical faculties on the health benefits of coconut oil.

Another problem of high priority is the variation in coconut yields due to climate change effects, mainly prolonged drought events associated with high temperatures. An extensive research programme is being conducted to overcome the drought effects by water saving techniques and agroforestry interventions in the coconut plantations. In the future the biggest challenge to the coconut industry is regarded as the effects of climate which has no direct mechanism for control. The institute conducted an international conference on climate change effects and discussed the ways and means for adapting to or mitigating climate effects on coconut yield.

Weligama coconut leaf wilt disease (WCLWD) continued to be a serious threat to the coconut industry in the Sothern region. WCLWD management programme funded by the FAO-TEC Project terminated in December, but a more focused programme is being continued with emphasis on the development of resistant/tolerant varieties, quick diagnosis of diseased palms and their removal and maintaining the boundary free of diseases palms. Of the

pests, coconut mite which is a serious problem was managed successfully by breeding predator mites. These predator mites are bred in the laboratories established by the CRI and CCB in different locations for distribution among the growers. The red weevil and black beetle control was also effectively managed by distributing pheromones to the growers. The coconut varietal improvement and production of high quality seeds remains a priority of the research agenda. The constraint in producing seeds on a large scale has been the inadequacy of land for the establishment of seed gardens. This problem was partly overcome by establishing a seed garden jointly with the Chilaw Plantation PLC at Kinyama estate.

Several international partnerships established earlier such as that with the World Agroforestry Centre, Kenya and the Government of the Republic of Cuba were continued. Another new partnership is under consideration with the Republic of Tanzania for the development of the coconut industry. Other agreements with local coconut industry have been effectively implemented such as that with the Medical Faculty of the University of Kelaniya on health benefits of coconut oil, development of an environment friendly charcoal kiln with Haycarb and Industrial Services Bureau (ISB), Kurunegala, and KCW Lanka Ltd for research on king coconut water for export.

Asian and Pacific Coconut Community (APCC) has provided strong support for the coconut research and development programmes of the institute through promoting staff participation in international conferences and supply of R&D information.

The outreach activities of the institute has been instrumental in linking the coconut industry with the institute's programmes. The research publications and scientific communication of the staff is a reflection of the outputs of the staff. These activities have been able to raise the profile of the institute to the status of a nationally and internationally recognized scientific research institution devoted for the development of the coconut industry.



The achievements during the year under review would not have been possible if not for the guidance, direction and support provided by Hon. Jagath Pushpakumara, Minister, Hon. Anthony Perera, Deputy Minister, Mr. Nihal Somaweera, Secretary and other staff of the Ministry of Coconut Development and Janatha Estate Development. The Coconut Research Institute acknowledge the above, with deep sense of gratitude.

Prof. H.P.M. Gunasena

Chairman

Coconut Research Board

Director's Report



Coconut has been recognized worldwide as a food crop in relation to human health and nutrition, industrial application and as an energy crop. During the period of 1980 – 1990's demand of coconut has shown a declining trend, but from the year 2000 onwards coconut products were able to gain good market due to rapid development of R&D activities. This has been more prominent in the human health sector due to the introduction of a large number of pharmaceutical drugs and cosmetics based on kernel products mainly, coconut oil. The emerging coconut products are virgin coconut oil, coconut milk powder, coconut cream, coconut water and coconut sugar. These products are rapidly replacing the traditional exports such as desiccated coconut (DC), copra and standard coconut oil. All the new products are of high value and they fetch high prices in the global markets. Therefore, there is considerable interest among all the coconut growing countries to increase production and on a competitive basis to supply coconut products to the world market. As a result the global extents of coconut land and nut production has considerably increased. At no other time of history that such a demand has been witnessed. Even the small coconut growing countries like Kenya, Ivory Coast and Ghana have entered into the global coconut industry.

In Sri Lanka also, coconut growers were able to enjoy reasonable high farm gate prices for coconuts during the year and they were in position to introduce good agricultural practices (GAP) to increase nut production. The coconut manufacturing industries have been responding to the increasing global demand of value added coconut products by modernizing the machinery and adopting latest techniques for the production of export oriented products of high demand. During the year both distribution and total amount of rainfall were poor and this was the major constraints to achieve expected nut yield, yet the nut production has been maintained at reasonable levels.

The research programme implemented by the Coconut Research Institute during the year under review was aimed at three major areas; enhancing coconut production, protection the crop from pests and diseases and value addition to demand oriented coconut products. Dissemination of technology was also given high priority to reduce the yield gap between research and farmer levels. Several policy guidelines were also formulated for medium and long-term planning of the industry by introducing reduced tariff for export of new coconut products and price mechanisms to control import of palm oil.

Development of coconut varieties for biotic stress factors (Weligama Coconut Leaf Wilt Disease, mite tolerance, drought tolerance) land suitability assessment, development of

agronomic practices and management of pest and diseases and to understand impact of climate change on coconut production were areas in which high achievements have been made. New directives were given to assist the growers in pest management, especially by the introduction of black beetle pheromone, production and release predator mite sachets for the management coconut mite and in the management of Weligama Coconut Wilt Disease. Several successful collaborative research programmes with the private sector were implemented for the production of value added products such as processing of coconut water for export and environment friendly production of coconut shell charcoal and activated carbon.

Strengthening of the seed production certification programme is important to increase production of high quality seed nuts and suitable hybrids. In the next phase of coconut development, the production of hybrid seeds should be given the highest priority. Therefore in the future the coconut breeding programme has to be strengthened to achieve the anticipated yield targets. The number of request from exporters for the testing of coconut products is increasing gradually; mainly for coconut oil, water and other kernel and coir products. The establishment of a quality assured programme and establishment of fully equipped laboratory facilities is a dire need for the institute. As the export of value added coconut products will be the centre-point of the future coconut industry, this aspect has to be given the highest attention by the government. Therefore, continuous investment on R & D on the coconut sector by the government deserves especial attention of the ministry and the government.

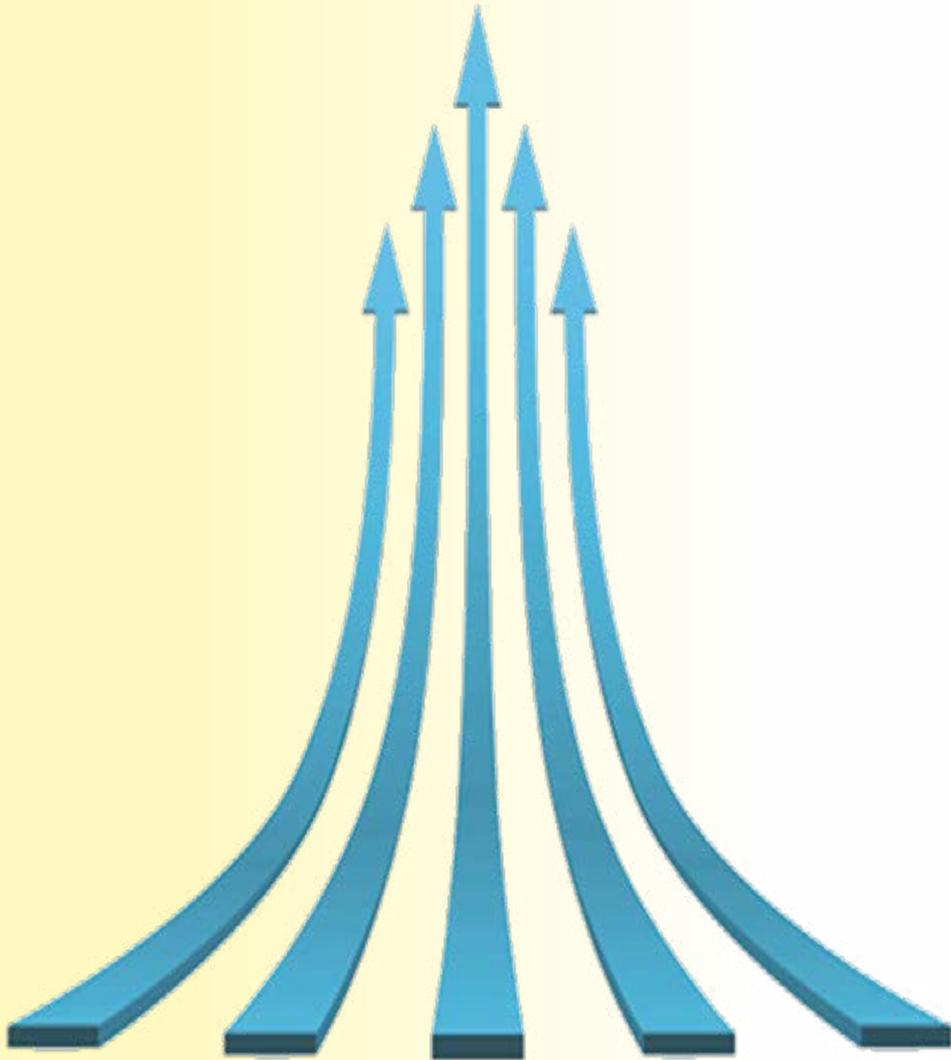
During the year total allocation of capital budget was Rs. 90.0mn and actual release by the Treasury was only Rs. 62.74. This allocation and release of capital budget was the major constraint for the implementation of the long-term research programme. Considering the emerging potential, this situation has to be corrected in the future for the accelerated development of the coconut industry.

Dr. H.A.J.Gunathillake

Director

Coconut Research Institute

Research Recommendations





Virtako 40WG for the control of red palm weevil

Virtako 40WG (Thiamethoxam 20% + Chlorantraniliprole 20%) was recommended to control the red palm weevil in coconut.

Inject 60ml of Virtako 40WG (4g dissolved in 250ml of water) through 2 holes of 0.5m apart on two sides of the trunk of palms less than 1.5m. For palms over 1.5m high, inject double the dose through 4 holes of 0.5m apart.

Crop Protection Division



Correcting magnesium deficiency

An improved recommendation was made to correct Magnesium deficiency in adult palms.

Apply the recommended dose of Adult Palm Mixture and dolomite in half circle of the manure circle and 1kg of kieserite in the other half circle of the palm simultaneously.

Soil & Plant Nutrition Division



Cashew under coconut

It was recommended to plant bud grafted cashew under coconut in intermediate and dry zones to increase profitability of coconut lands.

Plant bud grafted cashew in coconut lands in the center of the coconut square (one plant/ square). Follow general management practices for cashew plants. Yielding commences two years after planting and an average yield of 6.0kg/tree/year could be harvested.

Agronomy Division



Coconut kernel chips as a snack

A method for producing osmotically dehydrated coconut kernel chips as a snack was recommended.

Remove testa of mature coconuts and slice into 3 cm long and 0.75mm thick strips. Wash slices with chlorinated water. Put into a muslin cloth bag and dip in hot water of 90°C for five minutes. Prepare sugar syrup by dissolving 1kg of sugar with 5g of common salt in one liter water. Immerse slices of 600g in the solution for one hour and drain excess. Dehydrate slices at 70-80°C until crispy. Treat them with 200 ppm vitamin E, pack in PET/Al/LLDPE, filled with nitrogen and seal. Packed slices have a shelf life of 02 months.

Coconut Processing Research Division



Ready to serve preserved 'pol sambol'

A method for ready to eat preserved 'pol sambol' was recommended.

Mix scraped coconut with dehydrated onions, garlic and curry leaves and add salt and lime according to taste. Blanch at 90°C for 5 minutes with 0.01% vitamin E. Pack in LLDPE/ MPF. Store in a freezer at 18±2°C. The shelf life is 3 months in the freezer. The composition of 'pol sambol' is; 7.5 % protein, 69.2 % fat, 1.9 % minerals, 7.6 % sugars and 13.8 % other carbohydrates.

Coconut Processing Research Division

Policy Proposals



Temporary tax rebate for new coconut products

Coconut products such as virgin coconut oil, coconut paste, coconut cream, coconut milk, grated coconut, coconut ice cream are newly innovated products in the coconut industry. These products contribute to earn foreign exchange as well as it adds value to industry. In addition to that coconut paste and coconut cream would save 30% of kernel wastage, which could be utilized in other coconut based industries. However, these products are still not popular among the consumers. Producers find difficult to sell these products at attractive prices due to the value added tax imposed on them and therefore those have to compete with the fresh nut prices in the local market.



Based on the market analysis CRI recommended to the Ministry of Coconut Development and Janatha Estate Development to offer a tax rebate to coconut cream, coconut paste, coconut ice cream and grated coconut in the form of VAT exception at least for a two year period until these new products capture the local and international market.

Agricultural Economics & Agribusiness Management Division

Import tariff on substitute edible oils

Coconut market in Sri Lanka is closely connected with the world market prices of main edible oils. Price changes in the world market affect the prices in the domestic market within about two months. All adjustments in the domestic coconut market are done by farm-gate price of coconuts and Sri Lankan export price of desiccated coconuts. Import tariffs on substitute oils, which are the main instrument used to safeguard coconut industry is determined within the system.



CRI recommended the Ministry of Coconut Development and Janatha Estate Development to account for price changes of edible oils in the world market, price changes of farm-gate price of fresh coconut and export price of desiccated coconuts in deciding import tariff on substitute oils.

Agricultural Economics & Agribusiness Management Division



Research and Development Highlights

COCONUT VARIETAL IMPROVEMENT



Conservation and characterization of coconut germplasm

Genetics & Plant Breeding Division



Collection of characterization data in the field gene bank

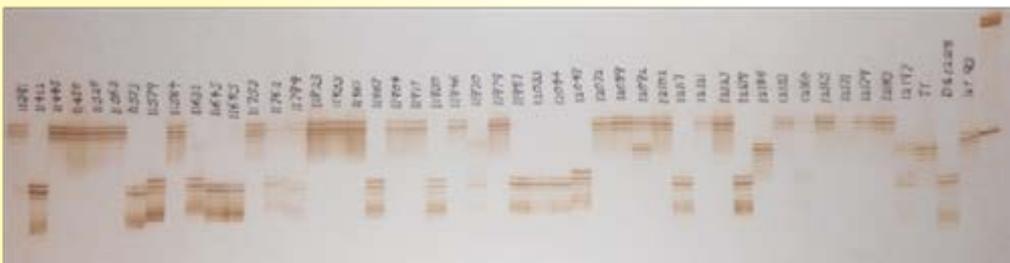
Ex-situ coconut field gene bank at Pallama was enriched with eight indigenous coconut varieties and one exotic coconut variety while five new exotic varieties were planted at the exotic field gene bank at Bandirippuwa estate. Steps were taken to enrich the pool of brown dwarf coconut germplasm with the identification of 22 new pure brown dwarf mother palms. A comprehensive research project was initiated for the management of International Coconut Genetic Resources database and comprehensive analysis of passport and characterization data with partial funding from the Coconut Genetic Resource Network (COGENT).

Genetic structure of Sri Lanka yellow dwarf population in Ambakelle

Genetics & Plant Breeding Division

The laboratory and field data collection of the National Research Council funded research project on the determination of the genetic structure of Sri Lankan Yellow

dwarf population was completed. Both morphological and molecular data revealed the presence of a genetic structure within this population. Molecular data revealed 04 differently structured populations within SLYD indicating the necessity for the purification of the parent palm pool at ISG.



Variation at microsatellite marker loci indicating genetic differences within SLYD

Flowering of new hybrids developed for tolerance to *Aceria* mite infestation

Genetics & Plant Breeding Division



Brazilian Green Dwarf x Gon thembili Tall in flower

New hybrids developed for tolerance to *Aceria* mite infestation attained reproductive stage with the initiation of flowering in 04 new crosses planted in multilocal trials at Sirigampola, Katukenda and Kuliypitiya estates. These new hybrids are expected to be evaluated for their tolerance to *Aceria* mite infestation once the newly emerged inflorescences bear fruits. During the year two more field evaluation trials were established to complete the establishment of multilocation evaluation trials in 07 sites representing different coconut growing agro-ecological regions in the country.

Drought recovery performance in Brown Dwarf crosses

Genetics & Plant Breeding Division

Better performance of Brown Dwarf crosses with respect to drought recovery was noted at Wanathawilluwa. Within the first two months of drought recovering after a 7 month drought, Dwarf Brown crosses (DBT and DBSR) showed the emergence of a higher number of inflorescences than DG crosses (DGT and DGSR) at Wanathawilluwa. Phenotyping for drought was conducted



Kapsuwaya palm recovering from a 2-month drought

for the first time in this experiment during 2013.

Plantlets from ovary derived calli

Tissue Culture Division

Four different morphological types of ovary derived callus were identified and tested for callus multiplication. Calli of frilly translucent nature showed the highest multiplication resulting the highest number of embryogenic callus after multiplication. Despite of the morphological variation, multiplication of embryogenic callus is favored by incorporation of 9 μ M Thidiazuron (TDZ) to multiplication medium which earlier consisted of 160 μ M 2, 4-D only.

Different media compositions were tested to compare the efficiency of embryo maturation and plantlet regeneration. Highest percentage of embryogenic callus maturation was observed in hormone free medium with high phytagel percentage than in BAP and 2ip consisting media. When calli were categorized according to the morphology, callus with globular structures showed good regeneration capacity. The

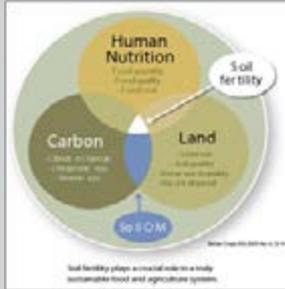


Development stages of ovary derived calli

results of this experiment revealed callus maturation in hormone free medium with high phytigel (0.3%w/v) content favor somatic embryogenesis in ovary derived callus.

Among the tested putative mother palms of coconut cultivars CRIC 65 and CRISL 98, 07 elite palms showed good response to tissue culture and those palms will be used in future studies. A total of 400 ovary derived plantlets were raised during the year and some of these plants are acclimatized.

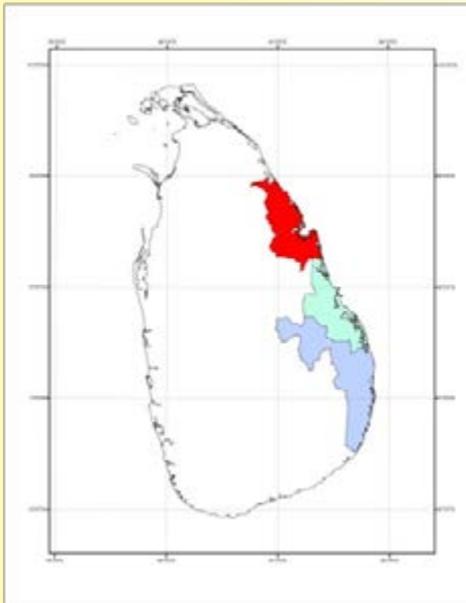
COCONUT PRODUCTION TECHNOLOGY



Land use classification for coconut cultivation in non-traditional areas of Sri Lanka

Soil & Plant Nutrition Division

The soil survey and compilation of maps in Ampara, Batticaloa and Trincomalee Districts were completed.



NEP districts survey for land suitability classification

Twenty eight new soil series and land suitability classes; S_3 (suitable, potential nut yield 10,000 - 12,500 nuts/ha/yr), S_4 (moderately suitable, potential nut yield 5,000 - 10,000 nuts/ha/yr), S_5 (marginally suitable, potential nut yield 2,500 - 5,000

nuts/ha/yr) and N1 (not suitable) were identified under 6 Great Soil Groups in Ampara District while 16 new soil series and S_3 , S_4 and S_5 land suitability classes under 4 Great Soil Groups were identified in Batticaloa District. Eighteen soil series and land suitability classes S_3 , S_4 and S_5 were identified under seven Great Soil Groups in Trincomalee District. The calculation of extent of the above land suitability classes is in progress

Residual effects of organic manure application

Soil & Plant Nutrition Division



Application of organic manure for adult palms

Application of organic manure conditions the soil and improves soil quality. The residual effects of application of different types of organic manures such as poultry, cattle, goat and gliricidia foliage and recommended rate of inorganic fertilizer were determined in a 16-year experiment

conducted to evaluate the effect of these treatments. No fertilizer applied palms were also kept as control.

It was revealed that 2 years after withdrawal of treatments the yield increase in poultry manure treatment compared with no fertilizer treatment was 106% while 56%, 62% and 56% yield increases were shown in cattle manure, goat manure and gliricidia applied treatments over the no fertilizer treatment respectively. The yield increase was 45% in inorganic fertilizer treated palms over the control.

Fertigation for increased nut yield

Soil & Plant Nutrition Division



Hose Irrigation



Drip Irrigation

Soil moisture deficiency often limits coconut production in areas where long dry spells occur or where the rainfall is scare and ill distributed. Nut production suffers under such conditions unless soil moisture is restored to sufficient level by irrigation. It

is known that coconut palm requires large quantities of water (40 - 60 l) per day for its normal growth and production. Application of heavy dosages of fertilizer once a year results in leaching of nutrients during rainy periods and fertilizer applied during dry season will not reach the effective root zone and may cause low uptake.

In this study, nutrients supplied through irrigation either hose or drip as 12 split doses per year have given the highest nut yield compared to annual application of only fertilizer or only irrigation or both fertilizer + irrigation. The yield increases in fertigation treatments compared with the above treatments of annual application were 32%, 16% and 11% respectively. Furthermore, highest nut yield was received when fertigation was done with hose irrigation than with drip irrigation.

Residual effect of Eppawela Rock Phosphate

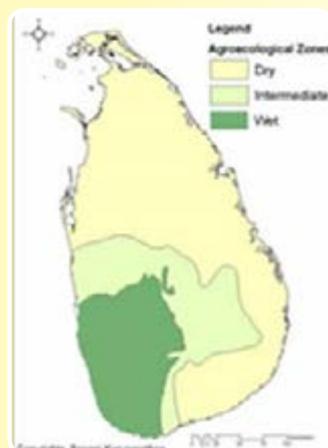
Soil & Plant Nutrition Division

More than 95% of coconut soils and coconut palms are rich in P in Sri Lanka. Therefore, an assessment of the residual effect of long-term (21 years) applied P sources was made. Two years after withdrawal of P there was no significant difference in P levels among the different P sources applied coconut palms.

Sine a yield drop has not shown 2 years after withdrawing application of P fertilizer, application of P fertilizer once in two years may be considered. The experiment is being continued to get more results for a recommendation.

Application of dolomite to high pH soils in Dry zone

Soil & Plant Nutrition Division



It was revealed that application of 1 kg dolomite/palm/year to fulfill the Mg requirement of coconut palms.

However, as most of the coconut growing soils in Dry Zone are high in pH growers are concerned that application of dolomite may raise the alkalinity and increase Nitrogen (N) losses. Therefore, most of them do not apply dolomite for their coconut plantations. Research conducted has shown that application of 1 kg of Dolomite does not increase the alkalinity of soil to a large extent. It is emphasized that application of dolomite is essential for Dry Zone to obtain a high yield. Either urea or ammonium sulphate can be used as the N source for coconut plantations in Dry Zone.

Effect of pruning height and plant spacing on biomass production of Gliricidia

Agronomy Division



Gliricidia is well known as a green manure and fuel wood tree in coconut plantations. It could be grown at 2 rows of 1mx1m spacing in an avenue of coconut (2200 trees/ha) and pruned at 1.0 m height. Pruning height and spacing are the key factors that determine biomass yield particularly wood yield. In some situations, pruning at high level (1.5m) is maintained to protect from cattle. Lower the pruning height of 1.0 m facilitates mechanical harvesting.

In an experiment on pruning heights at ground level, 45cm, 90cm and 135cm was evaluated. At these heights gliricidia yielded average wood yield (at 20.0% moisture) of 4.3kg, 8.0kg, 8.7kg and 12.1kg /tree/year respectively. There were no wood yield difference between treatments of 1.0 mx1.0m and 1mx2m spacing. Although the highest yield was obtained at 135cm pruning height, harvesting at that height is not convenient and efficient (number of trees/person/day).

Jatropha (Jatropha curcas L.) for bio- diesel production under coconut

Agronomy Division



Jatropha is worldwide accepted as a biofuel plant and seeds are used to produce biodiesel. It tolerates marginal soils and grows well with low inputs. A study was conducted to compare the local cultivar with

an exotic cultivar from Australia. The two varieties were established at Rathmalagara (IMZ) and Middeniya Research Centers (DZ) in 3 spacings; 1m x 1m x 1m (3 rows in an avenue of coconut), 1.5m x 1m (2 rows in an avenue of coconut) and 2.0m x 1m (2 rows in a avenue of coconut). Mean plant height was maintained at 22.0 cm from the ground.

Irrespective of the spacing, local and exotic cultivars of Jatropha plants produced an average of 200g and 240g seeds per plant during the year respectively. Yield of seeds showed a 19% increase in the DZ than in IMZ. However, this production level is inadequate to introduce Jatropha as an economical bio diesels crop in coconut plantations.



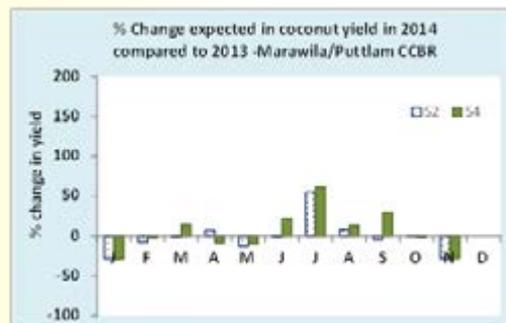
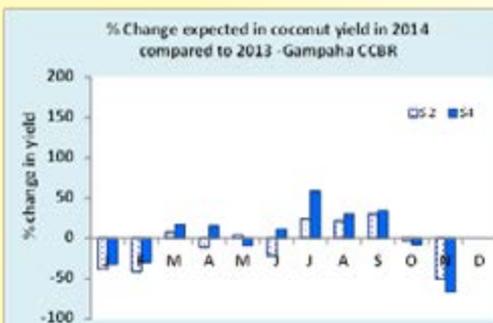
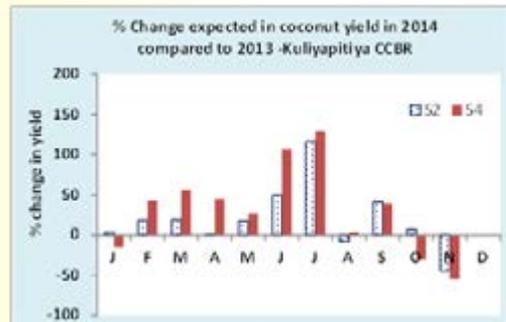
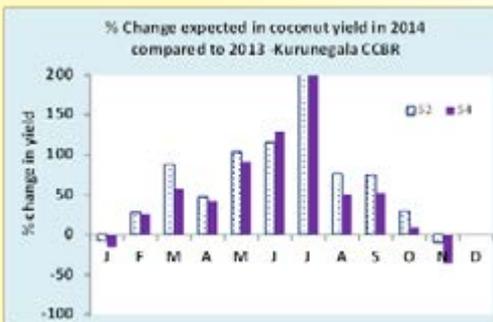
CLIMATE CHANGE EFFECTS ON COCONUT PRODUCTION

Climate effects on coconut yield variation

Plant Physiology Division

The pattern of monthly yield fluctuation (nuts/palm/month) was forecasted eight months in advance using fruit set data of palms grown on suitable (S_2) and marginal soils (S_4) in main coconut growing areas. Confirming the previous year's prediction, there was an appreciable reduction in coconut yield from April to August in 2013

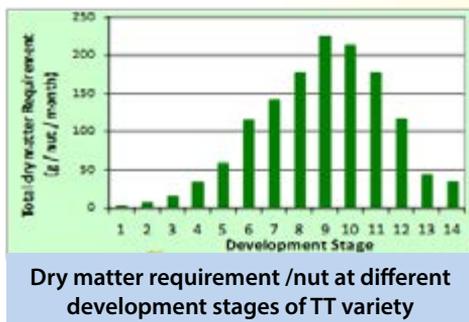
compared to 2012. For 2014, an increase in monthly nut yield / palm compared to 2013 was predicted from February to September and February to July in Kurunegala and Kuliyaipitiya CCB regions, respectively. Due to the failure of North-East monsoon rains in the latter part of 2013 and drought prevailed in February and March 2014, it is predicted that yields will decline appreciably from October to December 2014 in all major coconut growing areas.



Percent change expected in coconut yield in Kurunegala, Kuliyaipitiya, Gampaha and Marawila

Sub model development for different plant processes

Plant Physiology Division



Light response canopy photosynthesis models were developed to determine the total dry matter production of Tall x Tall (TT) and Dwarf Green x Tall (DGT) varieties. Sub models were developed to estimate the dry matter content of developing fruits of TT, DGT, Tall x San Ramon (TSR), and Dwarf Green x San Ramon (DGSR) varieties. The total dry matter requirement for growth and respiration of developing fruits was estimated for TT, DGT, TSR and DGSR. These sub models will be useful in dynamic process-based yield prediction models.

Impacts of climate change on coconut and adaptation measures

Plant Physiology Division

The critical temperature for reduction of fruit set in irrigated coconut plantations (without water stress) in the dry zone was determined. Heat stress alone reduced the fruit set of TT plantations at vapour pressure deficit (VPD) > 2.5 kPa and day temperature (T_{max}) > 35°C, possibly attributing to the impaired pollen germination process on the stamina. It revealed that when palms were exposed only to heat stress (with irrigation) the critical temperature for reduction of fruit set was about 2°C higher compared

to the condition with both heat and water stress (33 °C).



Newly opened inflorescence, dried flowers due to heat stress and germinating pollen grains

When the inflorescences of Tall x Tall (CRIC60, TT), Tall x San Ramon (CRISL98, TSR), Dwarf Green x San Ramon (Kapruwana, DGSR), Dwarf Green x Tall (CRIC65, DGT), Tall x Dwarf Brown (TDB), Dwarf Brown x Tall (DBT) and Dwarf Brown x San Ramon (DBSR) palms were exposed to heat and water stress during first three months (3M) after pollination (most sensitive stage), DGT showed the highest fruit set in a moderately drought-prone area (IL1a) whilst there was no FS in all the cultivars in a severely drought-prone area (DL₃). When Inflorescences of the same crosses were exposed to heat and water stress during 3rd to 4th month after pollination, DGT and DGSR and DBT performed better than other crosses in the moderately drought-prone area (IL_{1a}) whilst DGT was the best performer in the severe drought-prone area (DL₃). In the DL₃, the female flower production and fruit set of all the crosses were very low or almost none when the soil was shallow, hard and heat and water stress were severe. The maximum (T_{max}) and optimum (T_{opt}) temperatures for in vitro pollen germination, which are indicators for heat tolerance, were also differed with cultivar.

DGT exhibited the highest T_{max} (41°C), and DBT showed the highest T_{opt} (30.2 °C) for in vitro pollen germination.

Mix cropping to change micro-climate

Plant Physiology Division

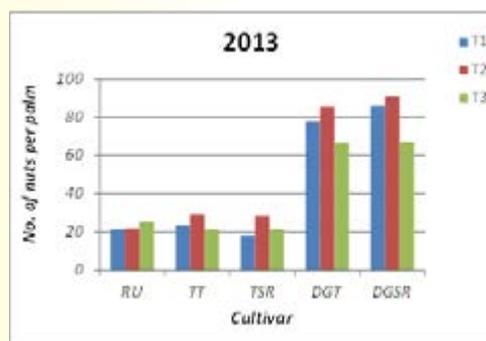
Three coconut-based mixed cropping systems existing in the dry zone (Puttalam (DL₃) (coconut and cashew) and Anuradhapura (DL_{1b}) (coconut and guava, coconut and banana) were evaluated for their potential in changing micro-climatic condition and fruit set of coconut plantation during drought periods. In Puttalam, the coconut and cashew plantation was more affected by severe drought in September 2012 compared to mono-crop and, in Anuradhapura, the mono-crop plantation was more affected compared to two mix-crop plantations, with respect to female flower production and fruit set. All cropping systems started to recover from January 2013 onwards, and the recovery rate was faster in mixed cropping systems compared to mono-crop systems.



Mix cropping system

Performance of coconut cultivars under soil moisture management

Plant Physiology Division



Cumulative yield of coconut (nuts/ palm) of five cultivars seven years after field planting at Middeniya Research Centre

When Rumassala Tall (RU), TT, TSR, DGT and DGSR were grown under overall soil moisture management (T_2) and irrigation (T_3) in coconut-mini triangle, Middeniya more than 80% flowering was observed in DGT and DGSR within the first four years while TSR showing about 45% and other tall cultivars were showing only 30% of flowering. This resulted in more than three times higher yield in DGT and DGSR in the 7th year (2013) compared to tall cultivars. The economic analysis revealed that a positive net profit after the 5th year of field planting. (In the average situation at the national level, it would take approximately 12 years to reach the level of positive net profit with generally cultivated tall cultivar and 7 years in highly suitable and fertile soils with the tall cultivar).



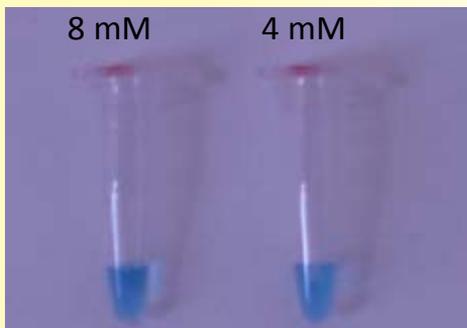
CROP PROTECTION

Molecular diagnosis of Weligama Coconut Leaf Wilt Disease phytoplasma

Crop Protection, Tissue Culture & Genetics and Plant Breeding Divisions



Operating RT-PCR machine



LAMP reaction

Studies were conducted to develop a reliable protocol for the detection of Weligama Coconut Leaf Wilt Disease (WCLWD) phytoplasma using PCR with universal primers, SeC A gene primers, LAMP protocol and Real Time PCR with

specific primers. In using universal primers, detection rate varied 0-100% seasonally. The highest detection rate of 100% was in June – October, but results of DNA sequencing of those samples were not consistent. Use of SeC A gene primers failed to detect WCLWD phytoplasma. Use of LAMP protocol showed seasonal variation in detection and the highest detection of 57% was in June – October, while having a 8% false negatives of healthy samples.

Use of Real Time PCR protocol showed higher reliability in detecting WCLWD phytoplasma than other methods. RT-PCR protocol was perfected using WCLWD-specific primers and probe. A total of 97 leaf samples from diseased palms and 60 healthy palms were tested during the year for validation. Over 75% of the samples of diseased palms were positive while samples of healthy palm showed up to 30% false positives.

Financial support for this project was given by the Food and Agriculture Organization of the United Nations.

Screening and breeding resistant varieties for Weligama Coconut Leaf Wilt Disease

Genetics & Plant Breeding Division

The growth measurements and number of seedlings affected by WCLWD disease was

recorded at four of the coconut cultivar screening trials in Southern province. By the end of the year six varieties; SR, DG x SLT, SLT x SLT, DG x SR, SR x BD, T x MRD were observed to be susceptible to WCLWD by morphological symptoms.



WCLWD resistant hybrid seedlings

The WCLWD resistant breeding programme continued successfully and land preparations were completed for the planting of these hybrids; SLGD x GTT, SLGD x SLT, SLT X SLT and SLT x GTT in field experiment in identified locations in the same area for the observations for resistance/tolerance. Hybridization programme was continued in 70 mother palms.

This project was supported by the Food and Agriculture Organization of the United Nations.

Biology and parasitism rates of the exotic parasitoid, *Tetrastichus brontispae* of the Plesispa beetle

Crop Protection Division

The parasitoid *Tetrastichus brontispae* (Hymenoptera: Encyrtidae) has been reported to parasitize Plesispa beetle (*Plesispa reicheii*) in other countries, hence it is a prospective biological control agent

of this beetle. The biology of this exotic parasitoid was investigated with the aim of using it for the management of Plesispa beetle in Sri Lanka.



T. brontispae female ovipositing in Plesispa pupa

Effect of different temperatures; 22°C, 25°C, 28°C, 30°C and 32°C on the biology of *T. brontispae* was studied. The parasitoid did not develop at temperatures above 30°C. The highest oviposition period, fecundity, percentage parasitism, eggs/female/day, percent offspring emergence and offspring production/female was recorded at 28±2°C.

Out of the different host-parasitoid ratios tested, highest offspring production per Plesispa pupae (>20 parasitoids) and parasitism over 90% was achieved when the Plesispa pupae were confined with either one or two parasitoids for a period of 24 h. In screen cages the rate of parasitism of *T. brontispae* was about 30 -75%.

Release of *Oryctes* virus infected beetles to manage black beetle

Crop Protection Division

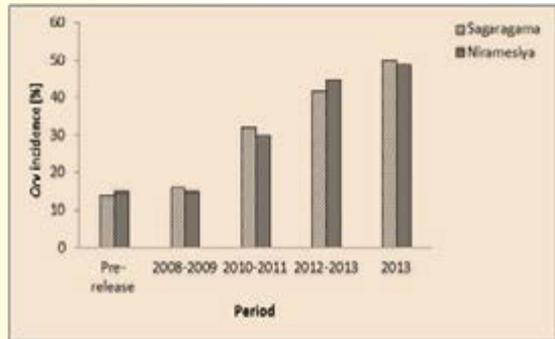
The experiment to determine the effect of releasing *Oryctes* virus (*Orv*) infected beetles was continued in two sites. Release of *Orv* infected beetles in reducing in black

beetle damage showed promising. Nearly 50% reduction in leaf damage was shown in 2013, which was 3 years of releasing

the infected beetles. The incidence of Orv among black beetle population was increased by 3-fold.



Gut of Orv infected beetle



Orv incidence before and after release of infected beetles

COCONUT PROCESSING & PRODUCT DEVELOPMENT



Improvement of processing and preservation of tender coconut water

Coconut Processing Research Division

Tender coconut water has a high export market as a beverage. It has a soluble solid content of 5.2 ± 0.2 %, total sugar 4.4 ± 0.5 % and mineral content of 0.60 ± 0.02 %. Studies were continued for extending shelf life of tender nut water. Nut water was collected from coconuts aged 7-8 months, pasteurized and maintained at different temperatures for over 6 months. It was revealed that the best temperature was 90°C for 10 minutes. By adding preservatives (100 ppm KMS and 0.05% CMC) tender nut water was bottled and stored in refrigerator for 6 months without changing any of its chemical properties.

Production of spray dried sweet toddy

Coconut Processing Research Division

Sweet toddy is the liquid oozes out of the coconut inflorescence, which is used to prepare coconut treacle, jaggery and golden syrup. The fresh unfermented sweet toddy contains 15-18% sugar (w/v) mainly in the form of sucrose. Spray dried products are very convenient as they have less volume and improved colour due to the spray drying technique. Sweet toddy powder can be stored for a long time for

preparation of treacle, jaggery and golden syrup.

The techniques were improved to produce spray dried sweet toddy and treacle by addition of drying aid. It was observed that 80 : 20 and 70 : 30 (sweet toddy : drying aid) were suitable to obtain 56.35 ± 2.90 % and 57.8 ± 1.85 % yields of spray dried sweet toddy. The results showed that 10% of drying aid was not sufficient to obtain good powder recovery. Since there was no significant difference ($p > 0.05$) between recovery of sweet toddy in the rate 80:20 and 70:30, the formulation was recommended to spray dry sweet toddy.



Spray dried powder of sweet toddy

Quality evaluation of coconut milk based ice cream

Coconut Processing Research Division

Coconut milk was extracted by blending scraped coconut (approximately 4 coconuts) with water to get 4L of milk (Four

coconuts give 4ℓ of coconut milk with the addition of water). Ingredients were mixed [sugar (1 kg), liquid glucose (5 g/l), ice cream stabilizer (5 g/l), thickening agent (14 g/l) and a pinch of salt]. The mixture was pasteurized at 90°C for 20 minutes and cooled to room temperature and different flavors were added separately [vanilla (2 tablespoons) or cocoa (2 tablespoons)]. The mixture was fed into the instant ice cream machine with the hardness of the ice cream mixture set at 6.0.



Coconut ice cream

Sensory results revealed that vanilla flavor was preferred to chocolate flavor. Vanilla ice cream consisted of 37.3% total solids, 9.32 % fat, 30.6% sugar and 0.27% protein while the cocoa flavored ice cream consisted of 38.1% total solids, 9.42% fat, 30.6% sugar and 0.27% protein.

Performance of a flash dryer for drying coir pith

Coconut Processing Research Division

Coir pith is generally sun dried, but during rainy weather this process is not feasible. Therefore, a flash dryer was fabricated and installed at the Coconut Processing

Research Division to improve drying of coir pith. Preliminary studies were conducted to verify currently used mesh sizes of coir pith; 1/6", 1/4" and 1/2" of coir pith used for various purposes in the industry. According to the results 1/4" mesh size was the best size to have maximum expansion ratio. High expansion ratio was also observed in products with moisture content of 10 -19%.

Coir pith samples were sun dried in thin layers to determine drying characteristics, particle size distribution and microbial aspects for coir pith products, pH, electrical conductivity and volume expansion (parameters were measured according to the SLS Standards). Also, coco pith discs made by various manufactures were tested for volume expansion, pH and electrical conductivity to determine the quality of the existing products.

Construction of an eco-friendly charcoal processing plant

Coconut Processing Research Division

Development of an eco-friendly high quality charcoal making kiln in collaboration with Industrial Services Bureau and Haycarb PLC was continued at a premises of a small scale charcoal manufacturer. The kiln was designed and constructed. Firing of coconut shells was done once and charcoal samples were collected for analysis.

SOCIO- ECONOMICS



Implications of export price of DC on edible oil market

Agricultural Economics & Agribusiness Management Division



The government import policy on edible oil in Sri Lanka indicated that irregular changes has been imposed on import tariffs of edible oil when the supply of fresh coconut in the domestic market is limited. Also, it was revealed that increase in export price of desiccated coconuts leads to drop in import tariff, supply and producer price of coconut oil. The results of the policy simulation showed that change in export price of desiccated coconuts has considerable implications on edible oil market.

Socio-economic impact of Weligama Coconut Leaf Wilt Disease (WCLWD)

Agricultural Economics & Agribusiness Management Division

A survey was conducted in WCLWD affected areas to identify the socio-economic

issues related to the WCLWD on coconut stakeholders, to quantify the economic loss caused by the WCLWD and to find out the economic viability and farmer acceptance of disease management measures suggested by the CRI. During 2013 data collection was completed. Results showed that even though

removal of diseased palms affected coconut consumption and their income, more than 95% of the respondents have removed the diseased palms and has received compensation. Although they are in favor of the programme some have doubts of managing the disease by palm removal. In this area mainly, pepper, cinnamon, banana and tea are regarded as main alternative crops and the growers prefer to establish these crops in their lands.

Cost of production of coconut (COP)

Agricultural Economics & Agribusiness Management Division



Data collection for estimating cost of

production in the coconut triangle was continued during the year. It was aimed to identify the differences in major cost components and variation of COP in different agro-climatic zones, land sizes, land suitability classes and levels of management. The main cost components identified were cost for fertilizer application, labour, weeding, agrochemicals and harvesting. An important observation was the increase of cost of production due to increased raw material cost, especially labour and transportation even though fertilizer prices were remained unchanged. In general, the average COP of coconuts in the coconut triangle was Rs. 13.30 per nut. Cost of production of a nut in land suitability classes S_1 - S_2 , S_3 , S_4 , S_5 are Rs. 8.00, Rs. 11.50, Rs. 12.50, Rs.15.50 and Rs. 19.00 respectively.

Diagnostic survey

Agricultural Economics & Agribusiness Management Division and all Research Divisions



Fourth diagnostic survey was commenced to assess the efficiency and effectiveness of dissemination of research findings and to identify the growers' constraints. It is expected to cover the entire country including Northern and Eastern provinces through collecting information from around 1200 growers of different levels. By using the data base developed on coconut lands, sample was selected in Kurunegala and Puttalam districts. Around 85% data collection in Kurunegala district has been completed.

Maintenance of a database on coconut growers and coconut based statistics

Agricultural Economics & Agribusiness Management Division and all Research Divisions

Development of a data base on coconut lands in all coconut growing districts was initiated. As the first step information were collected from Kurunegala, Puttalam, Gampaha, Kegalle and Kalutara districts. With the help of Agrarian Services Department, information on Kurunegala district was collected. Around 60% data collection of Puttalam district and Gampaha district was completed. Using the collected data an electronic database preparation is in progress.

Separate comprehensive database on coconut statistics are being maintained in the division.



OIL PALM RESEARCH & DEVELOPMENT

Nutrient removal by adult oil palm

Oil Palm Research Division

Soil analysis of palm oil plantations showed that soil organic matter levels in oil palm growing lands have been elevated over 1% compared to non-oil palm growing lands. However, soils of some plantations were deficient in Nitrogen, Phosphorus and Potassium and were in the ranges of 450-1120, 2.8-30, 74-226 mgkg⁻¹ respectively. Also foliar N, P and K levels were below the sufficiency range of 2.4-2.8%, 0.15-0.18% and 0.9-1.2% respectively. In regard to nutrient removal, empty fresh fruit bunches contained the highest proportion of K (82 mgkg⁻¹) and fronds contained highest amount of N (67 mgkg⁻¹) than the other parts of the palm. Hence, recycling of empty fresh fruit bunches is essential to maintain sustainability of soil fertility in oil palm plantations.

Yielding patterns of oil palm

Oil Palm Research Division

Two observation sites were established in Maduru Oya Genetics Resource Centre (Dry Zone) and Bandirippuwa Research Station (Intermediate Zone) comprising of 30 seedlings of variety Yagambi from Papua New Guinea in each site in December 2012. After 02 years of planting 50% of plants showed flowering at Bandirippuwa RC while at Maduru Oya it was 13%. Yield pattern of oil palm was highly related to rainfall and air temperature. These studies are being continued.





RESEARCH DEVELOPMENTS

Establishment of a new Isolated Seed Garden

Genetics & Plant Breeding Division

The ceremonial planting of the first seedling at the Indonesian model isolated seed garden at Kinyama Estate, Bingiriya was made as a joint venture between CRI and Chilaw Plantations. During the year 5855 of Green dwarf and San Ramon seedlings were planted at the Kinyama seed garden with nearly 90% completion of the total planting target.



Planting of first Green Dwarf seedling at Kinyama estate

Hybrid seed production and certification

Genetics & Plant Breeding Division

A total of 11,672 seedlings of pure San Ramon and Tall x Tall were produced by hand pollination techniques for planting in new seed gardens and for under planting/vacancy filling in existing seed gardens.

Further, 40,369 Kapsuwaya, 870 Kapsetha, 3,888 Kapruwana and 26,270 CRISL98 coconut hybrids seeds produced by hand pollinating were harvested during the year. The hand pollination programme for production of Tall x Tall seedlings with increased drought adaptability among selected tall of the progeny of Ambakelle especial palms in the filed 11A, ISG, continued for production of planting material for replanting the old plantations of the Isolated Seed Garden and for the proposed new seed garden at Poonaryn and 1,700 of such Tall x Tall seedlings were planted as a under planting to replace senile plantation at field No. 4 of ISG during the year.

Under the seedling certification programme, 413,441 seedlings were certified by the staff of the Seed and Seedling Certification Unit.



Flowers emasculated for production of brown dwarf hybrids



Certified seedlings

Maintenance of buffer zone and check points for managing Weligama Coconut Leaf Wilt Disease

Crop Protection Division

Eighty six kilometer long 3 km wide buffer zone surrounding the Weligama coconut leaf wilt disease area was monitored by land to land inspection, marking and removal of diseased palms to prevent advancement of the disease towards unaffected area. A total of 38,074 lands in the buffer zone were inspected and 398 WCLWD infected palms were removed from 18 lands. A significantly lesser number of infected palms were found in this round of checking compared to the first round. Three check points were set up

at Akuressa, Gintota and Walasmulla in the buffer zone to prevent transportation of live palm species and their green parts. A total of 8130 vehicles moving out of the WCLWD endemic area were searched and 702 prohibited items were apprehended during the year.



Roadside check point

Technical assistance for predator mite production

Crop Protection Division



Neoseiulus baraki



GS divisions inspected in the buffer zone

A total of 12 laboratories for breeding of the predatory mite *Neoseiulus baraki* for the management of coconut mite have been established island wide. The division provided technical guidance to maintain these laboratories operated by the Coconut Cultivation Board, Chilaw Plantations Ltd. Kurunegala Plantations Ltd. and private companies.

Importation of black beetle pheromone

Crop Protection Division

CRI issued an interim recommendation to use aggregation pheromone of black beetle for the management of black beetle by mass trapping. In order to provide the pheromone to the coconut growers 5000 vials of the pheromone were imported from India. These were sold at Rs. 500/- per vial through the Coconut Cultivation Board (4000 vials) and CRI Technology Park.

Demonstrations of farming systems

Agronomy Division

a. Livestock integration

The programme for developing a goat and buffalo farming systems under coconut

with the objective of increasing profitability of smallholder farmers through livestock integration under coconut was continued.

Goat and buffalo demonstration unit at Ratmalagara estate functioned successfully. Due to the promising goat breeding program, 10 male and female goats and 31 Murrah stud bulls were sold to farmers at a concession of price to improve their herds. To develop and popularize sheep farming under coconut which is a very effective method to control weeds and to improve soil fertility level, one field demonstration was established in Ratmalagara estate with active participation of farmers.

To upgrade the knowledge and awareness of local community, coconut growers and foreign visitors on livestock management in coconut lands, two field pasture demonstrations containing fodder, pasture and cover crops were established in Ratmalagara estate and at Agronomy Division premises at Bandirippuwa estate. Large number of public including coconut growers, private sector industries, academics and researchers from universities, students and foreign visitors benefitted through these demonstrations.



Goat farming unit at Rathmalagara Research Center



Pasture museum



Intercropping demonstrations at Makandura Research Station

Three field demonstration blocks with intercropping including export agricultural, fruit, timber, fodder and tuber crops were

maintained at Makandura, Rathmalagara and Bandirippuwa Research Centers.



Bio energy generation at Rathmalagara Research Center

Bio-energy generation project was continued at Rathmalagara Research Center in one hectare land comprising of 150 coconut palms, 2500 gliricidia trees and six buffaloes fed with externally supplied paddy straw. Gliricidia wood was used for gassification and buffalo dung was used

to generate bio-gas. During the year the model produced 5 buffalo calves, 4200 liters of buffalo's milk, 1.2 m³ of biogas /day and 12,000 kg fuel wood. The total income of the model was Rs. 260,000/- Application of biogas- affluent to coconut palms increased nut yield by 106%.

Planting gliricidia for production of wood fuel and foliage biomass

Agronomy Division

Approximately in 20ha of land at Pallama Genetic Resource Centre, gliricidia is planted as a dedicated energy plantation mainly to harvest fuel wood. Total number of planted trees was 29,971. No other input such as fertilizer was added and the plantation was maintained under rain-fed conditions. Trees were pruned at 1m height from the ground level at 8-monthly intervals. Woody parts were collected and sold to various dendro power producers and leaf materials were allowed to decompose in the site. At harvesting moisture level of fuel wood was approximately 52.5% and under average weather conditions fuel wood took 18 days to reduce moisture content to 20%. The total harvest of wood was 61,242 metric tonnes and it gave an income of Rs. 189,346.00.



Gliricidia plantation at Pallama Genetic Resource Centre

b. Vermicompost production

Agronomy Division

Four vermi-compost production units were established to multiply worms, *Eiseinia foetida* (tiger worm), *Eudrilus eugeniae* (African nightcrawler), *Perionyx excavatus*

(compost worm) and Lampito mauritti and were distributed among twenty coconut growers. Five farmers started commercial level vermicompost production with the assistance of CRI. Vermicomposting units functioned throughout the year and the compost produced was used in research trials on organic farming of the division. These units were also used as demonstrations for farmers, university students and agro-tourist groups.



Vermicomposting unit at Rathmalagara Research Center and worms used for composting (middle)

Maintenance of a database on coconut growers

Agricultural Economics & Agribusiness Management Division

Development of a data base on coconut lands in all coconut growing districts was initiated. As the first step information

were collected from Kurunegala, Puttalam, Gampaha, Kegalle and Kalutara districts. With the help of Agrarian Services Department information of Kurunegala district was collected. Around 60% data collection of Puttalam district and Gampaha district was completed. Using the data an electronic database is in preparation.

Technologies transferred to entrepreneurs

Coconut Processing Research Division



Technology on production of coconut ice cream was disseminated to 50 entrepreneurs.



Six files containing details of production of virgin coconut oil were sold.

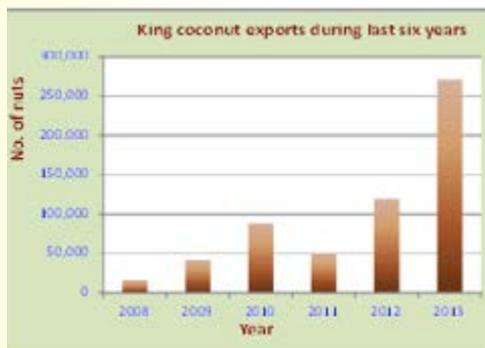
Export of king coconut

Plant Physiology Division

The protocol for shelf-life improvement of tender king coconut for export purposes



King coconuts packed for export



Number of king coconuts exported during 2008-2013

was demonstrated to 15 exporters and 122 certificates were issued to export 270,000 tender king coconuts in 2013.

Technology transfer activities

Technology Transfer Division

Training Programmes

a. One-day Training Programme

One day training programme conducted by the institute has become very popular among coconut growers. During the year seven one-day programs were conducted from April to October as given below.

Date	Venue	Topic	Participants
19 April	ISG, Ambakele	Replanting of coconut	111
31 May	Ratmalagara	Soil and moisture conservation	132
28 June	Head Office, CRI	Fertilizer recommendations	139
26 July	Makandura	Intercropping/ animal keeping	147
30 August	Head Office, CRI	Pest and diseases of coconut	144
27 September	Ratmalagara	Rehabilitation of palms	125
25 October	Head Office, CRI	Labor law and Estate Management	114



b. Farmer Field Schools

Following Farmer Field Schools (FFS) were conducted for Kapruka Purawara society leaders in Meepitiya and Kegalle.

Venue	Date	Subject area	Participants
Kegalle	05 July	Varieties and planting	22
Kegalle	06 August	Identification and control of Black Beetle and Red Weevil	18
Kegalle	06 September	Identification and control of Black Beetle and Red Weevil	19
Kegalle	14 October	Organic manure preparation, application, Nutrient deficiency identification and inorganic fertilizer application	20
Kegalle	22 November	Videos on all aspects of coconut cultivation	16
Kegalle	20 December	Moisture conservation, Intercropping and Estate Management	17



c. Other training programmes

Twelve educational programmes for officers from other institutions, 10 programs of training of trainers (ToT) and 42 educational programmes for teachers and students were held during the year. Further, another four educational programmes were conducted for coconut growers.

Two research and extension dialogs were also held at CRI on 25th June and 27th August. For these 73 and 92 Coconut Development Officers participated respectively. Another research and extension dialogue was held in Weligama on 16th July to which 42 Coconut Development Officers participated.



Seminars and workshops

During the year, six crop clinics, seminars and workshops were conducted jointly with CCB in Jaffna, Ambalangoda, Bingiriya, Arachchikattuwa and Embilipitiya areas.

Exhibitions

The division participated in thirteen exhibitions during the year. The stalls were arranged with models, light boxes, posters and live displays to promote coconut cultivation and processing technologies. "Deyata Kirula exhibition was held at

Ampara and stalls of the Ministry of Coconut Development and Janatha Estate Development was selected as the best stall in the agricultural sector.



The programme was funded by the Food and Agriculture Organization of the United Nations.

Printing and Publications



Awareness programmes on Weligama Coconut Leaf Wilt Disease

With respect to Weligama Coconut Leaf Wilt Disease, thirty six awareness programmes were conducted for coconut growers, Coconut Development Officers, school children and officers of other institutions in the Southern Province in collaboration with CCB. Further, six media programmes were conducted for general awareness building.



During the year, printing unit undertook more than 150 printing jobs for other divisions. These include letters, survey forms, booklets, questionnaires, official forms, circulars and handouts. Among the scheduled publications, Technology Update, Cocos Journal and quarterly CRI Newsletter were released.

Coconut Technology Park (CTP)

Coconut Technology Park (CTP) at Bandirippuwa estate maintained by the division became a major attraction of coconut growers, school children and the general public. During the year, CTP received 38,014 coconut growers and visitors. In addition to technology promotion programmes conducted at the CTP, publications of CRI and Department of Agriculture, media materials, coconut based products and other required inputs were made available.



Annual income summary of the CTP

Type	Amount (Rs.)
Polybagged Seedlings	2,569,400.00
Different products	
From Technology Park	998,915.00
From others	663,315.00
Books /Publications	411,467.00
Miscellaneous	34,818.00
Total	4,677,915.00

Other technology transfer activities

Research Officers and Technical Officers of CRI conducted various trainings, seminars, presentations, lectures to various groups of Coconut Development Officers, Agricultural Officers, growers, students, entrepreneurs and general public to transfer knowledge, information and developments in the coconut sector.

CONTRIBUTION TO NATIONAL DEVELOPMENT THROUGH SERVICES TO STAKEHOLDERS



1. Differential Fertilizer Recommendation to Coconut Estates

Soil & Plant Nutrition Division



Leaf sample analysis

Differential Fertilizer Recommendation (DFR) for coconut is recommended based on variation of nutrient status of the coconut palm. A nominal fee is charged only to cover cost of chemicals. Estate owners are required to provide transport for officers visiting the land for leaf sampling. During the year 87 reports were issued which covered an extent of 1,908 ha extent.

2. Land Suitability Assessment for coconut lands

Soil & Plant Nutrition Division

Soil survey and land suitability assessments of coconut lands were undertaken. In this service, CRI recommends whether the land is suitable or not for coconut cultivation and forecast the potential nut yield according the suitability class of the land. A total 23 land suitability assessment reports were issued covering an area of 270 ha.

Land suitability assessments of 2100 ha of oil palm lands were also completed.



Land suitability map of Puttalam district

3. Supply of parasitoids for the control of coconut caterpillar

Crop Protection Division



Insectary at CRI

Coconut caterpillar infestations were reported from Gampaha, Kurunegala, Puttalam, Hambantota, Batticaloa and Ratnapura districts. CRI insectary bred parasitoids, *Brachymeria nephantidis*, *Bracon hebetor*, *Goniozus nephantidis* and *Trichospilus pupivora*. A total of 96700 *B. nephantidis*, 422,750 *B. hebetor*, 169,650 *G.*

nephantidis and 120,500 *T. pupivora* were released during the year.

4. Synthesis and supply of



Synthesis of the pheromone in the laboratory

aggregation pheromone for mass trapping of red weevil

Crop Protection Division

Seven hundred and fifty milliliters of pheromone was synthesized in the laboratory of Crop Protection Division. A total of 7,201 pheromone vials were sold to the Coconut Cultivation Board and growers for trapping of red weevil adults. Two thousand of above vials were used by CCB in their special programmes which involved mass trapping of red weevils in a whole village.

Aggregation pheromone of black beetle was imported from India on the request of growers. Four thousand pheromone vials were sold to CCB for distribution among growers.

5. Production of predatory mites for the control of coconut mite

Crop Protection Division

Crop Protection Division of CRI continued to maintain 3 predator mite breeding laboratories which are situated at Bandirippuwa estate, Genetic Resource Center Ambakelle and Makandura Research Station. A

total of 33,203 predatory mite sachets were sold to growers to apply for 2075 acres of coconut mite infested lands. Crop Protection Division provided technical guidance to maintain predator breeding laboratories of Coconut Cultivation Board, Chilaw Plantations Ltd. Kurunegala Plantations Ltd. and

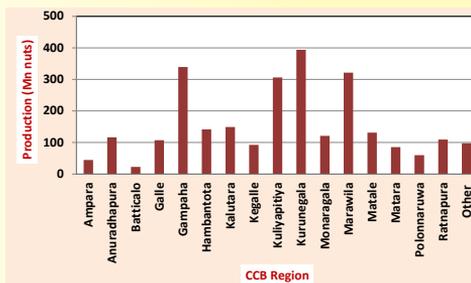


Mass rearing of predatory mite in the laboratory

private companies.

6. Estimation of national yield of 2013 and prediction of national yield in 2014

Biometry Unit, Plant Physiology and



Agro-meteorological station at Bandirippuwa Estate, CRI

Agricultural Economics & Agribusiness Management Divisions

The estimated national coconut production in 2013 was 2641 Mn nuts. It is about 10% reduction compared to the 2012

production, 2940 Mn.

The predicted coconut production for the first six months (January-June) of 2014 is 1567 Mn nuts; which ranged from 1475 to a maximum of 1661 Mn nuts.

7. Supply of Meteorological data

Plant Physiology Division

Daily data of rainfall, air and soil temperature, relative humidity, wind velocity and sunshine hours of four research stations of CRI; BE, RE, ISG and MOSG were provided to the national database at the Meteorology Department. Monthly rainfall and temperature data were provided to growers, industry personnel, scientists and students and Divisional Secretariats of



Agro-meteorological station at Bandirippuwa Estate, CRI

Wennappuwa, Mahawewa, Madampe and Dankotuwa, on their request.

8. Supply of information to other institutions and stakeholders

Agricultural Economics & Agribusiness Management Division

1. Provided information to update research database of Council for Research Policy
2. Provided technical assistance to plan National Agricultural Census 2014
3. Provided coconut statistics to Central Bank of Sri Lanka, Sri Lanka Treasury and many other institutes and stakeholders
4. Provided valuation reports to value coconut tress removed for different purposes
5. Proposed mechanism to sell nuts in CRI estates to Nestle Lanka Limited
6. Provided proposals to Amana Insurance Corporation to introduce insurance scheme to coconut growers

9. Importation of oil palm seeds

Oil Palm Research Division

Assistance was given for RPC's to import pre-heated oil palm seeds from Indonesia, Malaysia and Thailand. Further, nurseries were continuously monitored collaboratively with the National Plant Quarantine Service.

10. Test Reports

Several test reports on coconut inputs and coconut based products were supplied on request

Division	Sample Type/ Division	No. of Samples Analysed
<i>Soil & Plant Nutrition Division</i>	Soil analysis for nutrient status	305
	Leaf analysis for nutrient status	448
	Analysis of Inorganic fertilizer for quality assurance	90
	Analysis of organic fertilizer for quality and to recommend organic manure package	118
	Coir pith sample analysis for quality assurance	485
	Water analysis for suitability for irrigation	16
	Oil palm plant samples for nutrient status	710
	Oil palm soil samples for nutrient status	350
<i>Coconut Processing Research Division</i>	Virgin coconut oil for free fatty acids and moisture content	143
	Coconut oil for FFA and moisture content)	06
	Desiccated coconut for moisture content	3
	Rice bran for oil content	4
	Poonac for oil content	4



INTERNATIONAL AND LOCAL RESEARCH COLLABORATIONS

International collaborations

MOU with Republic of Cuba for the development of coconut industry



A delegation led by the Minister of Coconut Industries and Janatha Estate Development comprising Chairman, Coconut Research Board, Prof. H.P.M. Gunasena, Director, Coconut Research Institute, Dr. Jayantha Gunathilaka and Chairman, Coconut Cultivation Board, Sarath Keerthiratne visited Cuba from 24th - 29th June 2013 to focus on the implementation of the MoU on Coconut Development signed between Sri Lanka and Cuba. Both countries agreed on a joint plan of action to implement the provisions of the MOU. Sri Lanka will assist Cuba in capacity building, training, exchange expertise and transfer of technologies on appropriate cultivation practices, new and value added products and processes. The Cuba will assist Sri Lanka to acquire advanced technologies, in particular biotechnologies and technical support from Cuba.

CRI to assist United Republic of Tanzania to develop its coconut industry



A team consisting of Hon. Jagath Pushpakumara, Minister of Coconut Development and Janatha Estate Development, Prof. H.P.M. Gunasena, Chairman, Coconut Research Board, Dr. Nayanie S. Aratchige, Principal Entomologist and Mr. P.H.A. Nimal Appuhamy, Head, Technology Division Coconut Research Institute visited Tanzania in 2013. The coconut industry in Tanzania suffers from low yields with 35-40 nuts per palm mainly due to the low annual rainfall (1200 mm / year) and prolonged periods of drought extending over 7 months, heavy incidence of a deadly disease termed the Lethal Yellowing (LYD), which has taken toll of over 8 million palms or 38% of the coconut plantations, serious pest occurrences such as coconut beetle, coried bug, coconut mite and new pest invasions such as white fly, lack of expertise and inadequate facilities

for coconut processing and value addition and ineffective extension services resulting in poor plantation management. The team proposed recommendations to revive their coconut industry.

Collaboration with the International Centre for Research in Agroforestry (ICRAF)



The planned activities under the MOU signed with the World Agroforestry Centre (WAC), Nairobi, Kenya in 2011 progressed satisfactorily. The agroforestry trials established at the Mankandura Research Centre were maintained and data collection continued. WAC also made a proposal to the Sri Lanka government through the Ministry of Coconut Development and Janatha Estate Development on the possibility of establishing an international resource Centre for the development of island nations. Dr. Tony Simons, DG, and senior officials of the WAC held discussions with Hon. Chamal Rajapaksa, Speaker of the House of Representatives, Hon. Basil Rajapaksa, Minister of Economic Development, Hon. Mahinda Yapa Abeywardena, Minister of Agriculture and Hon. Jagath Pushpakumara, Minister of Coconut Development and Janatha Estate Development on the feasibility of setting up of this institute in Sri Lanka.

Local Collaborations

MOU signed with KCW Ceylon for coconut water research



CRI entered into an agreement with KCW Ceylon Pvt. LTD (KCW) to establish a framework for co-operation in developing appropriate technologies for coconut water as a natural beverage. Under the MoU, KCW will establish a laboratory at CRI and use the premises for a term of 5 years for coconut water research and development exchanging expertise between CRI and KCW. Further they will engage training in production, processing and marketing and facilitating and promoting research and development with other parties where necessary. KCW will also undertake the responsibility of making improvements in infra-structure, equipment and other facilities of the laboratory by investing Rs. 1 million every year. The laboratory will be used for research studies approved by a joint committee comprising six members appointed evenly by CRI and KCW. Prof. H.P.M. Gunasena, Chairman, CRB and Mr. Graham Hoedt, duly authorized representative of KCW Ceylon Pvt. Ltd signed the MoU on behalf of the two parties.

CRI signed a Non-disclosure agreement with SLINTEC to develop nanofertilizer



A non-disclosure agreement was signed between CRI and SLINTEC to conduct collaborative research to recommend a nanomaterial based slow release potassium fertilizer mixture for use in coconut lands to supply potassium to the palm uninterruptedly over a long period of time.

Planting seedlings at Kapruka seed garden under the MOU with Chilaw Plantations Ltd.



Planting dwarf green seedlings, the mother palm of Kapruwana (Dwarf Green x San Ramon) by the Genetics and Plant Breeding Division made steady progress at the proposed Kapruka seed garden in the Kinyama Estate of Chilaw Plantations Ltd. The total extent of dwarf green is 70 ac. Around 170 ac surrounding the dwarf green planted area will be planted by San Ramon, the pollen donor. During the year 5855 of Green

dwarf and San Ramon seedlings with nearly 90% completion of the total planting target.

Collaborative research with University of Kelaniya on health benefits of coconut oil



The collaborative project between CRI and the University of Kelaniya marked its 2nd year. All planned studies progressed satisfactorily.

The University conducted studies on the relationship between consumption pattern and cardiovascular mortality in Sri Lanka, identification of coconut consumption pattern related to income and expenditure, dietary intake and lipid levels of a community dependent on coconut oil and comparison of urban and a rural community in relation to knowledge, attitude and practice of coconut consumption. Data collection of surveys was completed. Animal study for determining blood levels of rats fed with different diets of coconut and coconut oil commenced.

For the determination of health benefits of coconut oil, a rat model was developed.

Determination of the fatty acid profile of the different types of coconut oil (Virgin coconut oil, White coconut oil and Refined, Bleached and Deodorized coconut oil)

was started. Sensory analysis of the oils was done using virgin coconut oil, white coconut oil and commercially available vegetable oil to investigate the preference of oil types among public.

Development of an eco-friendly kiln jointly with ISB and Haycarb

The collaborative research project undertaken by the Coconut Processing Research Division of CRI, ISB and Haycarb to develop an eco-friendly kiln for production

of high quality charcoal progressed successfully. The new charcoal kiln was designed by CRI and ISB and constructed at the premises of a private charcoal producer at Walpita. The first fire was set on 11th September 2013 and the result was promising as charcoal was of good quality. The combustion was controlled and emission of greenhouse gases was minimal. The emissions are now being analyzed as a prerequisite to transferring the technology to other kiln owners who had to close down their mills due to harmful emissions.



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PROVISION OF SERVICES FOR RESEARCH & DEVELOPMENT

BIOMETRICAL SERVICES

Biometry Unit

Biometry Unit provided 55 Biometrical consultancies on designing field experiments and analyzing data were provided to research staff of different divisions of CRI.

LIBRARY SERVICES

Library

- a. The library initiated converting into a digital library to digitizing its contents of coconut literature under the National Science Foundation (NSF) project during the year. Nearly 140,000 pages of coconut literature including CRI staff publications from 1929 to 2004 and other publications published by the CRI were digitized. These full text articles, including coconut Bulletin, Ceylon Coconut Quarterly and Ceylon Planters' Review, can be accessed online via URL// www.nsf.ac.lk/institutional repositories.
- b. Four electronic journals were subscribed in this year.

COMPUTING & NETWORK ADMINISTRATION SERVICES

Establishment Unit

During this year following services were provided by Network Administrator.

- a. Designed a database application for Estates Management Division to track all estate related expenses, income & crop. The software was installed in all estates where a clerk would enter all data to retrieve timely report for higher management references.
- b. Established computer repair and maintenance service at the CRI by timely documenting the reported fault by way of a computer history record and fault diagnosis by technician and its resolve.
- c. A network connectivity for video conferencing among other institutes under the Ministry of Janatha Estate/ Development online.

ENGINEERING SERVICES

Establishment Unit

During this year following maintenance and services were offered by the Engineering Unit.

- a. A garage was constructed to shelter all vehicles of the CRI under one roof at a cost of Rs. 4.55mn.
- b. Ice cream hut was constructed at the CRI Technology Park premises at a cost of Rs. 0.5 mn.
- c. Construction of General Stores at a cost of Rs.9.0 mn was commenced.

ESTATE MANAGEMENT ACTIVITES



ESTATE MANAGEMENT ACTIVITES

Coconut Research Institute owns ten estates managed by the Estate Management Division. It comprises of three Genetic Resource Centers (GRC) and seven Research Centres (RC) situated in various parts of the country. During the year they were satisfactorily maintained as a self-financial unit, except Middeniya RS, which is a relatively new addition. The total extent of all estates is 3148 ac. Out of which 1,980 acres are GRC and 1,168 acres are RS and model gardens.

The primary objective of the division is to maintain the estates to produce high quality seed nuts for the national seedling requirement and facilitate research divisions of CRI to carry out field research under various agro ecological regions, different soil types and with different coconut cultivars. The facilities provided to the research included labor, land, materials and

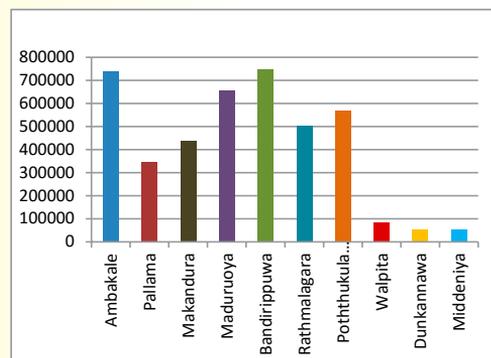
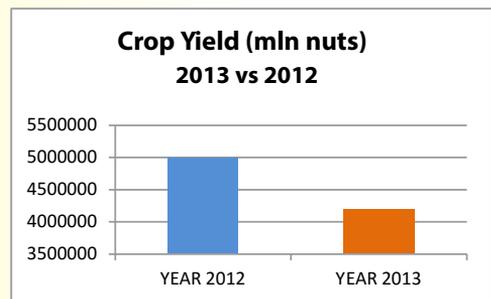
management of pests and disease. Further, live demonstrations were maintained for dissemination of new technologies to scientists, plantation managers, coconut growers, university students, and school children and for other visitors. In addition, the rest of the land of each estate was maintained satisfactorily with over 90% palms fertilized and other agronomic practices to obtain high profits.

The prolonged drought prevailed in 2012 affected the crop yields in 2013. The yield in 2013 was nearly 4.2 million nuts, which was about 0.8 million nuts short of 2012. The estates in the dry zone was worst affected by the drought. Majority of these nuts were sold through the Coconut Development Authority auction.

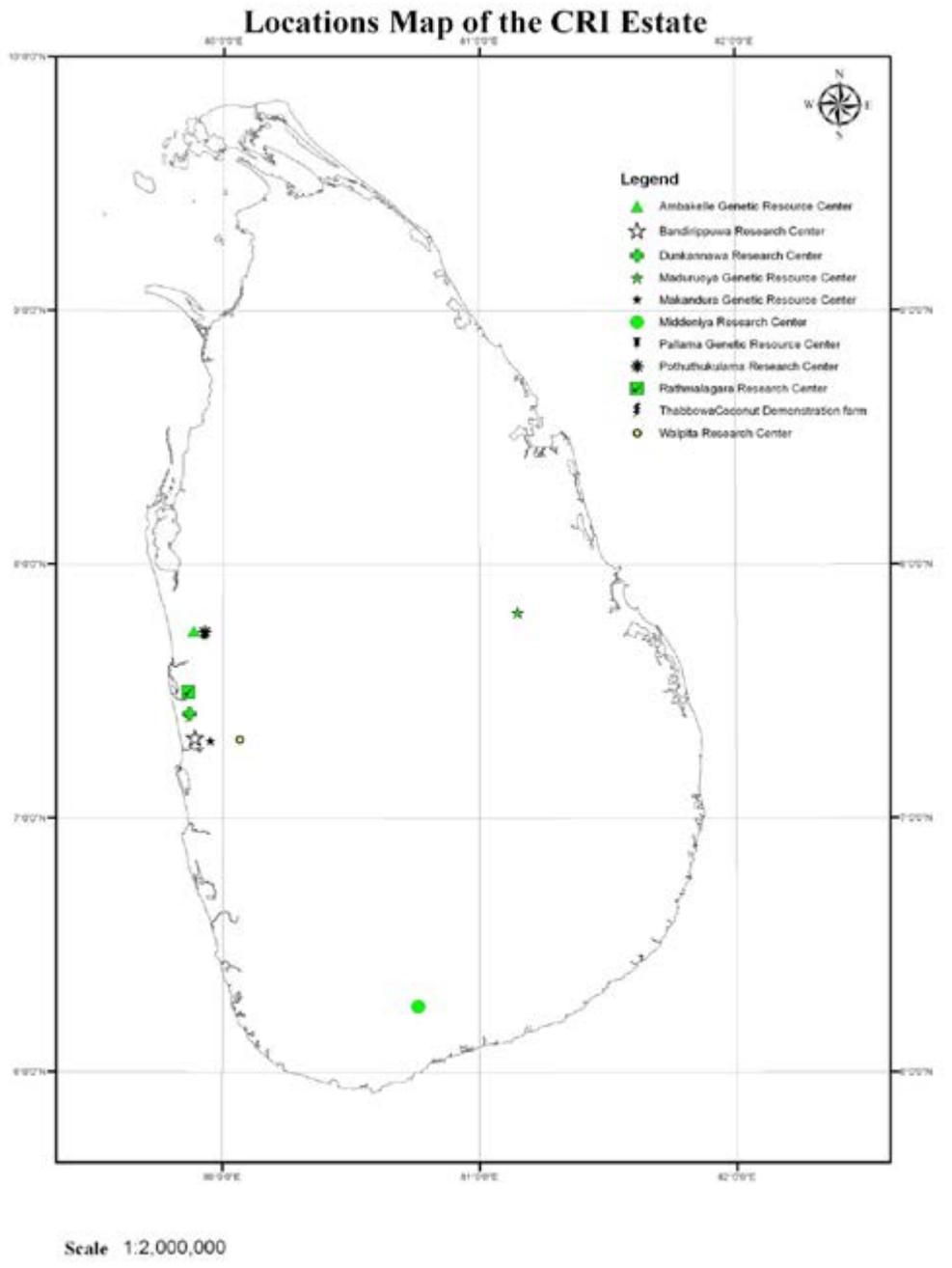
For the first time a bonus was given to permanent staff and laborers of the estates, which made profits during the year.



Distribution of bonus to estate employees



Yield (mln nuts) in different estates in 2013



Ambakelle Genetic Resource Centre

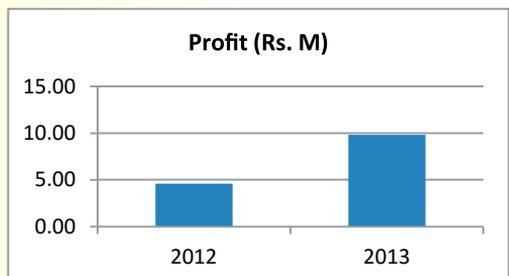
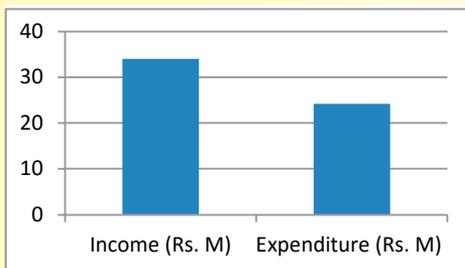
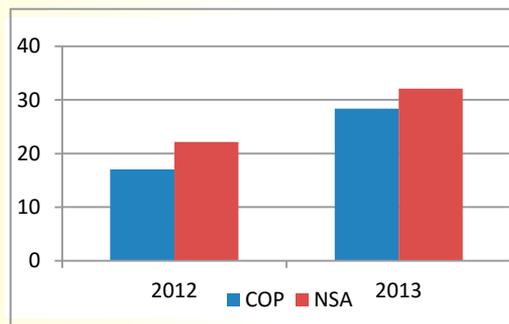
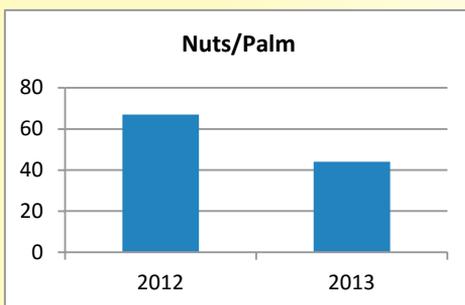
Superintendent - W.A. Herald Upali



Situated in Pallama (Puttalam district; North-western Province) in the Intermediate Dry Zone, Ambakelle Genetic Resource Centre has an extent of 1185 ac. Being an Isolated Seed Garden, the main function of the estate is to produce high quality hybrid seed nuts to supply the national seedling requirement. During 2013, 478,278 and 74,651 seed nuts of CRIC 60 and CRIC 65 have been produced by the estate respectively. There were 16,808 bearing palms and 2133 non-bearing palms. A 1150mm rainfall was experienced by the estate during the year.

A special block was maintained to produce CRISL 65 (DxT) to cater the extensive home garden development program. A new hand pollination program was initiated to produce "Kapruwana" (DG x San Raman Tall) and produced 3734 seed nuts. The activities of the GRC were supervised by the Genetics and Plant Breeding Division of CRI.

Although the COP, NSA and nuts per palm was less than 2012, the profit of the estate has been doubled in 2013.



Pallama Genetic Resource Centre

Magurankadawala, Pallama.

Superintendent - D.M.I.S.K. Dewameththa (BSc. Agric.)



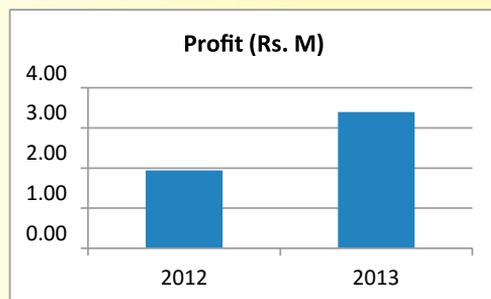
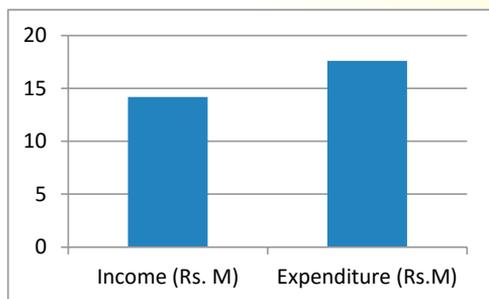
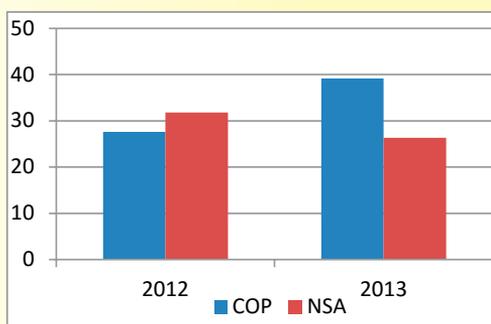
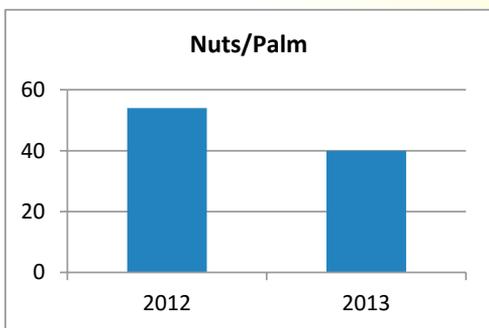
Pallama Genetic Resource Centre (PGRC) with an extent of 623 ac is situated in Puttlam district (North-western Province) in the Intermediate Dry Zone. The plantation consisted of 8798 bearing palms and 15,178 non-bearing palms.

The main function of this estate is to produce seed nuts of the variety CRISL 98 (TxSR), which is produced by PGRC only. In 2013, 26,270 TSR seed nuts were issued to coconut nurseries. In addition PGRC

produced small quantities of seed nuts of recently improved varieties. A total of 154, 870 and 4036 seed nuts of Kapruwana, Kapsetha and Kapsuvaya were produced by hand pollination respectively.

The most recent and the largest collection of coconut germplasm was established at field numbers 07 and 10 of PGRC. This collection includes different tall accessions, new varieties and indigenous varieties and therefore is the most diverse ex-situ field gene bank of coconut. Thirty ac. area at PGRC is dedicated to a Gliricidia plantation under coconut producing fuel wood at a commercial scale.

During the year it received only a little more than 1000mm of rainfall greatly affecting the nut yield causing a higher COP and loss of profit in 2013 than 2012.



Maduruoya Genetic Resource Centre (MOGRC)

Bogaswewa, Kasyapapura

Asst. Superintendent - T.I. Mithrarathne (BSc. Agric.)

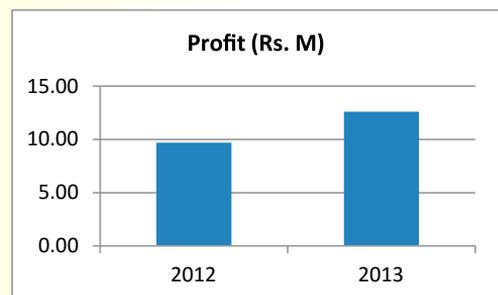
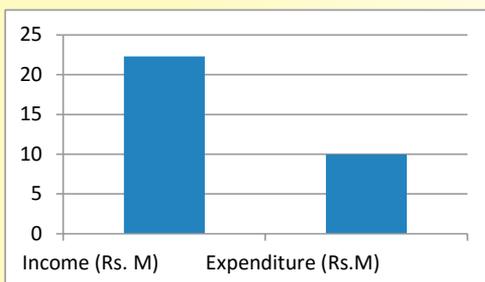
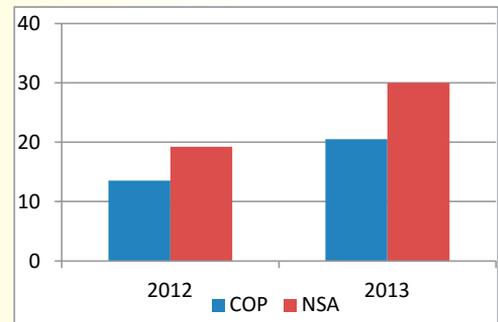
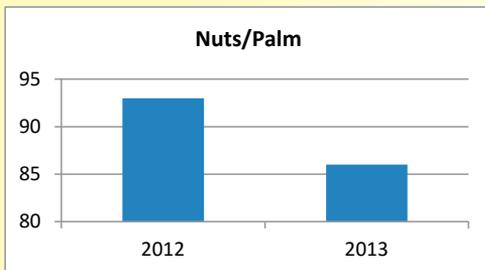


Maduruoya Genetic Resource Centre situated in the Dry Zone (Polonnaruwa district) has an extent of 86.5 ha. The plantation is irrigated by surface irrigation using water distributed by the Mahaweli scheme. An annual rainfall of 1615mm has been received in 2013.

The main function of the centre is to produce high quality seed nuts of CRIC 60

to supply for the national requirement. In addition, several research fields are also been maintained by the estate. There had been 7638 bearing and only 180 non-bearing palms in 2013.

Although, the nuts/palm has declined in 2013, the estate has made a profit during the year.



Bandirippuwa Research Centre (BRC)

Bandirippuwa, Lunuwila

Superintendent - W.M.U. Rathnayake

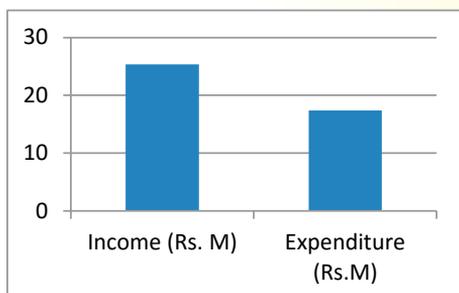
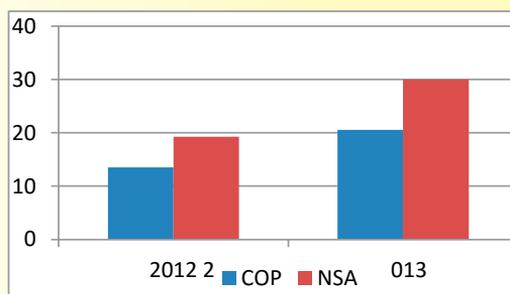
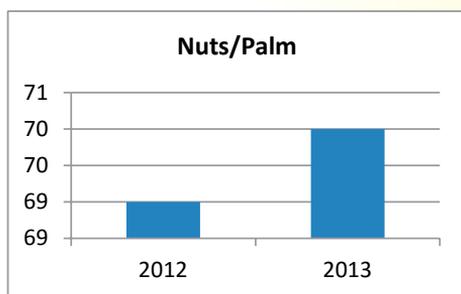


The 140 ha Bandirippuwa Research Centre situated in Puttalam District (North-western Province) in the Intermediate Wet Zone house the Head Quarters of the Coconut Research Institute.

A number of research trials were conducted at BRC to which the estate provided maintenance and other facilities. The ex-situ field gene bank for imported exotic coconut genetic resources is established at BRC. This gene bank currently holds 20 coconut varieties imported from India, Papua New

Guinea and Ivory Coast. It also consists of a collection of 'dikiri' coconut palms, plants produced from embryo culture technology and a demonstration block of different intercropping models. A dairy was maintained and toddy tapping was done from which treacle was produced for sale.

It had 10,639 bearing palms and 2826 young palms. During the year 1777mm of rainfall was received by BRC. Although a higher COP was recorded, a higher profit has been also made in 2013.



Makandura Research Centre (MRC)

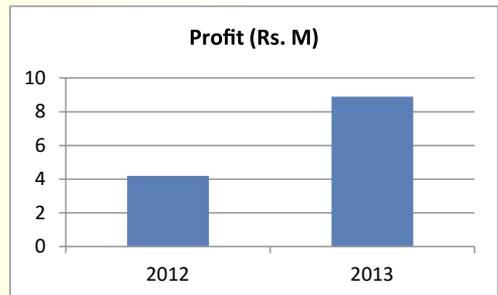
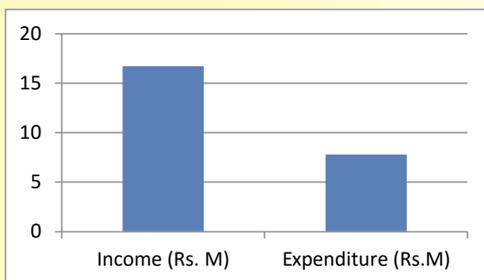
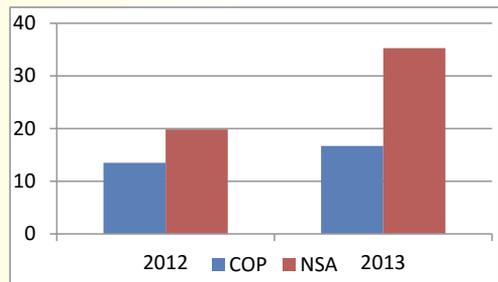
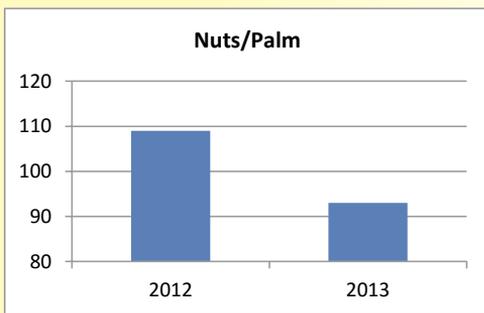
Makandura, Gonawila

Superintendent - D.P.S.K. Hettiarachchi



Makandura Research Centre with an extent of 139 ac is situated in Kurunegala District (North-western Province) belonging to Intermediate Wet Zone. The estate is maintained as a live demonstration of intercropping and agro-forestry system and also a model coconut garden.

The estate has 4700 bearing palms and 2240 non-bearing palms. During the year a little above 1000mm rainfall has been received. Although there had been a decline in the nuts/palm in 2013, the profit gained by the estate was higher than 2012. Also, the highest nuts/palm has been recorded in MRS out of all estates.



Rathmalagara Research Centre (RRC)

Panirendawa, Madampe

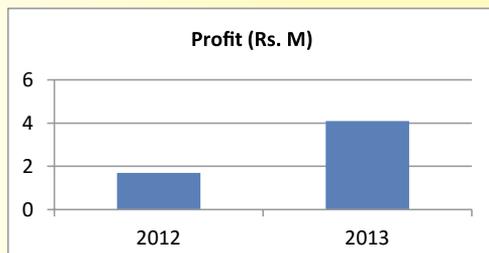
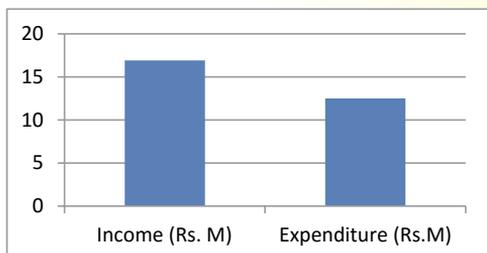
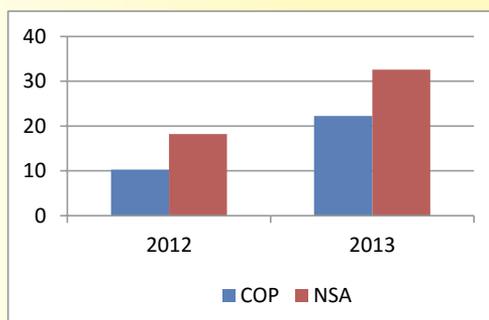
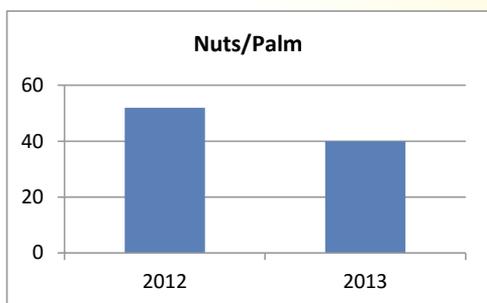
Superintendent - G.B.A. Wijesekara



Rathmalagara Research Centre with an extent of 110.44 ha. is situated in the Puttalam district (North-western Province) in the Intermediate Dry Zone. The estate mainly supports field research studies of various divisions of the Institute and maintains demonstrations on animal farming systems including poultry, goat and cattle. In addition bio-energy generating plant

is also installed. These demonstrations were supervised by the Agronomy Division of CRI is a popular training material among coconut growers, school children, students and many other visitors.

In 2013 the estate had 12,526 bearing palms and 984 non-bearing palms. The estate received a rainfall of 1200mm during the year. RRC has nearly doubled its profit in 2013 compared to 2012.



Poththukulama Research Centre (PRC)

Pallama

Officer in Charge - T.M.P.A.K. Thilakarathne (BSc. Agric.)

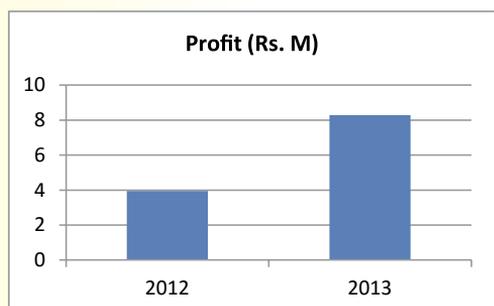
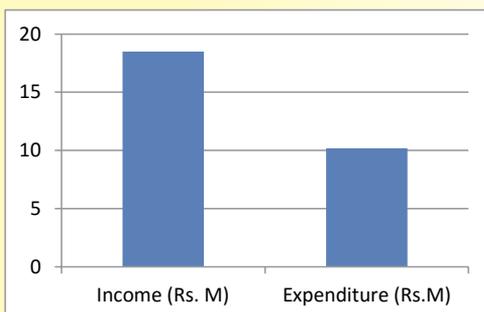
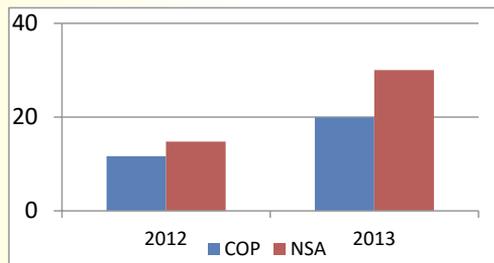
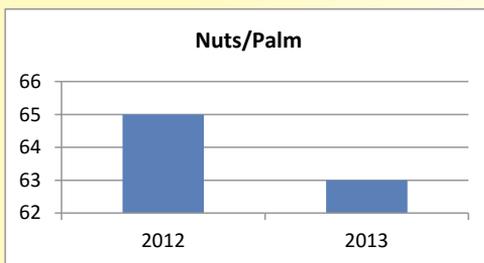


Poththukulama Research Centre has an extent of 203ha. The estate situated in the Puttalam District belongs to the Intermediate Dry Zone.

PRC maintains few field experiments and accommodates the largest and the oldest collection of tall coconut germplasm. This is a well established ex-situ field gene bank comprising of 22 tall coconut accessions and 02 exotic dwarf coconut accessions. A demonstration block of 12 different coconut

hybrids has also been established at PRC. These hybrids include recommended hybrids as well as the experimental crosses which are being evaluated in different multilocational field experiments.

The estate consisted of 8943 bearing palms and 1269 non-bearing palms. It received a low rainfall of 911 mm. during the year resulting in lower nuts/palm than the previous year. However, PRC earned a profit during 2013.



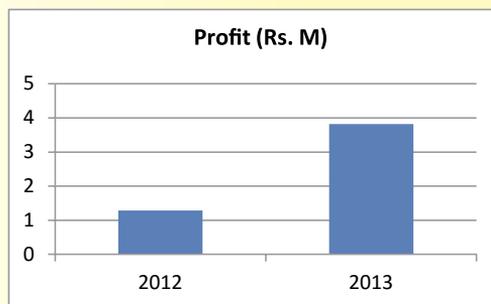
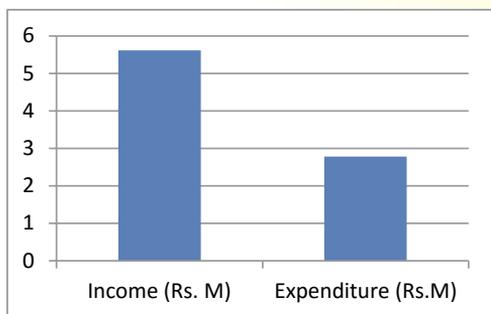
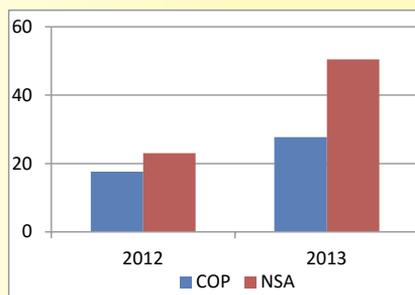
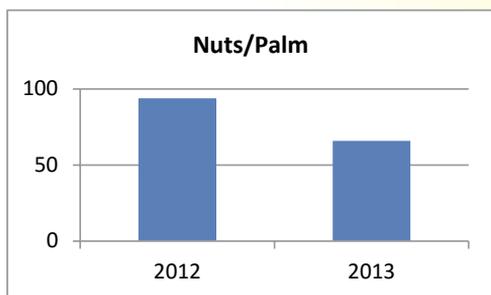
Walpita Research Centre (WRC)

Walpita

Officer in Charge - I.A.N. Hemasiri

Walpita Research Centre with an extent of 44ac in the Gampaha district is the only estate of CRI located in the wet zone. It too supports field research of the Genetics and Plant Breeding Division. A single population of a cross between Sri Lanka Red Dwarf and Sri Lanka tall is established in an area of 8 acres in Walpita estate and this is shown to be an early flowering and profusely bearing block of coconut.

The estate consisted of 1870 bearing palms and 747 non-bearing palms. Majority of adult palms are over 60 years old, hence complete under planting programme is in progress. During 2013 the estate received a rainfall of 1734mm. The WRC recorded a profit of nearly Rs. 3 million in 2013.



Middeniya Research Centre (MRC)

Middeniya

Asst. Superintendent - Nuwan Menaka



Middeniya Research Centre was a recent addition to the pool of CRI estates. Located in the mini coconut triangle of Hambantota district in the Intermediate Dry Zone, it has an extent of 75ha. A total of 2839 coconut seedlings of different cultivars were established and 65% reached flowering stage up to now. This estate too maintains research of Plant Physiology and Genetics and Plant Breeding Divisions. An ex-situ field gene bank comprising of several tall

accessions and a collection from Galle, Unawatuna area is plated at Middeniya. Also a field evaluation experiment of experimental exotic crosses has been established at Middeniya estate. Both the populations have started flowering and bearing. It experienced a rainfall of 117mm during the year. The MRC has conducted various demonstrations and extension programs for the growers in the southern Province in 2013.

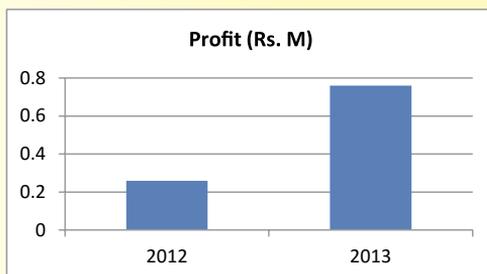
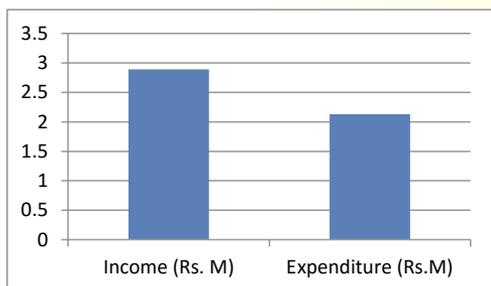
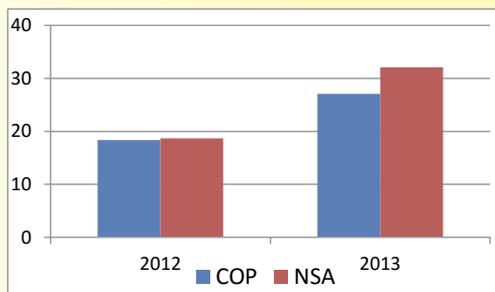
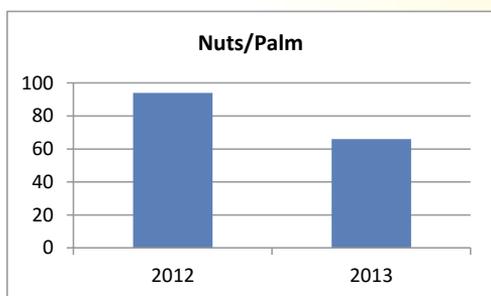
Dunkannawa Research Centre (DRC)

Dunkannawa, Naththandiya

Officer in Charge - W.L. Thushara & S.A. Sudath Kumara

Dunkannawa Research Centre has an extent of 25ha and located in (Puttalam District) the Intermediate Dry Zone. No research studies have been conducted in the estate during 2013.

During 2013 only 850mm of rainfall was received by the estate. There were 991 bearing palms and 130 non-bearing palms and the nuts/palm was 53 against 68 in 2012.



STAFF





STAFF

ACHIEVEMENTS

Awards

K.V.N.N. Jayalath won the award for the “Best Postgraduate Research Project Award” at the Research Project Competition 2013 organized by the Institute of Applied Statistics Sri Lanka, for her postgraduate research on “Effects of world market prices on the coconut sector in Sri Lanka: An analysis of price transmission elasticities and endogenous trade Policy”.

Research Grants

Dr. L. Perera received a research grant of Rs. 4.12Mn from National Research Council of Sri Lanka for “Investigation of the cause of tapering disorder of coconut in Sri Lanka and molecular characterization of the pathogen” (Grant No. NRC/13/31) 2013-2016

Dr. C.S. Herath received a research grant of Rs. 0.25Mn from National Research Council of Sri Lanka for “Assess the possibility of reducing fertilizer subsidy by enhancing other influential factors” (Grant No. NRC/13/159) 2013-2015.

Dr. S. Ranasinghe received a competitive research grant worth of Rs 3.0 Mn from National Research Council (NRC) for conducting a project on ‘Determination of the effects of heat and water stress on fertility of female and male reproductive organs of coconut (*Cocos nucifera* L.). (Grant No. NRC/13/32), 2013-2016.

Conferences, workshops held

An international conference on ‘climate change impacts and adaptations on food and environment security’ was organized in partnership with the Ministry of Environment and Renewable Energy and the Regional Office of the World Agroforestry Centre, New Delhi, India, 30-31 July, Colombo.

A workshop on “Coconut Sector Performance: Issues and Opportunities” was organized by the Agric. Economics and Agribusiness Management Division for the stakeholders in the coconut sector on 12th December, 2013.

Postgraduate Degrees Completed

Dr. H.M.I.K. Herath successfully completed PhD degree at University of Massey, New Zealand.

Post graduate studies undertaken

Mr. H.C Mendis, Research Officer, Plant Physiology Division is reading for Ph.D. degree at the Florida State University, USA from 11 August 2009.

Ms. S. C. Somasiri, Research Officer, Agronomy Division is reading for Ph.D. degree at the Massey University, New Zealand from February 2011.

Ms. K.P. Waidyaratne, Research Officer, Biometry Unit reading for Ph.D. degree at the Lincoln University, New Zealand from 14 March 2011

Mr. A.D.N.T. Kumara, Research Officer, Crop Protection Division reading for Ph.D. degree at the University of Agricultural Sciences, GKVK, Bangalore, Karnataka, India from 21 August 2012.

Mr. M.G.M.K. Meegahakumbura, Research Officer, Genetics & Plant Breeding Division reading for Ph.D. degree at the Kunming Institute of Botany, Chinese Academy of Sciences, Kunming, China from 10 September 2012.

Ms. P.M.E.K. Pathiraja, Research Officer, Agricultural Economics & Agribusiness Management Division reading for Ph.D. degree at the University of Melbourne, Australia from 20 December 2012.

Ms. H.D.M.A.C. Dissanayake, Research Officer reading for PhD degree at the University of Tsukuba, Japan with effect from 1 April 2013.

Ms. M.K.F. Nadheesha, Research Officer, Soils & Plant Nutrition Division continued her postgraduate studies leading to M.Sc degree at the Eastern Illinois University, USA from January 2012.

Ms. N.I. Suwandhrathne, Research Officer, Crop Protection Division continued her postgraduate studies leading to M.Sc degree at the Post Graduate Institute of Science, Peradeniya from 6 April 2010.

Ms. J.A.K.M. Fernando, Assistant Mechanical Engineer continued her postgraduate studies leading to M.Phil degree at the University of Moratuwa from 05 January 2012.

Local training programmes (More than 7 days)

Mr. R.M.U. Chandranath, Accountant follows Masters Degree in Business Administration at Wayamba University of Sri Lanka.

Dr. L.C.P. Fernando, Additional Director follows one year Postgraduate Diploma in Public Administration 2013/2014 at University of Colombo.

Mr. H.M.N.B. Herath, Senior Technical Officer, Genetics & Plant Breeding Division and Mr. W. Wimalasiri, Lab & Field Attendant, Soils & Plant Nutrition Division followed one year National Diploma in Plantation Management at National Institute of Plantation Management.

Overseas trainings

Dr. N. S. Aratchige obtained three week training on vector taxonomy and molecular techniques on insects at the University of Agricultural Sciences and the National Bureau of Agriculturally Important Insects, Bangalore, India from 17 March – 06 April, 2013 under the FAO-TEC project on Weligama Coconut Leaf Wilt Disease.

Dr. L. Perera participated at the First International Barcode of Life Conference and International Training Course on DNA Barcoding Informatics and Laboratory protocol from 25 October – 08 November, 2013 in Kunming, China

Dr. N.P.A.D. Nainanayake attended a training workshop on CIRAS-2 Portable Photosynthesis system at the PP Systems, USA from 20 to 27 January 2013.

Dr. H.T.R. Wijesekara obtained three week training on molecular diagnosis

of phytoplasma at Central Plantation Crops Research Institute Headquarters, Kasaragod, Kerala, India from 21 January – 09 February, 2013 under the FAO-TEC project on Weligama Coconut Leaf Wilt Disease.

Served in Committees

Dr. N. S Aratchige served as a member of the Pesticides sub-committee of the Department of Agriculture

Dr. L. C. P. Fernando served as a member of the Pesticide Technical Committee of the Department of Agriculture

Dr. H A J Gunathilake served as a committee member, Export Development Board of Sri Lanka

Dr. H A J Gunathilake served a a Board of Directors, National Institute of Plantation Management

Dr. H A J Gunathilake served as a Board of Director, Post Graduate Institute of Agriculture, University of Peradeniya

Dr. S. Idirisinghe served as a member of the National Committee on National Agriculture Census, 2014 of the Department of Agriculture

Dr. S. Idirisinghe served as a Committee Member of the National Committee on Socio Economics and Policy Analysis, Sri Lanka Council for Agricultural Research Policy

Dr. L. Perera served as the Chairman of the National Committee of Plant Breeding of the SLCARP.

Dr. L. Perera served as a committee

member of the National Committee on Biotechnology of the NSF.

Dr. L. Perera and Mr. R Jayathilake served as committee members for the National Seed Production Committee of the Ministry of Coconut Development and Janatha Estate Development.

Dr. L. Perera served as the Country Representative, International Coconut Genetic Resources Network (COGENT) of the Bioversity International, 2012-2014.

Dr. L. Perera served as the elected Chairman of South Asia & Middle East Subnet Work of International Coconut Genetic Resources Network (COGENT) of the Bioversity International, 2012-2014.

Dr. L. Perera served as member in drafting the “National Biotechnology Council (NBC) Act”. Prepared by the National Committee on Biotechnology, NSF, Sri Lanka

Dr. L. Perera served as member, Scientific Advisory Committee, Tea Research Institute, Sri Lanka (2013)

Dr. S.A.C.N. Perera served as a member in the International Thematic Action Group (ITAG) of the Bioversity International on coconut Genomics.

Dr. S.A.C.N. Perera served as the chairperson of the National Committee in Biotechnology of SLCARP.

Dr. S.A.C.N. Perera served as a member of the National sub-committee on Caryota products.

Dr. H. T. R. Wijesekara served as a member of the National Plant Protection Committee of the SLCARP.

Dr. V. Vidhanaarachchi served as a member of the National committee on Agricultural Biotechnology, established by CARP.

Dr. D.M.D.I.Wijebandara served as executive committee member of Soil Science Society of Sri Lanka.

Dr. C.S. Herath served as a member of the board of study of certificate course in coconut agronomy and processing of the National Institute of Plantation Management (NIPM).

Dr. N.A. Tennakoon served as a member of the committee on upgrade the laboratories in Agriculture Department, Ministry of Agriculture appointed by National Fertilizer Secretariat.

Dr. N.A. Tennakoon served as a member of the Advisory Committee on Fertilizer of the Ministry of Agriculture.

Dr. N.A. Tennakoon served as a member of the National Committee on Organic Fertilizer, Ministry of Agriculture.

Dr. N.A. Tennakoon served as a member of the National Working Group of Sustainable Organic Farming Technology, Department of Agriculture.

Dr. N.A. Tennakoon served as a member of the committee of Organic Agriculture appointed by Export Development Board, Colombo.

Dr. N.A. Tennakoon served as a member of the committee of Development & Assess the Usage of Bio Effluent in Sri Lanka appointed by the Environment Ministry.

Dr. N.A. Tennakoon served as a member of the committee of subsidy programme on organic fertilizer for coconut appointed by Ministry of Coconut Development & Janatha Estates Development.

Dr. D.M.D.I. Wijebandara served as Executive committee member of Soil Science Society of Sri Lanka.

Overseas visits

Dr. H.A.J. Gunathilake visited Central Plantation Crop Research Institute, Kerala, India on 06 April, 2013.

Dr. H.A.J. Gunathilake visited Cuba under the MOU on coconut development from 23 June – 09 July, 2013.

Dr. H.A.J. Gunathilake attended 8th International coconut conference at Mombaza, Kenya, 17-20 September 2013.

Dr. H A J Gunathilake visited Thailand as a Resource Person, Coconut Conference organized by the FAO from 30th October – 1st November 2013

Dr L.C.P.Fernando attended 8th International coconut conference at Mombaza, Kenya, 17-20 September 2013.

Dr. N.S. Aratchige was team member of the consultative visit for the development of coconut industry in Tanzania from 14 – 20 October, 2013.



ACADEMIC AND PROFESSIONAL ACHIEVEMENTS

Members in Editorial Boards

Dr. C. S. Ranasinghe served as a member of Editorial committee of the Journal of the National Institute of Plantation Management (NIPM).

Dr. L. C. P. Fernando served as a member of Editorial committee of 'Cord' journal published by the Asia and Pacific Coconut Community.

Supervision of Postgraduate students

Dr. C. S. Ranasinghe supervised M Sc research project of Ms. Jayaranjanie Sivasubramaniam, a student of Postgraduate Institute of Agriculture (PGIA), Peradeniya on 'Comparison of canopy photosynthesis of adult coconut palms and related physiological parameters of three coconut varieties under moderate water stress condition'.

Dr. C. S. Ranasinghe supervised M Phil research project of Ms. A. Amarasinghe, a student of Postgraduate Institute of Wayamba University on 'Determination of the effects of heat and water stress on fertility of female and male reproductive organs of coconut (*Cocos nucifera* L.)'.

Dr. L. Perera supervised PhD research project of Mr. Y M A M Wijerathna on "Investigation of the course of tapering disorder of coconut

in Sri Lanka and molecular characterization of the pathogen", University of Colombo

Dr. S.A.C.N. Perera supervised the M Phil research project of Ms. L. C. J. Kamaram on 'Determination of the population structure of Yellow Dwarf Coconut population'.

Dr. S.A.C.N. Perera supervised the M Phil research project of Ms. Parami Wakishta on the Evaluation of the Genetic Diversity of Finger millet Germplasm in Sri Lanka.

Dr. S.A.C.N. Perera supervised the M Phil research project of Ms. K. N. S. Perera on 'Comparative Analysis of Sri Lankan Coconut Germplasm with the Global Coconut Germplasm Data Available in the International Coconut Genetic Resources Database (CGRD)'.

Supervision of undergraduate students

Dr. N.S. Aratchige supervised the undergraduate research project of G.L.B.E. Gunethillake, undergraduate student of University of Peradeniya on "Optimizing Polymerase Chain Reaction (PCR) conditions for detection of phytoplasma in *Proutistamoesta*, a putative vector of Weligama coconut leaf wilt disease".

Dr. N.S. Aratchige supervised the undergraduate research project of U.L. Ranees a student of Uva Wellassa University

on “Identification of Plant hoppers and Leafhoppers on coconut palms affected by Weligama Coconut Leaf Wilt Disease (WCLWD) in Matara District”.

Dr. N.S. Aratchige supervised the undergraduate research project of H.A.S. Saliya on “Identification of Plant hoppers and Leafhoppers on coconut palms affected by Weligama Coconut Leaf Wilt Disease (WCLWD) in Matara District”.

Dr. N.P.A.D. Nainanayake supervised undergraduate research project of B.G.C.D.K. Mirissala, a student of UvaWellassa University of Sri Lanka on ‘Evaluating root distribution pattern of selected coconut cultivars at young stage under different climatic and soil conditions’.

Dr. S.A.C.N. Perera supervised the undergraduate research project of Ms. F.S. Suhair on ‘Evaluation of Genetic Variation of Exotic Coconuts (*Cocosnucifera* L.) using SSR Markers’.

Dr. C.S. Ranasinghe supervised undergraduate research project of B P Kadugammulla, a student of Wayamba University of Sri Lanka, Makanduraon ‘Response of stomatal characteristics of different cultivars of *Cocosnucifera* L. to environmental factors in IL_{1a} and DL₃’.

Dr. C.S. Ranasinghe supervised undergraduate research project of Ms. A S M P M Wickramasinghe, a student of Wayamba University of Sri Lanka on ‘Response of physiological parameters and leaf dry matter accumulation in different improved coconut (*Cocosnucifera* L.) cultivars to environmental conditions in IL_{1a} and DL₃’.

Dr. C.S. Ranasinghe supervised undergraduate research project of Ms. H.G.U. Rangani, a student of Rajarata University of Sri Lanka on ‘Estimation of total dry matter requirement of developing fruits of improved coconut cultivars’.

Dr. C.S. Ranasinghe supervised undergraduate research project of Ms K.G.S. Kiriwandeniya, a student of UvaWellassa University of Sri Lanka on ‘Determination of cultivar differences of heat tolerance in coconut by *in vitro* pollen germination’.

Dr. C.S. Ranasinghe supervised undergraduate research project of Ms K.A.W. Nethranjalee, a student of University of Peradeniya on ‘Possible influence of flower carbohydrates on the flower quality of coconut in response to variations in water availability prior to flower opening’.

Dr. S.H.S.Senarathne supervised a B.Sc. (Agriculture) final year research project of Miss. H.N. Dayananda at Sabaragamuwa University of Sri Lanka. The title of the project was “Feasibility of using problematic aquatic weeds in productive manner by generating vermicompost”.

Dr. S.H.S.Senarathne supervised a B.Sc. (Agriculture) final year research project of Miss. E.P.D.M Munasinghe at University of Peradeniya, Sri Lanka. The title of the project was “Identification of the Potential Use of Different Farm Animal Manure to Produce Vermi-Compost in the Coconut Triangle”.

Dr. N.S. Aratchige supervised the project of D.M.I.S.K. Dewameththa of National Institute of Plantation Management on “Identification of preferred host plants of putative vectors of Weligama coconut leaf wilt disease”

Dr. N.S. Aratchige supervised the project of J.H. Fernando of National Institute of Plantation Management on “The coconut mite and its management using predatory mites”

Dr. H.D.D. Bandupriya supervised a B.Sc. (Agriculture) final year research project on ‘Multiplication and differentiation of ovary derived callus of Coconut (*Cocos nucifera* L.) for higher embryogenic potential’ conducted by S Satharasinghe from the Department of Biotechnology, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka

Dr. H.D.D. Bandupriya supervised a B.Sc. (Agriculture) final year research project on ‘Initiation of callogenesis from unfertilized ovary explants of oil palm (*Elaeis guinensis* jacq.)’ conducted by H.M.D.M.P Herath, from the Department of Export Agriculture, Faculty of Animal Science and Export Agriculture, Uva Wellassa University

Dr. D.M.D.I. Wijebandara supervised B Sc (Environmental Conservation and Management) final year research project of Miss G A M S Gunarathna of University of Kelaniya, Sri Lanka. The title of the project was “Chemical Procedures Used to Estimation of Soil and Plant Nutrients”.

Dr. D.M.D.I. Wijebandara supervised B Sc (Plantation Management) final year research project of K. P. N. Kulasinghe of Wayamba University of Sri Lanka, Makandura. The title of the project was “Performance of Eppawela Rock Phosphate with Organic Manure as a Phosphate Source for Adult Coconut Palms in Dry Zone”.

Dr. D.M.D.I. Wijebandara supervised the industrial training programme of A.M.D. Tharanga, B.Sc. (Special) degree in Chemistry from Department of Chemistry, Faculty of Science, University of Kelaniya, Sri Lanka. The title of the programme was the “Chemical Analysis of Soil”.

Dr. D.M.D.I. Wijebandara supervised the industrial training programme of G.A.M.S. Gunarathna, B.Sc. (Special) degree in Zoology from Department of Zoology, Faculty of Science, University of Kelaniya, Sri Lanka. The title of the programme was the “Analytical methods used for coconut growing soils and coconut leaf.

Dr. D.M.D.I. Wijebandara supervised the final year research project of K.P.N. Kulasinghe, Faculty of Plantation Management, Wayamba University of Sri Lanka, Makandura. The title of the project was the “Performance of Eppawela Rock Phosphate with organic manure as a phosphate source for adult coconut palms in Dry Zone”.

Served as referees

Dr. S.A.C.N. Perera served as a referee for the International Herald Journals.

Dr. C.S. Ranasinghe served as a referee for the Agroforestry Systems (Springer) and Tropical Agriculture (University of Peradeniya).

Dr. C.S. Herath served as a referee for the International Journal of Agricultural Policy and Research to review the manuscript “Dairy Technology Adoption and Impact: The Case of Smallholder Dairy Commercialization Programme”.

Dr. C.S. Herath served as a referee for the Journal of Agricultural Science and Technology to review the manuscript “The Path Analysis of Effective Factors on Ideological Attitude and Behavior of Farmers in Sustainable Usage of Water (Case Study: Marvdasht Region of Fara Province)”.

Served as visiting lecturers

Dr.N.S. Aratchige served as a visiting lecturer of Latex and Palm Technology degree course of UvaWellassa University.

Dr.H.D.D. Bandupriya served as a visiting lecturer at the Department of Aquaculture Fisheries, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka.

Dr. A. Nainanayake served as visiting lecturer of Latex and Palm Technology degree course of Uva Wellassa University.

Dr. L. Perera and Dr. S.A.C.N. Perera served as visiting lecturer for the BSc undergraduate course on Genetic Improvement of Perennial Crops (PLT 311-2) at the Uva Wellassa University of Sri Lanka

Dr. S.A.C.N. Perera served as a visiting lecturer at the Department of Botany of the University of Sri Jayawardenepura for the course on Plant Breeding (PBT 462).

Dr.V. Vidhanaarachchi served as a visiting lecturer at the Department of Biotechnology, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka.

Dr. H.T.R. Wijesekara served as a visiting lecturer of Latex and Palm Technology degree course of UvaWellassa University.

Dr. D. M. D. I. Wijebandara served as visiting

lecturer of Latex and Palm Technology degree course on Coconut Growing Soils and Landsuitability Classification, Nutrient Requirments of Coconut, Inorganic and Organic Fertilizer Recommendations for Coconut at the Uva Wellassa University of Sri Lanka.

Other academic activities

Dr. A. Nainanayake served as a member of panel of judges of the session on Plantation Management at the 12th AGRES of the Wayamba University of Sri Lanka held on 30th May 2013.

Dr. L. Perera served as an evaluator for the SLCARP to evaluate the research proposals for funding and for evaluation of project progress reports and presentations.

Dr. L. Perera served as member of the research panel of the National Science Foundation to evaluate the research proposals and progress reports submitted for the NSH research grants calls.

Dr. S.A.C. N. Perera acted as an external examiner of the M Phil viva-voce examination of Mr. K. K. Liyange, PG student of PGIA for the defense of the M phil thesis titled ' Molecular and morphological evaluation of Hevea clones in Sri Lanka.

Dr. C.S. Ranasinghe acted as an external examiner of the PhD viva-voce examination of Mr. W. M. P. S. B Wahala, a PG student of University of Sri Jayawardenepura, for the defense of the thesis titled 'Determination of the biomass production and carbon sequestration capacity of wet-zone forests in Sri Lanka'.

Dr. C.S. Ranasinghe acted as an external examiner of the M Sc viva-voce examination

of Ms M. N. F. Sakeena, a PG student of University of Colombo, for the defense of the thesis titled 'Agricultural vulnerability and adaptations to climate change'.

Dr. C.S. Ranasinghe served as an evaluator for the National Science Foundation (NSF) to evaluate the research proposals for funding.

H.A.J. Gunathilake, Presented a Paper on a Coconut Based Farming Systems and Economics of CBFS.

H.A.J. Gunathilake, Presented a Paper on "Coconut Sector in Sri Lanka: Its performance and Key Development Issues at the Workshop on Coconut Sector Performance: Issues and Opportunities on 12 December, 2013 at the Coconut Research Institute.

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G P K Madhusanka

Office Attendant

J K Jensus Perera

ACCOUNTS UNIT

Accountant

R M U Chandranath, B.Sc [Management (Public)], PgD (Public Administration),
Fellow of APFA

Senior Management Assistant (Book Keeping)

S M Sirisoma

Senior Management Assistant (Accounting)

Mrs. A S M S Abeywickrama

Management Assistants (Book Keeping)

Miss. R M L N Rathnayake, AAT

A H M J S Abeyrathne, HNDBS

Miss. J M S V Perera, B.Sc (Business Adm.)

Mrs. W D P Fernando, AAT

W S P C Fernando

Management Assistant (Accounting)

Mrs. W A N K Wijesinghe

Management Assistant (Shroff)

Mrs. R D S Priyadarshani, AAT

Senior Management Assistant (Auditing)

M R U Attanayake

Office Attendants

P K C Sampath

R K S Wimalasiri

K A A Kumara

ENGINEERING UNIT

Resident Engineer

K N A S Perera, NDT (Mech-Automobile Eng.)

Work Superintendent

A L D K Amarasinghe, Dip. (Eng. Science),
NDES (Civil)

Senior Technological Officer (Mechanical)

R Vithanage

Technological Officer (Civil)

P S Senevirathne, ATD (Civil Engineering)

Technical Officer (Electrcal)

A C Senevirathna –NDES

Senior Draughtsman

Mrs. R M S Ratnayake

Management Assistant

M Somasiri

Miss. P P D T N Dynicious

Senior Mason

W M Dhanapala

Senior Carpenter

A A K Amarasinghe

Senior Motor Mechanic

R M S G Rathnayaka

Electrician

K H A Chandrasiri

J R C R Perera

W A S S Weerasinghe

P D Perera

Tinker

C M S F Leslipulle

Electrical Helper

H M N Jayarathna

Building Helper

K J J Appuhamy

Linesman

S R P Jayamanna

Micanical Helper

M T Wimalasena

General Worker

E M U Nishantha

Lab & Field Attendant

W M R Sisira

ESTATE MANAGEMENT DIVISION

Manager (Estates)

V P M Prasantha, B.Sc (Agric)

Senior Management Assistant

W A L R Fernando

Management Assistants

Miss P D Wickramarachchi

Miss H M Mallikarachchi

Office Attendant

R P Nevil

W A T Arunasiri

BANDIRIPPUWA RESEARCH CENTER

Superintendent

W M U Ratnayake, Dip. (Plantation Management)

Senior Supervisors

A G B G Silva

A A Sirinimal

Lab & Field Attendant

H A C P Hettarachchi

Miss R M S S Rathnayaka

Driver

M C N Fernando

RATMALAGARA RESEARCH CENTRE

Superintendent

G B A Wijesekara

Supervisor

W M D R Wijesinghe

Management Assistant

D M Jayawardena

AMBAKELLE GENETICS RESOURCES CENTRE

Officer-in-Charge

W A H Upali Dip. (Plantation Management)

Senior Supervisor

M P W Fernando

Driver

M I I Mirando

Management Assistant

H M Podiratne

Senior Pollination Labour

J A D N Stanly

Lab & Field Attendants

R H A M Ruparathna

Watcher

D M L Jayarathna

MADURUOYA GENETICS RESOURCE CENTRE

Assistant Superintendent

T I Mithrarathne, B.Sc (Agric)

Lab & Field Attendant

H J M P Nilanga

H A A S Kumara

Office Attendant

W G Mallika Manike

MIDDENIYA RESEARCH CENTRE

Field Officer(Con)

N Menaka

DUNKANNAWA RESEARCH CENTRE

Field Officer(Con)

S A S Kumara

WALPITA RESEARCH CENTRE

Superintendent

I A N Hemasiri

Office Attendant

M P S Abeytissa

POTHTHUKULAMA RESEARCH CENTRE

Assistant Superintendent

T M P A K Thilakaratne, B.Sc (Agric)

Management Assistant

R M N K Ratnayaka

Lab & Field Attendant

J M C P Jayamanna

Lab & Field Assistant

W N M Fernando

Watcher

W H M Wickramasinghe

MAKANDURA GENETICS RESOURCE CENTRE

Superintendent

D P S K Hettiarachchi, Dip. Agri. & EM

Supervisor

W M N G Wijayatunga

Driver

K K Piyatissa

Office Attendant

Mrs P M Kamalawathie

AM P S Abeyweera

PALLAMA GENETIC RESOURCE CENTRE

Superintendent

D M I S K Dewamethhta, B.Sc. (Agric)

Senior Supervisor

W W A P R Fernando

Lab & Filed Attendant

Mrs S A Sumanawathie

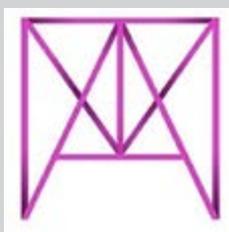
Senior Management Assistant

J A R Reginold

Watcher

J K U Abeyrathna

S M U D Sinhabahu



STAFF : RECRUITMENTS, PROMOTIONS, RETIREMENTS & DESIGNATIONS

Recruitments

Name	Designation	Date of appointment
I U H Mohotti	Assistant Estates Superintendent	01.01.2013
H T R Wijesekara	Head/ Crop Protection Division	01.01.2013
I M S K Idirisinghe	Head/Agricultural Economics Division	01.01.2013
Ms.V R M Vidhanarachchi	Head/Tissue Culture Division	01.01.2013
U T Jayamanna	Network Administrator	21.01.2013
D W Kasun Madusanka	General Worker	05.03.2013
K A M Indika	General Worker	16.04.2013
Ms. R D Shiroma	General Worker	16.04.2013
R M C Prabashana	Lab/Field Assistant	16.04.2013
Ms. H P D S W Somasiri	Lab/Field Assistant	16.04.2013
Ms. N I Suwandaratne	Research Officer	16.04.2013
Ms.W B N Prasangika	Research Officer	16.04.2013
Ms. S H K G Kumarasiri	Lab/Field Assistant	22.04.2013
Ms. B M A U Amaratunga	Lab/Field Assistant	22.04.2013
Ms. W D P Fernando	Management Assistant (Book Keeping)	20.05.2013
Ms. R A P Jayamanna	Lab/Field Attendant	20.05.2013
Ms. A M J N Arthanayaka	Lab/Field Attendant	20.05.2013
D M S Ramesh	Lab/Field Attendant	20.05.2013
L M G D Liyanage	Lab/Field Attendant	20.05.2013
J M C P Jayamanna	Lab/Field Attendant	20.05.2013
S V G C R Kumara	Research Officer	29.05.2013
A A A J Atapattu	Research Officer	03.06.2013
Ms. R Subhashini	Experimental Officer	19.06.2013
M A S Chandana	General Worker	17.06.2013
S A A Viraj	General Worker	17.06.2013
Ms. W M I K Weerapana	Technical Officer	07.08.2013
Ms. P G Scynthya	Research Officer	12.08.2013
Ms. H M S K Herath	Management Assistant	25.09.2013

Name	Designation	Date of appointment
Ms. P P D T N Dynicious	Management Assistant	25.09.2013
Ms. P D Wickramanayake	Management Assistant	25.09.2013
Ms. H M Mallikarachchi	Management Assistant	25.09.2013
G P K Madusanka	Management Assistant	25.09.2013
R M N K Ratnayaka	Management Assistant	25.09.2013
M M T Kumara	Lab/Field Attendant	07.10.2013
G A S Nuwanpriya	Lab/Field Attendant	01.10.2013
Ms. T S Wickramasingha	Technical Officer	25.11.2013

Resignations

Name	Designation	Date
S D R I Samarathunga	Field Supervisor	01.01.2013
W S Fernando	Watcher	01.03.2013
K E S P Fernando	Lab/Field Assistant	19.02.2013
B D H K Jayaratne	Lab/Field Assistant	31.01.2013
K K K C M Kodithuwakku	Lab/Field Assistant	22.02.2013
S A N B Lakmal	Lab/Field Assistant	22.02.2013
Ms. E M A Seram	Field Supervisor	31.03.2013
G I T Rupika	Technical Officer	04.04.2013
D B Wijesinghe	Research Officer	28.05.2013
W L Chinthaka	Technical Officer	07.06.2013
W B N Prasangika	Research Officer	30.06.2013
Ms. R Subashini	Experimental Officer	04.07.2013
Ms. K W K I Silva	Research Officer	12.07.2013
V G D Nayanaka	Research Officer	25.07.2013
I U H Mohotti	Asst. Superintendent	17.09.2013
M A S A Marasinghe	Lab/Field Attendant	28.10.2013
L R S Silva	Experimental Officer	24.09.2013
J M M A Jayasundara (Pending)	Officer-in-Charge/CPRD	28.10.2013

Retirements

Name	Designation	Date
W P Sirisena	Senior Driver	19.01.2013
S M Subasingha	General Worker (Mechanical Helper)	27.01.2013
Ms. S Suhair	PA To Chairman	25.03.2013
H B Perera	Lab/Field Assistant	26.03.2013
H M Kirihami	Senior Driver	26.03.2013
P M S T Fernando	General Worker (Mechanical Helper)	25.04.2013
K L Ranasingha	Lab/Field Assistant	03.02.2013
W M E G Fernando	Lab/Field Attendant	16.06.2013
B C Mendis	Lab/Field Attendant	29.06.2013
A Jayathilaka	Lab/Field Assistant	31.07.2013
R P Somasiri	Driver	08.08.2013
Ms. K C P Perera	Experimental Officer	20.08.2013
P A H N Appuhamy	Head/ Technology Transfer Division	13.11.2013
Ms. J K. Suwinitha	Lab/Field Attendant	01.12.2013
J M D T Everard	Deputy Director (Research)	20.12.2013

Transfers

Name & Designation	Place of Transfer	Date
W A S Jayathilake General Worker	Ratmalagara Research Centre to Bandirippuwa Research Centre	29.01.2013
S A Sumanawathie Lab & Field Attendant	Bandirippuwa Research Centre to Pallama Genetic Resource Centre	01.02.2013
H A C P Hettiarachchi Lab & Field Attendant	Pallama Genetic Resource Centre to Bandirippuwa Research Centre	01.02.2013
S S Rajapaksha Senior Technical Officer	Biometry Unit to Establishment Unit	07.02.2013
J A R Reginold Senior Management Assistant	Ambakelle Genetic Resource Centre to Pallama Genetic Resource Centre	02.05.2013
H M Podirathne Management Assistant	Pallama Genetic Resource Centre Ambakelle Genetic Resource Centre	02.05.2013
G D A Milroy Lab & Field Attendant	Coconut Processing Research Division to Genetics & Plant Breeding Division	01.03.2013
J H Premarathne Senior Lab & Field Attendant	Biometry Unit to Coconut Processing Research Division	01.03.2013
K K Piyatissa Driver	Bandirippuwa Research Centre to Makandura Genetic Resource Centre	03.06.2013

Name & Designation	Place of Transfer	Date
I A N Hemasiri Estate Superintendent	Engineering Unit to Walpita Research Centre	16.09.2013
R M C Prabashana Lab & Field Assistant	Oil Palm Research Division to Ratmalagara Research Centre	01.10.2013
K K A Mendis Lab/Field Attendant	Soils & Plant Nutrition Division to Establishment Division	15.10.2013
S M U D Sinhabahu Watcher	Bandiripuwā to Pallma	01.07.2013
H M D N Herath Driver	Pallama to Head office	01.08.2013
K A M Indika General Worker	Crop Protection Div. to Establishment Div.	17.6.2013
L B P Niroshan Lab & Field Attendant	Agro to Ratmalagara Estate	1.8.2013
A M P S Abeyweera Driver	Head office to Makandura Estate	26.7.2013



STATEMENT OF FINANCIAL PERFORMANCE

		2013 APPROVED BUDGET Rs.	2013 ACTUAL Rs.	2012 ACTUAL Rs.
OPERATING REVENUE				
TRANSFERS FROM OTHER GOVERNMENT ENTITIES	03	175,000,000.00	163,260,000.00	151,830,000.00
GENETIC & RESEARCH CENTER REVENUE	04	136,434,000.00	159,759,747.35	126,330,708.56
OTHER REVENUE	05	15,000,000.00	88,606,958.97	15,576,819.52
TOTAL REVENUE		<u>326,434,000.00</u>	<u>411,626,706.32</u>	<u>293,737,528.08</u>
OPERATING EXPENSES				
WAGES SALARIES AND EMPLOYEES' BENEFITS	06	136,150,000.00	130,038,985.25	132,301,723.28
SUPPLIES & CONSUMABLES USED	07	38,035,000.00	41,332,915.82	38,252,916.60
DEPRECIATION & AMORTISATION EXPENCES	10		23,605,629.46	22,172,263.65
GENETIC & RESEARCH CENTER EXPENCES	04	99,434,000.00	116,393,347.96	113,731,314.99
RESEARCH & DEVELOPMENT EXPENCES WRITE OFF	08		- 36,476,417.31	29,125,764.37
OTHER EXPENSES	09	15,815,000.00	23,077,267.56	17,691,303.48
TOTAL EXPENSES		<u>289,434,000.00</u>	<u>370,924,563.36</u>	<u>353,275,286.37</u>
SURPLUS /(DEFICIT) FOR THE PERIOD		37,000,000.00	40,702,142.96	(59,537,758.29)

CHAIRMAN

COCONUT RESEARCH BOARD

DIRECTOR

COCONUT RESEARCH INSTITUTE

ACCOUNTANT

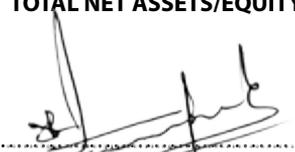
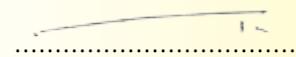
COCONUT RESEARCH INSTITUTE

Figures in brackets indicate deductions.

The Accounting Policies and Notes as set out on the pages 93 to 107 from an integral part of these Financial Statements

STATEMENT OF FINANCIAL POSITION

AS AT 31 ST DECEMBER 2013

	NOTES	2013 APPROVED BUDGET Rs.	2013 ACTUAL Rs.	2012 ACTUAL Rs.
<u>NON CURRENT ASSETS</u>				
INFRASTRUCTURE PLANT & EQUIPMENT	10	47,497,000.00	1,933,553,945.10	1,896,997,301.92
BIOLOGICAL ASSETS	11	-	7,002,262.50	9,714,405.00
RESEARCH & DEVELOPMENT			-	146,588,612.40
OTHER NON FINANCIAL ASSETS	12	71,503,000.00	2,749,377.18	2,644,769.18
		119,000,000.00	1,943,305,584.78	2,055,945,088.50
<u>CURRENT ASSETS</u>				
CASH & CASH EQUIVALANTS	13		26,345,252.39	28,179,367.45
RECIEVABLES	14		16,404,877.67	1,003,756.88
INVENTORIES	15		65,449,501.51	55,440,532.49
PREPAYMENTS	16		498,434.57	322,005.90
OTHER CURRENT ASSETS	17		24,462,789.37	51,163,288.62
		0.00	133,160,855.51	136,108,951.34
TOTAL ASSETS		119,000,000.00	2,076,466,440.29	2,192,054,039.84
<u>LIABILITIES</u>				
<u>CURRENT LIABILITIES</u>				
PAYABLES	18		14,609,075.32	20,615,915.59
EMPLOYEE BENEFITS	19		99,824,533.42	99,654,344.55
		-	114,433,608.74	120,270,260.14
<u>NON CURRENT LIABILITIES</u>				
CAPITAL CONTRIBUTED BY DONOR FUNDED PROJECTS	20		16,982,263.67	15,484,751.67
		-	16,982,263.67	15,484,751.67
TOTAL LIABILITIES		-	131,415,872.41	135,755,011.81
NET ASSETS		119,000,000.00	1,945,050,567.88	2,056,299,028.03
<u>NET ASSETS/EQUITY</u>				
CAPITAL CONTRIBUTED BY THE OTHER GOVERNMENT ENTITIES		90,000,000.00	395,826,583.08	401,307,041.97
RESERVES			1,689,612,302.64	1,689,612,302.64
ACCUMULATED SURPLUS/(DEFECIT)		29,000,000.00	140,388,317.84	(34620316.58)
		119,000,000.00	1,945,050,567.88	2,056,299,028.03
TOTAL NET ASSETS/EQUITY		119,000,000.00	1,945,050,567.88	2,056,299,028.03
				
CHAIRMAN				
COCONUT RESEARCH BOARD				
				
DIRECTOR				
COCONUT RESEARCH INSTITUTE				
				
ACCOUNTANT				
COCONUT RESEARCH INSTITUTE				

Figures in brackets indicate deductions.

The Accounting Policies and Notes as set out on the pages 93 to 107 from an integral part of these Financial Statements

CASH FLOW STATEMENT

	2013 Rs.	2012 Rs.
CASH FLOW FROM OPERATING ACTIVITIES		
SURPLUS/(DEFICIT)	36,054,442.07	(59,537,758.29)
NON-CASH MOVEMENTS		
DEPRECIATION	36,794,819.69	27,346,425.81
AMORTIZATION		6,581,899.00
RESEARCH & DEVELOPMENT & ASSET WRITE OFF	(60,082,046.77)	
INCREASE IN PROVISION FOR DOUBTFUL DEBTS		
INCREASE/(DECREASE) IN PAYABLES	(5,486,535.27)	(31,090,515.02)
INCREASING IN BORROWINGS		
INCREASE IN PROVISIONS RELATING TO EMPLOYEE COSTS	13,518,949.35	18,159,282.87
EMPLOYEE GRATUITY PAYMENT	(13,348,760.48)	(12,325,064.10)
(GAINS)/LOSSES ON SALE OF PROPERTY, PLANT & EQUIPEMENT	(8,424,659.27)	(579,134.01)
(GAINS)/LOSSES ON INVESTMENTS		
INCREASE IN OTHER CURRENT ASSETS	4,102,628.35	9,838,052.28
INCREASE IN INVESTMENT DUE TO REVALUATION		
INCREASE IN RECEIVABLES		
LESS:- PRIOR YEAR PROFIT ADJUSTMENT	118,468.18	3,144,040.62
NET CASH FLOW FROM OPERATING ACTIVITIES	3,247,305.85	(38,462,770.84)
CASH FLOW FROM INVESTING ACTIVITIES		
PURCHASE OF PLANT & EQUIPEMENT TREASURY FUND	(80,985,106.68)	(85,417,559.84)
PURCHASE OF PLANT & EQUIPEMENT DONOR FUND	1,497,512.00	
PROCEEDS FROM SALE OF PLANT & EQUIPEMENT	12,141,136.00	4,084,088.34
NET CASH FLOW FROM INVESTING ACTIVITIES	(67,346,458.68)	(81,333,471.50)
CASH FLOW FROM THE FINANCING ACTIVITIES		
PROCEEDS FROM BORROWINGS		53,219,907.37
CAPITAL GRANT	62,740,000.00	
OTHER PROJECTS	519,989.28	
REPAYMENTS OF BORROWINGS		
DISTRIBUTION / DIVIDENDS TO GOVERNMENT		
NET CASH FLOWS FROM THE FINANCING ACTIVITES	63,259,989.28	53,219,907.37
NET INCREASE / (DECREASE) IN CASH & CASH EQUIVALENTS	(839,163.55)	(66,576,334.97)
CASH & CASH EQUIVALENTS AT BEGINNING OF PERIOD	28,179,367.45	94,755,702.42
CASH & CASH EQUIVALENTS AT END OF PERIOD	27,340,203.90	28,179,367.45

Figures in brackets indicate deductions.

The Accounting Policies and Notes as set out on the pages 93 to 107 from an integral part of these Financial Statements

STATEMENT OF CHANGES IN NET ASSETS/ EQUITY

NOTE	CAPITAL CONTRIBUTED BY THE GOVERNMENT	REVALUATION RESERVE	ACCUMULATED SURPLUS/DEFICIT	TOTAL EQUITY
BALANCE AS AT 31-12-2012	758,165,966.77	1,689,612,302.64	(391,479,241.38)	2,056,299,028.03
CHANGES IN ACCOUNTING POLICIES				
ASSETS WRITE OFF LAST 10 YEARS	(210,270,312.40)		210,270,312.40	0.00
RESEARCH AND DEVELOPMENT EXPENCES	(146,588,612.40)		146,588,612.40	0.00
RESTATED BALANCE AS AT 01-01-2013	401,307,041.97	1,689,612,302.64	(34,620,316.58)	2,056,299,028.03
CAPITAL GRANT - TREASURY	62,740,000.00			62,740,000.00
SURPLUS/DEFICIT FOR THE YEAR			36,054,442.07	36,054,442.07
OTHER PROJECTS	519,989.28			519,989.28
OVER PROVISION OF AUDIT FEES			103,808.00	103,808.00
ASSETS WRITE OFF CURRENT YEAR	(23,605,629.46)			(23,605,629.46)
RESEARCH AND DEVELOPMENT EXP. WRITE OFF	(36,476,417.31)		(146,573,952.22)	(183,050,369.53)
LAND DISPOSAL PROFIT				
BALANCE AT DECEMBER 31, 2013	404,484,984.48	1,689,612,302.64	(145,036,018.73)	1,949,061,268.39
CARRIED FORWARD				

Figures in brackets indicate deductions.

The Accounting Policies and Notes as set out on the pages 93 to 107 from an integral part of these Financial Statements

Significant Accounting Policies

General

- 0.1. The Coconut Research Institute was founded in 1929 as the Coconut Research Scheme under the Coconut Research Ordinance No. 24 of 1928. The scheme established its head quarters at Bandirippuwa Estate, Lunuwila with three technical divisions namely Genetics, Chemistry and Soil Chemistry. Following the enactment of the Coconut Research Act No. 37 in 1950, it was renamed as the Coconut Research Institute of Ceylon. The Coconut Development Act No. 46 promulgated in 1971, the Coconut Research Board was set up in 1972 to function as the Board of Management of Coconut Research Institute.
- 0.2. The government body of the institute is the Coconut Research Board. In terms of Coconut Development Act, the board consists of 11 board members, appointed by the Minister - in - charge. One member is appointed as the Chairman of the Board. The members hold office for three years and are eligible for reappointment.
- 0.3. Principal Activities and Nature of Operations.
 - Conduct further scientific research on growth and cultivation of coconut palm , growing other crops and prevent & cure of diseases.
 - Conduct further scientific research on coconut processing , utilization of coconut products and value addition.
 - Establish and maintain pilot plants for processing of coconut products and fabricate coconut processing equipment.
 - Establish and maintain institutes' seed gardens and experimental stations.
 - Train advisory and extension workers to assist the coconut industry.

General Policies

- 0.4. Statement of Compliance

Statement of financial position , Statement of financial performances, Statement of changes in net assets/ equity, Cash flow statement , Approved budget column in the financial statement and Notes, comprising a summary of significant accounting policies and other explanatory notes have been prepared in accordance with the Institute of Chartered Accountants of Sri Lanka .
- 0.5. Basis of Preparation

The financial statements presented in Sri Lanka rupees have been prepared on a historical cost basis.

0.6. Changes in Accounting policies and adoption of new Public Sector Accounting Standards during the year.

The accounting policies adopted are consistent with those of the previous financial years.

The Coconut Research Institute has adopted the following new SLPSAS that are effective in the current year and the accounting policies of the Institute have been revised where relevant to reflect the changes in the provisions of these SLPSAS.

The adoption of the new standards have resulted in changes to the method of presentation and additional disclosures being made in the Financial Statement.

SLPSAS - 01 Presentation of Financial Statements

SLPSAS - 02 Cash Flow Statement

SLPSAS - 03 Accounting Policies , Changes in Accounting Estimates & Errors Statements

SLPSAS - 04 Borrowing Cost

SLPSAS - 05 Effects of Changes in Foreign Exchange Rates

SLPSAS - 06 Events After the Reporting Data

SLPSAS - 07 Property , Plant & Equipment

SLPSAS - 08 Provisions, Contingent Liabilities and Contingent Assets

SLPSAS - 09 Inventories

SLPSAS - 10 Revenue from Exchange Transactions

0.7. Comparative Information

The Accounting Policies applied by the Institute are , unless otherwise stated, consistent with those used in the previous year. Previous year figures and phrases have been rearranged wherever necessary to conform to the current year presentation.

0.8. Event After the Balance Sheet Date .

All material post financial position events have been considered and appropriate adjustments or disclosures have been made in the respective notes to the Financial Statements.

0.9. Foreign Currency Translation.

The Financial Statements are prepared in Sri Lanka rupees which is the institute functional and presentation currency.

0.10. Tax

The Board is not liable to Tax in the current year under the provisions of the Inland Revenue Act.

0.11. Infrastructure Plant & Equipment

Infrastructure Plant & Equipment are stated at cost or fair value less accumulated depreciation.

The carrying values of Infrastructure Plant & Equipment are reviewed for impairment when events or changes in circumstances indicate that the carrying value may not be recoverable.

The provision for depreciation is calculated by using a straight-line method on the cost or valuation of all Infrastructure Plant & Equipment, other than freehold land, over the estimated useful economic life of such assets.

The estimated useful life of assets are as follows:

<u>Assets</u>	<u>Years</u>
Buildings	25
Machinery & Laboratory Equipments	10
Field equipments	10
Vehicles	05
Office & Computer Equipments	05
Other Equipments	05
Furniture, fittings & Fixtures	20

No depreciation is charged on Lands and on leased lands. On the other assets full depreciation is charged in the year of disposal and no depreciation in the year of purchase.

Lease assets

Leased assets or other assets not owned by the Board are not recorded as Board's assets. Expenditure made in developing owned and leased lands is charged to Improvements to Estates account. Lands owned by the Board are shown at cost/valuation under Estate account.

Coconut Development Authority decided to allocate land known as Dunkannawa Estate which was leased to Coconut Research Institute period of thirty (30) years commencing from 1st May,2001 and ending 30th April ,2031 and annual rental of Rs.30,000 (Thirty Thousand) during the 1st year and thereafter with an annual rental increased by ten per cent (10%) per annum.

0.12. IMPROVEMENTS TO ESTATES

Expenditure in developing properties, maintaining young plantation and replanting for research purposes is charged to Improvements to Estate account which is amortized annually, @ 5%

0.13. Biological Assets

All biological assets are valued at the lower of cost and net realizable value. Net realizable value is the price at which live stocks can be sold in the ordinary course of business less the estimated cost of completion and the estimated cost necessary to make the sale.

These stock are valued base on the National Live stock Development Board rates which is authorized institute of the livestock.

0.14. Working- in- Progress

An account where the expenditure on capital work is recorded. The expenditure here is on assets which are completed and ready for use, the total expenditure in this account is transferred to the appropriate asset account if not disputed. Expenses on major repairs which accrues are shown under Repair in progress account until the repair is fully completed and then transfer to the relevant account.

0.15. Inventories

Inventories are valued at the lower of cost and net realizable value. Net realizable value is the price at which live stocks can be sold in the ordinary course of business less the estimated cost of completion and the estimated cost necessary to make the sale. The cost incurred in

bringing inventories to its present location and condition is accounted for as follows :

➤ Nuts	Subsequent realised value
➤ Copra	Net sales average
➤ Fertilizer	First in first out
➤ Publications	Subsequent realised value
➤ Chemical & Glassware	First in first out
➤ Seedling Product	Subsequent realised value
➤ General Store Stock	First in first out
➤ Other stocks	Subsequent realised value

0.16. Trade and other Receivable

Trade and other receivable are stated at the amounts they are estimated to realized, net of provisions for bad doubtful receivables.

Debtors are stated at amounts they are estimated to realise .Provision is made in the accounts for all known Bad & Doubtful debtors. Full provision has been made for irrecoverable debtors. 10% provision is on other Debtors.

0.17. Cash and Cash Equivalent

Cash and Cash Equivalents in the cash Flow Statement comprise, cash at bank and in hand and short term deposits

0.18. Books and Periodicals

The stocks of books & periodicals has been valued and disclosed in the accounts. The previous practice was total book & periodicals expenditure incurred on the purchase of items during the year under review had been charged against the income.

0.19. Liabilities and Provisions

Gratuity is a defined benefit plan. The institute is liable to pay gratuity in terms of the relevant statues. In order to meet this liability, a provision is carried forward in the statement of financial position, based on a half month's salary as of the last month of the financial year, for all employees for each completed year of service,

commencing from the first year of service. The resulting difference between brought forward provision at the beginning of a period and the

carried forward provision at the end of the period is dealt with in the statement of financial performances.

However, as per the payment of gratuity Act No. 12 of 1983, the liability to an employee arises only on completion of 05 years of continued service.

The gratuity liability is neither externally funded nor actuarially valued

0.20. Provisions, Contingent Assets and Contingent Liabilities.

Provisions are made for all obligations existing as at the balance sheet date when it is probable that such an obligation will result in an outflow of resources and a reliable estimate can be made of the quantum of the outflow. All contingent liabilities are disclosed as a note to the financial statement unless the outflow of resources is remote.

Contingent assets are disclosed, where inflow of economic benefit is probable.

Statement of Financial Performance

0.21. Revenue Recognition.

- i) The total grant received from the Treasury for the year is recognized as income and the for that year.

ii) The second high income received from the Genetic Resource Center and Research Center (Estates) for the year is recognized as income and the for that year.

iii) Other Income

Long term projects funded by external sources are shown separately under the name of the project until the project is over.

Other income is recognized on an accrued basis.

0.22. Expenditure Recognition.

Expenditure are recognized in the statement of financial performance on the basis of a direct association between the cost incurred and the earning of specific items of income. All expenditure incurred in the running of the business and in maintaining the property, plant and equipment in a state of efficiency has been charged to the statement of financial performance.

For the purpose of presentation of the statement of financial performance, the “function of expenses” method has been adopted, on the basis that it presents fairly the elements of the institutional performance.

0.23. Intangible Assets (Research & Development Cost).

Cost of product development , processes , production of new or substantially improved materials for research development are capitalized which is written off against the profit and loss account as amortisation of research & development cost during the period.

Research & Development Expenditure in the previous years shown under division wise. From the year 2007 it's indicated under the following trust areas.

- Crop Production
- Crop Protection
- Crop Improvement
- Crop Processing
- Technology Transfer
- Socio Economic Studies in Coconut
- Oil Palm Research

The previous practice was total Research and Development expenditure disclose as assets of the Balance Sheet and the presently theses expenses during the year under review have been charged against the Statement of Financial Performance.

Note 04**GENETIC RESOURCE CENTER & RESEARCH CENTER (ESTATES) REVENUE**

	Bandirippuwa Research Station	Rathmalagara Research Center	Ambakelle Genetic resource Center	Potthukulama Research Center	Walpita Research Center	Makandura Genetic resource Center	Mac G re C
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
REVENUE							
SALES OF COCONUT	21,070,235.27	15,958,319.81	23,614,725.44	15,922,394.10	4,089,183.66	15,314,490.97	18,
SALES OF COPRA	1,377,606.00	398,631.00	129,848.00	1,121,393.25	57,215.00	137,657.40	:
SALES OF SEEDLING	102,400.00	683,150.00	2,360,300.00		771,125.00	391,150.00	:
SALES OF SUNDRIES	1,698,682.25	706,355.54	275,249.10	169,290.26	145,774.77	468,143.81	:
SALE OF ANIMALS PRODUCE & ANIMALS	3,187,666.69	228,583.78	1,149,310.00	159,179.77		210,889.00	:
TOTAL REVENUE	27,436,590.21	17,975,040.13	27,529,432.54	17,372,257.38	5,063,298.43	16,522,331.18	19,9
STOCK VARIANCES							
STOCK AS AT 01-01-2013	6,321,340.66	6,054,274.95	4,519,388.94	4,300,802.66	559,797.89	3,518,944.49	4,
STOCK AS AT 31-12-2013	4,228,288.28	4,671,647.29	10,987,607.58	5,419,071.88	1,106,243.56	3,746,975.66	6,
	(2,093,052.38)	(1,382,627.66)	6,468,218.64	1,118,269.22	546,445.67	228,031.17	2,
ESTATE REVENUE	25,343,537.83	16,592,412.47	33,997,651.18	18,490,526.60	5,609,744.10	16,750,362.35	22,2
GENERAL CHARGES							
GENERAL CHARGES	3,849,726.79	4,322,882.15	6,775,361.72	2,954,107.34	979,961.39	3,211,624.45	3,
STAFF SALARIES	4,635,904.16	2,520,564.69	4,337,876.97	1,691,779.95	475,167.98	1,756,481.81	1,
UPKEEP	2,215,409.90	1,551,506.94	4,604,977.95	650,782.77	261,426.74	709,487.07	:
CUTIVATION	1,689,104.73	1,416,083.41	2,833,438.44	1,522,818.25	116,767.36	733,579.41	1,
HARVESTING	2,522,928.81	916,147.88	1,319,309.34	1,122,411.75	298,275.54	553,750.17	:
DEPRECIATION	451,910.44	444,905.64	1,090,993.56	445,934.70	146,998.00	343,641.43	:
TOTAL COST OF PRODUCT.	15,364,984.83	11,172,090.71	20,961,957.98	8,387,834.76	2,278,597.01	7,308,564.34	8,9
CURING INTO COPRA/DISPOSE							
CURING INTO COPRA/DISPOSE	445,255.63	280,097.37	50,056.12	342,897.88	28,281.55	193,874.79	:
ANIMAL HUSBANDRY							
ANIMAL HUSBANDRY	1,099,729.71	255,138.68	514,370.06	1,292,910.13		134,460.02	:
COST OF SEEDLING							
COST OF SEEDLING		739,470.59	2,584,251.69		441,727.27	159,715.18	:
AMORTIZATION							
AMORTIZATION	473,321.72	84,205.25	56,191.50	173,031.75	36,244.97	56,050.31	:
TOTAL EXPENDITURE	17,383,291.89	12,531,002.60	24,166,827.35	10,196,674.52	2,784,850.80	7,852,664.64	9,6
NET SURPLUS/(DEFICIT)	7,960,245.94	4,061,409.87	9,830,823.83	8,293,852.08	2,824,893.30	8,897,697.71	12,6

Notes to the Financial Statements

As at 31 December

	2013 BUDGET Rs.	2013 ACTUAL Rs.	2012 ACTUAL Rs.
Note 03 TRANSFERS FROM OTHER GOVERNMENT ENTITIES			
RECURRENT GRANT	175,000,000.00	163,260,000.00	151,830,000.00
	175,000,000.00	163,260,000.00	151,830,000.00

	2013 BUDGET Rs.	2013 ACTUAL Rs.	2012 ACTUAL Rs.
Note 05 OTHER REVENUE			
INTEREST ON LOAN & INVESTMENT	600,000.00	833,625.74	847,605.47
INCOME FROM MOTOR VEHICLES	750,000.00	805,056.78	643,922.05
SUNDRY INCOME	13,450,000.00	12,676,991.71	11,361,273.30
SALES CENTER INCOME		2,748,875.02	1,659,795.70
SALES OF PHEROMONE	150,000.00	373,210.00	198,350.00
SALES OF MONOCROTOPHOSE	50,000.00	23,015.00	25,200.00
INCOME PROJECTS		2,416,584.76	840,673.00
RESEARCH & DEVELOPMENT WRITE OFF		36,476,417.31	
ASSETS WRITE OFF		23,605,629.46	
	15,000,000.00	79,959,405.78	15,576,819.52

	2013 BUDGET Rs.	2013 ACTUAL Rs.	2012 ACTUAL Rs.
Note 06 WAGES SALARIES AND EMPLOYEES' BENEFITS			
SALARIES ALLOWENCES & OVER TIME	106,350,000.00	97,528,536.76	93,721,356.73
BOARDS CONTRIBUTION TO ETF/EPF	15,900,000.00	15,961,574.38	15,306,676.55
BOARDS CONTRIBUTION TO MEDICAL AID	5,500,000.00	4,812,370.35	4,892,888.99
COCONUT ALLOWANCES	400,000.00	576,139.95	221,518.14
GRATUITY	8,000,000.00	11,160,363.81	18,159,282.87
	136,150,000.00	130,038,985.25	132,301,723.28

	2013 BUDGET Rs.	2013 ACTUAL Rs.	2012 ACTUAL Rs.
Note 07 SUPPLIES AND CONSUMABLES USED			
SUPPLIERS AND CONSUMABLES	10,380,000.00	13,148,726.38	13,419,350.99
CONTRACTUAL SERVICES	10,355,000.00	8,950,433.17	8,505,217.11
MAINTENANCE	17,300,000.00	19,233,756.27	16,328,348.50
	38,035,000.00	41,332,915.82	38,252,916.60

Note 08 Research & Development Expenses Write Off			
Description (Thrust Area)	CODE	WRITE OFF YEAR 2013	WRITE OFF YEAR 2012
(1) Crop Protection			
1.1 Crop Protection Division			
Major Pests	257	-	39,679.52
Minor Pests	258	-	17,422.90
Diseases	259	76,897.60	85,442.39
Protection services	260	1,031,787.07	282,757.35
Weligama Leaf Wilt Disease	287	6,418,311.23	5,311,672.79
Maintenance of Predator Lab	289	784,001.58	-
Plesispa Beetle	290	66,688.80	20,261.09
		8,377,686.28	5,757,236.05
(2) Crop Production			
2.1 Agronomy Division			
Soil Moisture Conservation	261	219,060.83	150,031.23
Low Yielding Palms	262	431,649.40	378,786.13
Farming System	263	484,477.80	195,961.43
Bio-energy Production	264	797,691.73	344,441.94
Inter Cropping	265	244,983.03	248,252.70
Weed Management	266	268,352.22	155,095.34
Poverty Alleviation Studies	267	24,477.00	12,105.48
Animal Husbandry	268	568,387.09	423,893.23
Vermi Culture	269	98,040.40	150,512.58
Coconut Planting Systems	270	347,738.74	123,817.57
Organic Farming	271	95,684.06	246,157.81
		3,580,542.30	2,429,055.42
2.2 Oil Palm			
Oil Palm research	291	166,423.35	14,906.24
Land Suitability Assessment	292	108,933.65	-
Land & Field Management	293	58,161.50	-
Genetic Improvement	294	86,711.71	225.00
Clonal Studies	295	44,788.40	11,134.00
Soil & Fertilizer Studies	296	134,985.85	15,760.78
Environment Physiology Studies	297	13,505.16	218.25
Pest & Diseases Management	298	33,484.42	2,713.20
Processing Studies	299	19,936.25	-
Socio-Economic Studies	300	4,586.00	-
		671,516.29	44,957.47
2.2 Soils & Plant Nutrition Div.			
Low cost Material	272	646,710.74	502,130.30

Fertilizer Mixture	273	360,818.18	887,883.56
D.F.R.	274	621,493.25	391,237.60
Micronutrients	275	544,415.71	788,216.93
Fertilizer Application	276	-	5,127.26
Irrigation	277	673,862.94	514,081.49
Nutrient Mapping	278	274,380.17	523,356.44
Organic Manure	279	364,480.79	331,650.37
Land suitability assessment	288	2,322,109.40	375,620.68
		5,808,271.18	4,319,304.62
(3) Crop Improvement-GPBD			
Evalu. Exis. Co. Cultivars	280	1,015,070.99	809,725.13
Dev. New Co. Cultivars	281	685,668.07	2,023,270.84
Conse. Eva. Co. Germplasm	282	1,305,214.09	522,767.89
Tolerance to Aceria mite	283	1,694,131.00	21,185.91
Research Nursery	284	-	36,278.82
Miscellaneous Research	285	-	7,701.89
		4,700,084.15	3,420,930.48

Note 08 Research & Development Expenses Write Off

Description (Thrust Area)	CODE	WRITE OFF YEAR 2013	WRITE OFF YEAR 2012
(4) Coconut Processing-CPRD			
Improv.Kernal Based Product	225	228,779.40	-
Sap Based Product	226	158,415.99	-
Charcoal making Process	227	357,061.09	-
Testing of Abrasive Peeling Mechanism	228	5,630.00	-
Project on Coconut Oil	255	1,374,531.77	638,818.76
Project on Product Develop.	256	200,023.30	363,024.27
		2,324,441.55	1,001,843.03
(5) Agriculture Economics			
Socio Economy Studies	286	718,233.09	314,280.16
		718,233.09	314,280.16
(6) Development & Services Related to Crop Production			
Drought Study - Middeniya (PPD)	400	582,707.38	483,314.78
Phosphate Sources - Middeniya (PPD)	401	-	30,569.89
Monthly Harvesting Impact (PPD)	402	-	53,478.02
Development & Maintenance of Middeniya R.C.(ME)	403	-	611,057.73
Assessment & Improv. of soil Quality Dep.Co.Land	404	-	173,152.08
Asse. Potential Subsurface Irri. Fertigation of Coco.	406	-	14,180.99
Yield Improv.Co. Land by Rain Water Harve. Tech.	407	-	59,620.72

Consumer survey Nut Consumption & coco. Oil	408	-	185,168.42
Predication of husk weight / copra weight (Bio)	427	-	78,696.76
Biofertilizer for co.Indigenouse arbuscular mycorriza	428	-	1,043.00
Appling Zn & Cu sources for coconut palm	429	-	3,814.00
Formulation of an Effective Fertilizer Mix.Young Coco.	430	-	46,541.10
Use of locally K sources as Fertilizer for coconut(Bio)	431	523,706.00	554,613.79
Improv. of soil Ferti.coco. Land Through Vermiculture	446	-	132,270.12
		1,106,413.38	2,427,521.40
(7) Development & Services Activities Related to Genetical Improvement of Coconut (GPB)			
Assessment of Biodiversity in Unawatuna (PPD)	410	-	13,641.60
Construction of a Coconut Genome map	411	492,341.03	552,305.45
Constr. Of a Population for Mapping QTL Acaria Mite	412	-	63,419.93
Molecular Diagnosis of coco. Disorders	413	-	37,491.55
Estab. P.S.G. for mass Production of CRISL98	414	378,517.71	564,188.86
Upgrading ISG to Increase the Produ. of CRIC 65	415	449,719.97	483,105.91
Germplasm Importation	416	-	68,237.90
Function of the Seed Production Unit	417	3,301,145.84	2,041,442.47
Estab. Seed Garden for mass Produ. of Kapruwana	432	-	22,872.40
		4,621,724.55	3,846,706.07
(8) Development & Services Related to Crop Protection			
Coconut Mite Research & Development (CPD)	418	399,914.25	1,133,055.88
Extension Programs for Mite Management	419	-	61,540.18
Impact of mite damage on yield at spatial & temp.scale	420	-	58,591.03
Determi. Proba. Casues of palm decline multidis. Project	421	-	479,062.64
Manag. of black beetle using pherom. & Oryctes(CPD)	433	202,454.00	445,934.71
Power driven sprayer to tall coconut palms	434	-	-
		602,368.25	2,178,184.44
(9) Development & Services Related to Coconut processing & Value Addition (CPRD)			
Dev. & Popula.organic Pro. & Processing Of Coconut	405	-	170,355.90
Virgin oil - value addition	422	-	61,608.15
Dev.& Impro. Co. coir retting thro. Introdu.Cons. Micro	423	409,217.76	337,500.17
Dev.& Impro. Coconut fibre based Products	424	43,218.57	167,519.19
Dev. Prod. of high qua. Charcoal & Copra	425	84,457.00	157,878.45
		536,893.33	894,861.86

Note 08 Research & Development Expenses Write Off

Description	CODE	WRITE OFF YEAR 2013	WRITE OFF YEAR 2012
(Thrust Area)			
(10) Development & Services Related to Coconut processing & Value Addition			
Develop. Farm machinery for coconut sector (CPRD)	435	179,002.88	84,521.37
Coconut milk pouch for household use (CPRD)	436	-	3,600.00
Coconut water vinegar manufacturing method (CPRD)	437	-	92,776.31
		179,002.88	180,897.68
(11) Agricultural Economics			
Mechanization & the demand of machinery co. Indus.	438	58,378.47	198,993.30
Increasing farmers through toddy tapping	439	-	10,220.40
Fertilizer use in incre. Productivity & Profitability C. P.	440	-	8,338.60
		58,378.47	217,552.30
(12) Transfer of Technology			
Coconut Technology Village	426	1,250,517.58	769,459.33
Electronic print media & Techn. transfer Prog (Ext)	441	804,517.20	580,513.01
Development of field models & exhibits (Ext)	442	322,762.65	709,598.40
Farmer field school Expansion (Ext)	443	33,244.83	25,342.85
Impro. farm practices in mini coco. Triangle Hambantota (Ext)	444	779,819.35	7,519.80
TOTAL		36,476,417.31	29,125,764.37

Note 09 OTHER EXPENCES

	2013 BUDGET Rs.	2013 ACTUAL Rs.	2012 ACTUAL Rs.
TRAVELLING	2,800,000.00	1,650,979.75	1,222,509.51
EXPENSES- PROJECTS	-	4,063,675.91	1,707,815.82
EXPENSES- CESS	-	3,710,314.92	6,316,927.29
BOARD MEMBERS FEES	-	290,950.00	249,437.77
WELFARE	3,000,000.00	1,431,602.36	2,154,620.46
OTHER OPERATING EXPENSES	10,015,000.00	6,774,409.24	6,039,992.63
	15,815,000.00	17,921,932.18	17,691,303.48

Notes to the Financial Statements (Contd)

As at 31 December

Note 10 - INFRASTRUCTURE PLANT & EQUIPMENT

	MATURED LAND	BUILDINGS	IMPROVEMENT TO ESTATES	FIELD, AUDIO, WATER & LABORATORY EQUIPMENTS
	Rs.	Rs.	Rs.	Rs.
COST				
AS AT 01-01-2013	1,525,417,506.98	198,535,869.83	78,662,287.28	158,418,115.83
ADDITIONS		11,439,753.01	16,183,156.74	37,601,950.79
DSPOSALS	3,133,633.00			4,358,795.86
AS AT 31-12-2013	1,522,283,873.98	209,975,622.84	94,845,444.02	191,661,270.76
ACCUMULATED DEPRECIATION				
AS AT 01-01-2013	-	39,708,378.04	10,419,080.71	76,542,968.09
ADDITIONS	-	4,768,137.43	3,189,244.65	15,840,311.57
DSPOSALS	-	-	-	3,922,916.27
AS AT 31-12-2013	-	44,476,515.47	13,608,325.36	88,460,363.39
CARRYING VALUE				
WORKING PROGRESS				
AS AT 31 DEC.2013	1,522,283,873.98	165,499,107.37	81,237,118.66	103,200,907.37
AS AT 31 DEC. 2012	1,525,417,506.98	158,827,491.79	68,243,206.57	81,875,147.74

AMORTIZATION - EST: IMPROVEMENTS	3,189,244.65
ASSETS DEPRECIATION - HEAD OFFICE	23,605,629.46
ASSETS DEPRECIATION - ESTATES	5,269,559.47
ASSETS DEPRECIATION - CESS PROJECTS	1,020,071.19
ASSETS DEPRECIATION - DONOR PROJECTS	3,710,314.92
	36,794,819.69

Notes to the Financial Statements (Contd)

As at 31 December

	2013 BUDGET Rs.	2013 ACTUAL Rs.	2012 ACTUAL Rs.
Note 11 BIOLOGICAL ASSETS			
LIVE STOCK		7,932,772.50	9,714,405.00
	-	7,932,772.50	9,714,405.00
	2013 BUDGET Rs.	2013 ACTUAL Rs.	2012 ACTUAL Rs.
Note 12 OTHER NON FINCIAL ASSETS			
LIBRARY BOOKS & PERIODICALS	71,503,000.00	2,681,807.18	2,644,769.18
	71,503,000.00	2,681,807.18	2,644,769.18
		2013 ACTUAL Rs.	2012 ACTUAL Rs.
Note 13 CASH & CASH EQUIVALANTS			
BANK OF CEYLON - DANKOTUWA - A/C NO 3002507		1,203,100.20	72,703.92
BANK OF CEYLON - DANKOTUWA - A/C NO 3002942		9,577,929.15	11,954,086.77
BANK OF CEYLON - DANKOTUWA - A/C NO 3002556		64,602.41	37,488.56
BANK OF CEYLON - DANKOTUWA - A/C NO 3003088		3,190,597.64	1,610,301.70
BANK OF CEYLON - DANKOTUWA - A/C NO 3002557		86,035.48	86,035.48
BANK OF CEYLON - DANKOTUWA - A/C NO 3001528		2,212,939.02	1,166,871.02
		16,335,203.90	14,927,487.45
SAVINGS DEPOSITS			
TREASURY BILLS - BOC		11,004,000.00	13,250,880.00
NSB - NEGAMBO		1,000.00	1,000.00
		11,005,000.00	13,251,880.00
TOTAL		27,340,203.90	28,179,367.45
		2013 ACTUAL Rs.	2012 ACTUAL Rs.
Note 14 RECIEVABLES			
SALES LEDGER CONTROL ACCOUNT		16,810,227.32	1,080,152.09
LESS - BAD & DOUBTFUL DEBTS PROVISION FOR THE YEAR		(1,681,022.73)	(108,015.21)
		15,129,204.59	972,136.88
POST MASTER GENERAL		31,620.00	31,620.00
		15,160,824.59	1,003,756.88

Notes to the Financial Statements (Contd)

As at 31 December

	2013	2012
	ACTUAL	ACTUAL
	Rs.	Rs.
Note 15 INVENTORIES		
COCONUT	28,113,679.40	19,835,299.27
COPRA	900,764.11	520,840.00
GENERAL STORES/ESTATE	3,637,683.78	5,377,681.81
FERTILIZER	4,144,310.97	5,543,158.77
CHEMICAL & GLASSWARE	18,342,073.25	14,892,764.61
SEEDLING STOCKS	7,729,675.00	6,281,783.03
STOCK OF PUBLICATIONS	2,581,315.00	2,989,005.00
	65,449,501.51	55,440,532.49

	2013	2012
	ACTUAL	ACTUAL
	Rs.	Rs.
Note 16 PREPAYMENTS		
INSURENCES	498,434.57	322,005.90
	498,434.57	322,005.90

	2013	2012
	ACTUAL	ACTUAL
	Rs.	Rs.
Note 17 OTHER CURRENT ASSETS		
ADVANCE TO LOCAL SUPPLIERS	673,666.77	26,645,055.98
ADVANCE TO STAFF	35,000.00	35,000.00
MOBILIZATION ADVANCE & ADVANCE TO FOREIGN SUPPLIERS	1,889,817.00	2,824,793.00
CASH IN TRANSIT	16,609.38	46,068.00
SAVINGS DEPOSIT	245,650.00	245,650.00
DISTRESS LOANS	18,509,931.20	18,114,811.38
TRANSPORT LOAN	1,442,847.80	1,636,728.13
WAGES ADVANCE	174,517.72	150,134.19
FESTIVAL ADVANCE	471,450.00	477,450.00
SPECIAL ADVANCE	450.00	1,700.00
SPECIAL SALARY ADVANCE	286,660.00	281,368.00
FESTIVAL ADVANCES TO LABOURERS	556,150.66	519,872.66
SPECIAL SALARY ADVANCES TO LABOURERS	160,038.84	184,657.28
	24,462,789.37	51,163,288.62

Notes to the Financial Statements (Contd)

As at 31 December

	2013	2012
	ACTUAL	ACTUAL
	Rs.	Rs.
Note 18		
PAYABLES		
ACCRUED EXPENSES	5,018,789.87	4,262,199.63
EXPENCE CREDITORS	6,897,514.15	12,769,057.19
UCLAIMED WAGES	13,875.34	12,005.35
UNPAID SALARIES	19,150.00	28,850.00
PROVISION FOR AUDIT FEES	800,000.00	1,200,000.00
PROVIDENT FUND (LABOURER)	22,772.65	9,098.99
SECURITY DEPOSITS		139,424.35
	119,753.47	
RETENTION	1,402,119.84	1,352,690.80
SECURITY DEPOSIT STAFF	569,305.00	45,000.00
TENDER DEPOSIT PAYABLE	266,100.00	277,600.00
AID FROM CESS FUND FOR SPECIAL PROJECTS	-	519,989.28
	15,129,380.32	20,615,915.59

	2013	2012
	ACTUAL	ACTUAL
	Rs.	Rs.
Note 19		
EMPLOYEE BENEFITS		
PROVISION FOR GRATUITY	99,824,533.42	99,654,344.55
	99,824,533.42	99,654,344.55

	2013	2012
	ACTUAL	ACTUAL
	Rs.	Rs.
Note 20		
NON CURRENT LIABILITIES		
CONTRIBUTED CAPITAL - PROJECTS	10,365,436.70	8,867,924.70
FOREIGN AID	6,616,826.97	634,078.78
LOCAL AID		5,982,748.19
	-	
	16,982,263.67	15,484,751.67



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கணக்காய்வாளர் தலைமை அலுவலகத் திணைக்களம்
AUDITOR GENERAL'S DEPARTMENT



මගේ අංකය } LP/K/CRB/1/FA/
 எனது இல. } 13/05
 My No. }

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 உமது இல. }
 Your No. }

දිනය } 2015 ජූනි 10 දින
 திகதி }
 Date }

සභාපති,
 පොල් පර්යේෂණ මණ්ඩලය.

පොල් පර්යේෂණ මණ්ඩලයේ 2013 දෙසැම්බර් 31 දිනෙන් අවසන් වර්ෂය සඳහා වූ මූල්‍ය ප්‍රකාශන පිළිබඳ 1971 අංක 38 දරන මුදල් පනතේ 14(2) (සී) වගන්තිය ප්‍රකාර විගණකාධිපති වාර්තාව

මාගේ සමාකතා 2015 අප්‍රේල් 10 දිනැති ලිපියට යොමු වේ.

02. ඉහත සඳහන් ලිපිය සමඟ එවන ලද මාගේ වාර්තාවේ ඉංග්‍රීසි අනුවාදය මේ සමඟ එවා ඇත.

සහලු.පී.පී. චන්ද්‍රසේන
 විගණකාධිපති (වැඩබලන)

Handwritten signature: Dr. N. A. S. Jayaratne
 25/06

පිටපත් : 1. ලේකම්, වැවිලි කර්මාන්ත අමාත්‍යාංශය

2. ලේකම්, මුදල් අමාත්‍යාංශය



විගණකාධිපති දෙපාර්තමේන්තුව
கணக்காய்வாளர் தலைமை அலுவலகம்
AUDITOR GENERAL'S DEPARTMENT



මගේ අංකය
My No. } LP/K/CRB/1/FA/13/05

ඔබේ අංකය
Your No. }

දිනය
Date } 10 April 2015

The Chairman
Coconut Research Board

Report of the Auditor General on the Financial Statements of the Coconut Research Board for the year ended 31 December 2013 in terms of Section 14(2) (c) of the Finance Act, No. 38 of 1971.

The audit of financial statements of the Coconut Research Board for the year ended 31 December 2013 comprising the statement of financial position as at 31 December 2013 and the statement of financial performance, the statement of changes in equity and cash flow statement and a summary of significant accounting policies and other explanatory notes was carried out under my direction in pursuance of provisions in Article 154(1) of the Constitution of the Democratic Socialist Republic of Sri Lanka read in conjunction with Section 13(1) of the Finance Act, No. 38 of 1971 and Section 43 of the Coconut Development Act, No.46 of 1971. My comments and observations which I consider should be published with the Annual Report of the Board in terms of Section 14(2) (c) of the Finance Act appear in this report. A detailed report in terms of Section 13(7) (a) of the Finance Act will be issued to the Chairman of the Board in due course.

1.2 Management's Responsibility for Financial Statements

The management is responsible for the preparation and fair presentation of these financial statements in accordance with Sri Lanka Public Sector Accounting Standards and for such internal control as the management determines is necessary to enable the preparation of financial statements that are free from material misstatements whether due to fraud or error.

1.3 Auditor's Responsibility

My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with Sri Lanka Auditing Standards consistent with International Standards of Supreme Audit Institutions (ISSAI 1000-1810). Those Standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatements.



An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatements of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Board's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Board's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of financial statements. Sub-sections (3) and (4) of Section 13 of the Finance Act, No. 38 of 1971 give discretionary powers to the Auditor General to determine the scope and the extent of the audit.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

2. Financial Statements

2.1 Opinion

In my opinion, the financial statements give a true and fair view of the financial position of the Coconut Research Board as at 31 December 2013 and its financial performance and cash flows for the year then ended in accordance with Sri Lanka Public Sector Accounting Standards.

2.2 Comments on Financial Statements

2.2.1 Sri Lanka Public Sector Accounting Standards

Standard 01

Income and expenditure should not be set off with each other and brought to account unless permitted by a Standard. However, expenditure of Rs. 1,120,673 against the income of Rs.3,869,548 and the relative expenditure amounting to Rs. 2,896,530 against other income of Rs.11,560,125 of the sales centre of the Board had been set off and the net result had been shown in the statement of financial performance.



2.2.2 Accounting Deficiencies

The following observations are made.

- (a) The Board had not taken action to precisely identify the assets built from money received as grants for research activities and to amortize the amount of depreciation of the said assets.
- (b) The value of the biological assets of Dunkannawa and Middeniya Estates for the year under review had not been assessed and the value of Rs. 175,800 assessed in the year 2012 had been entered in the accounts instead.
- (c) The value of the land of the Tabbowa farm with an extent of 05 acres had not been assessed and revealed as an asset in the accounts of the Board.

3. Financial and Operating Review

3.1 Financial Review

According to the financial statements presented, the financial result of the Board for the year under review had been a surplus of Rs.40,702,143 as against the deficit of Rs.59,537,758 for the preceding year thus indicating an improvement of Rs. 100,239,901 in the financial result. The increase of the income for the year under review by a sum of Rs.117,889,178 as compared with the preceding year had been mainly attributed to this position.

3.2 Analytical Financial Review

The following observations are made.

- (a) Sixty seven per cent of the income earned through operating activities had been spent for operating expenses.
- (b) Sixty per cent and 40 percent of the entire income of the Board had been generated from operating activities and Government grants respectively.



4. **Operating Review**

4.1 **Performance**

Even though a special RTPCR machine which can identify the pytoplasma known as the cause for disease of Weligama Leaf Wilt and Leaf Rotting had been purchased for Rs. 6.3 million in the year 2011, no sample tests had been carried out due to unavailability of chemicals for a period of 07 months in the year under review.

4.2 **Management Inefficiencies**

The following observations are made.

- (a) Release of predator maita to the field had been carried out in the year under review for the control of coconut maita biologically. Twelve breeding laboratories had been established in 07 districts to breed and distribute maita. The following observations are made in this connection.
 - (i) In the production of predator maita, approximately 25 predator maita and necessary food is added into the polypropylene packets at the beginning and kept for a period of 06 weeks. When maita are multiplied up to approximately 5000 in a packet, it is considered as appropriate to release them to the field. These packets should be released within a period of 6-8 days, if it fails, the predator maita in those packets can be used to produce new packets. Even though the date of production should be mentioned in the packets, the packets which are appropriate for release to the field and which could be used in the production of new packets could not be identified due to failure in mentioning the date.
 - (ii) A large number of coconut trees affected by maita had been observed in audit carried out on 10 June 2014 at the Ambakele Gene Resource Center. It was observed that this disease could not be suppressed due to the cost that has to be incurred for keeping predator maita on trees and keeping them once in three months too. As it is intended to follow a mechanical method to keep predator maita packets on coconut trees, the Chairman has replied that this difficulty would be overcome in future.
- (b) No action had been taken to utilize effectively or reimburse the savings of the grants received as domestic and foreign for research activities without utilizing for the said activities. The amount so retained at the end of the year under review amounted to Rs.6,897,514.



4.3 Personnel Administration

The following observations are made.

- (a) The approved cadre and the actual cadre of the Board had been 390 and 299 respectively. The posts of senior, tertiary and secondary levels relating to operating activities had been 09, 20 and 47 respectively and 22 posts of primary level had been vacant. The posts of 07 officers had approved as personal to them and abolished at their resignation from the service.
- (b) Even though the Department of Management Services had approved a post of Deputy Director (Administration) and a post of Senior Accountant in the year 2011, those post had been vacant up to 30 May 2014.

5. Accountability and Good Governance

5.1 Presentation of Financial Statements

The accounting deficiencies amounting to Rs.10,089,000 revealed at the examination of the financial statements presented on 05 March 2013 were brought to the notice of the Chairman of the Board. The financial statements amended by rectification of those deficiencies were presented again on 26 December 2013.

6. Systems and Controls

Deficiencies in systems and controls observed during the course of audit were brought to the notice of the Chairman of the Board from time to time. Special attention is needed in respect of the following areas of control.

- (a) Accounting
- (b) Human Resources Management
- (c) Preservation of Crops

W. P. C. Wickramaratne
 Acting Auditor General