

2018



வார्षிக வர்வாவ
ஆண்டு அறிக்கை
ANNUAL REPORT



சோர் சர்சேஷு மதீவிரய
தென்னை ஆராய்ச்சி நிலையம்
COCONUT RESEARCH BOARD

வரீரீ கர்மாத் அமாதாண்டய
பெருந்தோட்ட கைத்தொழில் அமைச்சு
Ministry of Plantation Industries

TABLE OF CONTENTS

Vision, Mission & Mandate.....	1
Organogram of the Institute.....	2
The Coconut Research Institute.....	3-4
Director's Message.....	5-7
Research Recommendations.....	8-10
Policy Proposals.....	11-15
Research Highlights.....	16
Coconut Varietal Improvement.....	17-20
Coconut Production Technology.....	21-32
Climate Change Effects on Coconut Production.....	33-37
Crop Protection.....	38-46
Coconut Processing & Product Development.....	47-56
Socio Economics.....	57-66
Developmental Research.....	67-76
Technology Transfer.....	77-87
Contribution to National Development through Services to Stakeholders.....	88-95
National Collaborations.....	96
Local & International Publications.....	97-104
Estate Management Activities.....	105-126
Staff.....	127
Staff Achievements.....	128-132
Academic & Professional Achievements.....	133-143
Staff Members of the Coconut Research Institute.....	144-156
Recruitments, Promotions, Retirements & Resignations.....	157-163
Statement of Financial Performance.....	164-190
Auditor General's Report.....	191-198



Our Vision

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

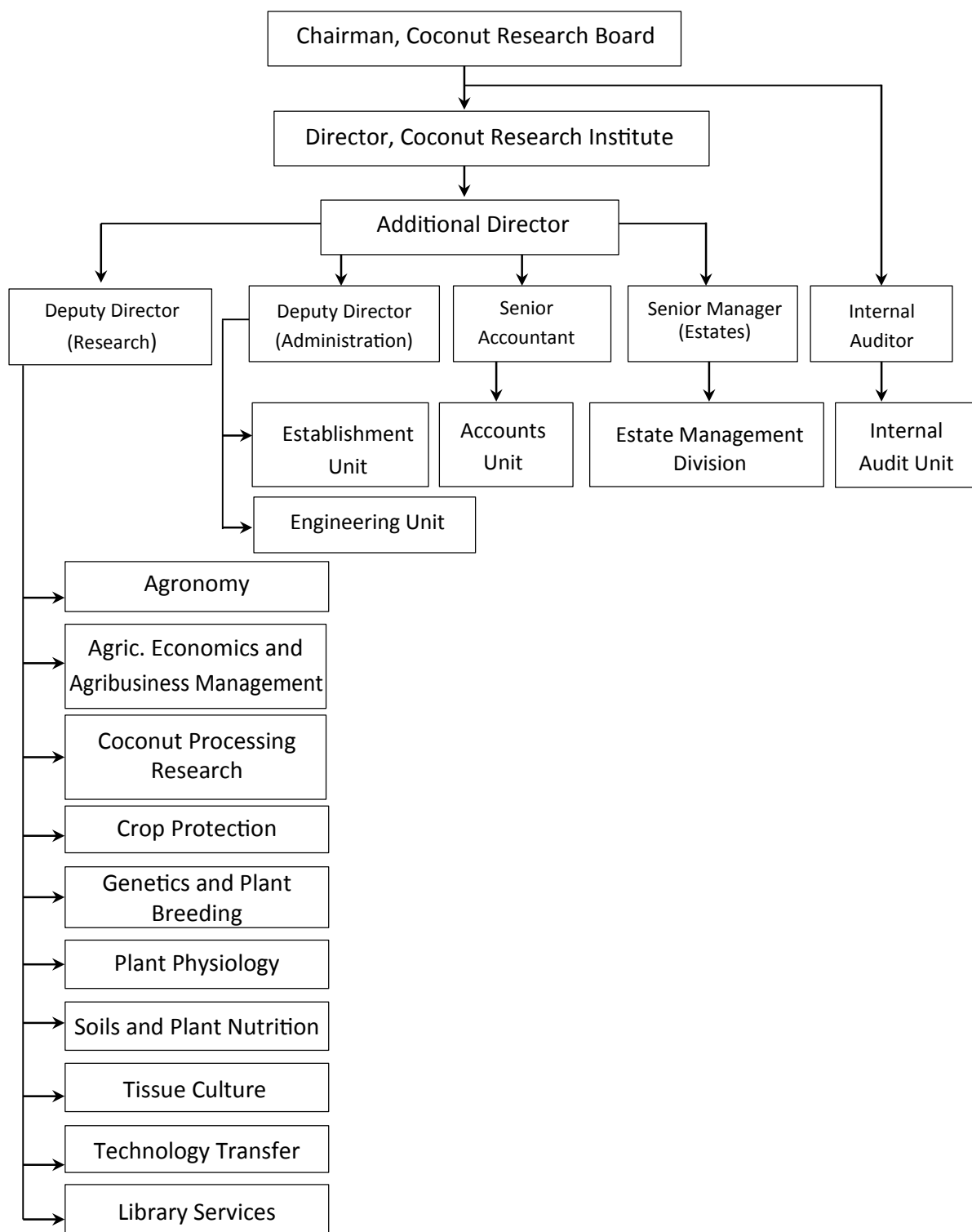
Our Mission

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 institute's 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



MINISTRY OF PLANTATION INDUSTRIES

THE COCONUT RESEARCH INSTITUTE

SHORT ANNUAL REPORT – 2018

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 (CRB)

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. Nine meetings were held during the year.

The Members of the Board

Record of Attendance

Mr. Jayantha Jayewardene, Chairman / CRB	-	08/09 (Upto September)
Mr. H. M. K. Herath, Chairman / CRB	-	01/09 (From September)
Ms. Sureka Attanayake / Ministry Representative	-	09/09
Mr. H. K. U. K. Rupasinghe, Chairman / CDA	-	07/09
Mr. Y. L. K. Yakandawala, Chairman / CCB	-	04/09
Dr. Rohan Wijekoon, Director General / DOA (retired)	-	00/09 (Upto July)
Dr. W. M. W. Weerakoon, Director General / DOA	-	01/09 (from July)
Dr. S. F. N. Silva, Representative from CGA	-	08/09
Dr. J. D. H. Wijewardena, Director/Secretary/CARP	-	07/09
Mr. C. H. S. Dangalle/Treasury Representative	-	08/09
Mr. Gamini Rupasinghe	-	08/09
Dr. K. P. Premaratne	-	09/09
Dr. L. C. P. Fernando, Director/CRI	-	09/09

Secretary-to-the-Board - Dr. (Mrs) Sanathanie Ranasinghe, Additional Director

CRB: Coconut Research Board

CRI: Coconut Research Institute

CDA: Coconut Development Authority

CCB: Coconut Cultivation Board

DOA: Department of Agriculture

CGA: Coconut Growers' Association

CARP: Council for Agricultural Research Policy

The Audit and Management Committee

Altogether 03 meetings were held during the year to discuss the Audit & Management activities of the Institute.

The members of the Audit committee are;

	Name	Record of attendance
Chairman & treasury Representator	Mr. C. H. S. Dangalle	3/3
Ministry Representative	Ms. Sureka N. Attanayake	3/3
Board member	Dr. K. P. Premarathne	3/3
Observer from AGD	Mr. L. P. Jayantha Pushpakumara	3/3
Observer	Mr. W. A. D. D. M. Priyantha	3/3
Chairman/CRB	Mr. Jayantha Jayewardene	3/3
Director/CRI	Dr. (Mrs) L. C. P. Fernando	3/3
Internal Auditor	Mr. P. W. A. Fernando	3/3
Convener, Secretary to the Board	Dr. (Mrs) Sanathanie Ranasinghe	3/3

AGD: Auditor General Department

Director's Message



In 2018, the Coconut Research Institute continued Research & Development, Technology Transfer activities and various service functions to support stakeholders to enhance the coconut production and its revenue. It was soothing to note that the coconut yields were catching up from the drastic downfall in 2017. It showed an upward trend and reached annual national production (ANCP) of 2736.9 Mn nuts in 2018, which was only a -7% deviation from that forecasted by the CRI. Consequently, it was recommended to ban importation of frozen coconut kernel and lift the ban on export of fresh nuts and proposed new tariff levels for a sustainable coconut industry in 2018. The forecast of ANCP for 2019 was 2828.3 ± 25.8 Mn nuts.

Three new recommendations were made during the year. A gel formulation combining the majorred palm weevil pheromone component with minor components trapped considerably higher number of red weevils than the currently produced pheromone formulation. This new formulation was introduced as an interim recommendation for trapping of red weevil in coconut plantations. CO-3 fodder grass which contains 10-14% crude protein and 30-36% crude fiber, yielding 15 – 22 Mt/ha/year of dry matter and fodder sorghum containing 12-16% crude protein and 28-32% crude fiber with a dry matter content of 5-7 Mt/ha grown in between coconut palms were recommended as feeds for intensive and semi intensive livestock farming systems in coconut plantations in wet and intermediate zones.

Research highlights of the year indicated that the hybrid between Sri Lankan Tall and exotic Rennel Island Tall (T x RIT) is superior to all other recommended hybrids in terms of nut yield and fruit components making it as a prospective cultivar for future recommendation. Research showed that application of biochar increases the microbial community compositions and moisture holding capacity of the soil. While confirming the adoption of currently recommended integrated management package significantly decreases black beetle damage (75%) in coconut plantations it was shown that including pheromone-baited trapping would further reduce the damage by about 20%. Research revealed that quality parameters such as moisture content, free fatty acid content and peroxide value of virgin coconut oil was always significantly lower than that of white coconut oil, however storing both types of oils more than 08 months exceeds the safety quality level. A study concluded that treacle produced from coconut inflorescence sap collected fresh and in cooled conditions without adding “hal bark” has higher sensory attributes. A vulnerability index to climate change was developed and sensitivity of small holders in the Kurunegala

District was quantified and mapped. With the objective of guiding the coconut growers and policy makers in selecting areas for new coconut cultivations in dry zone (Ampara, Batticaloa and Trincomalee districts), an important research was initiated to identify and map suitable areas considering the important climatic and topographical parameters. A new laboratory for insect behavioural and electrophysiological research was established.

CRI continued its development activities with respect to producing seed nuts for national replanting programme, maintaining the buffer zone of the Weligama Coconut Leaf Wilt disease, producing predatory mites and parasitoids for the management of coconut mite and coconut caterpillar respectively, monitoring the performance of field planted tissue culture plants, maintaining of demonstrations of intercropping and farming systems, maintaining the Technology Park and inspecting oil palm nurseries. Land suitability maps for non-traditional coconut growing districts was developed completely. CRI also introduced a set of guidelines for the sustainable management of the oil palm plantations in Sri Lanka. The first ten tissue culture oil palm seedlings produced by the institute was field planted at Elpitiya estate.

In addition to the most popular technology transfer programme, the “Certificate Course for Coconut Cultivation and Value Addition” all other routine technology transfer programmes were conducted for extensionists and various other stakeholders successfully. A series of workshops were commenced to the plantation companies and large-scale coconut growers to provide a platform to address their issues in coconut cultivation. CRI also continued to assist the coconut growers and processors by providing analysis/test reports of various substrates, soil and land suitability reports, supply of bio control agents, provision of yield prediction and meteorological data and demonstrating various farming systems which were in high demand.

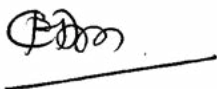
Three special Treasury grants were provided to the institute in 2018 to improve the Genetic Resource Centres and Kinyama seed garden jointly established with the Chilaw Plantations Ltd. to increase seed nut production, construction of a laboratory to assist small-medium scale coconut processors in setting up new processing plants and construct a laboratory for advanced scientific research.

The 03 Genetic Resource Centres and 08 Research Centers maintained with self-funding continued to produce hybrid seed nuts for the national requirement, supported various research trials and maintained demonstrations for the use of coconut growers and the public.

It was a honor that CRI was identified to conduct the first international certificate course in Coconut Plantation Management by the Asian and Pacific Coconut Community (APCC). This comprehensive 52-day long scientific course jointly organized with the APCC was held in mid-year and attended by 14 participants from 08 countries.

CRI scientists closely interacted with local and overseas institutes in various capacities and actively contributed to development of science. A research collaboration with Coconut Research Institute of China was initiated. Eight research papers in international journals, 01 in a local journal, 11 book chapters and 36 papers in conferences/workshops locally and internationally were published. Five policy documents were submitted to the Ministry. Three scientists received 10 awards for various scientific achievements. Staff served in many scientific committees and resource persons and supervised undergraduate and post graduate students. The staff attended various training programmes locally and internationally in capacity and human resource development.

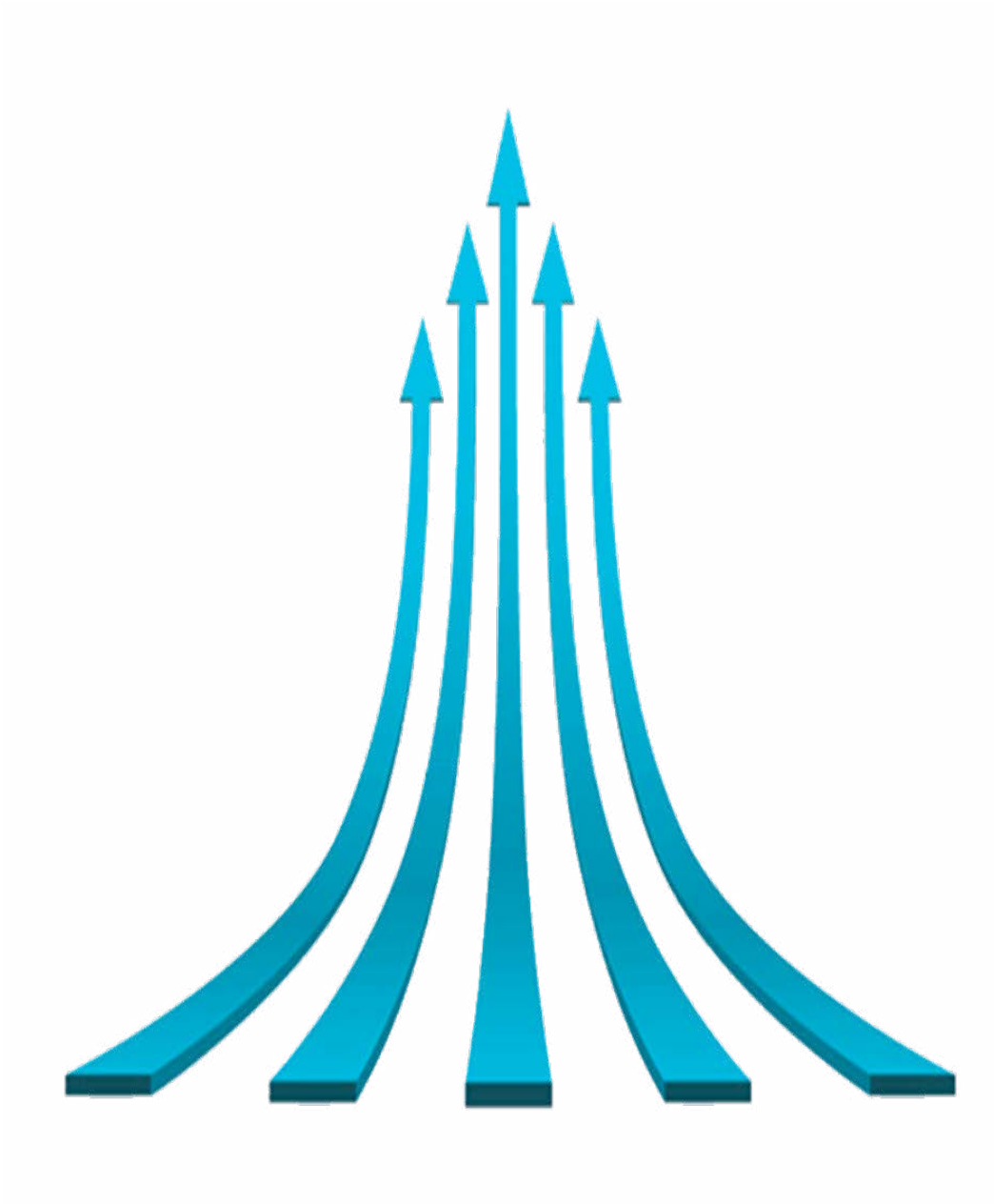
I wish to thank all staff of the institute and the estates for their untiring efforts to achieve the goals of the institute. I am grateful to the Hon. Minister of Plantation Industries, Secretary and the officials of the Ministry of Plantation Industries for their guidance and support extended to us during the year. I appreciate the Coconut Cultivation Board, Coconut Development Authority, Universities, government departments, institutes, coconut growers and industrialists collaborated with us during the year.



Dr. (Mrs) L. C. P. Fernando

Director, Coconut Research Institute

Research Recommendations



Interim Recommendation on gel-type dispenser with new combination of pheromone components for red palm weevil



The new gel-type dispenser for red palm weevil pheromone

Pheromone gel containing formulation of 4 –methyl -5- nonanol (major component) and 4 –methyl -5- nonanone (minor component) 9:1 ratio + ethyl acetate (5 volumes) is recommended for mass trapping of Red palm weevil.

Crop Protection Division

CO-3 fodder grass as a feed for livestock in coconut plantations

CO-3 fodder grass is recommended to be used as a feed for intensive and semi intensive livestock farming systems in coconut plantations in wet and intermediate zones to improve



CO-3 fodder grass cultivation in Poththukulama estate

the overall productivity. CO-3 cuttings should be planted at 1m x 1m spacing for maximum of five rows in between two coconut rows leaving the manure circles unutilized. Best harvesting interval is 30 - 45 days which provides the highest biomass yield with high crude protein content. Dry matter content of 15 – 22 Mt/ha/year could be obtained from five rows of grasses in between two coconut rows with 30 days harvesting interval with 10-14% crude protein and 30-36% crude fiber.

Agronomy Division

Fodder sorghum as a feed for livestock in coconut plantations

Fodder sorghum is recommended to be used as a feed for intensive and semi intensive livestock farming systems in coconut plantations in wet and intermediate zones to improve the overall productivity. Fodder sorghum seeds should be seeded (two seeds per hole) at 1 ft x 1 ft for maximum of twelve rows in between two coconut rows leaving the manure circles unutilized. Fodder sorghum plants are highly sensitive to inorganic fertilizer and harvesting should be done at the maturity of two months before flowering. Dry matter content of 5-7 Mt/ha could be obtained from one cutting of fodder with 12-16% crude protein content and 28-32% crude fiber content.



Fodder sorghum cultivation in
Makandura estate

Agronomy Division

Policy Proposals



Fresh nut exports

By considering the requests of the coconut processors, Ministry of Plantation Industries decided to ban the export of fresh nuts from 18th June 2017 onwards. This decision was continued up to end August, 2018 and lifted the ban of fresh nut export from 01st September, 2018. Further to promote fresh nut export, service charge collected by Coconut Development Authority was reduced to Rs. 8.00 from Rs. 15.00

Agricultural Economics & Agribusiness Management Division

Special commodity levy for imported kernel

Special commodity levy was adopted for the imported kernel as Rs. 1.00 per kg with effect from 14th December, 2017.

Agricultural Economics & Agribusiness Management Division

Tariff structure for edible oil importation and fresh nut prices

As a result of nut shortage in 2017 in the country, coconut processors requested to reduce the palm oil import tariff intending to reduce the coconut oil production and make available nuts for other industries. By considering this request, tariff rates were revised for crude palm oil to Rs. 110.00/kg, palm kernel oil to Rs. 130.00/kg and palm oil imported in packing to Rs. 135.00/kg with effect from 24 February, 2017. Further as a budget proposal imported edible oil tariff was revised with effect from 09 November, 2017. With this change, tariff rates for crude palm oil was reduced to Rs. 95.00/kg, crude palm olein to Rs. 100.00/kg and palm oil imported in packaging to Rs. 110.00/kg. These rates were revised back to the previous rates effected from 15th December 2017 and again this tariff rates were revised on 01 June, 2018. According to the revision, tariff rate for crude palm oil was increased to Rs. 130.00/kg, palm kernel oil to Rs. 150.00/kg and palm oil imported in packing to Rs. 155.00/kg.

This tariff rates were further revised on 25 August, 2018. According to the revision, crude palm oil tax was increased from Rs. 130.00 to Rs. 150, palm oil refined and packed Rs. 155.00 to Rs. 175.00, crude palm kernel oil Rs. 150.00 to Rs. 170.00 and coconut oil and virgin coconut oil Rs. 150.00 to Rs. 170.00.

Timeline of tariff policy changes on imported edible oil

Year	Crude palm oil 1511.10 (Rs./kg.)	Palm oil (refined/ packaged) 1511.90.20 (Rs/kg)	Crude Palm kernel oil 1513.11 (Rs./kg.)	Coconut oil VCO 1513.11.11 (Rs./kg.)	Date
2017	110	135	130	130	24.02.2017
	105	110	105	105	09.11.2017
	110	135	130	130	15.12.2017
2018	130	155	150	150	01.06.2018
	150	175	170	170	25.08.2018

According to the CRI forecasts, there was a surplus of nuts in the second half of 2018 owing to the favorable rainfall and temperature observed during the last quarter of 2017 and first half of 2018, even though the first half of 2018 is encountered with a shortage of nuts. Forecasted figures have shown that, the annual coconut yield for the year 2018 is 2947.4 ± 22.56 million nuts which is 20.2% increase compared to year 2017 (2450 Mln. nuts). To absorb the surplus nuts into the industry, CRI issued the following recommendations to the Plantation Ministry.

Recommendation 1

To balance all the industries and to promote coconut oil production, tariff levels for imported edible oil should be adjusted. Therefore, by considering the CIF prices of imported edible oils CRI recommended to revise the special commodity levy of crude palm oil from Rs. 130.00 per kg to the level of Rs. 175.00 per kg and special commodity levy of palm kernel, refined palm oil and packed palm oil from Rs. 150.00 to the level of Rs. 200.00.

Recommendation 2

To promote fresh nut exports:

1. Remove the fresh nut export ban immediately as sufficient quantity of excess nuts is available in the market
2. Reduce the registration fee in CDA for small scale fresh nut exporters (export less than 30,000 nuts per month) to Rs. 50,000.00
3. Remove the handling fee of Rs. 15.00 paid to CDA by all exporters

Recommendation 3

Initiate compensation scheme for DC producers to continue their production process

Waving Economic Service Charges

Economic service charge (ESC) is defined as a tax that to be charged from every person and every partnership for every quarter of every year of assessment commencing on or after April, 1, 2006 in respect of every part of the relevant turnover of such person or partnership for that relevant quarter, at the appropriate rate specified in the Schedule to Economic Service Charge Act, No. 13 of 2006 and certified on 31st March, 2006. Under this act coconut sector is also charged a tax at the rate of 0.5 per cent of turnover. The Exporters Association of Coconut Based Substrates has requested to wave the ESC for three years from 2018.

In the short run: The effect of impose of ESC depend on the market power of the exporting country. If a country imposes a domestic tax which has no market power to change the world market price, the country will lose benefits compared to the trade before the tax is imposed. World market share of most of the Sri Lankan coconut products are less than 20 per cent. Hence the impose of ESC by Sri Lanka will be net welfare loss to the country. Contribution of coir and coir products and coconut milk and cream exports to the world market share are as high as 39 and 47 per cent respectively. Therefore, they may get the benefit of ESC since they may act as a large country in terms of trade.

In the long-run: However, the products in which world market contribution are high, may lose their trading partners as a result of a domestic tax in the long-run. Coir and coir products are facing high competition from synthetic substitutes. If the price is increased in the world market due to a domestic tax, the importing countries will look for substitutes and other suppliers. Coconut cream/milk market also has the risk of losing its market as mostly they are niche-markets. Therefore, imposition of domestic taxes as ESC on coconut exports is a loss to the country.

Recommendation

World market share of the most of the coconut and coconut-based products is less than 20 per cent. Hence, it is beneficial to Sri Lanka to remove ESC for such products. There are certain coconut-based products that contribute highly for international trade which can gain from impose of a domestic tax. However, this happens if the lost benefits in the country is lower than the tax paid by the foreign consumers. If not, these producers are also losers due to impose of a domestic tax as they lose their buyers. Therefore, it is advantageous to remove the ESC from coconut and coconut-based products for a period of 3 years from 2018.

Agricultural Economics & Agribusiness Management Division

Importation of Coconut Kernel, De-husked Nuts and Copra

Coconut industry plays a vital role in the country's economy and coconuts are one of the essential food constituents in Sri Lankan cuisine. At present, two third of the domestically produced fresh nuts are utilized by the local consumers while the rest is absorbed by different

coconut-based industries comprise of exportable value-added coconut products. However, different estimates have proven that the industry has the potential to accommodate higher levels of production to cater for the increasing demand in the international market.

Importation of frozen kernel can be allowed for fill the gap in industrial uses with the assurance of the re-export of the total produce under proper labelling while mentioning the origin of the raw materials. However, by considering the high risk of potential introduction of new pest and diseases, CRI seriously consider that the importation of coconut is not an option unless it is in compliance with the quarantine regulations.

Recommendation

As sufficient quantity of nuts is available for processing and consumption and also excess nuts are available, ban the importation of frozen kernel and study the reasons for sudden demand reduction for desiccated coconut in the international market.

Agricultural Economics & Agribusiness Management Division



Research and Development Highlights



COCONUT VARIETAL IMPROVEMENT

Evaluation of new exotic crosses

Genetics & Plant Breeding Division

Genetics and Plant Breeding Division started a new crossing programme in 2006 with imported pollen of three promising exotic varieties namely Malayan Red Dwarf (MRD), Rennel Island Tall (RIT) and Tagnanan Tall (TAGT) with the objective of developing early flowering and high yielding new coconut hybrids for the national replanting programme in Sri Lanka. These exotic varieties were crossed in various combinations with Sri Lankan Tall and Sri Lankan Green Dwarf. Newly developed hybrids were field planted in 2008 and the data analysis revealed the high potential of Sri Lankan Tall x Malayan Red Dwarf (T x MRD) and early flowering nature of Sri Lankan Tall x Rennel Island Tall (first flowering in 2 ½ years and 50% flowering in 4 ½ years) which we had reported earlier.

Sri Lankan Tall x Rennel Island Tall (T x RIT) appears superior to others in terms of nut yield and fruit component analysis. New hybrid T x RIT produced 10,791 nuts/ha/year eight years after planting which is higher than all tall x tall hybrids evaluated at Middeniya and Siringapatha trial blocks and yield was not significantly different with Dwarf x Tall hybrids. Fruit component analysis also revealed that it has the highest kernel productivity (4,547 kg/ha/year) over all new and recommended cultivars including Kapruwana. Kernel productivity of T x RIT was almost double over the recommended tall x tall hybrid cultivar CRISL 98 (1,915 kg/ha/year). T x RIT has also shown great potential for a future recommendation. Data recording will be continued in the multi-locational trials to obtain comprehensive evidence.

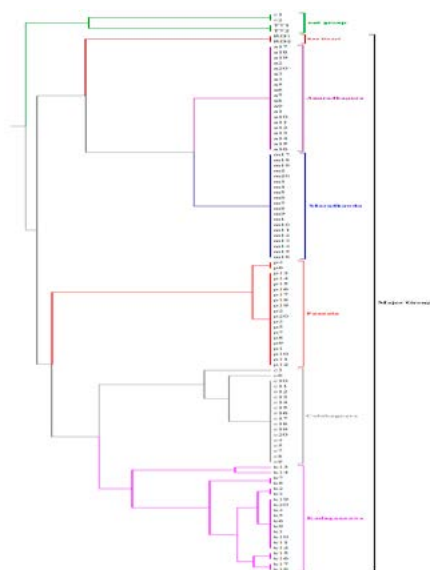


Young Sri Lankan Tall x Rennel Island Tall (T x RIT) palms and a bunch eight years after planting

Diversity analysis of indigenous King coconut germplasm in Sri Lanka

Genetics & Plant Breeding Division

King coconut is an indigenous coconut variety in Sri Lanka and it has very high potential for using as a beverage. 6.1 million King coconuts were exported in 2017, generating much needed foreign exchange to Sri Lankan economy. Yet, there is no systematically selected King coconut cultivar with high sugar and nutrient content issued to farmers or improved planting material available. No systematic conservation has been carried out in the past too. There are old King coconut populations (over 50 years old), possibly having rich genetic diversity, currently being replaced by high yielding coconut cultivars or destroyed due to land fragmentation. Therefore, there is an urgent need to select a new King coconut cultivar to the beverage industry and conserve the King coconut germplasm. With these objectives, a comprehensive phenotypic and molecular screening of old king coconut populations were initiated in 2018. As a preliminary study, genetic diversity of the five old King coconut populations (Anuradhapura, Marandawila, Pannala, Colambageara and Kadugannawa) were evaluated with the molecular markers (SSRs) and high level of population differentiation and moderate genetic diversity was observed. Nut water quality will also be evaluated from these populations in future. Genetic diversity and nut water quality will be used to release a new King coconut cultivar and germplasm conservation.



SSR based phylogenetic tree and a bunch of King Coconut

Clonal propagation of Coconut

Tissue Culture Division

Production of tissue cultured coconut planting material was continued using ovary culture protocol. In order to overcome limitation of low regeneration of clonal shoots with current protocol, a protocol with high concentration of growth regulator and charcoal combination was tested. Callus initiation and multiplication was achieved and regeneration is yet to evaluate. Effect of polyamines on callus initiation and multiplication was tested by adding different concentrations of spermidine to media.

Two field trials were established in Ambakotte (IL_{1a}) and Katunayake (WL₃) with eighty clonal plants acclimatized during the year. One clone of cultivar TSR was used in these trials with seedlings of same cultivar to evaluate performance of tissue cultured coconut planting material. Initial growth performance of tissue culture plants already established in the field is comparable with growth of seed derived plants. Two anther derived plants were also field planted in Bandirippuwa Estate.



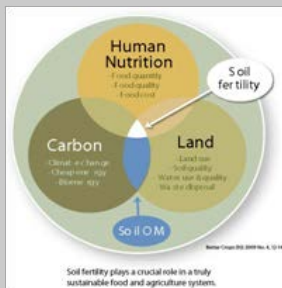
Field planted clonal coconut plants in Katana

Identification of new explants for vegetative propagation of coconut

Tissue Culture Division

To overcome the limitation of ovaries available for culture in ovary culture protocol, more abundant rachilla explants from -4 to -7 inflorescence were tested. Few callus development was observed in medium Y3 supplemented with 650 μ M 2,4-D, 0.25% activated charcoal.

COCONUT PRODUCTION TECHNOLOGY



Biochar Production Using *Gliricidia* Sticks and Paddy husk

Soils & Plant Nutrition Division

The Small- Scale Closed Retort, Artisanal Biochar production technique was successful for the biomasses used in the experiment namely paddy husk and *Gliricidia* sticks. This artisanal charring process reached to a maximum temperature of about 500-600°C, which is known to be the ideal temperature for producing Biochar with higher fixed carbon contents. The char yield of each biomass varied, with *Gliricidia* stick yielding 21.35 % and paddy husk yielding 54.93 % of the fresh biomass.



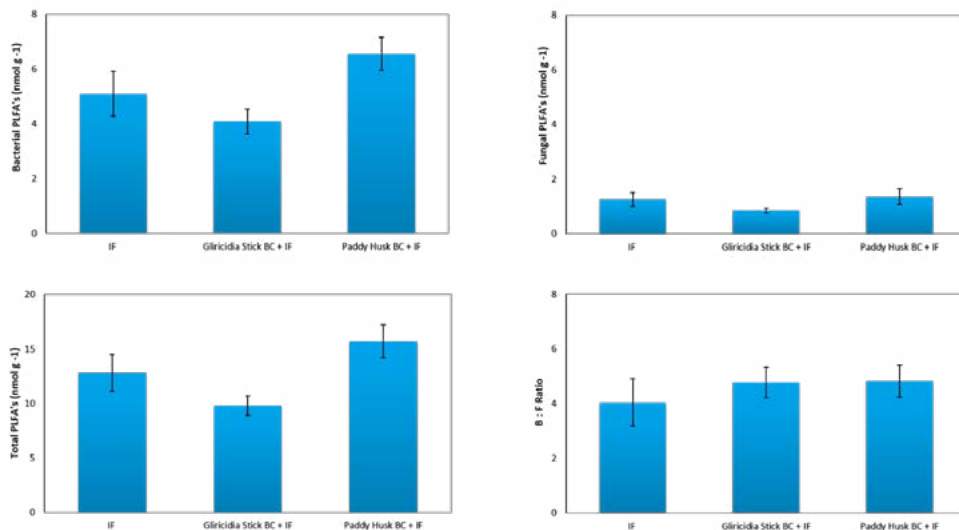
Production of *Gliricidia* stick and paddy husk biochar using Artisanal Biochar production technique

Immediate effect of Biochar (BC) on soil micromcomposition and structure

Soils & Plant Nutrition Division

The Phospholipid Fatty Acid Profiling of the soil samples collected two months after the application of biochar in the field experiment showed significant positive shifts on the bacteria to fungal community structure when biochar was applied. The results showed that biochar application increased the microbial community compositions of G + (gram positive),

G- (gram negative) bacteria, and actinomycetes whereas no influence was observed on Arbuscular mycorrhizae populations in the short term. Thus, Biochar applications to the infertile coconut soils could be influential the soil nutrient cycles *via* changes in soil microbial dynamics. Continuous investigations are being carried out in order to evaluate the long-term impacts of biochar to coconut lands.



Changes of microbial community compositions with biochar application



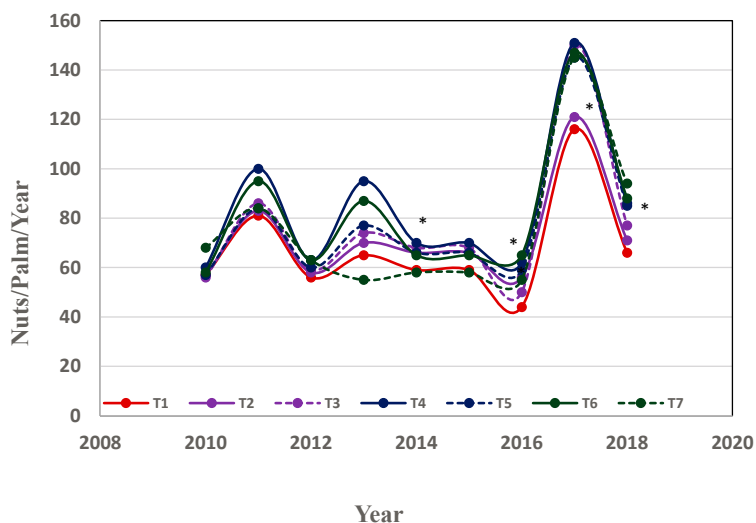
Field application of biochar with fertilizers

Different Fertilizer Placement Techniques

Soils & Plant Nutrition Division

A long term experiment including four different fertilizer placement techniques including current recommended surface application, trench application at a width and depth of 45 cm and 10 cm respectively and 0.5 m away from the base of the palm, four pit application 45 cm X 45 cm pits 0.5 m away from the base of the palm, and basin method, 1.75 m basin towards the base conducted from 2011 to 2018. The results revealed that a significant yield improvement and sufficient nutrient levels in the palms treated with continuous trench fertilizer application and four pits techniques over the control. Therefore, the aforementioned two techniques are to be introduced with inorganic and inorganic + organic half in each as recommendations. Yield fluctuations are shown in the figure where a remarkable increase

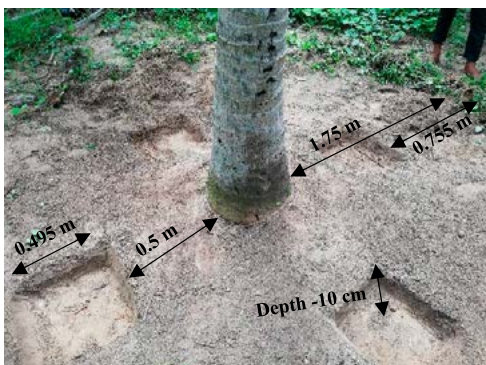
was observed due to the changing of recording pattern of nut counting at the time of picking to the direct nut counting at the canopy with the help of a climber. This increase is not related to other factors or climatic factors.



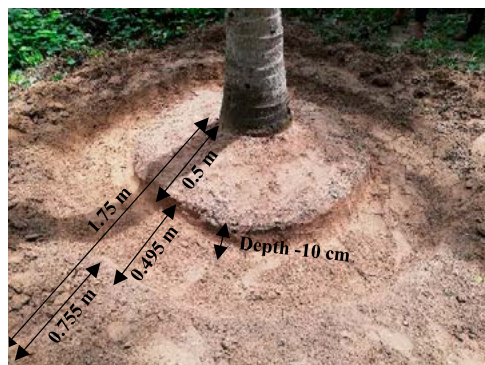
Yield fluctuation during experimental period

* Significant yield changing years (2014, 2016, 2017 and 2018)

- T1** Without fertilizer
- T2** Surface application up to 1.75 m from the palm (inorganic only)
- T3** Surface application up to 1.75 m from the palm (inorganic + organic)
- T4** Fertilizer application in a trench (0.495 m wide, 10 cm deep and 0.5 m away from the palm (inorganic only)
- T5** Fertilizer application in a trench (0.495 m wide, 10 cm deep and 0.5 m away from the palm (inorganic + organic)
- T6** Four pits (0.495 m x 0.495 m x 0.495 m) 0.5 m away from the palm at a depth of 10 cm (inorganic only)
- T7** Four pits (0.495 m x 0.495 m x 0.495 m) 0.5 m away from the palm at a depth of 10 cm (inorganic + organic)



Four pit method



Trench method

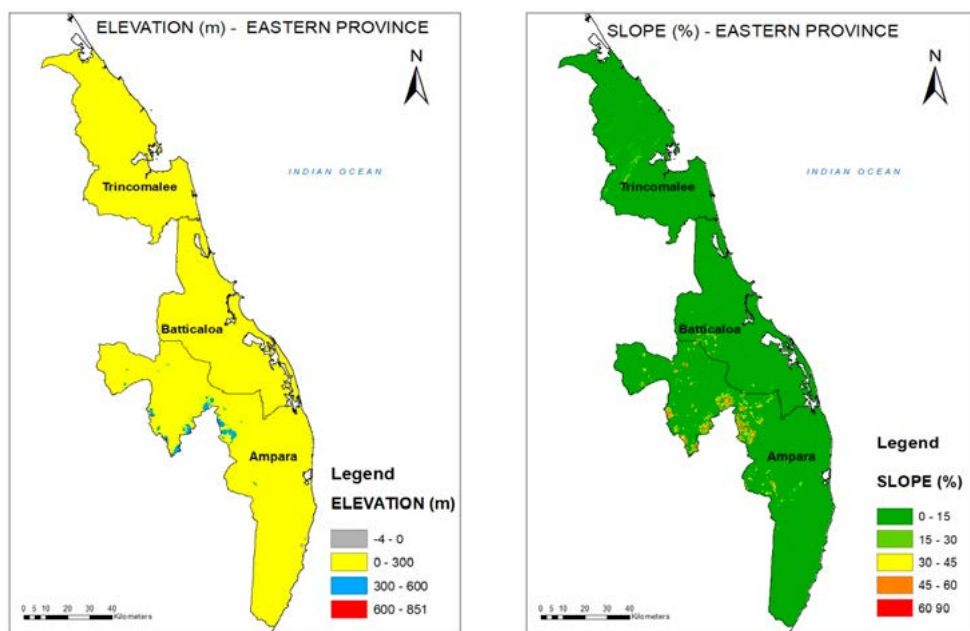
Identification of suitable areas in Eastern province considering temperature, rainfall, slope and elevation for expanding the coconut cultivation

Soils & Plant Nutrition Division

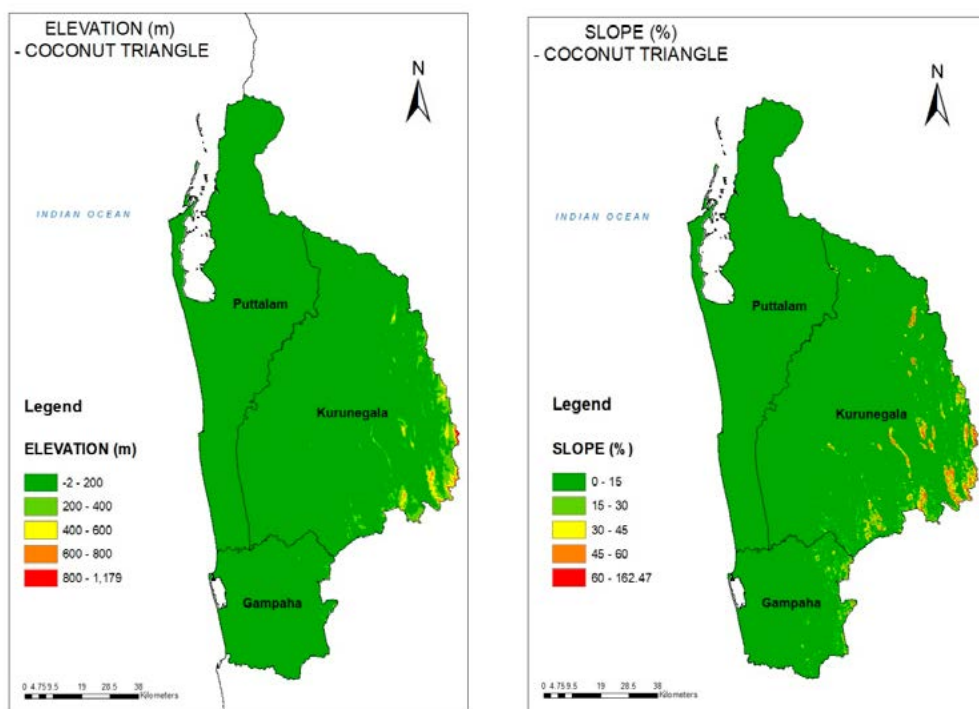
In identification of suitable lands in non-traditional coconut growing areas to expand coconut cultivation, the knowledge on temperature, rainfall, slope and elevation in those areas is very important factors those affect the potential yield of coconut cultivation. As these three districts namely Trincomalee, Batticaloa and Ampara included in the Dry zone, assessing of ideal temperature and rainfall zones, slope classes and elevation of those areas is a necessity.

Maps of temperature, rainfall, slope and elevation were derived using the soil maps which have already prepared in Eastern province. Hence, most favorable areas for growing coconut could be identified using those maps. In addition, these maps can be used for crop diversification programs.

Using similar technique, temperature, rainfall, slope, and elevation maps in coconut triangle were also derived.



Elevation and slope maps of Eastern Province

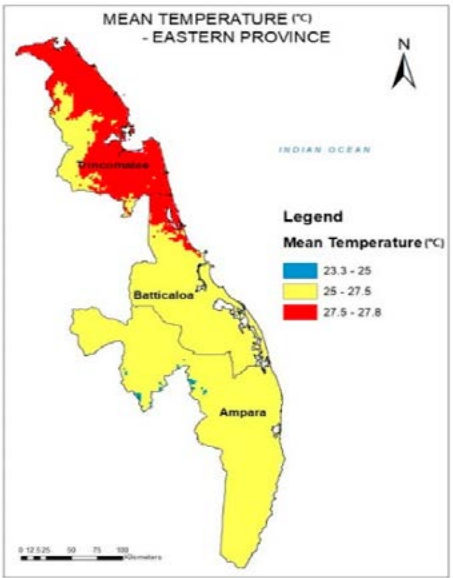
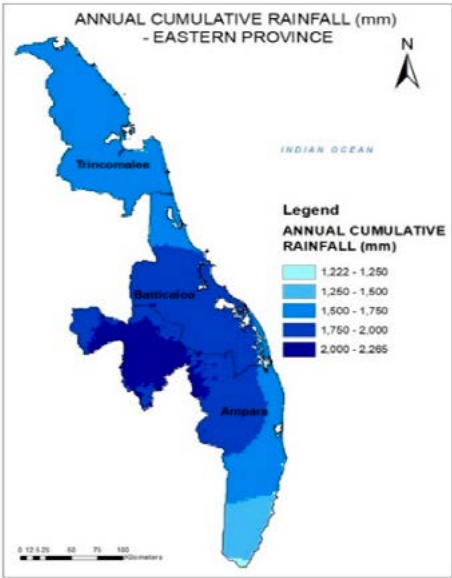


Elevation and slope maps of Coconut triangle

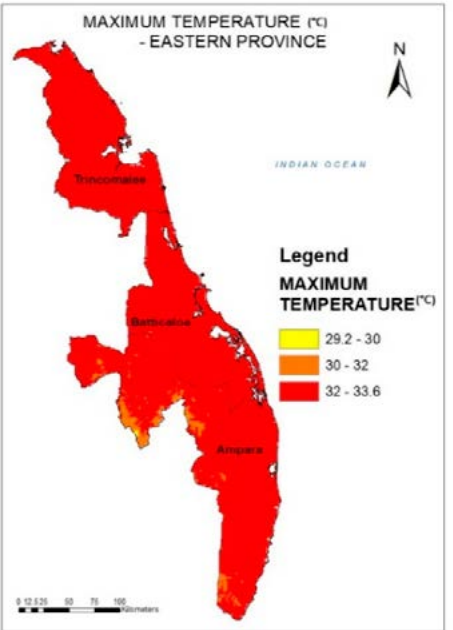
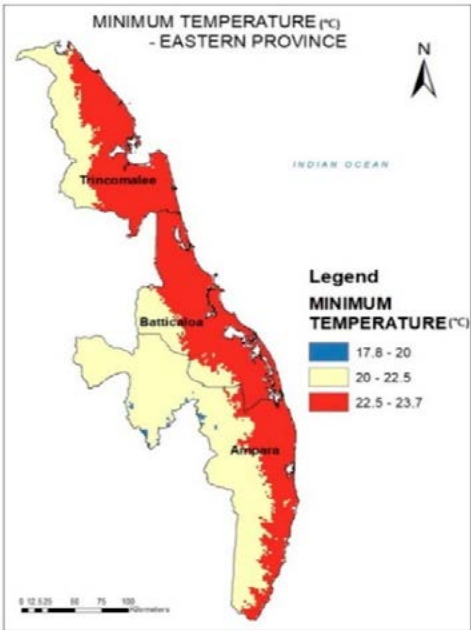
Drought vulnerability in coconut triangle

Soils & Plant Nutrition Division

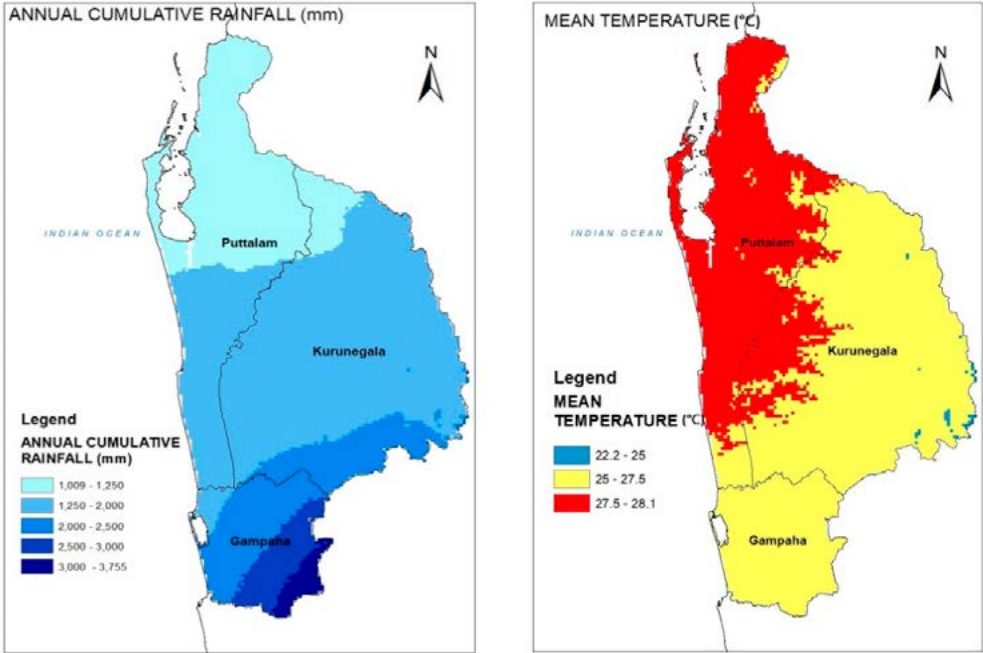
Rainfall and temperature have already been identified as one of the key factors of plant growth and production. Therefore, rainfall and temperature provide valuable outcomes to identify climatic vulnerability for coconut cultivations. Instead of annual cumulative figures vulnerability was assessed via dry spells and drought indicator values for Eastern Province and coconut triangle.



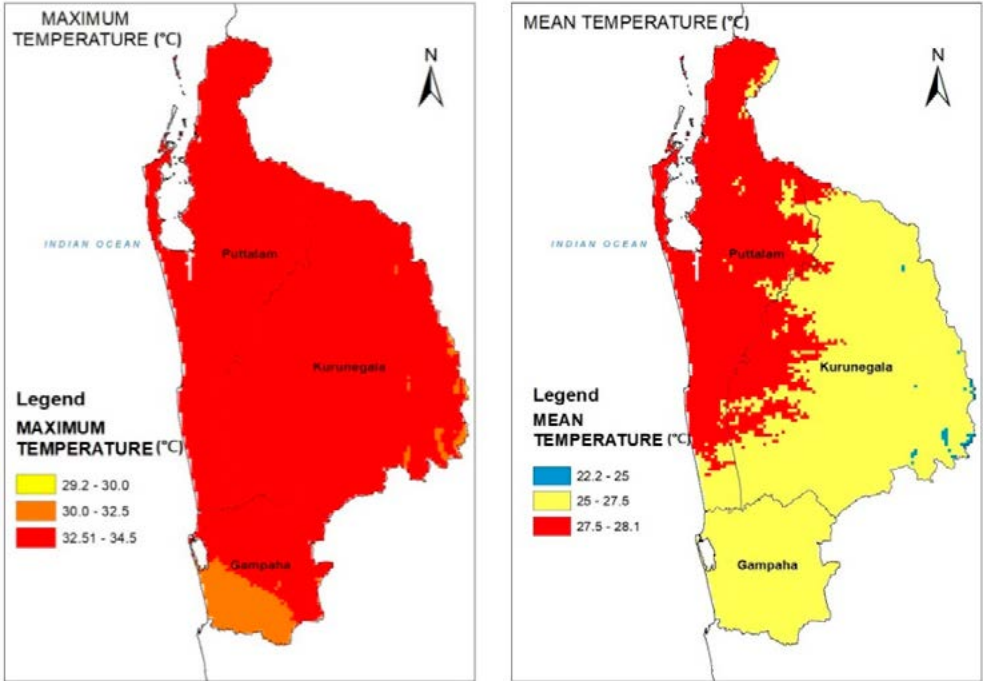
Annual and mean temperature of Eastern Province



Maximum and minimum temperature of Eastern Province



Minimum and annual temperature of coconut triangle

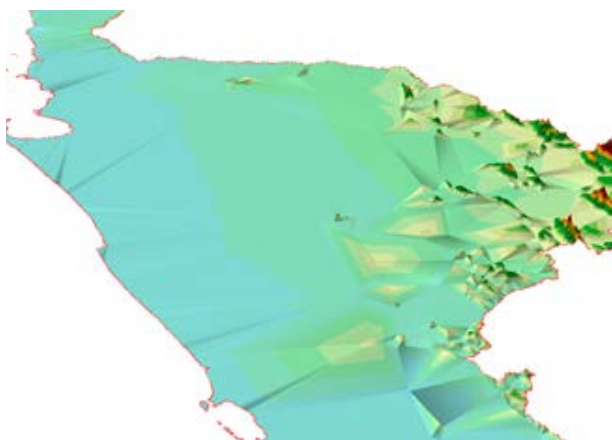


Maximum and minimum temperature of Coconut triangle

Triangular Irregular Networks (TIN) models

Soils & Plant Nutrition Division

Triangular Irregular Network (TIN) models for coconut triangle and Eastern Province have been prepared. These models can be used to derive flow direction and watershed data of the area. Flow direction and watershed data are important to identify soil erosion possibilities and water accumulation areas. Furthermore, Water scarcity and high temperature are the main unfavourable conditions for the coconut in Dry zone. Non traditionally coconut growing areas mostly concentrated in Dry zone. Part of the coconut triangle is also falls in Dry zone. To Expand coconut cultivation in non-traditional coconut growing areas of which suitable soils present, irrigation plan is one of the essential management practices to get maximum benefit. Thus, the knowledge on flow direction and watershed areas is very useful for planing irrigation to fulfill the growers need.



TIN model - Coconut Triangle



TIN model - Eastern Province

Development of sustainable moisture conservation method by using bio-char for coconut plantations

Agronomy Division

Soil moisture conservation is considered as one of the most important cultural practices in coconut plantations that are grown under rain fed conditions, particularly in the intermediate and dry zones of Sri Lanka. According to the recent research findings, carbonized plant materials (Biochar) produced from incomplete combustion of organic materials are capable of maintaining high levels of soil organic matter, conserve soil moisture and available nutrients in the soil. Therefore, this experiment was established in a thirty-year-old coconut stand in an estate at Rasnayakapura representing dry zone to study the potential of carbonized plant materials (Biochar) in soil moisture conservation in coconut lands. According to the results, burying of bio-char 15kg and 10kg per palm increased soil moisture content in the palm manure circle soil by 12% and 7% respectively compared to the control treatment at 0-30 cm depth while 24% and 17% increases were observed respectively at the boundary of manure circle adjacent to the biochar pit.



Carbonized plant materials (Biochar)

Mix cropping systems to increase the nut yield in dry zone coconut plantations

Agronomy Division

This experiment was designed to evaluate the impact of adopting agroforestry based on farming systems to overcome the adverse climatic effects on nut production of coconut plantations in the dry zone. This experiment was conducted in Maduru-oya Seed Garden and domesticated forest species; *Artocarpus heterophyllus* (Jak fruit), *Gliricidia sepium* and *Anacardium occidentale* (Cashew) based mixed cropping system was established with coconut to understand the change of micro-climatic conditions in coconut plantations in the dry zone. Seedling height, leaf length and total available nitrogen, available phosphorous, soil exchangeable potassium, organic matter contents were higher in both top and sub soils in the mixed cropping systems than the monocrop.



Coconut and Gliricidia mixed crop model at Maduruoya estate

Evaluation of growth performance of CO-3 fodder grass under different management conditions in coconut plantations

Agronomy Division

CO-3 is considered as one of the highest yielding perennial tropical fodder grasses and being used as a cut-and-carry forage for stall feeder system. This experiment was designed to determine the fodder biomass production under different management levels and to determine the effects of growing CO-3 fodder grass under coconut on soil physical, chemical and biological properties. The experiment was established at Poththukulama Research Station situated in Low Country Intermediate zone. CO-3 grass was established in between coconut rows by different methods and biomass was harvested at different intervals. The highest CO-3 dry biomass was recorded in five rows of CO-3 planting system with 30-day- lopping interval and three rows of CO-3 planting system with 30-day- lopping interval methods and the biomass values were 14.89 and 9.71 mt/ha/year respectively in 2018.



CO-3 fodder grass cultivation at Poththukulama Estate

Growth performance evaluation of fodder sorghum under coconut

Agronomy Division

Shortage of quality fodder production and seasonality of feed supply are the major problems that are prevailing in the livestock sector in the dry zone areas of Sri Lanka. Fodder sorghum is a recently developed hybrid grass species to be used as a livestock feed in arid and semi-arid regions in the world and is widely available. This study was carried out in order to quantify the growth performance of commercially grown fodder sorghum under two different fertilizer types and two different spacings under coconut. Fodder sorghum seeds were established in between coconut rows with different spacing and different nutrient sources. The highest fodder biomass of 6.13 mt/ha was obtained from inorganic fertilizer treated 1ft x 1ft spacing provided cultivation in 2018.



Fodder sorghum cultivation at Makandura Estate

Effect of buffalo grazing on soil physical and chemical properties on a silvo pastoral system under the coconut

Agronomy Division

Silvo pastoral systems are a prototype of agroforestry with a livestock component and in coconut plantations it comprises of pasture, livestock and coconut trees. This experiment was designed to determine the effect of incorporating livestock on physical, chemical and biological properties of coconut growing soils and determine the effect of silvo pastoral system on yield of coconuts. The experiment was established in Maduru Oya seed garden situated in Low Country Dry Zone and grazing effect was evaluated as grazing and no grazing while applying fertilizer and without applying fertilizer. Microbial activity, soil organic matter content, bulk density and total nitrogen content of the top and subsoil were comparatively higher in buffalo grazed systems than the control.



Buffalo grazing paddocks at Maduruoya Estate



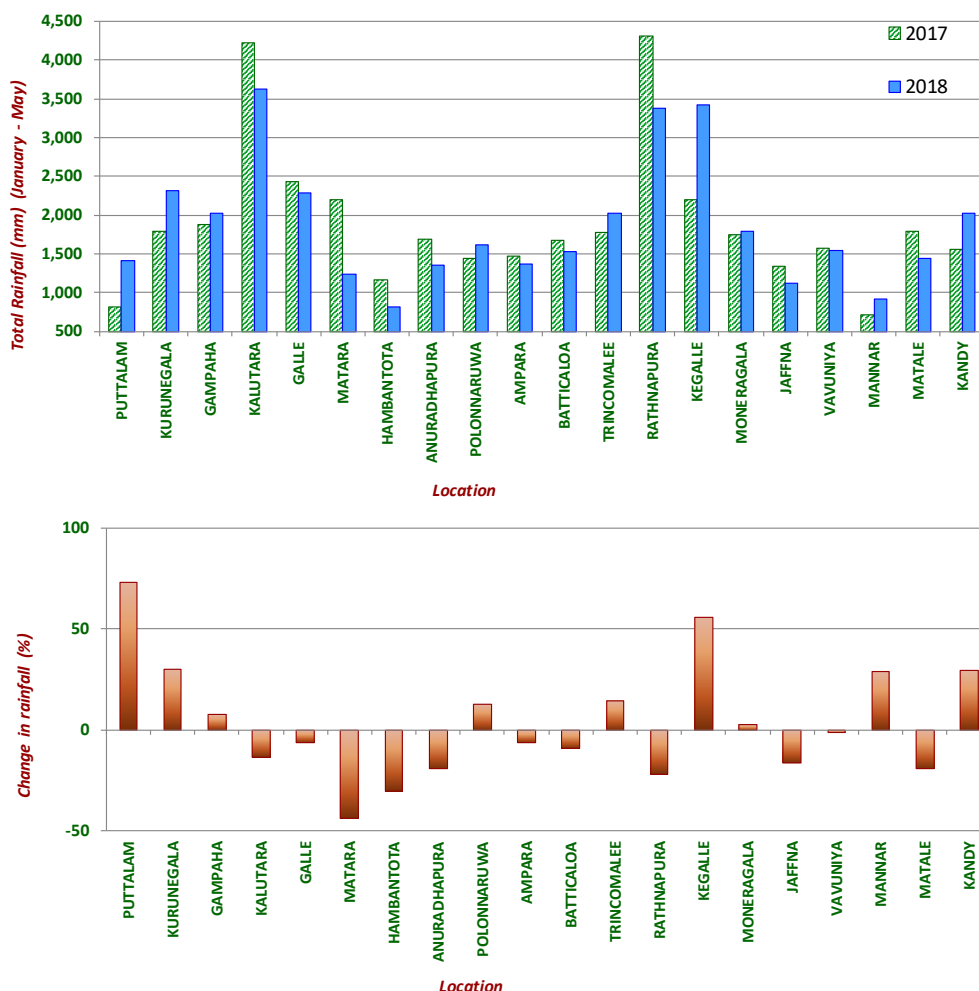
CLIMATE CHANGE EFFECTS ON COCONUT PRODUCTION

Changes in rainfall and maximum air temperature

Plant Physiology Division

When the weather conditions across all coconut growing areas were considered for the previous year, there had been only 1% reduction in average rainfall across all coconut growing districts in 2018 (1864.1 mm) compared to that of 2017 (1889.1 mm). However, substantial variations were observed among districts. Accordingly, the received annual rainfall was higher in some districts such as *Puttalam* (73%), *Kurunegala* (30%), *Gampaha* (7%), *Polonnaruwa* (12%), *Trincomalee* (14%), *Kegalle* (55%), *Mannar* (29%) and *Kandy* (29%) compared to those of 2017. *Puttalam*, *Kurunegala* and *Gampaha* which are the major contributory districts for coconut production, received comparatively higher rainfall in 2018 and that would result in a positive impact for the coconut production in 2019. However, reductions in annual rainfall was observed in some districts such as *Matara* (43%), *Hambantota* (30%), *Anuradhapura* (19%), *Rathnapura* (22%), *Jaffna* (16%), *Matale* (19%) and *Kalutara* (14%) in 2018 compared to those of 2017. Although the annual rainfall was comparatively low in 2018 in districts such as *Kalutara* (3632.6 mm) and *Rathnapura* (3372.4 mm), the amount of rainfall received were fairly sufficient and well spread throughout the year resulting in no major threats to the coconut production.

The average annual maximum air temperature ($T_{\max}$) across all stations covering all coconut growing districts has reduced by about 0.2°C (from 31.9 to 31.7°C) in 2018. $T_{\max}$ remained below the critical temperature of 33°C in major contributing districts. Districts generally with drier climates i.e. districts in North-Central, Eastern, Northern and Uva Provinces have experienced above critical temperatures during April to September period with slight changes in different districts. Therefore, the nut setting of inflorescences opened or within the first three months after opening during the above period in above districts will be considerably affected resulting in low yields. However, compared to the climatic conditions prevailed in 2016 and 2017, the conditions in 2018 were comparatively favourable for coconut production.



Annual rainfall (mm) in 2017 and 2018 and percentage change in annual rainfall in 2018 with respect to those in 2017 in different coconut growing districts

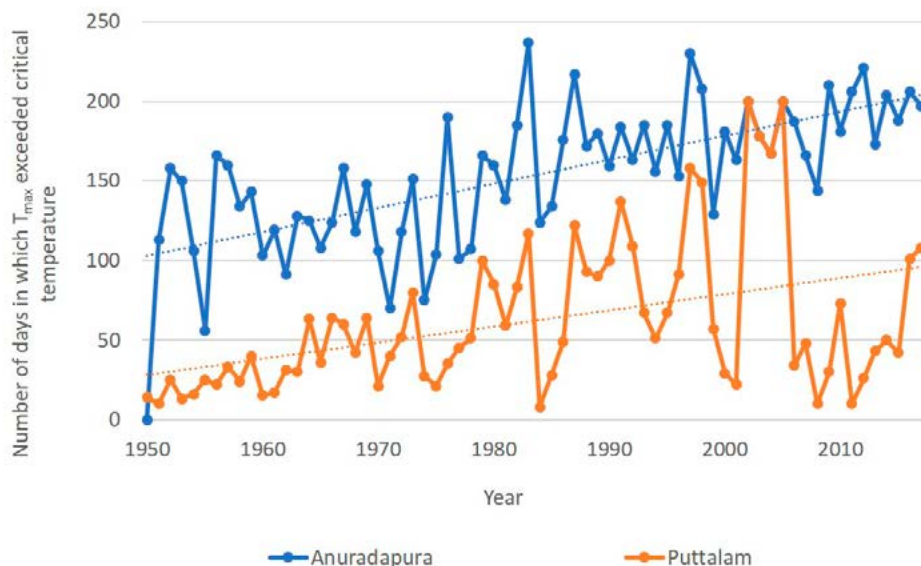
Long term Climate Change in coconut growing areas

Plant Physiology Division

The analyses of climatic data for past 50 years covering the coconut growing areas of the country revealed that the dryness has significantly increased in major coconut growing areas where temperature and rainfall have become significant factors deciding the yield. It was found that maximum air temperature (T_{max}) has increased in the country, significantly in *Anuradhapura*, *Puttalam*, *Hambantota*, *Kurunegala* and *Galle* regions in all four quarters of a year. Further, the air temperature has risen above the critical temperature for coconut, which was evident by the increase of number of days in which the maximum temperature is above 33°C, in all above regions.

Of the coconut growing regions considered, enhancement of dryness/ change of rainfall

distribution over the time is evident by increase of number of dry days in different months. It was found that the first three months are the most vulnerable for the above change in *Galle* (WL2a), *Kalutara* and *Gampaha* (WL3) areas. Number of dry days have also been significantly increased in the latter part of a year (June to December) in *Kegalle* area (WL2b AER). It was further found that extreme rainfall events are yet consistent in *Anuradhapura*, *Puttalam*, *Hambantota*, *Kurunegala*, *Galle* and *Gampaha* regions.

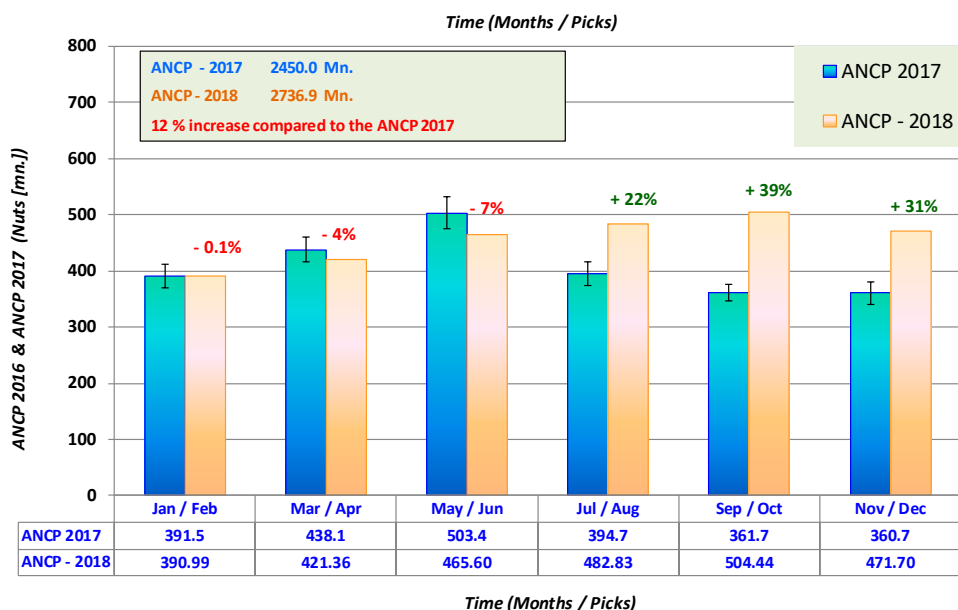
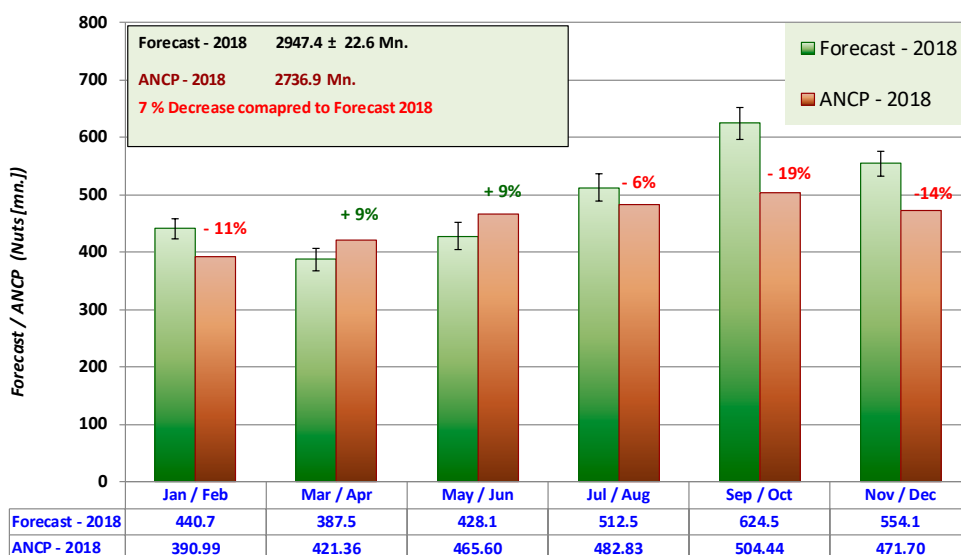


Number of days in which Tmax exceeded the Critical temperature (33°C) in two districts from 1950 to 2017

Effect of climatic conditions on yield variation of coconut

Plant Physiology Division

The Annual National Coconut Production (ANCP) for the year 2018 was estimated based on the yield data collected from more than 900 coconut plantations distributed in all coconut growing districts of the country. The ANCP was 2736.9 Mn nuts in 2018 and this was about 12% increase in yield compared to that of 2017 (2450.0 Mn nuts). Severe drought and the heat stress continued from 2016 and prevailed in early part of 2017 (up to August 2017) significantly reduced the nut setting and crop yield in first 3 picks (January – June) of 2018. However, significant increase of yield was observed in the latter half of 2018 due to the sufficient rainfall received from September 2017 onwards along with the favorable atmospheric temperature. The ANCP 2018 (2736.9 Mn nuts) showed only 7% deviation compared to the prediction for 2018 (2947.4 ± 22.6) thus the forecast was within the acceptable limits.



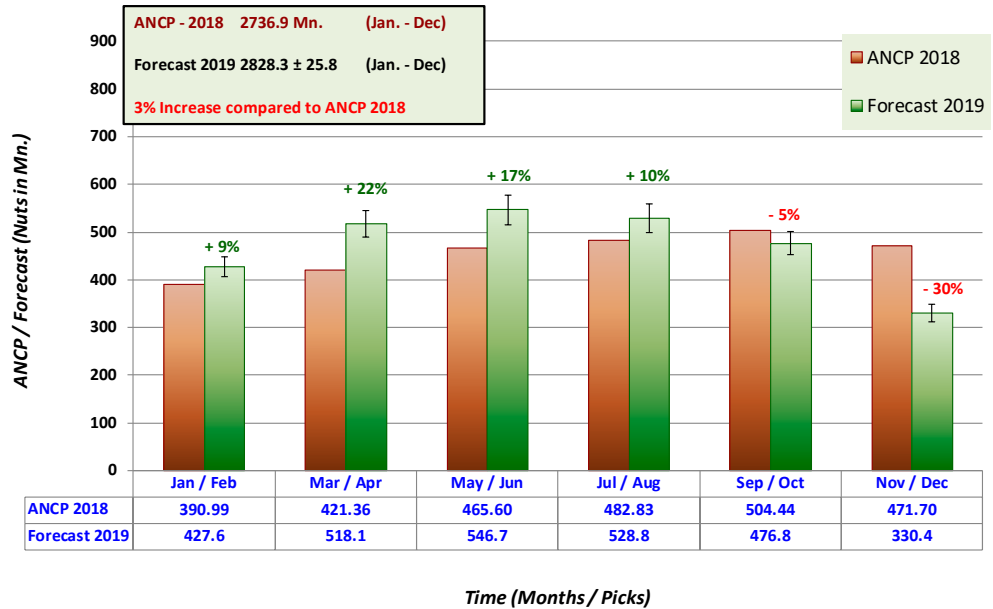
Comparison of the actual annual national coconut production (ANCP) on bi-monthly basis for 2018 with the forecast and its comparison with ANCP of 2017

Forecast of coconut yield of 2019

Plant Physiology Division

The expected change in the yield per palm in 2019 compared to that of 2018 was predicted for the main coconut growing areas; *Kurunegala*, *Kuliyapitiya*, *Gampaha* and *Puttalam* CCB Regions based on the fruit set data and the rate of survival of set fruits. Accordingly, there would be increases in yield per palm in *Kurunegala* (2%), *Kuliyapitiya* (3%) and *Puttalam* (20) CCB regions while *Gampaha* will show almost similar yield (-0.5%) for the year 2019.

Accordingly, the bi-monthly coconut yield predictions for 2019 are 427.6 ± 21.6 for January/February (Pick 1), 518.1 ± 28.1 for March/April (Pick 2), 546.7 ± 30.9 for May/June (Pick 3), 528.7 ± 30.3 for July/August (Pick 4), 476.8 ± 24.5 for September/October (Pick 5) and 330.4 ± 19.2 for November/December (Pick 6) which amounts to a total of 2828.3 ± 25.8 Mn nuts for the year 2019. Thus about 3% higher yield is expected for 2019 compared to the national production for 2018.



Bi-monthly coconut yield forecast for 2019



CROP PROTECTION

Evaluation of Different Coconut Varieties Resistant to Coconut mite damage

Gas Chromatography Mass Spectrometer (GCMS) analysis of head-space volatile organic compounds of different coconut cultivars in relation to coconut mite damage

Crop Protection Division

The National Research Council granted project to understand the searching behaviour of coconut mites and *Neoseiulus baraki* in relation to resistant and susceptible coconut varieties was continued in 2018. Using the 5-arm poly acrylic runway arena, the searching behaviour of the coconut mite was tested. The coconut mites did not preferentially search any of the varieties tested suggesting that their searching behavior is random and not influenced by the volatiles produced by the coconut fruits.

Differential emission of some volatile organic compounds by the coconut varieties

Volatile organic compound	Variety							
	Gon Thambili		Sri Lanka Tall		Ran Thambili		Sri Lanka Green Dwarf	
	Infested	Uninfested	Infested	Uninfested	Infested	Uninfested	Infested	Uninfested
α -Pinene	-	***	-	***	*	***	*	*
2-ethyl Hexane	-	***	-	***	*	*	*	*
3-Carene	-	***	-	***	-	*/***	-	*
Acetophenone	*	***	*	***	*	***	*	*
l-Menthone	***	-	***	*	*	*	*	*

*Emitted in small quantities, ***Emitted in large quantities

GCMS analysis of head-space volatile organic compounds (VOC) of different coconut varieties showed differential emission of VOC was observed by different varieties with and without the coconut mite infestation. Differential emission of VOC by the infested and uninfested fruits of coconut varieties with different levels of susceptibility suggest that the

production of these compounds may either be suppressed by the infestation or the fruits become susceptible when the compounds are absent in fruits or in susceptible varieties. This needs further investigation.

Reproductive performance of coconut mite on different coconut varieties

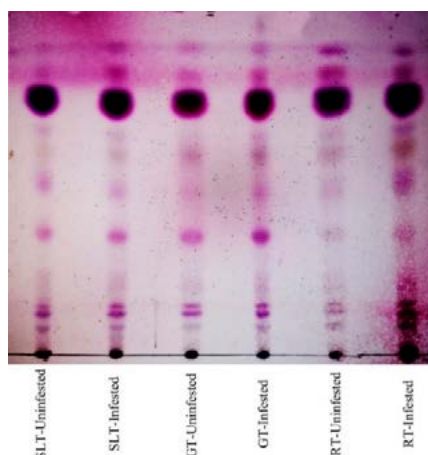
Crop Protection Division

A new method was developed using button fruits wrapped with Clingwrap® to study the reproductive performance and survival of the coconut mite. Results of the preliminary experiment revealed that more than 5 eggs/female/day is produced by the coconut mites irrespective of the different coconut varieties.

Thin Layer Chromatography analysis of cuticular lipids of different coconut cultivars in relation to coconut mite damage

Crop Protection Division

Thin Layer Chromatography analysis of cuticular lipids of different varieties revealed that there is no difference between the lipids in infested and uninfested fruits of all the varieties except Gon Thambili. The lipid extract of infested Gon Thambili expressed an additional band at $R_f = 0.97$ which was not observed on the lipid extract of the uninfested Gon Thambili. Identical chromatograms of the infested and uninfested coconut fruit samples of Sri Lanka Tall and Ran Thambili might have resulted due to the activation of cellular signaling mechanisms which induce defense mechanisms and phytochemical changes in uninfested plant parts as well. On the other hand, the differences in the compounds in the infested and uninfested fruits of Gon Thambili might have been induced in the cuticle of infested fruits but it is likely that they are not systemically induced in the uninfested fruits. This is an important feature, especially in a variety such as Gon Thambili which has been identified as a putative tolerant variety to the coconut mite damage.



Thin layer chromatography (TLC) of the fruit cuticular lipid extracts (SLT: Sri Lanka Tall, GT: Gon Thambili, RT: Ran Thambili).

Improvement of the effectiveness of the Red Palm Weevil pheromone

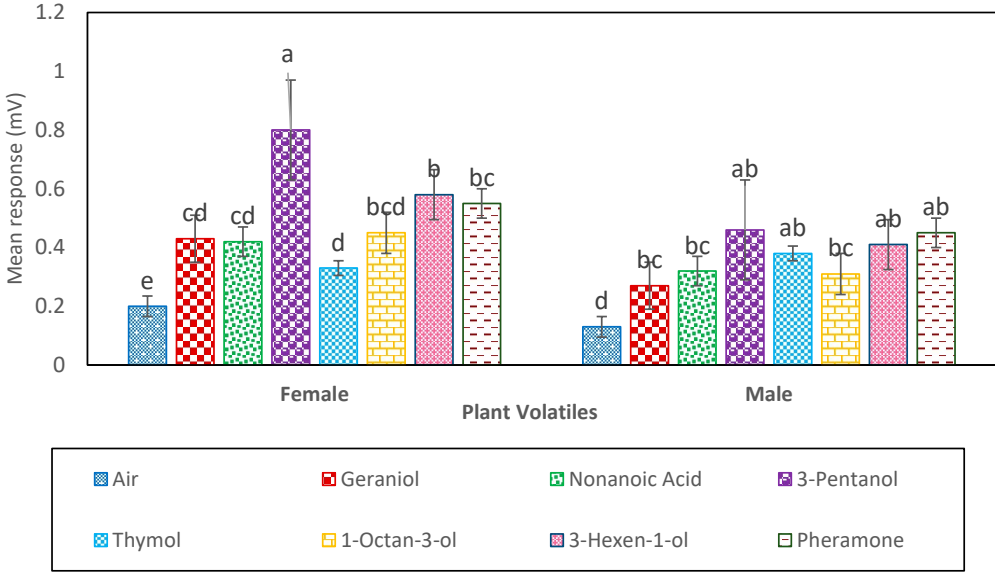
Crop Protection Division

Formulation and field experiment of different formulations of the red palm weevil pheromone components and plant volatiles was conducted. The combination of 4-methyl-5-nonano1 (major) and 4-methyl-5-nonanone (minor) 9:1 ratio + ethyl acetate (ATA) (5 volumes) attract higher number of weevils than the other combinations. Therefore, this formulation can be used as an effective formulation for red palm weevil mass trapping and management.

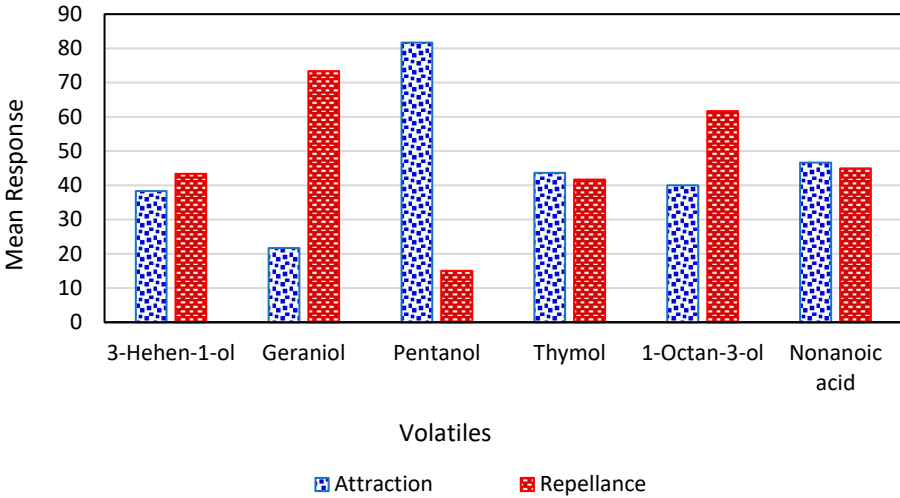
Number of red palm weevil catches per trap during four-month period

Treatments	Number of weevil per trap/4 month
Nano gel	28
Nano + Ratio 9:1 (Major: minor)	40
Nano + ATA (1:1)	50
Nano + ATA (1:5)	54
Nano + Ratio 9:1 + ATA (1:1)	66
Nano + Ratio 9:1 + ATA (1:5)	92

Electrophysiological and behavioural studies were conducted to identify the pheromone synergist and repellent compound for red palm weevil. The results revealed that both male and female red palm weevil electroantennogramme responses were significantly higher in 3-pentanol followed by 3-hexen-1-ol and RPW aggregation pheromone. Further, behavioural studies results revealed that 3-pentanol was attractive to both male and female red palm weevil and more than 80% weevils were attracted to the 3-pentanol treated leaf petiole than untreated petioles. However, geraniol and 3-hexen-1-ol treated coconut petioles repelled the red palm weevil. Therefore, 3-pentanol was identified as a potential pheromone synergist compound for red palm weevil and tested different formulations. The results revealed that the formulation of 3-pentanol: pheromone 1:1 is a more attractive blend for Red palm weevil trapping. Formulation and field testing are being continued.

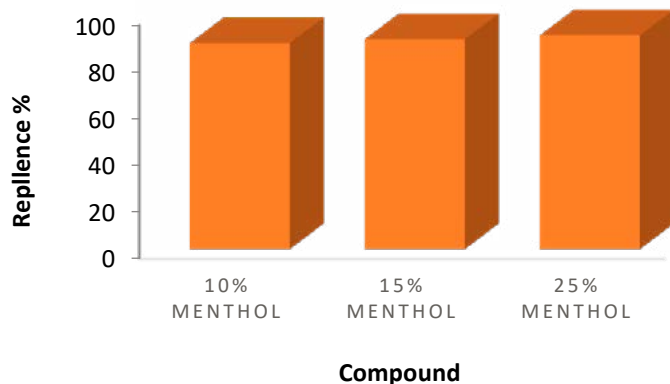


Electroantennogram responses of red palm weevil to selected plant volatiles



Behavioural responses of red palm weevil to selected plant volatiles

Electrophysiological and behavioural studies revealed that some essential oils and plant volatiles were effective as insect repellents. The essential oil of menthol and plant volatile of geraniol were identified as repelling compounds for both male and female red palm weevils. Laboratory studies revealed that 90% weevils were repelled from the source when treated with 10% menthol. The different formulations of menthol were prepared to repel the red palm weevil from coconut plantations and field experiment is being continued.



Percentage red palm weevil repellence against different menthol concentrations



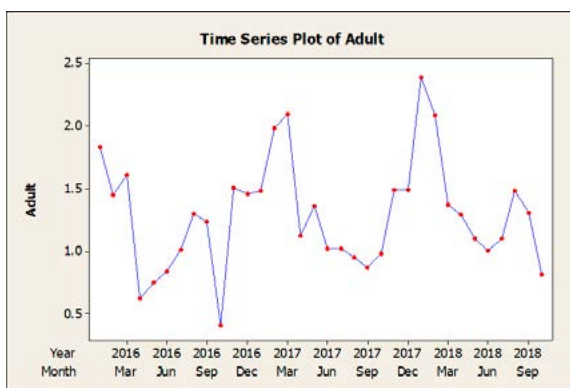
Different menthol formulation for field experiments

Population dynamics of Plesispa beetle

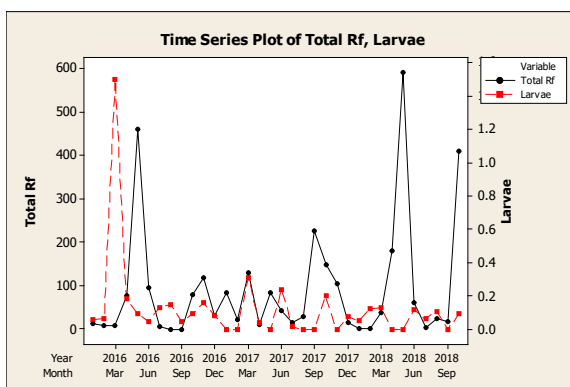
Crop Protection Division

Study on determination of population dynamic patterns and the climatic factors governing the population cycles of *Plesispa reichei* was completed in two sites at Pallama Genetic Resource Centre (GRC) and Hettipola private estate. Pest population and damage levels were monitored at monthly intervals for three years in Pallama GRC and two years in Hettipola estate.

The peak pest populations were reported in March whereas the lowest pest populations were reported in September.



Monthly variation of *P. reichei* population



Pattern of pest population fluctuation vs total rainfall

Climatic factors significantly correlated with the *P. reichei* population. The daily average temperature, maximum temperature and rainfall negatively correlated whereas relative humidity positively correlated with *P. reichei* population.

During heavy rainfalls the pest population was drastically decreased and the highest pest population was observed following the rainfall. This may be due to the availability of fresh coconut leaves as a food source promoting the survival, growth and reproduction of *Plesioa* beetle.

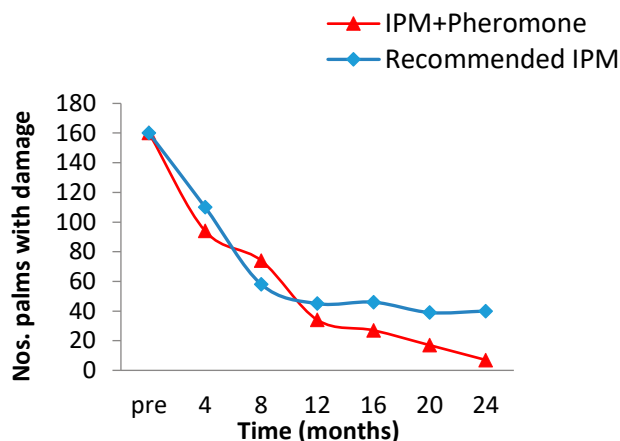
Evaluation of the efficacy of pheromone in integrated pest management package for black beetle

Crop Protection Division

Evaluation of the efficacy of pheromone (ethyl 4-methyloctanoate) as a component in the recommended integrated pest management (IPM) package of black beetle (*Oryctes*

rhinoceros) in small scale plantations was completed. Comparison of IPM practices (field sanitation + application of used engine oils + naphthalene balls) verses IPM practices + pheromone (at the rate of 1/5 ac) were continued for two years.

Significant reduction in black beetle damage over time was observed in both sites with recommended IPM practices and IPM package + pheromone. However, over 95% reduction was observed in the site with recommended IPM practices + pheromone package when compared to recommended IPM practices alone which was 75% reduction in the damage level.



Level of damage reduction of black beetle

Improvement of Weligama Coconut Leaf Wilt Disease (WCLWD) phytoplasma detection methods

Crop Protection Division

Plant Virus Indexing Center (PVIC) at Homagama (2010) and university of Colombo (2015) have developed two indirect- ELISA protocols for detection of Weligama Coconut Leaf Wilt Disease phytoplasma using polyclonal antibodies. University of Colombo has developed the most recent protocol for this. Testing detection accuracy of Indirect-ELISA method using coconut and sugarcane tissue samples was continued in 2018.

Polyclonal antiserum produced by PVIC was tested with WCLWD symptomatic, healthy, apparently healthy coconut leaf and inflorescence samples. Also, symptomatic white leaf disease affected and healthy sugarcane leaf samples were tested. Disease true positivity, true negativity, false positivity and false negativity percentages were calculated for each type of samples separately to evaluate the detection accuracy.

The detection of affected coconut leaf, coconut inflorescence and sugar cane white leaf (positive samples) were 24%, 0% and 65% respectively. The detection of negative healthy coconut leaf, apparently healthy coconut leaf, apparently healthy inflorescence and healthy

sugarcane samples were 47%, 100%, 100% and 83% respectively.

Results obtained from the experiment is inconsistent and further developments and investigations are needed.

Testing non-chemical methods for controlling of black beetle

Crop Protection Division

The experiment was continued and terminated in 2018. Damage assessment and application of treatments were continued. Four cycles of treatment applications and damage assessments were completed in 2018. There was no significant difference between treatments. But in both sites, reduction of fresh bud damage was observed when applying fishing nets to the bud region of seedlings.

Effect of application of river sand and fishing nets to bud region to control black beetle

Damage category	Treatment	Percent Bud damage					
		Observations					
		Pre treatment	1	2	3	4	5
Damaged	Sand	100	23.6	55.7	57.3	28.0	24.0
	Net	100	20.7	21.4	16.5	20.5	20.5
	Control	100	44.2	39.2	52.5	48.3	48.3
Undamaged	Sand	0	10.0	26.3	14.3	11.3	0
	Net	0	10.0	14.2	15.3	9.0	0
	Control	0	10.0	21.3	26.3	31.3	26.3



Covering the bud region with fishing nets to safeguard the young coconut palms from black beetle damage

New method for treatment of stem bleeding disease of coconut

Crop Protection Division

An injection method was developed to treat stem bleeding palms by injecting a fungicide solution on to the affected tissues. This method has to be repeated in several sites before recommending it for growers.



Stem bleeding disease affected coconut palm

Efficacy of different fungicides for the management of bud rot disease

Crop Protection Division

It was observed that drenching of metalaxyl containing fungicide solution 4g/l on to the crowns of coconut palms surrounding bud rot affected palms twice at one-month interval protected treated palms for 18 months from the bud rot disease.



Initial symptoms of bud rot disease; withering of bud leaves



COCONUT PROCESSING & PRODUCT DEVELOPMENT

Improvements to the extra virgin coconut oil process and quality evaluation

Coconut Processing Research Division

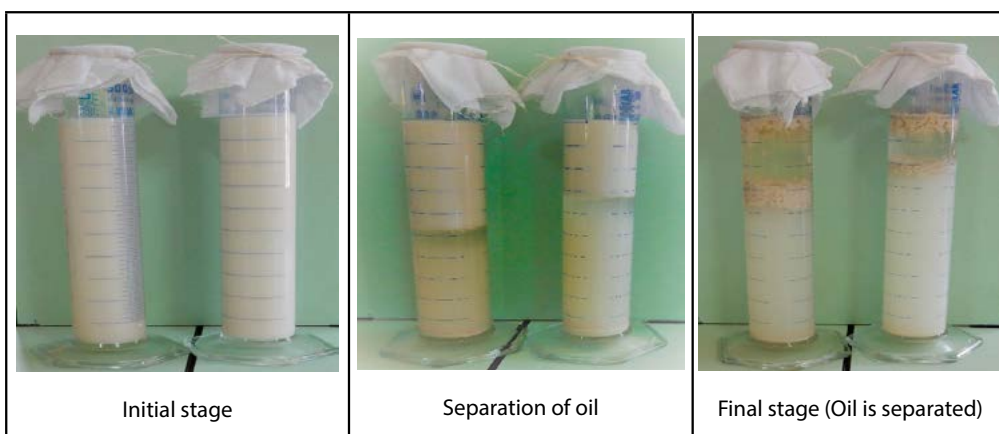
Experiments were conducted to improve the wet processes of virgin coconut oil production, the process of obtaining coconut oil from coconut milk. These methods are based on expelling coconut milk from the fresh kernel followed by separating oil in milk with mild heat or without heat. The virgin coconut oil produced with mild heat treatment or without any heat application is referred to as extra virgin coconut oil (EVCO).

Method of coconut milk fermentation

Coconut Processing Research Division

Fermentation method of virgin coconut oil production involves in milk extraction which is left in normal atmospheric conditions for separation of oil from water and other components under gravity in cylindrical containers and followed by concentration of oil. Coconut milk extraction is the first step of making EVCO by fermentation. The scraped or finely cut coconut kernels mixed with water in 1:1 (w/v) and followed by expelling milk using hydraulic press machine gave high yield of EVCO. Water at ambient temperature conditions gave higher yield compared to water at warm temperatures. Time of fermentation of the milk had a significant effect on the oil yield.

The milk extracted with above conditions was allowed to fermentation in cylindrical plastic containers under normal ambient conditions (28-32°C) for separation of oil from milk due to natural fermentation for 24 -36 hours. The containers should be covered with clean muslin cloth to prevent contamination with environment. During the fermentation, oil layer is seen on the top of the container. The oil layer is syphoned out / scooped using a spoon. Finally, oil is filtered through sterilized cotton wool to obtain clear EVCO. The improvement was done for the of milk extraction process, temperature of milk and time of fermentation for the existing method of natural fermentation.



Oil layer separation due to fermentation of coconut milk

Method of centrifugation of coconut milk

Coconut Processing Research Division

This method of making VCO involves in milk extraction and separation of oil in milk using centrifugal force for concentration of oil. The quality and the oil yield depend on the oil content of coconut milk, centrifugal force, time and temperature of the centrifugation. Expelling coconut milk without added water produced high oil yield in centrifuge method. The centrifugal speed of 8000 rpm gave good separation of oil. The most suitable temperature and centrifugation time for obtaining maximum oil yield was 20°C and 90 minutes.

The centrifugation method involves usage of several machineries in addition to coconut milk extraction machine. Therefore, investment is higher than fermentation method. Both methods produced VCO without heat application and can be referred to as extra VCO.

Comparison of quality and quantity of virgin coconut oil obtained from wet methods

Coconut Processing Research Division

All wet methods for production of VCO produced high quality oil with lower free fatty acids (FFA), moisture and peroxide content. Yields of VCO obtained from modified traditional kitchen method (MTKM) and modified natural fermentation method (MNFM) were not significantly different. However, percentage of VCO obtained from centrifuge method (CM) and dry processing method (DM) were not significantly different and they were slightly higher than oil yields from MTKM and MNFM. Moisture and FFA content of VCO produced using MNFM was higher than those from MTKM, CM and dry processing methods. Peroxide formation was not observed in VCO obtained in all the methods. However, significant difference in phenolic contents and antioxidant activities were observed with different processing methods.

Oil yield and recovery of VCO produced from different wet methods

Method	Oil yield % (w/w) of fresh coconut kernel
MNFM	26.57 ± 0.42 ^a
MTKM	26.71 ± 0.69 ^a
CM	27.14 ± 0.50 ^b
DM	27.17 ± 0.29 ^b

Chemical parameters of VCO produced from wet methods and dry methods

Method	Moisture%	FFA%	PV (meq/O ₂ kg)	TPC (GAE equi/ppm)	Antioxidant ctivity (DPPH/ppm)
MNFM	0.12±0.01	0.10±0.00	ND	20.63±0.56	12.56±0.67
MTKM	0.09±0.01	0.06±0.00	ND	31.29±2.99	14.95±1.49
CM	0.07±0.00	0.05±0.00	ND	5.12±0.32	2.38±0.45
DM	0.07±0.03	0.05±0.00	ND	4.63±0.91	2.09±0.30

Oil concentration step of MTKM involved in application of heat until 80°C. Therefore, it cannot be considered as a process for extra VCO production. The MNFM and CM do not involve in heat application and can be recommended for extra VCO production.

Effect of varietal differences, maturity level and extraction method on the quality of virgin and white coconut oil***Coconut Processing Research Division***

Research continued to compare virgin coconut oil (VCO) and white coconut oil (WCO) produced from coconuts of different maturity stages. Concentration of phenolic compounds of VCO was ranged between 1.67±1.0 ppm and 2.82±0.9 ppm. These values were significantly lower than the phenolic contents of WCO which produced using same type of coconuts. However, Both VCO and WCO did not show significant variation of phenolic compound concentrations due to maturity stage.

VCO is produced by removing brown testa of coconut kernel and WCO is produced using whole copra with brown skin of coconut kernel. This indicates that incorporation of brown testa contributes more phenolic compounds in WCO than virgin coconut oil which is produced without brown testa.

Total phenolic content of VCO and WCO produced using coconut at different maturity level

Maturity level	Phenolic content (ppm as Gallic acid equivalent)
T1-11 months (VCO)	2.82±0.9 ^a
T2 - 12 months (VCO)	1.67±1.0 ^a
T3-12 months and seasoned (VCO)	2.17±1.0 ^a
T4-11 months (WCO)	97.5±13.6 ^b
T5 - 12 months (WCO)	98.4±3.2 ^b
T6-12 months and seasoned (WCO)	93.6±12.8 ^b

Storage of VCO and WCO prepared from kernels of different maturity level

Coconut Processing Research Division

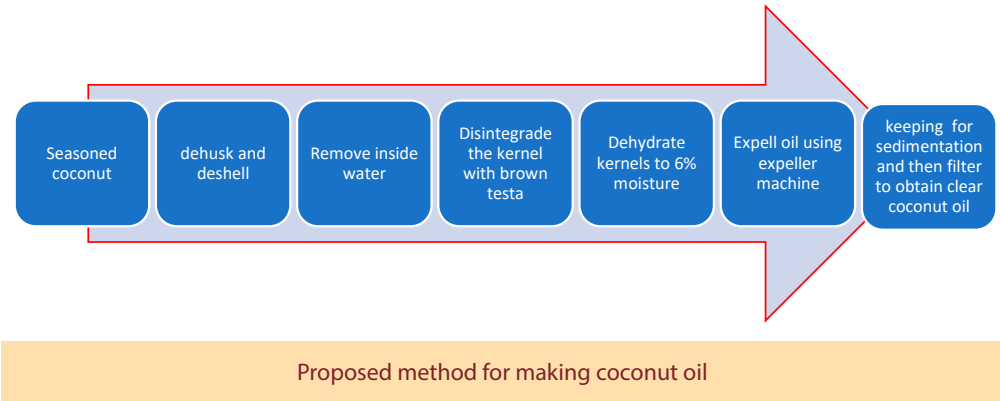
Moisture content, free fatty acid content (FFA) and peroxide value (PV) of all VCO and WCO produced using coconuts of different maturity stages increased significantly during 8 month-storage. Both VCO and WCO could be stored more than 8 months without exceeding the safety quality standards. Further, moisture content, FFA content and peroxide value of virgin coconut oil was always significantly lower than those of white coconut oil. However, there were no significant differences of FFA and moisture due to different maturity stages. Initially peroxide content of VCO was not detected since it was too low. However, with time formation of peroxide was detected with very low values. However, white coconut oil showed a measurable peroxide value initially and it increased significantly when 8 months old, peroxide value of WCO just exceeded the permissible levels at 8 month-storage. Therefore, copra oil has lower shelf life compared to VCO irrespective of the maturity stage.

Change of quality characteristics of coconut oil prepared from kernel of different maturity stages during 8 months of storage

Maturity level	Moisture %		FFA %		PV (meq O ₂ /kg)	
	Initial	8 months	Initial	8 months	Initial	8 months
T1-11 months (VCO)	0.04	0.08*	0.08	0.19*	ND	0.03*
T2 - 12 months (VCO)	0.03	0.09*	0.09	0.18*	ND	0.01*
T3-12 months and seasoned (VCO)	0.03	0.09*	0.08	0.16*	ND	0.01*
T4-11 months (WCO)	0.08	0.2*	0.24	0.44*	2.6	3.5*
T5 - 12 months (WCO)	0.07	0.3*	0.26	0.72*	3.8	3.0*
T6-12 months and seasoned (WCO)	0.08	0.2*	0.24	0.48*	3.6	3.0*

*Significant with respect to the initial value at p<0.05

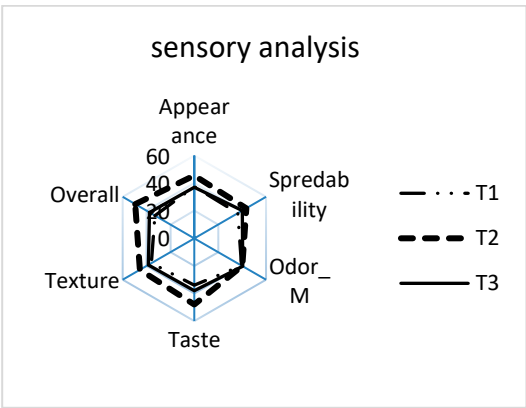
The results showed that process for making virgin coconut oil produced was coconut oil with higher quality and higher shelf life than white coconut oil which was produced *via* copra. Therefore, the process of VCO production is better compared to WCO production through copra. Therefore, following method for making coconut oil is proposed for large or small scale of coconut oil production.



Development of coconut butter spread

Coconut Processing Research Division

A Coconut butter spread was developed using dehydrated coconut kernel. Dehydrated coconut kernel was ground into a paste having fine particles. Preliminary investigations showed ground coconut kernels were separated to oil and fine particles within few hours. This problem could be overcome by dehydration of coconut kernels at 60-70°C. The ingredients giving good sensory characteristics for the butter was identified for the butter spread. Sugar and peanuts were added to improve taste and appearance. Virgin coconut oil was added to improve spread ability. The addition of cocoa powder (2%) improved the taste of coconut butter spread and this composition was selected for further improvements by application of homogenization and addition of stabilizers.



Sensory attributes for coconut butter spread improved with cocoa powder (T1 – 1.5 % cocoa powder, T2- 2.0 % cocoa powder, T3-2.5 cocoa powder to the basic ingredients)

Determination of the effect of temperature and brown testa for dry processing of virgin coconut oil

Coconut Processing Research Division

A study was conducted to find out the effect of different temperatures for dehydration of coconut kernels. The recommended practice is to dehydrate coconut at 60°C to prevent kernels from undergoing chemical changes due to the heat and then expel the kernels maintaining at 60-65°C. It has been observed that this recommendation is not strictly practiced by manufactures.

Coconuts of T x T were processed to obtain disintegrated coconut kernels after removal of brown testa according to the current recommended method of VCO production. The disintegrated kernels were dehydrated at 60°C, 70°C and 100°C using continuous dehydrator until moisture content was below 3% and the dehydrated kernels were expelled in cold press expeller to obtain VCO.

There was no significant variation of moisture and FFA of dehydrated coconut (DC) due to the temperature of dehydration. The quality of VCO obtained using DC produced at different temperatures were similar in quality parameters such as moisture content, FFA and peroxide value. However, colour of VCO produced using DC at 100°C showed significant intense colour (2.8 ± 2.4) compared to DC prepared at 60°C and 70°C. This indicates that colour change of coconut kernel is taken place during dehydration at high temperature. Further, if the expelling kernels is done at high temperatures, colour intensity will be increased. Therefore, it is recommended to use lower temperatures to produce VCO.

Quality of DC and oil at different processing temperatures

Temp (°C)	DC			VCO			
	Moisture%	Fat %	FFA%	Moisture%	FFA%	PV (meq/O ₂ /kg)	Colour
60	2.04±0.07 ^a	66.1±1.6 ^a	0.10±0.01 ^a	0.08±0.00 ^a	0.08±0.01 ^a	ND	0.6±0.05 ^a
70	0.98±0.08 ^b	60.3±2.3 ^b	0.11±0.00 ^a	0.07±0.01 ^a	0.07±0.01 ^a	ND	0.7±0.10 ^a
100	1.13±0.09 ^c	63.4±2.4 ^c	0.09±±0.00 ^b	0.10±0.02 ^a	0.06±0.01 ^a	ND	2.8±2.4 ^b

Different letters in same columns are significantly different at $p < 0.05$

Improvement of the quality of coconut sap and its products: Improvements to sensory characteristics of coconut treacle

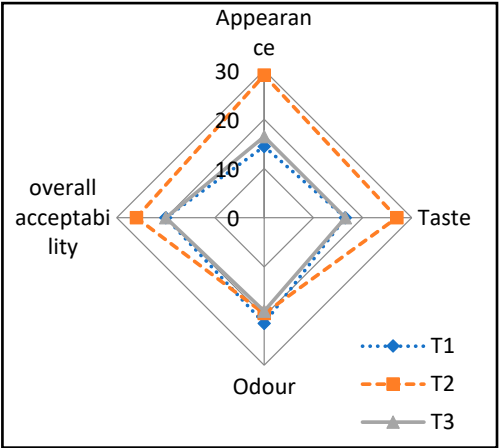
Coconut Processing Research Division

The taste of treacle was not in good quality when produced from sap collected with *Hal bark*. *Hal bark* is added to the sap collecting pots to arrest fermentation by traditional tappers. There is no definite quantity which is needed to arrest fermentation. Therefore, a study conducted to determine the exact quantity of *Hal bark* to be added to the pots for

arresting fermentation and to find out quality of sap collected from different methods. The treatments were; sap collected from Traditional method (TM) (T1- application of *Hal bark* to the clay pots of 4L), New sap collection method (NSM) (T2-collection of sap in a cool container without added *Hal bark*) and Modified traditional method (MTM) (T3-application of 5g of *Hal bark* in to 30 cm X 50 cm polythene bag in clay pots of 4L). Coconut sap was collected during 12 hours from 6 pm to 6 am. Coconut sap was collected from 24 number of Tall x Tall palms located at Bandirippuwa estate of Coconut Research Institute during 12 hours from 6 pm to 6 am. The sap was boiled at 112°C to concentrate total soluble solids up to 75 °brix to obtain treacle. The sap collected from NSM gave treacle with significantly high sensory attributes compared to treacle of TM and MTM.



Sap collected by the New Sap Collection method



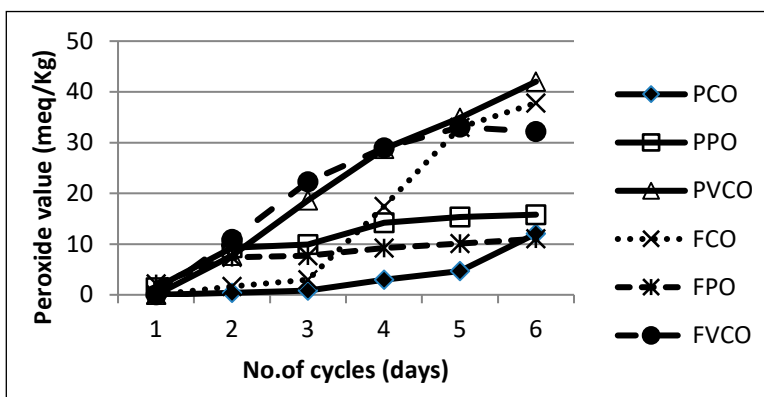
Sensory attributes of treacle made from sap collected using TM(T1), NSM(T2) and MTM(T3)

Investigation of physical and chemical changes of coconut oil at repeated deep frying

Coconut Processing Research Division

A study was conducted to determine the effect of repeated deep frying on the physiochemical properties of white coconut oil, virgin coconut oil and palm oil. White coconut oil (coconut oil prepared using copra and filtered to remove sediments) procured from oil mill at Haldaduwana, Palm oil (Fortune brand) procured from Supermarket, Wennappuwa and virgin coconut oil manufactured at CPRD, CRI were used in this study. The oils were used for deep frying *Salaya* fish (25 number) and potato chips of 0.5 mm thickness and 4mm length (1 kg) for each day. Each frying oil (2L) was used to frying each food for 2 hours duration and procedure repeated with remaining oil for 6 consecutive days. After each frying cycle 100 ml of samples of oil was taken for analysis.

The moisture content of the fresh white coconut oil, palm oil and virgin coconut oil were 0.20 %, 0.13% and 0.14% respectively. The moisture content of all the oil samples decreased with the repeat cycle of the oil. Due to repeated frying, moisture content of all the samples reduced to below 0.01 %. The free fatty acid content increased significantly with the number of repeating cycles. However, the free fatty acid contents of all the repeatedly used oils and fresh oils were below 0.5 % which is a safe level for consumption. Coconut oil used for deep frying potatoes and fish had significantly higher free fatty acid content during 6 repeating cycles. Peroxide formation of oil is the major chemical change which affects the physiochemical properties and sensory qualities of oil. Coconut oil maintained 3meq/O₂/kg peroxide value (which is standard limit for presence of peroxide in fresh coconut oil) until 3rd cycle of frying. However, virgin coconut oil showed higher peroxide value even after 1st frying cycle. The reason may be the lower phenolic content in VCO compared to traditional coconut oil (Traditional coconut oil contains 93.6 ± 12.8 ppm of phenolic components while that for VCO is 2.17 ± 1.00). Palm oil maintained lower peroxide value compared to virgin coconut oil. The palm oil is in RBD grade and it is manufactured for different cooking purposes. According to the results repeated frying of fish and potatoes, palm oil is also not suitable for deep frying after 1st frying cycle as the peroxide value exceeds the limit of 3 meq/kg.



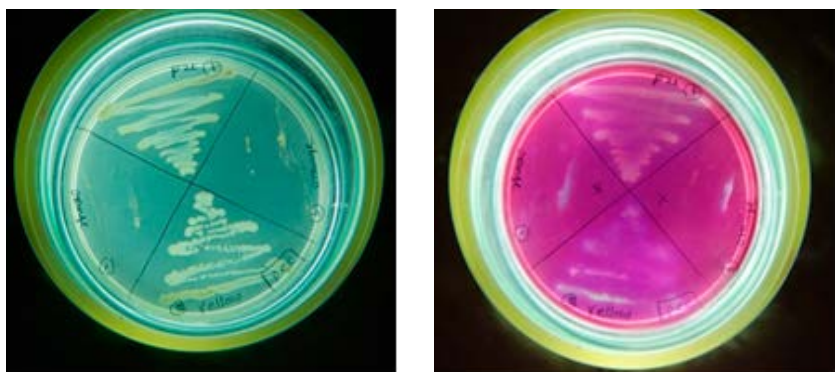
Change of peroxide value of oil with repeating frying cycles of different food types (PCO – White coconut oil deep fried potatoes, PPO – palm oil deep fried potatoes, PVCO- virgin coconut oil deep fried potatoes, FCO – White coconut oil deep fried fish, FPO – palm oil deep fried fish, FVCO – virgin coconut oil deep fried fish)

Development of a technology for coconut coir retting using consortium of micro-organisms

Coconut Processing Research Division

Research continued to determine the effectiveness of the microbial consortium which containing 21 microorganisms isolated from 6 coir mills in Puttalam District. The consortium with 21 microbes were not effective to reduce the retting time of coconut husk. Therefore, further screening of microbial consortium using biochemical methods was carried out. The molecular techniques confirmed the presence of following microbes within the original consortium. *Serratia rubidea*, *Bacillus safensis*, *Bacillus thuringiensis*, *Staphylococcus sciuri*, *Bacillus depressus*, *Bacillus megaterium*, *Bacillus vietnamensis*, *Bacillus aquimaris* and *Bacillus altitudinis*

Further screening of the consortium was carried out to see the activity of the selected organisms giving attention to the pectin and polysaccharide degradation. The organisms having high pectin degradation and cellulose and hemicelluloses degradation ability were identified from the above consortium. Therefore, further studies are being carried out with consortium having high pectin, celluloses, and hemicelluloses degrading organisms. The organisms which showed high pectin, celluloses and hemicelluloses activities are *Serratia rubidea*, *Staphylococcus sciuri*, *Bacillus safensis* and *Bacillus vietnamensis* and further experiments will be conducted using these effective microbial strains /consortium.



Highly pectin degrading micro organisms isolated from retting pits

Improvement of cushion/mattress using coir fibre

Coconut Processing Research Division

A study was conducted to develop a rubberized coir based cushion /mattress as a value added product from coir fibre. Out of the 5 rubber coir combinations used as treatments, best combination of different type of coir and rubber compound mix for making mattress samples were identified using analytical data for one year. The samples were kept for one year for studying changes of quality parameters during storage

Treatments for making coir rubber composite mattress

Treatment	Compound Mix
1	50% mix fibre and 50% compounded rubber latex to make mattress having 80 kg/ m ³ density
2	50 % fibre mix (25% mix fibre and 75% omat fibre) and 50 % compounded rubber latex to make mattress having density of mattress 80 kg/ m ³
3	50 % fibre mix (50% mix fibre and 50% omat fibre) and 50 % compounded rubber latex to make mattress having density of mattress 80 kg/ m ³
4	50% omat fibre and 50% compounded rubber latex to make mattress having density of 80 Kg/m ³
5	50% omat fibre and 50% compounded rubber latex to make mattress having density of 70 Kg/m ³

All the parameters tested in six months and one year aged mattress samples prepared from 50% Omat fibre having the density of 80 Kg/m³ (Treatment 4) satisfied the SLS standards and it is acceptable for manufacture of mattresses.



SOCIO- ECONOMICS

Overall sector performance of kernel, fibre, and other products

Agricultural Economics & Agribusiness Management Division

Coconut production which showed a massive drop of 18.7 per cent to reach 2,450 million nuts in 2017, seems to be recovering in 2018 recording an 8.4 per cent from January to October in 2018 compared to the corresponding period of 2017 and it is anticipated that this positive trend will further continue. However, the lagged effect of prolonged drought conditions, which continued in both 2016 and 2017, can be seen even in 2018 making it difficult to the industry to reach its highest production level of 3,000 million nuts which was recorded in 2015 and 2016.

Amidst this contraction of nut production, coconut related industries able to fulfill regular export demands while releasing a sufficient number of fresh nuts for domestic consumption owing to a number of measures taken by the government to ease the shortfall in supply and subsequent price pressure. This was further supported by the favorable climatic conditions prevailed in major coconut growing areas in 2018. The policy decision that was taken to ban the exportation of fresh nuts in 18th June, 2017 was continued up to end of August 2018 and the ban was lifted effect from 1st September, 2018 considering the increasing production. Furthermore, the service charge collected by the Coconut Development Authority was reduced to Rs.8.00 from Rs.15.00 encouraging the fresh nut exporters. Moreover, as a temporary measure, a policy decision was taken to allow the importation of coconut kernel for re-exportation purpose only under stringent regulations and guidelines provided by the plant quarantine act. This was commenced in 2017 and continued in 2018. Special Commodity Levy (SCL) was implemented for the imported kernel as Rs. 1.00 per Kilogram effective from 14th December, 2017. Meanwhile, considering the market situation, the government revised the SCL on edible oil products including palm oil responding to the increment in the domestic coconut production.

Timeline of tariff policy changes on imported edible oil in 2017

Crude palm oil 1511.10 Rs./kg	Palm oil (refined/ packaged) 1511.90.20 Rs./kg	Crude Palm kernel oil 1513.11 Rs./kg	Coconut oil VCO 1513.11.11 Rs./kg	Date (dd/mm)
130	155	150	150	01.06.2018
150	175	170	170	25.08.2018

Export value of coconut products including kernel, fibre, shell and finished products recorded a marginal drop of 3 percent from January to November in 2018, in comparison to the corresponding period in 2017.

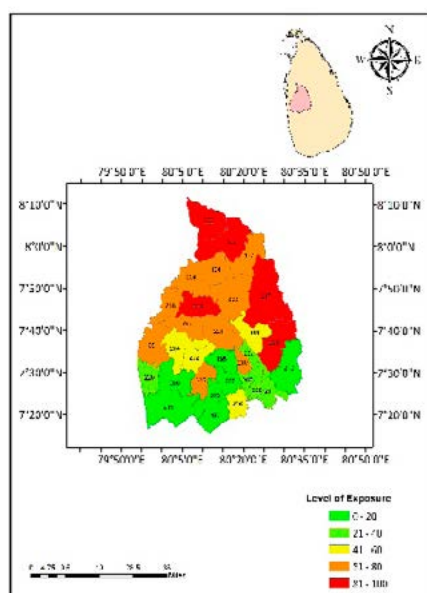
Vulnerability of Coconut Smallholders to Climate Change in Kurunegala District

Agricultural Economics & Agribusiness Management Division and Wayamba University

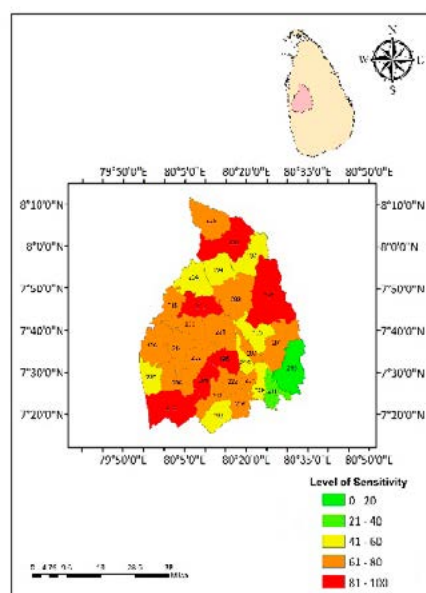
Agriculture is a highly vulnerable sector to climate change. Amongst, the plantation sector more specifically coconut sector has critically affected by climate change. Exposure, Sensitivity, Adaptive capacity are the major components of vulnerability. Exposure is the extent, duration or frequency of stress on a system, while the limit to which a system is affected by stress is known as the sensitivity. Further, the adaptive capacity is defined as the ability of a system to resist the stress. This kind of information is important for sector policymakers. Thus, this study was carried out to assess the vulnerability of coconut smallholders to climate change.

In order to quantify the vulnerability of coconut smallholders to climate change, a survey was carried out in 30 divisional secretariats of the Kurunegala district. Primary data were collected from 187 coconut small holders from July to August 2018 through a questionnaire and classified under the major components of vulnerability. Sub-indices were calculated for exposure, sensitivity and adaptive capacity.

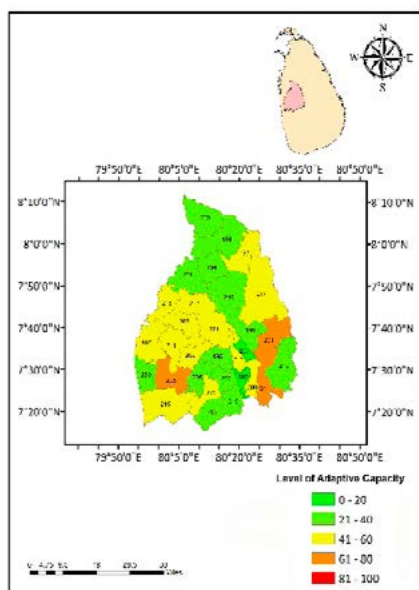
As indicated in Figure, Exposure index was higher towards the dry zone of the Kurunegala district. Sensitivity was increased with the cultivation extent and reduced with the selection of the apparent drought tolerant variety or the tall variety. Further, the adaptive capacity is increased with practicing and willingness to practice adaptation mechanisms.



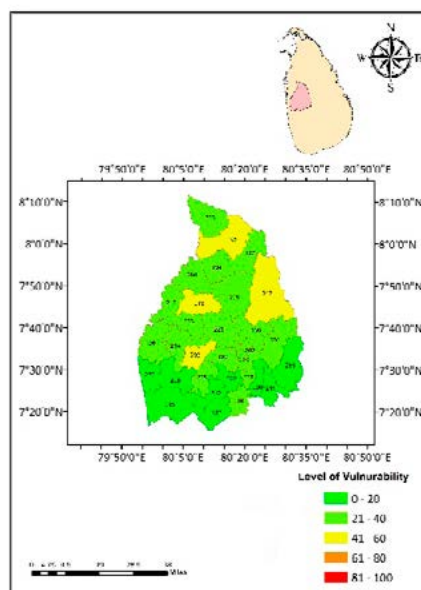
Exposure Index Map



Sensitivity Index Map



Adaptive Capacity Index Map



Vulnerability Index Map

As a result, the vulnerability index has been reduced concluding the potential of adaptation mechanisms to minimise the adverse effects of climate change. Especially, this study maps the areas which are comparatively heavily exposed to the adverse climate and highly sensitive. Awareness and subsidy programmes can be focused on these areas and where the adaptive capacity is low. Higher production increase can be expected while promoting adoption measures in large extent land holders as they are the highest sensitive group for climate change.

Assessing the impact of external shocks to the coconut market: Tariff on edible oil imports by an Equilibrium Displacement Model (EDM) approach

Agricultural Economics & Agribusiness Management Division

Coconut production in Sri Lanka is stagnant, varying annually and intra annually especially based on climate. However, the demand from processing industries and domestic consumers for fresh coconut is increasing. Therefore, importation of substitute edible oils has been allowed since around 1991, to reduce the industry demand for fresh coconuts for coconut oil production. Tariffs on edible oil imports were used as a tool to control the domestic market and it is still the main and frequent instrument for low production periods. However, the impact of this policy for the whole coconut industry and among its stakeholders is not yet understood. Therefore, an equilibrium displacement model developed for the Sri Lankan coconut industry was used to test the following hypotheses of; 1. Controlling the tariff level is an effective instrument for coconut industry stability, 2. Domestic coconut oil producers are worse-off due to low tariff levels, 3. This is a biased instrument towards domestic coconut consumers and DC millers

An EDM is a partial equilibrium approach to industry analysis. It represents the economic framework of an industry by specifying its demand and supply relations and the price formation processes which link different market segments.

According to the results, one percent downward demand shift for coconut oil is a net loss to the industry approximately equivalent to Rs. 167 million (nearly 2 % of the value of the industry). Nearly 40 percent of the loss (reduction in gain) goes to coconut oil consumers and 31 percent goes to wholesalers which consist of coconut growers and coconut wholesalers. However, in the case of fresh coconut consumers, it is an incremental gain of nearly 20 percent compared to their initial gains. DC and other products processors are also benefitted. This is due to the availability of more nuts for fresh nut consumers and processors as a result of demand reduction from coconut oil processing. Since there is no quantitative restriction, the coconut oil demand further drops and production is reduced. Adulteration of coconut oil with substitute oil is inevitable since the majority of the oil is retailed without branding or labelling. This is common in lean crop years where growers and coconut oil millers request tariff protection.

The study concludes that the tariff on edible oil affects the stability of the industry incurring a net loss. In order to quantify and compare the actual amount of financial gain to the country, the tax income generated and the net loss to the industry with the actual demand reduction need to be compared.

However, there is a distributional impact. Mainly the coconut growers, coconut wholesalers, coconut oil consumers followed by coconut oil processors (including copra and other input suppliers, traders) are worse off from the tariff reduction. Lack of labelling is an issue in finding the actual substitutability of coconut oil for other edible oils. Those worse off parties should be compensated with the income generated from import tariff. Especially the growers, whose selling price is forcefully reduced should be encouraged with a tariff income transfer to minimise the lean crops. This is a biased policy instrument for domestic fresh coconut consumers and export consumers of desiccated coconut and other processed products.

The study was further extended to analyse other sector policies with actual data to test the ability of the model to use as a sector policy analysis tool.



Imported edible oils are substitutes for domestic coconut oil

Assessing susceptibility of CRIC 60 (TxT) palms for Tapering Disorder (TD)

Agricultural Economics & Agribusiness Management Division

Tapering disorder of coconut was first reported in Sri Lanka in 1950 from Seeduwa to Negombo area (Cooke, 1950). This was found to be not associated with any disease-causing agent, environmental conditions including soil, cultivation type, and management practices. A previous survey conducted to analyse the incidence of coconut decline disorders has revealed that Tapering Disorder (TD) is the most prominent among other disorders in the coconut triangle. It was nearly 7.4 percent and Gampaha district had the highest incidence which was nearly 10 percent (Ranasinghe *et al.*, 2006). This study (Ranasinghe *et al.*, 2006) has further investigated the relationship of soil, plant and management practices for the occurrence of the disease. According to that, the incidence of TD was prominent in S4 soils and in shallow and eroded soils. Further, the occurrence of TD was comparatively low in lands practicing husk burial and mulching. This survey has been carried out mostly (95%) in second generation plantations. TD was observed in nearly above 4 percent regardless of the planting material. However, CRI and own planting material were found to be more prone to the disorder. Further to these findings, field observations in Makandura seed garden by CRI researchers have shown that the incidence of TD is comparatively high in that estate compared to adjoining coconut lands and other coconut estates. This seed garden is mainly cultivated with CRIC 60 (TxT) cultivar. Moreover, there were suspicions among growers and stakeholder community regarding the susceptibility of CRIC 60 for the tapering disorder compared to other plus palms. Therefore, this study aims to identify whether TxT palms are more susceptible to TD.

TD is mostly observed in palms aged above 15 years (Ranasinghe *et al.*, 2006). Therefore, the growers who obtained CRIC 60 seedlings from CCB and CRI nurseries during the period of 1980 to 2000 were considered for the study. Coconut triangle was considered as the study area.

The average figures show that nearly 10 percent of the selected palms are susceptible to TD disorder. Further analyses are in progress to verify the variety of the palms. The study was directed towards getting information from estates where proper record maintenance is expected. CRI, CCB, and RPCs estates are selected in this stage. CRI estates were covered and CCB estates are yet to be covered and the study will be completed during 2019.

The main limitation is the difficulty of identifying the variety through morphological characteristics of the palms. This restricts the confirmation or the reassurance of the variety of tapered palms. However, the significance of the issue of TD between these two categories due much attention and confirmation methods to proceed with further distribution of the varieties.

Cost of production of coconut (COP)

Agricultural Economics & Agribusiness Management Division

Cost of production survey conducted annually in the coconut triangle by CRI has identified the cost for weeding, fertilizer application and harvesting as the main cost components in coconut cultivation. Unavailability of weedicides in particular to control Gini grasses in coconut lands coupled with high labour cost has further aggravated the situation. Accordingly, the estimated cost of production values per nut in S1, S2, S3, and S4 soil suitability classes were Rs.19.53, Rs.22.83, Rs.26.99 and Rs.26.53 respectively.

Modelling Coconut Prices to Develop a Price Forecasting Model

Agricultural Economics & Agribusiness Management Division

Production and prices of agricultural commodities are largely influenced by eventualities and hence, they are often random. Similar to the other agricultural industries, coconut has confronted by fluctuation in prices and accords the importance of reliable price modelling and forecasting techniques to ease the burden on the value chain actors. Therefore, the aim of this study is twofold. Firstly, it is intended to review the main approaches used by the agricultural forecasters in modelling and forecasting coconut prices, with an assessment of the strengths and weaknesses of each approach. Furthermore, an attempt has taken to examine how the existing coconut price models could be improved by incorporating relevant knowledge generated in price models of other crops. Secondly based on the findings more realistic model will be developed and validated to forecast coconut prices. The first component of the study is completed and the second part is progressing.

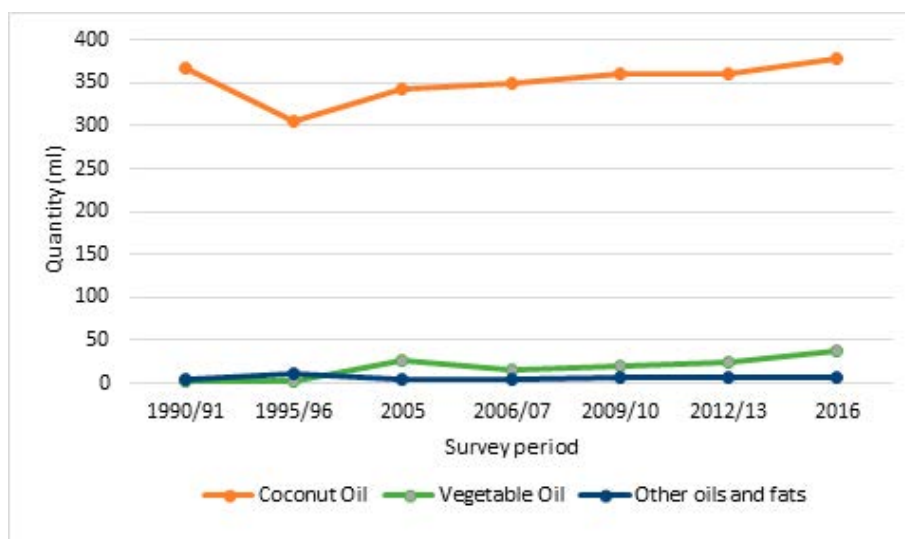
Reviewing the literature identifies that the modelling techniques used in coconut price forecasting are mainly time series models dominated by univariate time series models. This type of models excessively confines the analysis to a single variable, despite the many interactions affected in a system of coconut pricing. The major drawback in existing price modelling studies is that they do not generate information for planning, organizing, directing and controlling the industry due to the absence of interacting factors (eg: prices, production, climatic variables) and their relationships in the system. Therefore, the study suggests the importance of extending the existing studies of coconut price modelling and forecasting with a systems approach by including other interacting elements to generate more realistic forecast values allowing the industry to adopt its changing circumstances.

Dynamics of Household Coconut and Edible Oil Consumption of Sri Lankan Consumers

Agricultural Economics & Agribusiness Management Division

Coconut and coconut oil are important constituents in the Sri Lankan diet and they are one of the main sources of dietary fat. However, based on various consumer finance surveys, it

is evident that the per capita consumption of coconuts and coconut oil shows significant differences among different income categories and there are notable differences in the amount of expenditure on coconut oil and other cooking oils and fats among different sectors. Availability of substitute oils in the domestic market due to trade liberalization in the Sri Lankan edible oil market has a substantial effect on the consumption pattern of the domestic consumers. Moreover, the rising income of households has further stressed on changes in consumer demand for food including edible oil due to changes in the food consumption pattern. Therefore, the aims of this study are to assess the temporal shift in consumption of major edible oils and coconut in Sri Lanka and to ascertain the present pattern of consumption of edible oils and coconut by the households in rural, urban and estate sector.



Edible oil consumption in Sri Lanka (average monthly per person)
Source: Household Income and Expenditure Survey -
Department of Census and Statistics (various years)

The study will be conducted in the North Western province covering 300 respondents representing the three categories; rural, urban and estate sectors. Pretesting of the questionnaire is completed and data collection will be commenced. This study is concentrated on the dynamics in edible oil consumption at both the national and disaggregated level. Hence the findings on the shift of coconut and edible oil consumption pattern will be helpful for planning coconut oil production in the country as well as for formulating appropriate trade policies.

Evaluation of the Success of Coconut Replanting Program of Sri Lanka

Agricultural Economics & Agribusiness Management Division and Plant Physiology Division

Coconut industry, one of the most versatile industries in Sri Lanka, plays a significant role in the national economy in view of rural employment and income generation. However, to

date, Sri Lanka suffers from the inadequacy of annual national production of coconuts to cater to national requirement due to many biotic and abiotic influences. Of them, senility of existing plantations has become and becoming a major threat.

Coconut Cultivation Board (CCB) together with Coconut Research Institute (CRI) annually produce coconut seedlings to support the national replanting program with the aim of making Sri Lankan Coconut industry sustainable. However, there is no cross evaluation of the replanting program to understand how successful these seedlings are in the field level to cater future coconut industry. Therefore, this study aims to evaluate the current situation of the seedlings distributed all over the country since 2012 and thereby to understand the gaps in national replanting program.

A representative random sample was selected from two populations. One group represents the growers who have purchased hybrid seedling from CRI while the other group represents the growers in the coconut triangle who receive coconut seedlings under the four subsidy programs conducted by CCB namely replanting, under planting, new planting and rehabilitation. The survey is in progress to observe the present situation of the seedlings issued.



Coconut seedlings to be issued for growers

Evaluation of International Organic Fertilizer Standards and Related Export Regulations on the Use of Local Organic Fertilizer Sources to Organic Coconut Industry in Sri Lanka

Agricultural Economics & Agribusiness Management Division and International Irrigation Management Institute

This study will clarify prerequisite conditions for export-oriented organic farming in Sri Lanka. Increasing organic fertilizer use strengthen food security and ecosystem services thereby supporting conditions for large scale soil rehabilitation and counteracting land degradation. The support to export-oriented agriculture helps alleviate poverty by assisting private, public sector initiatives, and the development of value chains across urban to rural areas. The assessment of the application process of international standards will reveal business opportunities and assist to identify political and infrastructural barriers while

supporting strategy adaptation for stakeholders in the value chain. The main objective of this study is to identify international and national standards of organic fertilizer and barriers to trade on organic coconut products. Survey on organic fertilizer producers has started and the study is in progress.



Different types of organic fertilizers

Assessing the Impacts of Releasing Predator Mite to Control Aceria Mite in Coconut

Agricultural Economics & Agribusiness Management Division and Crop Protection Division

According to the CRI estimates, Coconut Mite (*Aceria guerreronis*), one of the major pests of coconut can cause severe crop losses mainly in nut production even up to 50-60%. Therefore, reducing the losses caused by mite has been an arduous task for coconut growers. CRI has formulated both chemical mixtures and predator mite (*Neoseiulus baraki*) to control the mite population. With the intention of easy access to growers, CRI has released the predator mite breeding technology to the Coconut Cultivation Board, CRI sub-stations and other interested parties and has established predator-breeding laboratories in different locations in the country. These laboratories have started releasing the predatory mites but the level of adaptability and the impact of this technology at the farmer field level is to be examined. Hence, this study is conducting to assess the effectiveness of the release of predator mite to control *Aceria* mite at farmer field conditions.

The experiment was started with the collaboration of Kurunegala Plantations Ltd who is already involved in breeding predator mite in their own laboratories. Two sites in Holongolla and Kudaoya estates have been selected for the study. Pre-treatment data collection is in progress.

Value Chain Analysis (VCA) of coconut sap products in Sri Lanka

Agricultural Economics & Agribusiness Management Division

Coconut sap products are a traditional range of products produced from coconut inflorescence. Coconut toddy, treacle, jaggery, sugar, vinegar, and arrack come under this category. Nearly 33 million rupees were generated during 2017 from the export of coconut-based vinegar and arrack. The rest of the products are nearly targeted to the domestic market. Majority of those products are produced under domestic scale and product quality standards are not well developed to reach the global and local value chains. Therefore, this study aims to identify the constraints and opportunities of these sub-sectors to increase the profitability of the industry. A value chain analysis approach will be carried out to map the value chains and to identify the constraints and opportunities of each value chain segment. A list of toddy tappers registered under the Department of Excise was requested and questionnaires were prepared.



Extraction of coconut sap



DEVELOPMENTAL RESEARCH

Management of the buffer zone of the Weligama Coconut Leaf Wilt Disease

Crop Protection Division

The field programme in the Southern Province for identification and removal of Weligama Leaf Wilt Disease affected coconut palms to prevent the spread of the disease to non-affected areas was continued. A total of 19,365 lands in the Weligama in the Weligama Coconut Leaf Wilt Disease buffer zone was inspected covering 20,511.58 ac. Six hundred and three affected palms were identified and removed 381 affected palms during the year.

Mr. P.H.P.R. De Silva made presentations on "Current status and the progress of Weligama Coconut Leaf Wilt Disease management programme in Southern Province" for the government officers attached to the Okewela Divisional Secretariat at the Regional Agricultural Committee Meeting on 02-11-2018, Tangalle Divisional Secretariat at the Regional Agricultural Committee Meeting on 13-11-2018 and Beliatta Divisional Secretariat at the Regional Agricultural Committee Meeting on 13-11-2018.

Dr. H.T.R. Wijesekara made a presentation on Weligama Coconut Leaf Wilt Disease Management and Plant Protection Act number 35 of 1999 to Police officers of Southern Province at Ganga Addara Hotel, Matara.

Establishment of laboratory for insect behavioral studies

Crop Protection Division

Complete laboratory facility consisting of Electroantennogramme setup, Olfactometers and flight channel (wind tunnel) for electrophysiological, behavioural studies and volatile extraction was established for insect research.



Electroantennogramme setup

Production of genetically superior high yielding coconut planting materials for the national replanting program

Genetics & Plant Breeding Division

Under the treasury funded special project (2017-2019) “Production of genetically superior high yielding coconut planting materials for national replanting programme”, a new irrigation system was designed and established in the Maduruoya Seed Garden which is located in the dry zone during 2018 with the objective to increase the seednut production. Additionally, predator mite breeding and the application of predator mites to the coconut palms at Maduruoya was also continued during the year. These activities altogether will contribute to increase the productivity of the seed garden with high quality seed nuts which can be supplied to the National Replanting Programme in the future.



Newly constructed flood irrigation canals at Maduruoya Seed Garden

Hybrid seednut production project - Kinyama (2019 – 2021)

Genetics & Plant Breeding Division

Genetics and Plant Breeding Division of the Coconut Research Institute established the Kinyama Seed Garden in 2013 as a public-public partnership with Chilaw Plantations Ltd. This seed garden was designed to produce the high yielding Kapruwana hybrid seed nuts. Increasing the hybrid seed nut production capacity in Sri Lanka is the way forward to increase the yields and productivity of coconut lands. Understanding this need, Treasury funded Rs. 25 million to upgrade the Kinyama seed garden in 2018. With these funds a new hose irrigation system was established and organic fertilizer application was carried out. This will enhance the seed nut production capacity of this seed garden as Kinyama area is usually subjected to long dry spells. Kapruwana hybrid seed nut production via hand pollination will commenced from 2019.

Demonstrations of farming systems

Agronomy Division

i. Bioenergy Production

Bio-energy generation was studied in a model designed in one hectare of coconut lands comprised with 150 coconut palms, 2500 trees of *Gliricidia*, externally supplied paddy

straw fed to six buffaloes in Ratmalagara Estate. In this system *Gliricidia* wood was used for gasification and buffalo dung was used to generate of bio-gas.



Gliricidia cultivation and bio-energy production unit at Ratmalagara Estate

ii. Livestock integration

The demonstration of goat, sheep and buffalo farming systems under coconut with the objective of increasing profitability of small holder farmers through livestock integration under coconut was continued. Goat and sheep breeding and demonstrations at Rathmalagara Estate were equipped with new infrastructure and paddocks were established with CO-3 fodder grass for rotational grazing and continued successfully to popularize the sheep and goat farming in coconut plantations. New vegetable, fruit and fodder cultivations were started with utilizing the organic manure from buffalo farming system and continued. Both farming systems are effectively used for weed control and soil fertility increment of the estate.



Goat and sheep farming demonstrations at Ratmalagara Research Center

iii. Pasture and fodder demonstrations

Agronomy Division

Two Fodder, Pasture and Cover crop demonstrations were maintained at Head office premises at Bandirippuwa estate and Ratahmalagara estate to upgrade the knowledge and awareness of local community, coconut growers, university, agriculture and school students on livestock management in coconut lands. Demonstration in the Head office premises was renovated with new infrastructure and sprinkler system.



Fodder and pasture demonstration at Bandirippuwa estate

iv. Vermicompost production

Agronomy Division

Vermicomposting is a non-thermophilic, bio oxidative process that decomposed biological organic waste involving earthworms and associated microbes. One compost production unit has been established at Rathmalagara Research Centre for demonstration purposes. Using this technology, the commonly available waste biomass in coconut plantations; weed and plantation residues and animal wastes can be converted into nutrient rich compost fertilizer within 5 to 6 weeks by the involvement of worms. Under this project, worms were distributed among growers and also used as a demonstration model for farmers, university, agriculture school and students.



Vermicomposting demonstration at Ratmalagara Research Center

v. Intercropping demonstrations

Agronomy Division

To disseminate the knowledge and the awareness on maximizing the resource utilization and food security in coconut lands, more than twenty (20) intercropping demonstration models were established and maintained at Makandura, Rathmalagara and Bandirippuwa estates including export agricultural, fruit, timber, fodder and cash crops. *Aloe vera* (komarika) and two varieties of budded Durian which have high local and export demand in present market trends were newly established and large number of coconut growers, university, agriculture and school students were benefited throughout the year.



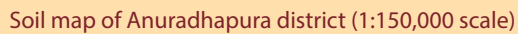
Newly established budded Duriyan, Aloe vera and Banana demonstrations at Makandura estate

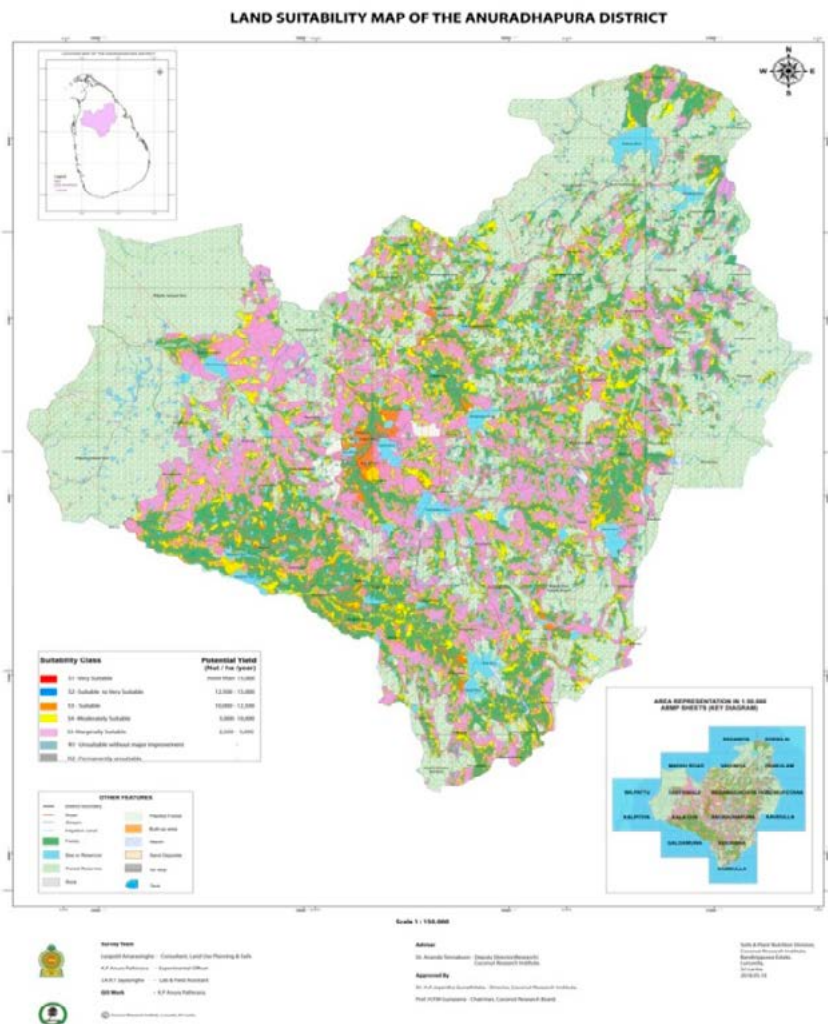
Land suitability evaluation for coconut in non-traditional areas

Soils & Plant Nutrition Division

Anuradhapura District

Anuradhapura district soils belong to Great Soil Groups namely, Reddish Brown Earths and Alluvial. Out of the surveyed area (228, 401.86 ha) 60.5% of lands were identified as marginally suitable for coconut cultivation. In addition, highly suitable (S_1) and suitable to highly suitable (S_2) lands with a potential yield of $>15,000 \text{ ha}^{-1}\text{yr}^{-1}$ and $12,500$ to $15,000 \text{ ha}^{-1}\text{yr}^{-1}$ respectively were not identified in this district. Suitable (S_3) lands with a potential yield of $10,000$ to $12,500 \text{ ha}^{-1}\text{yr}^{-1}$, moderately suitable (S_4) lands with potential yield of $5,000$ to $10,000 \text{ ha}^{-1}\text{yr}^{-1}$ and marginally suitable (S_5) lands with potential yield of $2,500$ to $5,000 \text{ ha}^{-1}\text{yr}^{-1}$ were identified covering areas of 3,629.87 ha., 85,754.21 ha and 138,255.09 ha respectively.

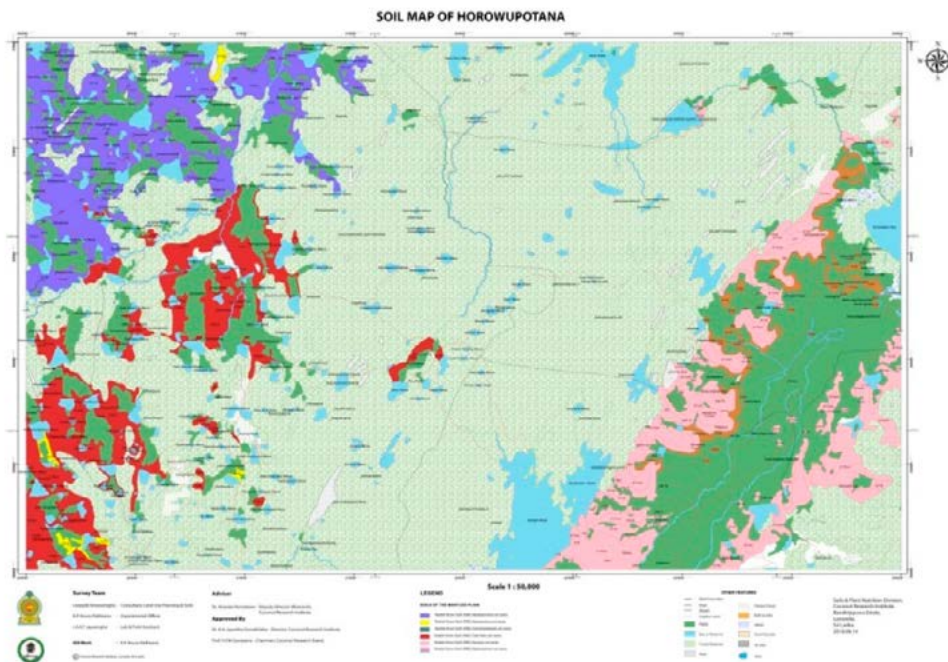




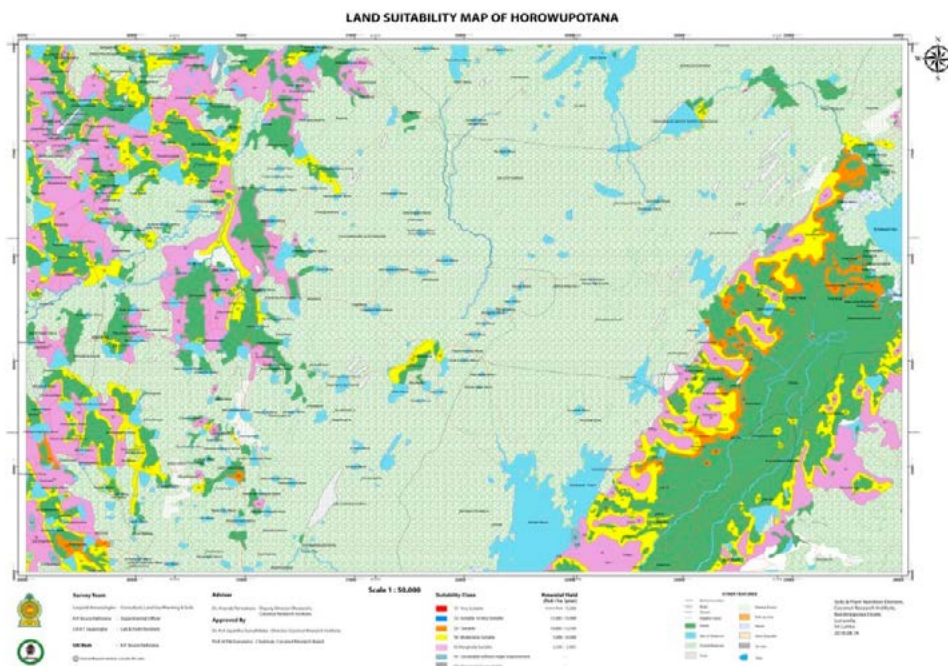
Land Suitability map of Anuradhapura district (1:125,000 scale)

In Anuradhapura district 1:50,000 soil maps and soil suitability maps were produced for Dambulla, Kekirawa, Galgamuwa, Kala Oya, Kalpitiya, Wilpattu, Tantirimale, Madhu Road, Anuradhapura, Medawachchiya, Vavuniya, Padawiya, Kokkilai, Pankulam, Horowpathana and Kaudulla topographical sheets.

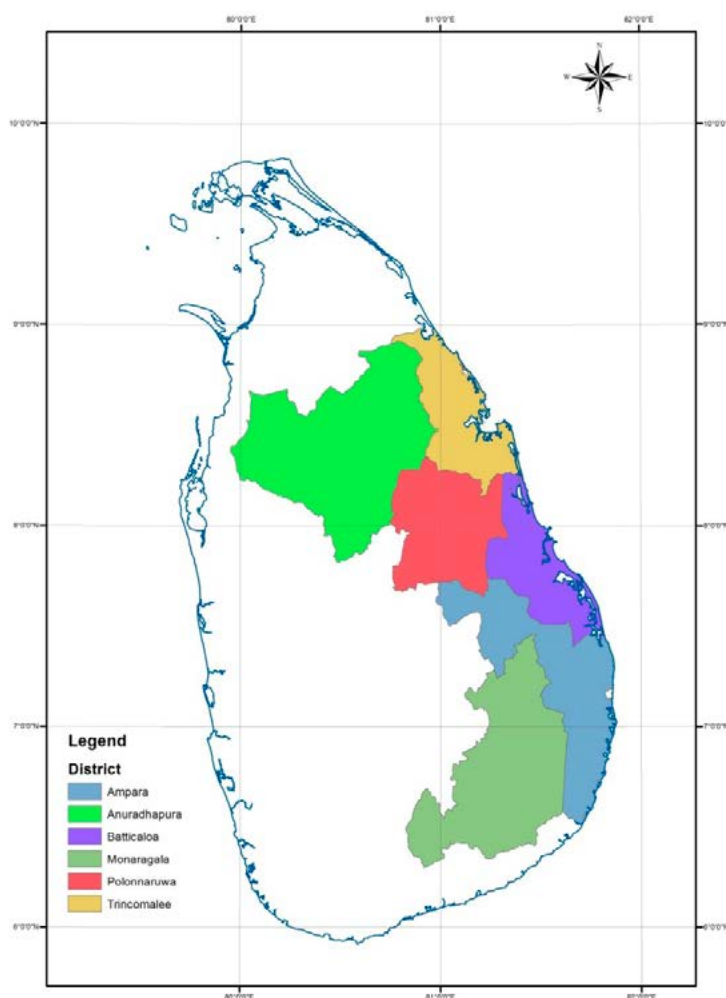
Preparation of soil maps and soil suitability maps in scale of 1:125,000 and 1:50,000 in Moneragala, Ampara, Batticaloe, Trincomalee, Polonnaruwa and Anuradhapura districts were also completed.



Soil map of Horowpathana sheet (1:50,000 scale)



Land Suitability map of Horowpatana sheet (1:50,000 scale)



Non-Traditional Coconut growing districts in Sri Lanka (1:2,000,000 scale)

Recommendation of oil palm seedlings

Crop Protection Division

The CRI officers inspected and recommended oil palm seedlings in the 1st stage nursery prior to transferring them to the second stage nursery. During the year approximately 150,000 seedlings were recommended. In addition, as quarantine requirement, the net houses of the 1st stage nurseries of Lalan Rubber Industries Ltd. Agalawatte Plantations PLC and Malwatte Valley Plantations PLC were certified for raising oil palm seedlings for the year 2018.



Oil palm seedlings in a certified nursery at Lalan Rubber Industries Ltd.

Guidelines for the sustainable management of oil palm in Sri Lanka

Crop Protection Division

The Coconut Research Institute introduced a set of guidelines for the sustainable management of the oil palm plantations in Sri Lanka. It includes guidelines for land selection, land preparation, seed importation, seedling raising, planting, fertilizer application, weedicide and pesticide use, reservation for human settlements, processing and byproduct disposal and monitoring of sustainability standards.

Field planting of tissue cultured oil palm seedlings

Crop Protection Division

The Coconut Research Institute was able to produce 10 tissue cultured oil palm seedlings. Out of them five seedlings were planted in Giragoda Division of the Elpitiya Estate of the Elpitiya Plantations PLC. and the rest are in the second stage nursery of the Lalan Rubber Industries Pvt Ltd.



Tissue-cultured oil palm seedling in the field

First international certificate course on coconut plantation management

Technology Transfer Division

The Coconut Research Institute of Sri Lanka (CRISL) conducted the first International Certificate Course on Coconut Plantation Management from 13th June to 3rd August, 2018 jointly organized with the Asian and Pacific Coconut Community (APCC). This comprehensive 52-day long course, was organized and conducted to provide training on scientific coconut cultivation and management to other coconut growing countries. The APCC identified the CRISL for this international training, CRISL being an accomplished Coconut Research Institute and the world first research center dedicated solely on coconut research. A comprehensive training manual was developed by the CRISL research staff for this course. Hon. Navin Dissanayake, the Minister of Plantation Industries of Sri Lanka graced the inauguration as the Chief Guest, which was attended by more than 150 distinguish invitees, CRISL staff and Mr. Uron Salum the Executive Director of the APCC. There were 14 participants in the course from Papua New Guinea, Tonga, Kiribati, Tuvalu, Vanuatu, Samoa, Jamaica and Sri Lanka.

The course had a combination of lectures, practical, demonstrations and on-site field work component to give the participants the theoretical knowledge and practical exposure. The field work and practical were conducted exclusively in the CRISL owned and managed coconut plantations, regional research stations and coconut seed gardens. The accommodation for the participants to the course was provided at the Rani Beach Hotel in Negombo.



Participants for the First international certificate course on coconut plantation management

Certificate course on coconut cultivation and value addition

Technology Transfer Division

The most famous training programme series among the growers “Certificate Course for Coconut Cultivation and Value Addition” was conducted in this year too. The training programme series includes eight one-day programmes on specific subject areas on coconut cultivation, estate management and value addition. The programme schedule was advertised in newspapers requesting interested coconut growers to register for the programme in advance. Based on different subject categories, coconut growers have the choice to select the suitable programmes for them. These programmes were conducted at CRI substations located in different areas. The certificate course was conducted from April to November. The details of eight programmes conducted during the year is as follows.

Details of the certificate course conducted during the year

Date	Venue	Topic	Participants
27 April	ISG, Ambakele	Replanting of coconut	282
25 May	Ratmalagara	Soil and moisture conservation	283
29 June	Head Office, CRI	Fertilizer recommendations	263
26 July	Makandura	Intercropping/ animal keeping	281
31 August	Head Office, CRI	Pest and diseases of coconut	257
28 September	Ratmalagara	Rehabilitation of coconut estates	255
26 October	Head Office, CRI	Labor law and Estate Management	254
30 November	Head Office, CRI	Coconut based product and value addition	246



Participants for the certificate course

Workshop on increasing productivity of coconut plantations

Technology Transfer Division

This is one of the latest technology transfer tools implemented by the division. It enables to develop links between the research personnel and the stakeholders. Further, it provides a superior platform together research personnel and the stakeholders to discuss their field problems and identify strategies to solve the problems. Two such workshops were conducted during the year.

1. Workshop for 5 plantation companies (Estates of Archdiocese of Colombo, Pitakanda group of Lalan plantations, Elkaduwa Plantations, L. J. M. Peiris company and Helanka Plantations) at CRI on 28/02/2018
2. Workshop for 125 coconut growers in the Kurunegala, Gampaha and Puttalam districts at CRI on 7/8/2018



Participants for workshops

Training of Trainer (TOT) Programmes

Technology Transfer Division

Training of trainers programmes aim at improving the coconut sector through provide training the village level leaders, grass root level trainers and extension personnel from different organizations to enhance the technical capabilities. During the year, nine ToT programmes were conducted by the division to the grass root level trainers and extension personnel.

Training of Trainers (ToT) programmes conducted during the year

Date	Institute / Farmer group	No of Participants
29/01/2018	Plantation ministry representatives	8
16/02/2018	St. Sebastian College Kalpitiya	200
30/08/2018	Hakmana Agrarian services, Hakmana	60
09/11/2018	L.J.M. Peiris & Company	35
20/12/2018	Vidatha Centre, Mahara	50
03/05/2018		
23/07/2018	Awareness programmes for WCLWD	300
02/11/2018	Agalawatta, Embilipitiya, Okewela, Beliatta, Tangalla	
13/11/2018		



Training of Trainers (ToT) programmes

Training Programmes on Value Added Coconut Products*Technology Transfer Division*

During the year, seven training programmes were conducted for youths, women organizations and rural entrepreneurs jointly the Youth centers and Vidhtha Centers.



Training programmes conducted for youths, women organizations and rural entrepreneurs

Venue	Date	Participants
Pannala	12/03/2018	16
Kuliyapitiya	16/03/2018	44
Chilaw	16/05/2018	56
Dambulla	16/06/2018	39
Wennappuwa	15/10/2018	35
Minuwangoda	16/11/2018	40
Chilaw	23/11/2018	45

Technology transfer on coconut processing activities

Coconut Processing Research Division

The staff of the Coconut Processing Research Division conducted several programs for transferring the technologies to Industrial Development Board at Kurunegala and Moratuwa, Kapruka Samithi of several districts and Vidhatha centers. Division participated in International Coconut Trade fair organized by Ministry of Plantations.

School educational programmes

Technology Transfer Division

CRI has become one of the popular scientific destinations among the schools for their educational tours. During the year, 12 schools including 1520 students and teachers were attended.



School educational programmes

Educational Programme for universities and higher educational institutions

Technology Transfer Division

Eleven practical training programs were conducted for students from universities and higher educational institutions during the year.

Universities	Agriculture Schools
Uva Wellassa University	Labuduwa Agriculture School
University of Wayamba	Vavuniya Agriculture School
Rajarata University	Angunakolapelessa Agriculture School
Sabaragamuwa University	Gabadawatte Agriculture School
	Walpita Agriculture School
	Aquinas College



Educational programmes for universities and higher educational institute

University students trained at CRI in 2018

S. No.	Name of the University	No. of students
01.	Institute of Chemical Sciences	02 – Research Project
02.	Open University	02 - Industrial
03.	Wayamba University	03 – Internal 06 – Research Project
04.	Kelaniya University	02 – Industrial
05.	Sabaragamuwa University	05 – Research Project
06.	Uwa Wellassa University	04 – Research Project
07.	Jayawardenapura University	01 – Industrial 01 – Research Project
08.	Rajarata University	03 – Research Project
09.	Ruhuna University	01 – Research Project
		01 - Industrial
	Total	31

Exhibitions and crop clinics

Technology Transfer Division

The division attended seven exhibitions and crop clinics in Colombo, Gampaha, Dankotuwa, Horana, Tharakudivilluva, Mahalluppallma and Maravila areas during the year to promote coconut cultivation, management and processing technologies.



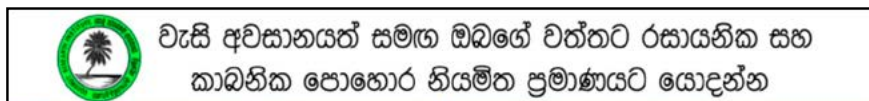
Exhibitions

Technology dissemination through mass media

Technology Transfer Division

TV advertising

Two crawling messages namely “moisture conservation” and “inorganic and organic fertilizer application” were telecast on Rupavahini TV channel for six weeks (600 times).



Radio programmes

One discussion programme about coconut cultivation “Subarathi” was broadcasted on “Swadeshiya” service of Sri Lanka Broadcasting Corporation on 11/01/2018.

Newspaper articles

Four newspaper articles were published on Dinamina newspaper “Wewili Saviya” supplement. These articles covered;

- Intercropping
- Inorganic and organic fertilizer mixture
- International training course
- SMS messages

Production of “Kapruka Waruna” video documentary film (English version)

“Kapruka Waruna” video documentary which produced in 2017 was dubbed into English language which runs 18 minutes. It includes details about Coconut Research Institute, current research programme of CRI and the services given to the coconut growers and general public.



Information on 'Kapruka Waruna'

Printing and Publications

Technology Transfer Division

During the year, division has published following printing materials.

1. A booklet on “Planting and management of young plantations”
2. A booklet on “Soil and moisture conservation”
3. A booklet on “Plant nutrients and fertilizer management”
4. A booklet on “Rehabilitation of low yielding coconut lands and animal husbandry”
5. A booklet on “Management of coconut pests and diseases”
6. A booklet on “Intercropping in coconut lands”
7. A booklet on “Estate management and labor regulations”
8. A booklet on “Coconut based products and value addition”
9. CRI Annual Report 2015
10. CRI Annual Report 2016
11. A booklet on “About Coconut Research Institute (Guide Book)”
12. Advisory Circulars C booklet (Sinhala)
13. Technology Update 2017
14. Advisory Circulars A booklet (English)

The printing unit of the division undertook 83 printing jobs and binding jobs which cost Rs. 227,170.00 of other divisions. This includes annual reports, booklets, leaflets, official forms, circulars, various kinds of forms, datasheets, survey questionnaires, certificates, folders and handouts etc.



Printing press of the Coconut Research Institute

Coconut Technology Park (CTP)

Technology Transfer Division

The Coconut Technology Park (CTP) established with the purpose of demonstrating field application of cultivation and management technologies has become a popular place not only among the coconut growers and the general public but also with the foreign visitors. The CTP not only serves as an educational and information centre, but also provides required inputs and materials for coconut growers and other stakeholders.



Crop Clinic and Coconut Technology Park

During the year 2018, division has started a crop clinic at CTP, where growers can get advices for their field problems from 9.30 am to 3.00 pm on week days. CTP crop clinic received 1596 coconut growers and visitors for 2018.

Familiarization programme for Foreign visitors

Technology Transfer Division

Recently, CRI has become one of the famous tourist destinations. Further, it enhanced research collaborations with international institutions. The division conducts a familiarization programmes for the foreign visitors to get an exposure of CRI activities. Nine tourist groups visited CRI and Technology Park during the year.



Country	No. of visitors
Austria	2
India	3
UK	22
Switzerland	12
Norway	2
Chile	7
New Zealand	10
Germany	6
Oman	3

Technology transfer on pests and diseases

Technology Transfer Division

Crop Protection Division conducted two special training programs and demonstrations on Acarology for two groups of the students from the Rajarata University on 15-6-2018 and 8-12-2018.



Staff of the Crop Protection Division conducting training programs on pest and disease management of coconut to the university students

CONTRIBUTION TO NATIONAL DEVELOPMENT THROUGH SERVICES TO STAKEHOLDERS



Improved coconut seed production and seedling certification

Genetics & Plant Breeding Division

During the year 2018 a total of 428,841 and 30,463 CRIC60 and CRIC65 seed nuts were produced respectively, from the three Genetic Resource Centres and 15,388 CRISL98, 3,212 Kapruwana, 1,690 Kapsetha and 7,306 Kapsuwaya improved seed nuts were produced by hand pollination. 17,174 Plus Palm seed nuts were also produced in 2018. Under the project of genetically superior hybrid seed nut production for North and East, 29,920 T x DG and 3,645 SR x DG seed nuts were produced. Under the seedling certification programme, 322,744 seedlings were certified by the staff of the Seed and Seedling Certification Unit.



CRI certified coconut seedlings

Provision of Dikiri plants for field planting

Tissue Culture Division

120 Dikiri plants propagated through embryo culture were acclimatized during the year and 40 Dikiri plants were sold to growers.

Advisory visits to oil palm plantations

Crop Protection Division

Advisory visits were made to oil palm plantations providing advices on different aspects of oil palm. During the year, 3 visits to oil palm plantations were made and major problems that received advices were on black beetle management, water logging and fungal disease management in mature plantations.

Services provided for the management of coconut pests

Crop Protection Division

Production of predatory mites for the control of coconut mite

Mass production and issue of the predatory mite (*Neoseiulus baraki*) of the coconut mite were continued from the laboratories at Bandirippuwa estate and Makandura Research Station. In 2018, a total of 10,220 sachets containing predatory mites were produced and 8,321 were issued to the growers. The Crop Protection Division also provided technical guidance to the predator mite laboratories maintained by the Coconut Cultivation Board. During the year, visits were made to the laboratories at the Daisy Valley Estate, Gampaha, Kegalle, Batticaloa, Ampara, Bibila, Moneragala and Hambantota and necessary recommendations were given on technical issues.

1,246,000 parasitoids were produced and released for the management of coconut caterpillar out breaks. 2,119 pheromone vials were issued to manage red palm weevil infestations.

Testing of imported kernels

Staff of Crop Protection Division inspected 104 number of 40-foot reefer containers and 6 numbers of 20 foot containers of frozen coconut kernel samples imported for processing and re-exporting. Pest free certificates were issued to commence processing of the imported kernels.



Officer of the Crop Protection Division drawing frozen coconut kernel samples for testing

Analysis of quality parameters of coconut products

Coconut Processing Research Division

Coconut Processing Research Division extended its services to stakeholders by analyzing samples (92 VCO samples, 54 white coconut oil samples, 8 DC samples, 04 coconut flour and 07 poonac samples). The technologies for coconut water beverage production, coconut ice cream making and coconut oil production were obtained by stakeholders. Production of virgin coconut oil, white coconut oil and coconut water were mostly sought technologies.

One-day training session was conducted for those interested in learning coconut products.

Test reports and fertilizer recommendations

Soils & Plant Nutrition Division

Sample Type	No. of samples
Analysis of Inorganic fertilizer for quality assurance	228
Analysis of organic manure for quality assurance	67
Coir pith sample analysis for quality assurance	425
Differential Fertilizer Recommendations	33
Land Suitability Evaluation Reports	32
Water analysis for suitability for irrigation	11
Analysis of soil for nutrient status	68
Analysis of leaf for nutrient status	166

Supply of information to other institutions and stakeholders

Agricultural Economics & Agribusiness Management Division

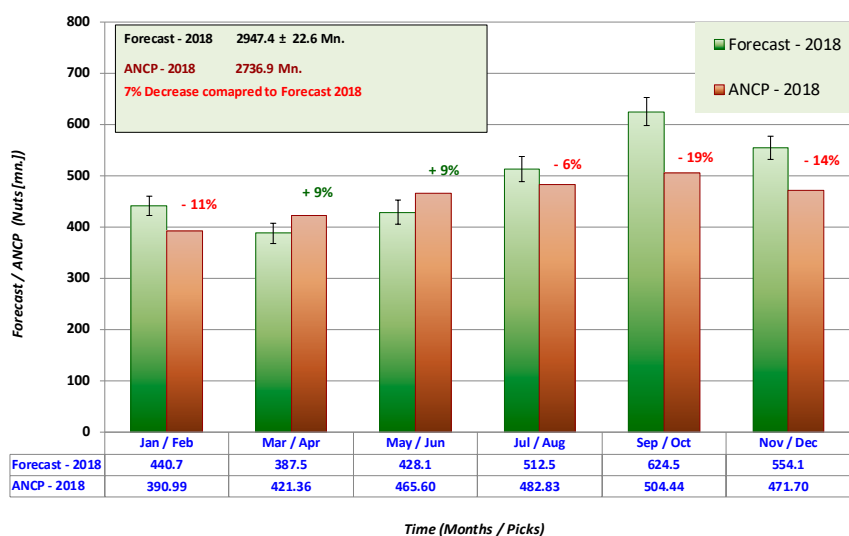
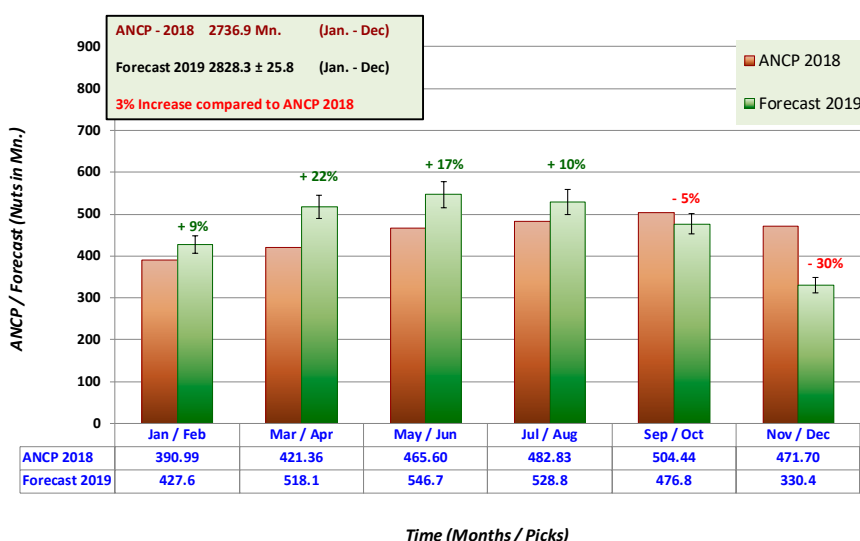
1. Provided information to update research database of Council for Agricultural Research Policy
2. Provided coconut statistics to Central Bank of Sri Lanka, Sri Lanka Treasury, Department of Census and Statistics, many other institutes and stakeholders
3. Provided valuation reports to value coconut trees removed for different purposes
4. Provided statistics and information on coconut for the budget speech and the library of Sri Lanka Parliament
5. Served as a Centre for Coconut Based Socio-Economic Statistics
6. Issued the policy recommendations to the industry
7. Provided data to update "National Science and Technology Status Report 2017" of National Science and Technology Commission
8. Completed the survey questionnaire on "Survey of Research and Experimental Development (R & D) in Sri Lanka – 2017" of National Science Foundation

Estimation of national yield of 2018 and prediction of national yield for 2019

Plant Physiology and Agricultural Economics & Agribusiness Management Divisions

The estimated national coconut production in 2018 was 2736.9 Mn nuts. It is about 12% increase compared to the production in 2017 (2450.0 Mn. Nuts)

The predicted coconut production for 2019 is 2828.3 ± 25.8 Mn nuts; which will range from 2802.5 to a maximum of 2854.1 Mn nuts. Two issues of a brochure with above information along with the district-wise climatic parameters were printed and circulated among relevant officials, growers and entrepreneurs. In addition, bi-monthly updates of National Coconut Production and the forecast for the remaining months were provided to the all stakeholders through e mails on request.

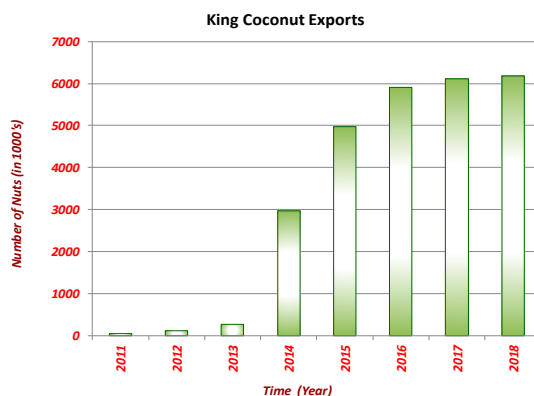


Estimated national coconut production on bi-monthly basis in 2018 and coconut yield forecast for 2019

Supply of the protocol for the improvement of shelf life of king coconut for export markets

Plant Physiology Division

The protocol developed for the improvement of shelf-life of king coconut was given to 15 exporters during the year. The export of king coconuts to more than 25 countries has shown a steady growth in previous five-year period of which the export volume has exceeded the 6 Mn. king coconuts (6,178,324 nuts) in the third consecutive year in 2018.



Exports of king coconuts in previous years using the protocol developed by CRI

Supply of Meteorological data

Plant Physiology Division

Daily data of rainfall, air and soil temperature, relative humidity, wind velocity and sunshine hours of five research stations of Coconut, Research Institute; Bandirippuwa Estate, Rathmalagara, Isolated Seed Garden, Maduruoya Seed Garden and Middeniya Research Station were provided to the national database at the Meteorology Department. Monthly rainfall and temperature data were provided to growers, industry personnel, scientists, students and Divisional Secretariats of Wennappuwa, Mahawewa, Madampe and Dankotuwa, on their request.



Agro-meteorological station at Bandirippuwa Estate, CRI

“Kapruka” SMS Service

Technology Transfer Division

Mobile phone is an easy, fast and convenient device to communicate and get information. Therefore, technology transfer division introduced a project to disseminate coconut related information to the growers with the support of the Agricultural Economics division and Plant physiology division. Coconut growers receive messages on farm gate price of a coconut, DC price, Copra price, Coconut oil price bi weekly whereas yield prediction for the following month and weather forecast details weekly. About 400 growers registered as new recipients during the year 2018 making the total of 2278 recipients who received this service in 2018.



Provide advisory services to growers

Technology Transfer Division

During the year the institute received a large number of requests from coconut growers requesting to inspect their plantations and provide necessary advice for their field problems. Most of these requests were referred to CCB regional staff for necessary assistance. During the year fifteen field inspections were made on special requests and reports were submitted with necessary recommendations. Approximately 1100 growers who visited the institute, contacted us on our hotline and inquired through mails were provided with the required advisory assistance by the staff of the division.



Providing advisory services

Library Services

- The library has provided lending and reference services using in-house resources to internal and external clientele throughout the year.
- Literature searches were done on requests by the users.

- The library facilitated stock verification by re-shelving books specifically for the task.
- With comparison to the previous years, there is a decline of library visits by university students.

Engineering Services

Following major renovations & maintenance works were conducted by the Engineering Unit during the year 2018.

Repairs under Capital Expenditure

1. Repairing of Ho/Gr.01/08 Quarters
2. Repairing of Ho/Gr.03/08 Quarters
3. Repairing of Ho/Gr.03/09 Quarters
4. Construction of proposed two storied laboratory - (Common Lab – Stage 1)
5. Tiling & partition work of the Estate Management Division
6. Completion of Wash Room in Agriculture Economics Division
7. Construction of Net House for Tissue Culture Division

Repairs under Estate Funds

1. Concreting of internal road of Bandirippuwa Research Estate.
2. Renovation of labor cottage at Bandirippuwa Research Estate
3. Renovation of labor rest room at Bandirippuwa Research Estate
4. Renovation of GPB quarters at Ambakelle
5. Construction of toilet & bathroom at Ambakelle
6. Construction of estate office at Ambakelle
7. Construction of labor rest room at Maduruoya.
8. Construction of office washroom at Maduruoya.
9. Construction of general stores at Thabbowa.
10. Construction of watch hut at Maduruoya

In addition, routine maintenance works of the buildings, quarters, vehicles, electricity lines, air conditioners & telephone etc. were completed under recurrent expenditure.



NATIONAL COLLABORATIONS

Behavioural and reproductive responses of coconut mites to coconut varieties

Crop Protection Division

Drs. N. S. Aratchige and A. D. N. T. Kumara of the Crop Protection Division collaborated with Dr. P. Ranasinghe of the Industrial Technology Institute and Dr. S. A. C. N. Perera of the University of Peradeniya in the project on “Assessment of behavioural and reproductive responses of coconut mites to coconut varieties and identification of volatile organic compounds, lipid profiles and phenolic compounds in coconut varieties with different susceptibility levels to coconut mite”.

Studies on health effects of virgin coconut oil

Coconut Processing Research Division

Dr C. Yalegama of the Coconut Processing Research Division continued following studies on health effects of virgin coconut oil.

1. Randomized control trial of virgin coconut oil in the treatment of Alzheimer's Dementia at the University of Kelaniya,
2. Feasibility study of virgin coconut oil in ameliorating Type 2 diabetes in human at the University of Peradeniya
3. Determination of the efficacy of adjunctive extra virgin coconut oil / coconut products use in people with mild cognitive impairment and mild to serve Alzheimers disease; community based randomized, double blind, placebo controlled, pragmatic study at the Kothalawala Defense Academy.



LOCAL & INTERNATIONAL

Science Citation Indexed Journals

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Kumarathunge, D.P., Medlyn, B.E., Drake, J.E., Tjoelker, M.G., Aspinwall, M.J., Battaglia, M., Cano, F.J., Kelsey, C.R., Cavaleri, M.A., Cernusak, L.A., Chambers, J.Q., Crous, K.Y., De Kauwe, M.G., Dillaway, D.N., Dreyer, E., Ellsworth, D.S., Ghannoum, O., Han, Q., Hikosaka, K., Jensen, A.M., Kelly, J.W.G., Kruger, E.L., Mercado, L.M., Onoda, Y., Reich, P.B., Rogers, A., Slot, M., Smith, N.G., Tarvainen, L., Tissue, D.T., Togashi, H.F., Tribuzy, E.S., Uddling, J., Vårhammar, A., Wallin, G., Warren, J.M., Way, D.A. (2018). Acclimation and adaptation components of the temperature dependence of plant photosynthesis at the global scale. *New Phytologist* doi: 10.1111/nph.15668

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- Hansamali, A.A.D., Liyanaarachchi, L.A.T.S., Karunaratne, S.B. and Gajanayake, B. (2018). Characterization of Calcic-Red Yellow Latasol of Northern Province for Coconut Cultivation: A Case Study in Palali Area of Jaffna District, Proceeding of 17th Agriculture Research Symposium, pp 247-251.
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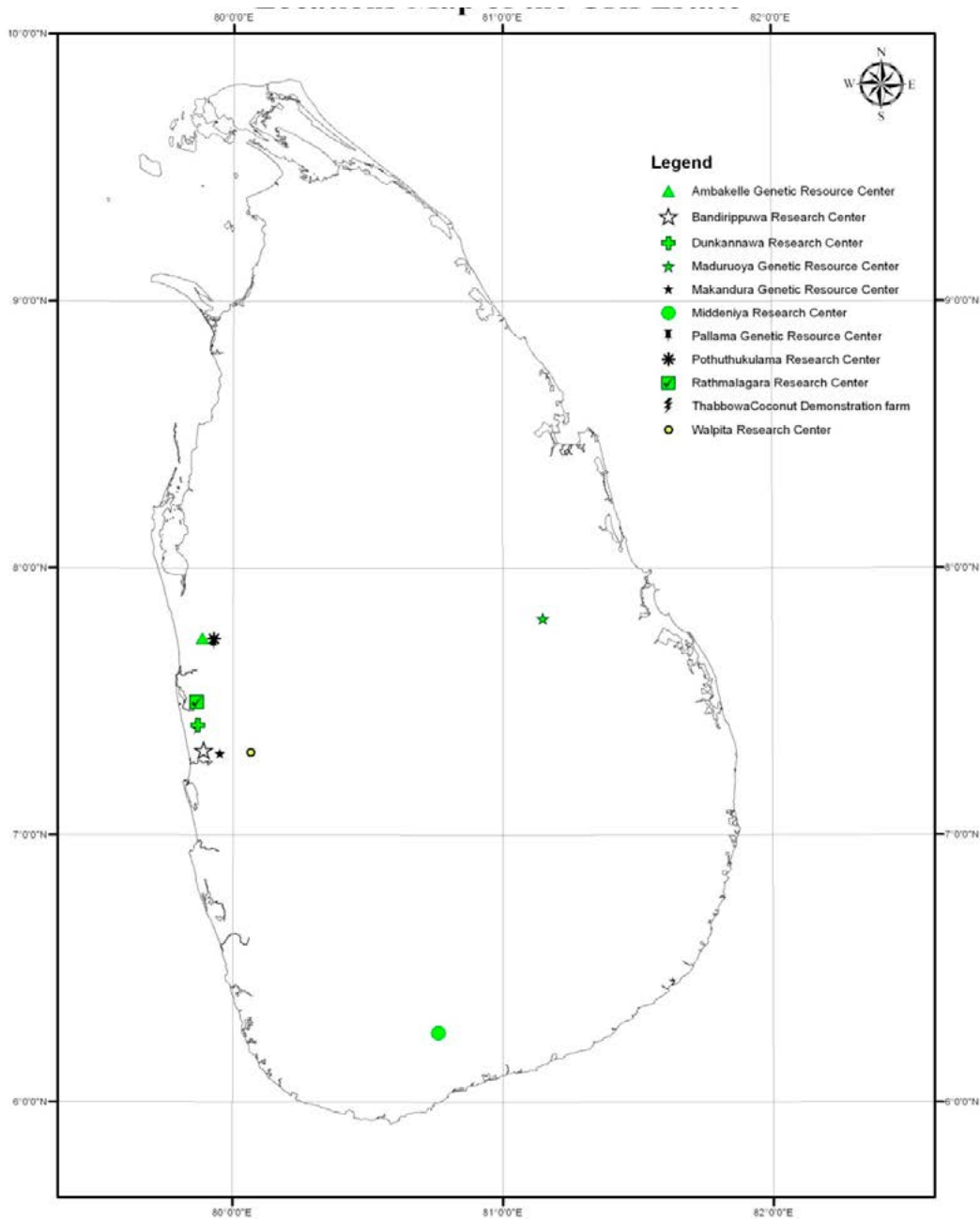
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ESTATE MANAGEMENT ACTIVITES





Scale 1:2,000,000

Location map of the CRI estates

ESTATE MANAGEMENT DIVISION

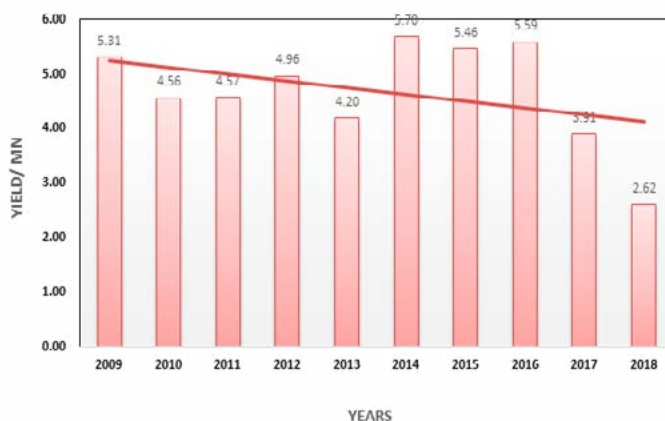
(Seed Garden/ Research Centers)

Manager (Estates)

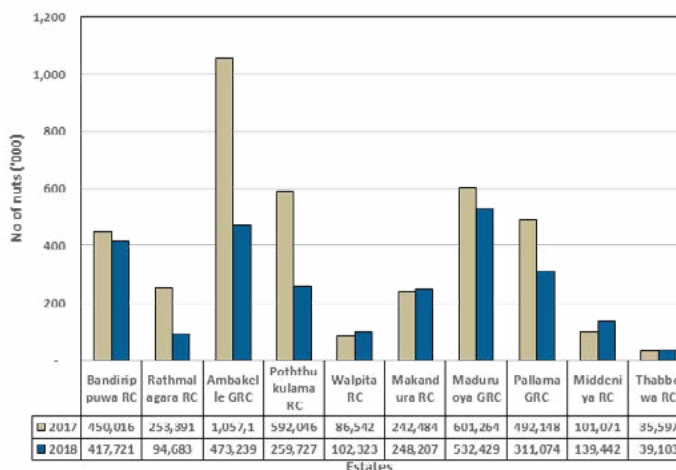
Mr. L.M.S.R. Jayathilake, B.Sc (Sci), M.Sc (Agric) (Cover up Duty)

Estate Management Division (EMD) of Coconut Research Institute (CRI) is the managing division of Genetic Resource Centers and the Research Centers belong to the institute. Production of high quality coconut planting material for the National Replanting Programme (NRP) is one of the main objectives of Coconut Genetic Resources Centers (CGRC). In addition, they provide infrastructure and facilitate research activities of the institute. Total extent of all CRI estates is 3,148 ac and out of which 1,980 ac. are Genetic Resource Centers and 1,168 acres are Research Centers.

Name of the CGRC/ RC	Main Objective	Extent/ ac.	Remarks
Makandura RC	Research Centre	145	
Rathmalagara RC	Research Centre	251.1	
Walpita RC	Research Centre	40	
Poththukulama RC	Research Centre	194	
Bandirippuwa RC	Research Centre	360.16	
Middeniya RC	Research Centre	75.55	
Thabbowa RC	Research Centre	6.96	
Ambakelle CGRC	Seed Garden	347.8	Forest area 828 ac
Maduruoya CGRC	Seed Garden	205.1	
Pallama CGRC	Seed Garden	623	
Weligama CGRC	Seed Garden	17.02	



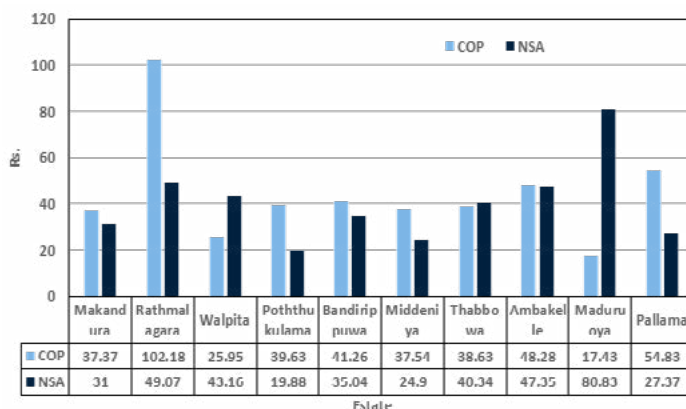
Variation in coconut production in CRI Estates from 2009 to 2018



Total production in CRI Estates in 2017 and 2018

As per the above graph of the last ten years coconut production of CRI estates, lowest crop figure was recorded in 2018. Second lowest had been recorded in 2017. Accordingly, the income generation from CRI estates has been severely declined during last two year-period. Not only the reduction of the crop but also the considerable reduction of the price of coconut was taken place in the local market after March 2018. This is somewhat uncommon to the general observation that the lower the production the higher the price or vice versa. Therefore, the lowered crop during 2018 was not compensated by higher prices and hence the situation directly affected the self-finance, profit-oriented estates.

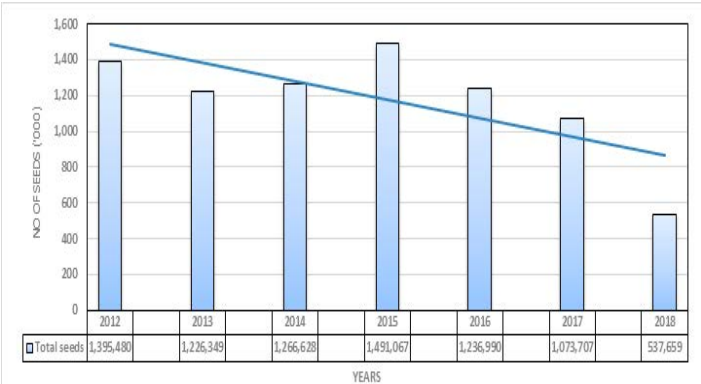
COP and NSA of different estates are given in the figure.



COP and NSA of the CRI Estates

Ambakelle, Maduruoya and Pallama seed gardens are governed by the EMD to produce different types of quality coconut seeds to the plantation sector which is one of the major objectives of the EMD. Average seed nut production from all three seed gardens is 1.2 Mn/

year.



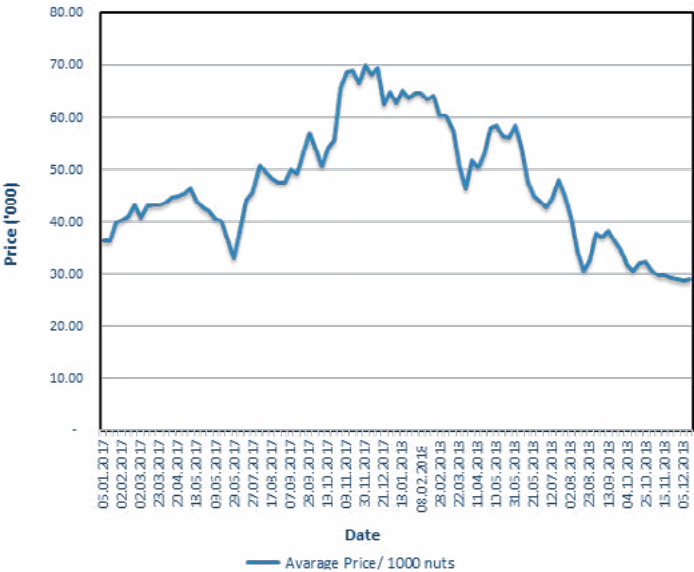
Total seed production in all CRI estates from 2012 to 2018

Summary of annual census of all estates

Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
14,742	51,112	4,168	4,412	5,201	5,225	5,544	3,011	31,010

As per the census, total palm population of the estates is 93,415 except the palm vacancies. In this census categories, Unproductive Senile, Dud and Weak Palms which is about 14.67%, are not benefited to the estates. Palms which are contributing to the yield (Well bearing, Bearing and partial bearing palms) covers about 74.95 % of the total. This information helps to find the strategy which should be followed within next 3-5 years to increase the crop and thus the seed nut production.

A significant reduction of crop was noticed in 2018 and it was nearly 50% of the annual target. But the crop figure of MOSG is somewhat comparable with the target and it may be due to the artificial irrigation practiced at MOSG.



Average auction price fluctuation per 1000 nuts for the last two years

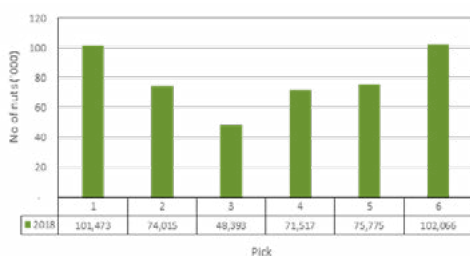
Coconut Genetic Resource Centre Ambakelle (CGRC), Ambakelle

Superintendent - I. P. S. A. Wanasingha, (BSc Agric.)

Agro Ecological Zone	Intermediate Dry
Extent/ac	1175.8

Annual census of the estate

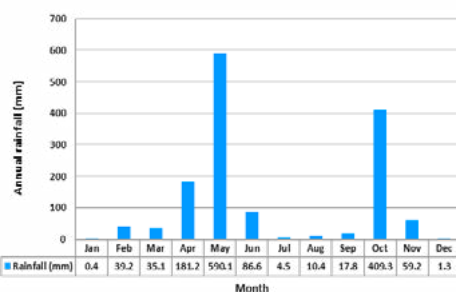
Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	5,630	6,698	175	1,886	3,310	803	1,090	450	1,820
%	25.7	36.6	0.80	8.6	15.14	3.68	4.90	2.0	8.32
%	56.4		9.42		15.14	19.0			



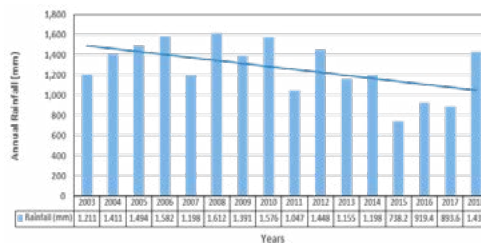
Coconut production in 2018



Variation in coconut production in previous years



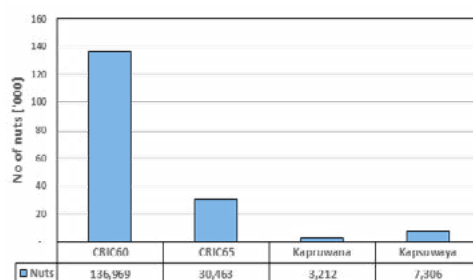
Monthly rainfall (mm) in 2018



Variation in annual rainfall (mm) in previous years

According to the annual rainfall for the last 16 years at AGRC, lower annual rainfalls had been recorded in 2015, 2016 and 2017. This had affected predominantly to the coconut production of the AGRC. But, considerable amount of annual rainfall has been received in 2018.

Seednuts of CRIC60 and CRIC65 are being produced in mass scale by control environment method and Kapruwana, and Kapsuwaya seednuts are also produced by hand pollination technology. Seed production in 2018 is as follows.



Seednut production of different varieties

	COP / Nut (Rs)	NSA/ Nut (Rs)
2017	24.41	41.57
2018	48.28	47.35

Coconut Genetic Resource Centre Pallama (CGRC Pallama)

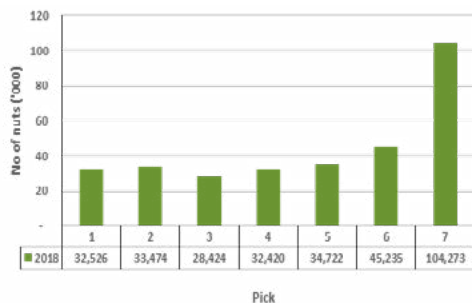
Superintendent - I. A. N. Hemasiri



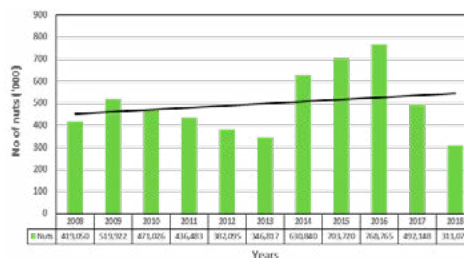
Agro Ecological Zone	Intermediate Dry
Extent/ac	623

Annual census of the estate

Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	988	8,414	817	631	1,326	942	2,073	1,087	8,684
%	3.90%	33.70%	3.20%	2.50%	5.30%	3.70%	8.30%	4.30%	34.70%
%	37.60%		5.70%		5.30%	51%			



Coconut production in 2018



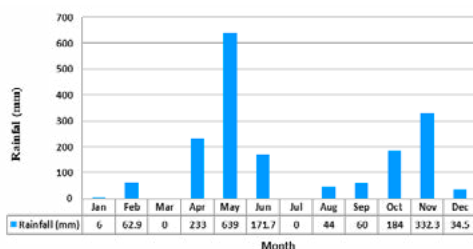
Variation in coconut production in previous years

CRI has initiated a special project in 2017 to increase the production of hybrid coconut seeds using 1000 mother palms with the objective to supply hybrid coconut seedlings specially to Northern and Eastern Province. Funds were released from the national Budget of 2017, and this project will continue up to the end of 2019. Under this project, hose irrigation system was installed in field No. 01, 02 and 03. Two tube wells were also established in this area.

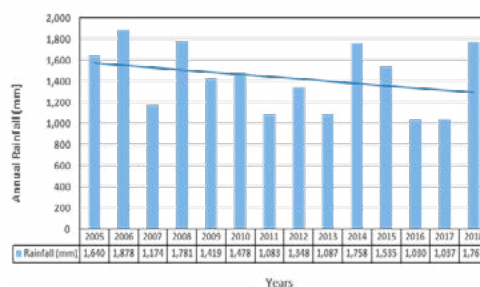
However, the lowest crop was recorded in 2018 and this was due to the severe drought prevailed in 2016 and 2017.



Hose irrigation practiced in the estate



Monthly rainfall (mm) in 2018



Variation in annual rainfall (mm) in previous years

	COP / Nut (Rs)	NSA/ Nut (Rs)
2017	37.39	40.30
2018	54.83	27.37

Coconut Genetic Resources Centre Maduruoya (CGRC), Maduruoya

Assistant Estate Superintendent - W. M. G. K. G. D. K. Weerakoon

B.Sc. (Agricultural Resource Management & Technology)

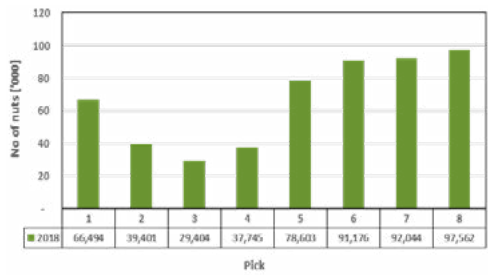


Agro Ecological Zone	Dry Zone
Extent/ac	205.1

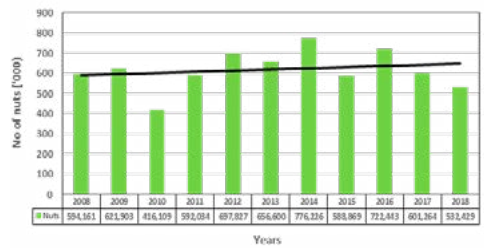
Annual census of the estate

Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	5,783	1,048	379	317	-	67	106	373	6,303
%	40.20	7.28	2.63	2.20	-	0.46	0.73	2.59	43.8
%	47.51		4.84		-	48.64			

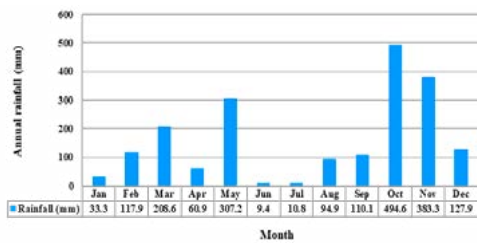
Maduruoya seed garden was established in 1985 to produce CRIC60 coconut seeds to the National Replanting Programme. This is also an Indonesian Type coconut seed garden and it is in Mahaweli System B area. A decline in production continued from 2017 onwards with the lowest production for last 10 years in 2018. Rainfall in 2016 and 2017 had been among the lowest in last 16 years and the effects of climate had not been fully compensated with irrigation.



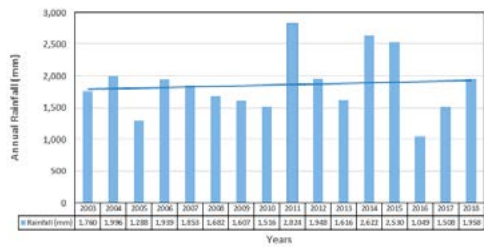
Coconut production in 2018



Variation in coconut production in previous years



Monthly rainfall (mm) in 2018



Variation in annual rainfall (mm) in previous years

	COP / Nut (Rs)	NSA/ Nut (Rs)
2017	15.39	52.51
2018	17.43	80.83

Weligama Seed Garden

Officer in Charge - S. A. S. Kumara



Agro Ecological Zone	Wet Zone
Extent/ac	17.2

Annual census of the estate

Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	2	37	19	-	310	-	31		
%	0.00%	8.90%	4.70%	-	74.80%	-	7.50%		
%	8.90%		4.70%		74.80%	7.50%			

This estate was previously managed by Coconut Cultivation Board as a coconut nursery. This land was acquired by Coconut Research Institute on lease basis at the end of year 2016. Several development activities were initiated with the funding facilities of WCLWD project in 2017.

Total extent of this seed garden is 17.2 ac and the most of the areas were covered with Cinnamon plantation at the time of acquiring. Ground preparation, fencing and renovation of OIC's quarters were completed in 2017. The main objective of the establishment of this Seed Garden was to produce WCLWD resistant/ tolerant coconut seeds to the growers. As an initial step about 300 DG Mother Plants were planted in early 2018.

Makandura Research Centre

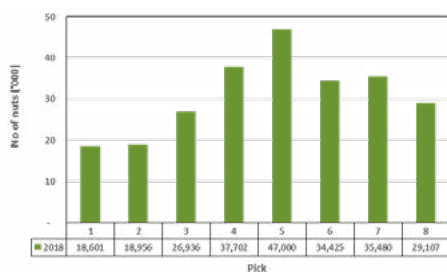
Superintendent – W. M. U. Ratnayake, Dip. (Plantation Management)



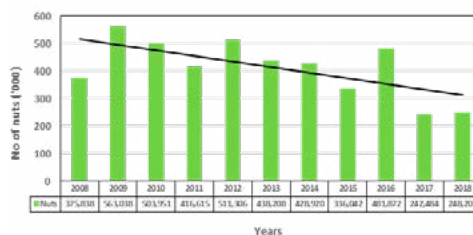
Agro Ecological Zone	Intermediate Wet Zone
Extent/ac	145

Annual census of the estate

Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	238	4,101	1,530	291	529	-	-	171	1,780
%	2.85	47.41	17.70	3.36	6.12	-	-	1.97	20.60
%	50.21		21.07		6.12	22.52			

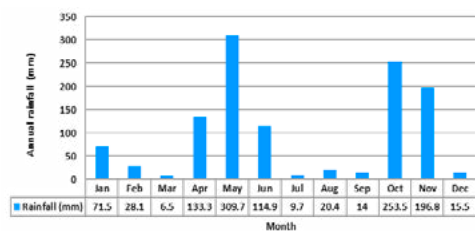


Coconut production in 2018

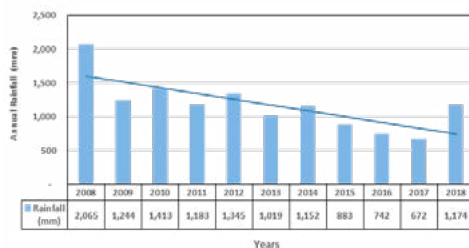


Variation in coconut production in previous years

Although some decline in yield was observed 2017 onwards, the decline was somewhat marginal in MRC compared to the changes observed in other estates. A continuous declining trend had been recorded in annual rainfall in that area for last ten-year period showing the lowest values for the period from 2015 – 2017 while a gradual decreasing trend can be seen over last ten-year period. However, comparatively higher annual rainfall has been recorded in 2018.



Monthly rainfall (mm) in 2018



Variation in annual rainfall (mm) in previous years

	COP / Nut (Rs)	NSA/ Nut (Rs)
2017	35.14	36.22
2018	37.37	31.00

Bandirippuwa Research Centre

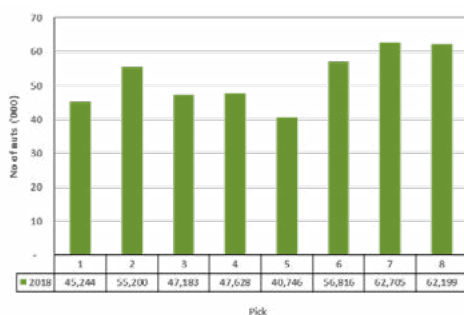
Superintendent – W. A. H. Upali, Dip. (Plantation Management)



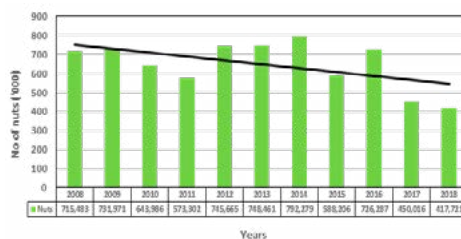
Agro Ecological Zone	Intermediate Dry Zone
Extent/ac	360.16

Annual census of the estate

Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	-	10,183	589	577	-	93	1,516	367	288
%	-	74.8	4.3	4.2	-	0.6	11.1	2.6	2.1
%	74.8		8.6		-	16.6			

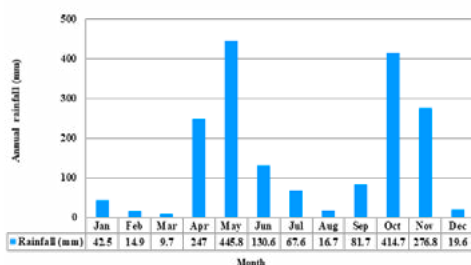


Coconut production in 2018

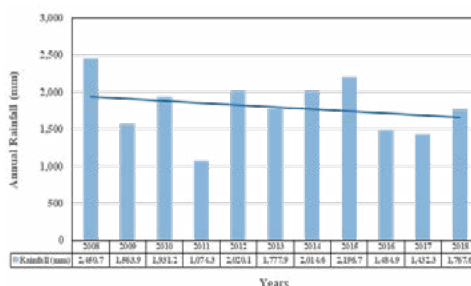


Variation in coconut production in previous years

A reduction in yield had been observed in both 2017 and 2018 compared to previous years showing the lowest in 2018. The effect of the drought prevailed in most part of the country in 2016 and 2017 had been the main cause for these reductions in crop production. Yield pattern for last ten years shows a decreasing trend. Out of these ten years, the lowest yield was recorded in the last year.



Monthly rainfall (mm) in 2018



Variation in annual rainfall (mm) in previous years

	COP / Nut (Rs)	NSA/ Nut (Rs)
2017	33.59	51.22
2018	41.26	35.04

Rathmalagara Research Centre (RRC)

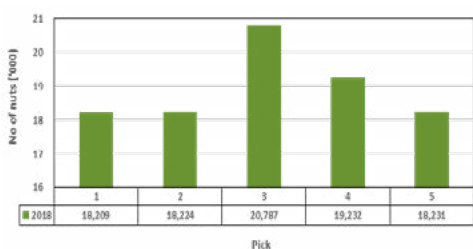
Superintendent - D. P. S. K. Hettiarachchi (Dip. Agri. & EM)



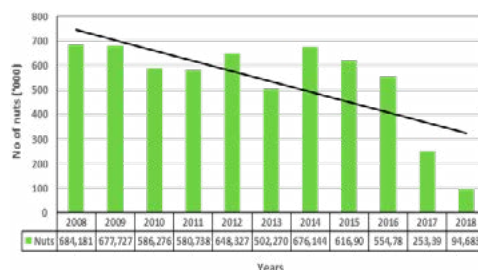
Agro Ecological Zone	Intermediate Dry Zone
Extent/ac	251.1

Annual census of the estate

Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	-	8,968	-	130	1,296	3,314	-	-	3,743
%	-	51.30%	-	0.70%	7.40%	18.90%	-	-	21.4
%	51.30%		0.70%		7.40%	40.30%			

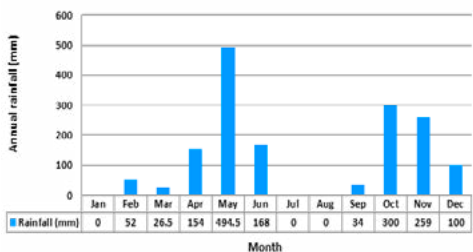


Coconut production in 2018

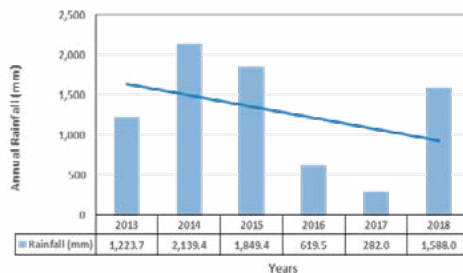


Variation in coconut production in previous years

With the yield reduction pattern observed from 2014 onwards, conspicuous reductions were observed in 2017 and 2018 of which the lowest production for past ten years was recorded in 2018. This would be the combined effect of the inclement weather; over-aged plantation and the marginally suitable soils exist in the major part of the estate.



Monthly rainfall (mm) in 2018



Variation in annual rainfall (mm) in previous years

	COP / Nut (Rs)	NSA/ Nut (Rs)
2017	46.70	45.00
2018	102.18	49.07

Poththukulama Research Centre

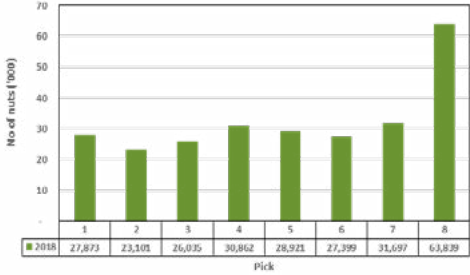
Officer in Charge - W. W. A. P. R. Fernando



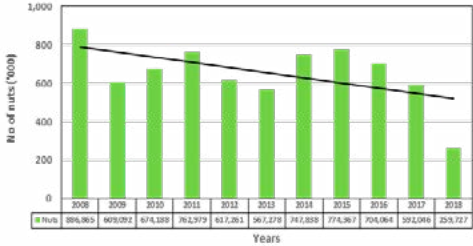
Agro Ecological Zone	Intermediate Dry Zone
Extent/ac	194

Annual census of the estate

Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	67	8,636	236	241	100	-	603	330	3730
%	0.40%	62.60%	1.70%	1.70%	0.70%	-	4.30%	2.30%	26%
%	63%		3.40%		0.70%	32.60%			

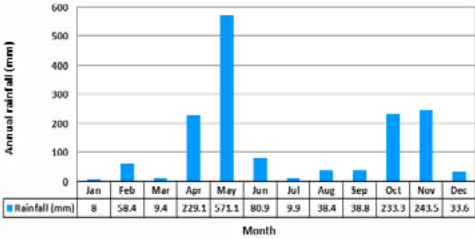


Coconut production in 2018

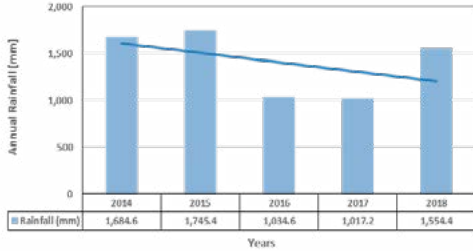


Variation in coconut production in previous years

As observed in other estates, the lowest yield of the PRC has been recorded in 2018. This was attributed by the significantly low yield recorded in 2016 and 2017 in the area.



Monthly rainfall (mm) in 2018



Variation in annual rainfall (mm) in previous years

	COP / Nut (Rs)	NSA/ Nut (Rs)
2017	15.57	37.21
2018	39.63	19.88

Walpita Research Centre

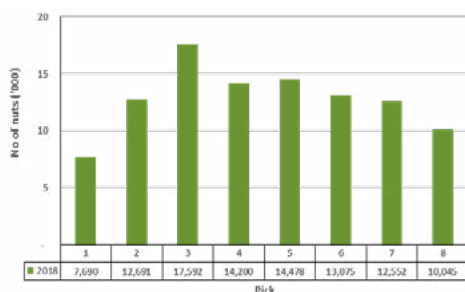
Officer in-charge – Mr. T.M.N. Meneka



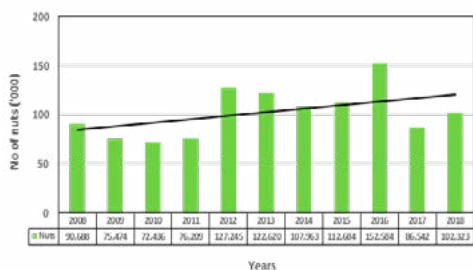
Agro Ecological Zone	Intermediate Wet Zone
Extent/ac	40

Annual census of the estate

Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	1,417	217	120	553	-	-	24	109	747
%	44%	6.80%	3.70%	17%	-	-	0.70%	3.40%	23%
%	50.80%		20.70%		-	27.10%			

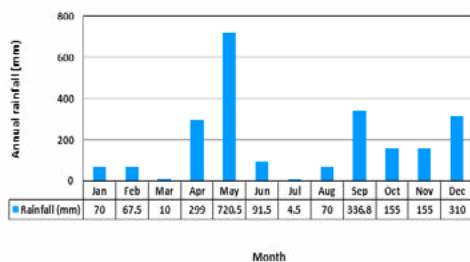


Coconut production in 2018



Variation in coconut production in previous years

The presence of a significant proportion of partial bearing and young palms may have been contributed for the slight increase in production in 2018 even a significant reduction was observed in 2017. When all such palms come into full bearing in few years' time, a substantial increase in yield can be expected. A comparatively well spread rainfall has been recorded in 2018.



Monthly rainfall (mm) in 2018

	COP / Nut (Rs)	NSA/ Nut (Rs)
2017	28.59	42.84
2018	25.95	43.16

Middeniya Research Centre

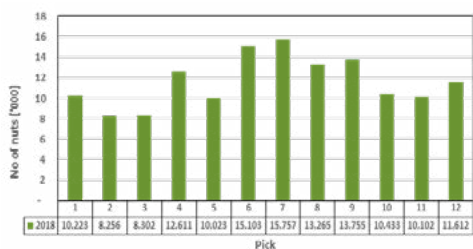
Officer in Charge - E. A. S. Kumara



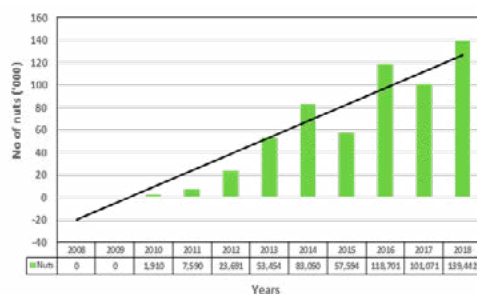
Agro Ecological Zone	Intermediate Wet Zone
Extent/ac	75.55

Annual census of the estate

Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	167	1,911	384	82	187	-	93	-	152
%	5.6	64.2	12.9	2.7	6.2	-	3.1	-	5.1
%	69.8		15.6		6.2	8.2			

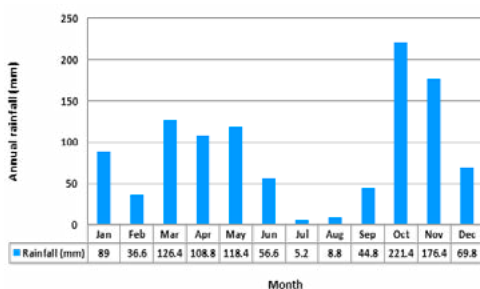


Coconut production in 2018

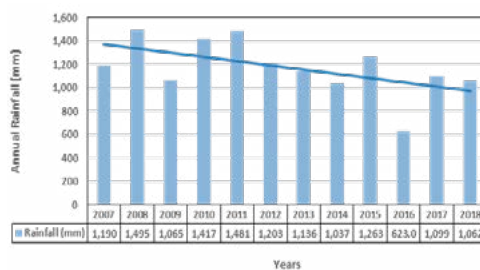


Variation in coconut production in previous years

The entire estate is covered with a young plantation and thus gradual increase in yield can be observed over time. As a result, the highest crop has been recorded in 2018, even with the generally prevailed dry weather condition in Middeniya area specially in 2016 and early part of 2017.



Monthly rainfall (mm) in 2018



Variation in annual rainfall (mm) in previous years

	COP / Nut (Rs)	NSA/ Nut (Rs)
2017	34.74	32.88
2018	37.54	24.90

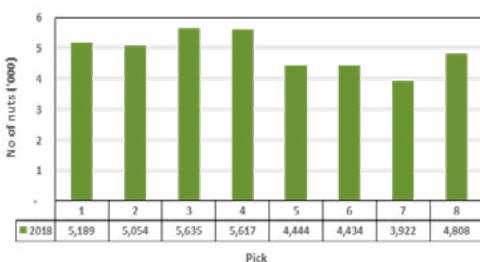
Thabbowa Research Centre

Officer in charge - H. M. C. Bandara

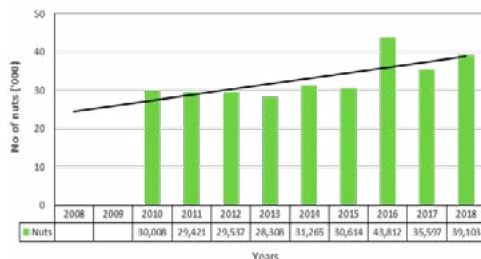
Agro Ecological Zone	Intermediate Wet Zone
Extent/ac	6.96

Annual census of the estate

Description	Well Bearing Palms	Bearing Palms	Partial Bearing Palms	Young Palms	Seedlings	Unproductive Senile Palms	Dud Palms	Weak Palms	Vacancies
No. of palms	85	194	16	16	-	6	8	124	
%	18.90%	43.20%	3.50%	3.50%	-	1.30%	1.90%	27.60%	
%	62.10%		7%		-	30.80%			

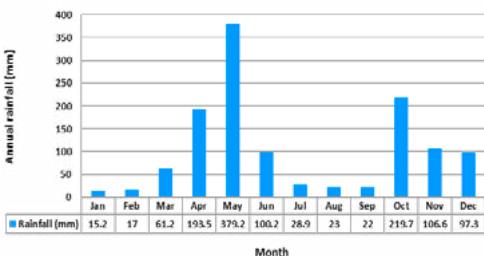


Coconut production in 2018

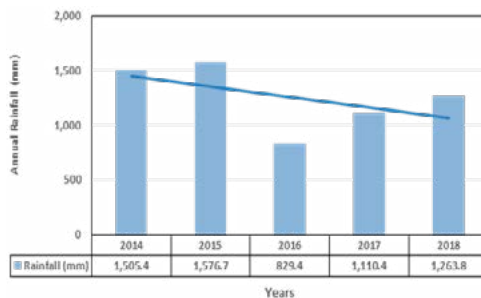


Variation in coconut production in previous years

The estate belongs to the CRI with the lowest extent appears not significantly affected by the prevailed drought during 2016 and 2017. Higher yields have been recorded for the period from 2016 to 2018 with the highest recorded in 2016. The landscape with lower elevation, comparative high density of palms and the management factor may have contributed for this increase in production.



Monthly rainfall (mm) in 2018



Variation in annual rainfall (mm) in previous years

	COP / Nut (Rs)	NSA/ Nut (Rs)
2017	38.98	44.30
2018	38.63	40.34

STAFF





STAFF ACHIEVEMENTS

Awards

Dr. M. K. Meegahakumbura received a Presidential Award for Scientific Publications in SCI journals in 2018.

Ms. D. M. P. D. Dissanayake received a certificate for outstanding contribution in reviewing for the Journal of Soils and Sediments awarded by Springer.

Ms. D. M. P. D. Dissanayake received a certificate of outstanding contribution in reviewing for the Journal of Environmental Pollution and Journal of Hazardous Materials awarded by the Elsevier.

Ms. D. M. P. D. Dissanayake received the best oral presentation award (3rd prize) for the outstanding presentation on "Effect of carbon dioxide and potassium hydroxide modification on CO₂ adsorption capacity of biochar" presented at 4th Asia Pacific Biochar Conference (APBC 2018), Foshan, China.

Ms. D. M. P. D. Dissanayake received the best poster presentation award for the poster on "Biochar based adsorbents for capturing carbon dioxide: A critical review" in the 3rd International Conference on Biological Waste as Resource (BWR 2018). Tai Po, Hong Kong

Mr. M. D. P. Kumarathunga, Research Officer of Plant Physiology Division received the Research Science Award for ComBio 2018. Australian Society of Plant Scientists.

Mr. M. D. P. Kumarathunga, Research Officer of Plant Physiology Division received the American Geophysical Union student travel grant to attend the AGU Fall Meeting 2018, 10-14 December 2018 in Washington, D.C., U.S.A: 1000 USD

Mr. M. D. P. Kumarathunga, Research Officer of Plant Physiology Division received the International Student Fee Waiver Scholarship funded by ACIAR to attend OAFflux 2018 meeting 2018, Darwin, Australia: Approximately 400 AUD

Mr. M. D. P. Kumarathunga, Research Officer of Plant Physiology Division received the Western Sydney University higher degree research students international travel award – 2018 to attend the 2018 American Geophysical Union (AGU) Fall Meeting, 10-14 December 2018 in Washington, D.C., U.S.A: 4000 AUD

Mr. M. D. P. Kumarathunga, Research Officer of Plant Physiology Division received the Western Sydney University higher degree research students domestic travel award – 2018 to attend OAFlux 2018 meeting 2018, Darwin, Australia: 2000 AUD

Patent application was submitted for New sap collection equipment by H. P. D. T. Hewapathirana of Coconut Processing Research division.

Research Grants

Dr. D. M. D. I. Wijebandara, as the co-investigator, continued research grant of National Research Council of Sri Lanka for conducting the project on “Using King coconut husk to produce an organic potassium source for agriculture use”.

Dr. M. K. Meegahakumbura and team received Rs. 4.5 million Competitive Research Grant from National Research Council of Sri Lanka for the Identification of drought tolerant coconut mother palms through phenotypic, physiological and gene expression studies (Grant No: 16-084) (2018-2021).

Drs. N. S. Aratchige and A. D. N. T. Kumara continued to receive the National Research Council research grant on “Assessment of behavioural and reproductive responses of coconut mites to coconut varieties and identification of volatile organic compounds, lipid profiles and phenolic compounds in coconut varieties with different susceptibility levels to coconut mite”.

Mrs. G. S. Nirukshan received a research grant from the Land Resources Division, Ministry of Mahaweli Development, under 'Small Grant Research Programme - Sustainable Land Management and Land Degradation Prevention' for the research titled “Biochar as soil conditioner for sustainable management of coconut plantations in Sri Lanka”.

Dr. C. Yalagama received Treasury funds (96million) for the proposal “Modernization of coconut Processing Research division).

Dr. L. Perera and Mr R. Jayathilake continued the national project on “Production of genetically superior high yielding coconut planting materials for national replanting programme” funded by the Sri Lanka Treasury under special projects (2017-2019).

Postgraduate Degrees Completed

Ms. K. V. N. N. Jayalath, Senior Research Officer, Agricultural Economics and Agribusiness Management Division completed the M. Phil. degree at the University of Queensland, Brisbane, Queensland, Australia in 2018.

Mr. S. A. S. T. Raveendra, Research Officer, Agronomy Division completed the MSc degree at the Postgraduate Institute of Agriculture, University of Peradeniya in 2018.

Postgraduate Degrees Undertaken

Ms M. K. F. Nadeesha, Research Officer, Soils & Plant Nutrition Division is reading for PhD degree at the Postgraduate Institute of Science, University of Peradeniya, Peradeniya from 15th December, 2014.

Ms. D. M. P. D. Dissanayake, Research Officer, Soils & Plant Nutrition Division is reading for PhD degree at the at Division of Environmental Sciences and Ecological Engineering, Korea University, Seoul, Korea from 06th June, 2018.

Mr. E. M. T. Bandaranayake, Assistant Extension Officer, Technology Transfer Division continued his postgraduate studies leading to M.Phil. Degree at the Postgraduate Institute of Agriculture, University of Peradeniya from 2010.

Mr. K. M. R. T. Wijekoon, Technology Transfer Officer, Technology Transfer Division commenced his postgraduate studies leading to Ph.D. at University Putra Malaysia (UPM) from September 2018.

Mr. M. D. P. Kumarathunga, Research Officer of Plant Physiology Division was continuing his postgraduate studies (PhD) at Western Sydney University, Australia from November 2016.

Mrs. G. S. Nirukshan, Research Officer, Soils & Plant Nutrition Division is reading for PhD degree in Applied Biological Sciences at Department of Soil Management, Doctoral School of (Bioscience) Engineering, University of Ghent, Belgium from 3rd October, 2017.

Mr. A. A. A. J. Atapattu, Research Officer, Agronomy Division continued his studies on PhD degree in Soil Ecology at Xishuangbanna Tropical Botanical Garden, Chinese Academy of tropical Agricultural Sciences (CATAS), china from August 2017.

Ms. T. H. Chandrathilake, Research Officer of Plant Physiology Division was continuing her postgraduate studies (MSc in crop science, course work and one-year research) at postgraduate institute of Agriculture, University of Peradeniya from February 2018.

Ms. K. V. N. N. Jayalath, Senior Research Officer of Agricultural Economics and Agri Business Management Division commenced her postgraduate studies (PhD in Agricultural Economics) at postgraduate institute of Agriculture, University of Peradeniya from August 2018.

Mr. S.W.G.C.R. Kumara, Research Officer, Genetics and Plant Breeding Division commenced the Postgraduate Degree (PhD) in the University of Philippines Las Banos, The Philippines from 25th July 2018.

Overseas Training

Dr. A. D. N. T. Kumara participated for a five-day training workshop on Bio pesticide and pesticide residue analysis held on 7th to 11th October 2018 at Bangladesh Agriculture Research Institute, Gazipur, Bangladesh.

Mrs. J.A.K.M. Fernando/ Research Officer (Mechanical Engineer) participated in a Workshop on Sustainable Management of Coir Industry to Delight End Users in Indian Institute of Plantation Management, Bangalore, India from 10th March to 17th March 2018.

Dr. C.S. Ranasinghe/ Additional Director participated in a Training Programme on Leadership in Asian Institute of Technology (AIT), Thailand from 29th May to 11th June 2018.

Mrs. K.P.S. Jayathilake/ Administrative Officer participated in an Executive Leadership Development Workshop in Malaysia from 04th September to 10th September 2018.

Mr. P.H.P.R. De Silva, Research Officer of Crop Protection Division participated in a Short Course *cum* Study Visit on “Sustainable Oil Palm Cultivation & Processing” in Krabi, Thailand from 23rd September to 29th September 2018.

Overseas Visits

Dr. L.C.P. Fernando/ Director attended a workshop on “Early Detection of Red Palm Weevil” at King Abdullah University of Science & Technology, Saudi Arabia from 28th February to 2nd March 2018.

Mr. Jayantha Jayewardena/ Chairman & Dr. A.A.F.L.K. Perera/ Deputy Director (Research) attended a Consultative meeting to Strengthen Cooperation between CRISL & CRI-CATAS in the field of Coconut Research & Development in Coconut Research Institute, Chinese Academy of Tropical Agricultural Sciences, Hainan, People’s Republic of China from 15th April to 19th April 2018.

Dr. C. S. Ranasinghe, Dr. A. A. F. L. K. Perera, Dr. V. R. M. Vidanarachchi, Dr. N. S. Aratchige participated in the 48th Asian and Pacific Coconut Community COCOTECH conference in Bangkok, Thailand from 20th to 24th August, 2018.

Dr. L.C.P. Fernando/ Director attended the 3rd Annual Meeting of “Coconut Industry Technology Innovation Strategic Alliance of Hinan” in Coconut Research Institute, Chinese Academy of Tropical Agricultural Sciences, Hainan, People’s Republic of China from 12th August to 18th August 2018.

Dr. A.A.F.L.K. Perera/ Deputy Director (Research) participated in the 48th APCC COCOTECH Conference & Exhibition and the COGENT Steering Committee Meeting in Bangkok, Thailand from 19th August to 27th August 2018.

Dr. A. D. N. T. Kumara visited Wageningen University & Research in The Netherlands for initiating collaborative research programme and consultative visit for mass rearing of predatory mites from 16th June to 1st July 2018.

Mr. M. D. P. Kumarathunga, Research Officer of Plant Physiology Division attended the AGU Fall Meeting 2018, 10-14 December 2018 in Washington, D.C., U.S.A

Mr. M. D. P. Kumarathunga, Research Officer of Plant Physiology Division attended the OAFlex 2018 meeting 2018, Darwin, Australia



ACADEMIC AND PROFESSIONAL ACHIEVEMENTS

Served in External Committees

Dr. C. S. Ranasinghe served as a Judging panel member of Annual Symposium of the Department of Agriculture.

Dr. C. Yalgama served as a member of judging panel at the annual symposium organized by Plantation Management Department of Wayamba University of Sri Lanka

Dr. C. Yalgama participated in the meeting organized by Sri Lanka Medial Association to discuss to use coconut oil for repeated deep frying on 31st October, 2018.

Dr. C. Yalgama served as a member of the committee of Revision of Coconut oil Standards conducted by Standard Institute of Sri Lanka

Dr. C. Yalgama served as a member of the committee to draft guide lines for fresh coconut kernel processing for virgin oil and coconut milk conducted by Coconut Development Authority

Dr. C. Yalgama served as a member of the committee to draft standard for coconut water processing conducted by Standard Institute of Sri Lanka

Dr. C. Yalgama served as a member of the consultation group of revising Food Based Dietary Guidelines for Sri Lankan, organized by Nutrition Division of Ministry of Health

Dr. D. M. D. I. Wijebandara served as a member of the Coconut Fertilizer Subsidy committee meeting of the Ministry of Plantation Industries

Dr. D. M. D. I. Wijebandara served as a member of the Control of Land Degradation committee meeting of the Ministry of Agriculture.

Dr. H. T. R. Wijesekara and Mr. P. H. P. R. de Silva served as members of the Weligama Coconut Leaf Wilt Disease management steering committee.

Dr. H. T. R. Wijesekara served as the Coconut Research Institute representative of the Plant Protection Committee of Sri Lanka Council for Agricultural Research Policy.

Dr. I. M. S. K. Idirisinghe served as a Committee Member of the National Committee on Socio

Economics and Policy Analysis, Sri Lanka Council for Agricultural Research Policy

Dr. I. M. S. K. Idirisinghe served as an evaluator for the SLCARP to evaluate the research proposals for funding and for evaluation of project progress reports and presentations.

Dr. I. M. S. K. Idirisinghe served as the Board Member of Board of Study of Agricultural Economics and Business Management, Postgraduate Institute of Agriculture, University of Peradeniya

Dr. I. M. S. K. Idirisinghe served as the member of advisory committee on coconut and coconut based products, Sri Lanka Export Development Board

Dr. I. M. S. K. Idirisinghe served as the member of Cost of Living Committee, Ministry of Economic Development

Dr. I. M. S. K. Idirisinghe served as the member of Pricing Committee appointed by Secretary to the Ministry of Plantation Industries

Dr. I. M. S. K. Idirisinghe, Dr. P. M. E. K. Pathiraja, Ms. K. V. N. N. Jayalath and Ms. M. G. D. Abeysekara served as resource persons of APCC international training program held in CRI on July, 2018.

Dr. K. P. Waidyarathne served as a member of the academic training committee of Institute of Applied Statistics, Sri Lanka (ASASL)

Dr. K. P. Waidyarathne served as the contact person for establishing digital repository, greenhouse gas inventory preparation and preparation of risk maps for third national communication on climate change, Ministry of Mahaweli development and Environment

Dr. K. P. Waidyarathne served as the judging panel member of the 17th Agricultural Research Symposium (AGRES) of the Faculty of Agriculture and Plantation Management of Wayamba University on 9th November 2018

Dr. K. P. Waidyarathne served as the representative in the monsoon forums organized by department of meteorology, Sri Lanka

Dr. M. K. Meegahakumbura served as a member of the National Plant breeding Committee, Council for Agriculture Research Policy Sri Lanka (SLCARP).

Dr. M. K. Meegahakumbura served as a member of the Steering Committee, Young Scientists Forum (2018), National Science and technology Commission (NASTEC)

Dr. M. K. Meegahakumbura served as a member of the judging panel in the Germplasm Characterization and Plant Protection session of the 30th Annual Congress of the Post Graduate Institute of Agriculture University of Peradeniya.

Dr. M. K. Meegahakumbura served as a member of the judging panel in the 17th Agriculture Research Symposium of the Faculty of Agriculture and Plantation Management of the Wayamba University of Sri Lanka.

Dr. M. K. Meegahakumbura served as the Chairperson of the Molecular Biology and Biotechnology session of the 7th Annual Symposium of the Young Scientist Forum (YSF) of the National Science and Technology Commission (NASTEC).

Dr. N. P. A. D. Nainanayake served as a panel member of the evaluation team of external degree student intake of the Faculty of Agriculture and Plantation Management of Wayamba University.

Dr. N. P. A. D. Nainanayake served as a panel member of the selection committee for selecting new students for the external degree programme (2018/2019) of the Faculty of Agriculture and Plantation Management of Wayamba University.

Dr. N. P. A. D. Nainanayake served as the judging panel member of the 17th Agricultural Research Symposium (AGRES) of the Faculty of Agriculture and Plantation Management of Wayamba University, held on 9th and 10th November 2018.

Dr. N. P. A. D. Nainanayake served as the member of the Consultative Committee for the development of curriculum for the degree program of the National Institute of Plantation Management.

Dr. N. P. A. D. Nainanayake served as the member of the Judging panel of the National Symposium on Sustainable Plantation Management conducted by the National Institute of Plantation Management.

Dr. N. S. Aratchige represented the Coconut Research Institute in the committee to inspect and recommend oil palm net houses and seedlings.

Dr. N. S. Aratchige represented the Coconut Research Institute in the committee on 'Identification of Environmental and Social Impacts of Oil Palm Cultivation in Sri Lanka'.

Dr. N. S. Aratchige served as a member of the Committee of the Planters Association of Ceylon to formulate a concept paper for oil palm in Sri Lanka.

Dr. N. S. Aratchige served as a member of the Judging Panel at the Annual Symposium of the Department of Agriculture held on 7-9-2018.

Dr. N. S. Aratchige served as a member of the Pesticide Sub-Committee of the Department of Agriculture.

Dr. N. S. Aratchige served as a member of the Sub-Committee on Field Activities of pesticides of the Department of Agriculture.

Dr. N. S. Aratchige served as a Judging panel member of Annual Symposium of the Department of Agriculture.

Dr. P. M. E. K. Pathiraja served as a member of judging panel, undergraduate research symposium of Faculty of Agriculture (FAuRS-2017) held on 12th January, 2018.

Dr. P. M. E. K. Pathiraja served as invited member for curriculum development consultations of Faculty of Agriculture, University of Peradeniya on 06th December, 2018.

Dr. P. M. E. K. Pathiraja served as member of confirmation panel of W. V. Fernando, PhD student, University of Deakin, Australia on 15th May, 2018.

Dr. P. M. E. K. Pathiraja served as session chair under the subtheme of 'Climate and Environment'. Third Wayamba International Conference on 25th August, 2018 (WinC 2018).

Dr. P. M. E. K. Pathiraja served as a member of judging panel, undergraduate research symposium of Faculty of Agriculture (FAuRS-2017) held on 12th January, 2018.

Ms. K. V. N. N. Jayalath serving as a member of the Steering Committee of Vision 2030 and Roadmap for the Coir Fiber Sector of Sri Lanka, Ministry of Plantation Industries.

Dr. H. D. M. A. C Dissanayake served as a member of the judging panel in the Plant Breeding session of the 30th Annual Congress of the Post Graduate Institute of Agriculture University of Peradeniya.

Supervision of Postgraduate Students

Dr. I. M. S. K. Idirisinghe served as a member of the supervisory committee of B. Mathavan, MPhil student, Postgraduate Institute of Agriculture, University of Peradeniya.

Dr. P. M. E. K. Pathiraja served as a member of the supervisory committee of M. G. D. Abeysekera, MPhil student, Postgraduate Institute of Agriculture, University of Peradeniya.

Drs. N. S. Aratchige and A. D. N. T. Kumara supervised M Phil research project of Mr. N. T. P. Wijewardana, a student of the Postgraduate Institute of Science, University of Peradeniya on 'Assessment of behavioural and reproductive responses of coconut mites to coconut varieties and identification of volatile organic compounds, lipid profiles and phenolic compounds in coconut varieties with different susceptibility levels to coconut mite'.

Supervision of Undergraduate Students

Dr. A. D. Nainanayake supervised Mr. T. K. C. Thudugala, undergraduate student from University of Wayamba (Plantation Management), "A comparative study of soil moisture depletion and root growth in nursery plants of oil palm, rubber and tea under greenhouse conditions".

Dr. A. D. Nainanayake supervised Mr. W. I. M. Premarathne, undergraduate student from University of Wayamba (Plantation Management), “Comparative study on gas exchange rates of young oil palm, rubber and tea plants grown under greenhouse conditions”.

Dr. C. Yalgama supervised A. M. U. C. Alagiyawanna, undergraduate student from University of Wayamba (Food Science and Technology), “Quality improvement to butter from coconut milk by incorporation of cocoa butter”

Dr. C. Yalgama supervised C. A. T. Chandrapeli, undergraduate student from University of Wayamba (Plantation management), on “Comparison of quality of extra virgin coconut oil made with centrifuge and fermentation methods”

Dr. C. Yalgama supervised K. C. W. Premadasa, undergraduate student from University of Wayamba (Food Science and Technology) on “Quality evaluation of coconut oil extracted from coconut kernel residue”.

Dr. P. M. E. K. Pathiraja supervised Ms. L. A. S. I. Gunawardhane, undergraduate student of Wayamba University of Sri Lanka on “Vulnerability of Coconut Smallholders to Climate Change in Kurunegala District”.

Dr. H. D. M. A. C. Dissanayake supervised Mr. M. A. R. T. Senarathne in his final year research project of the of the Faculty Agriculture and Plantation management of the Wayamba University of Sri Lanka. “A Method for Legitimacy Checking of Kapsuwaya (CRISL2012) Coconut Hybrids”

Dr. M. K. Meegahakumbura supervised Ms. K. M. M. Thamel, final year student of the Department of Botany, University of Sri Jayawardenepura in her Internship training programme. “Genetic diversity and relationship of king coconut germplasm and its beverage quality in Kurunegala district of Sri lanka”

Dr. N. S. Aratchige supervised B Sc. research project of Ms G.G.T.M. Athapatthu, a student of the Rajarata University on ‘Determination of volatile organic compounds of different coconut varieties in relation to coconut mite infestation’.

Dr. S. H. S. Senarathne and Mr. S. A. S. T. Raveendra supervised a B.Sc. (Agriculture) final year research project of Mr. O. Madusanka, at Sabaragamuwa University of Sri Lanka. “Impact of perennial intercropping systems on soil quality of major coconut growing areas in Sri Lanka”.

Dr. S. H. S. Senarathne and Ms. S. S. Udumann supervised a B.Sc. (Agriculture) final year research project of Miss. K. G. N. C. Dharmalal, at Sabaragamuwa University of Sri Lanka. “Effect of carbonized plant material incorporated growth media on coconut seedlings.”

Dr. S. H. S. Senarathne supervised a B.Sc. (Agriculture) final year research project of Ms. U. Ishani, at Rajarata University of Sri Lanka. “Effect of coconut based Gliricidia, wild sunflower agroforestry system to improve soil properties of wet zone coconut plantation”.

Mrs. H. P. D. T. Hewapathirana supervised Ms. J. M. M. S. Jayasinghe, undergraduate student from Uva Wellassa University of Sri Lanka, “Development of an edible film using coconut protein isolate”

Mrs. J. A. K. M Fernando supervised Ms. H. M. N. P. Thillakaratne, undergraduate student from Uva Wellassa University of Sri Lanka, “Identification of retting enhancing microbial strains for coconut fiber extraction”.

Mrs. W. M. K. Lakdusinghe supervised Ms. U. S. S. Marasinghe, undergraduate student from Uva Wellassa University of Sri Lanka, “Quality improvement of coconut butter spread”.

Ms. K. V. N. N. Jayalath supervised Ms P. M. M. J. Periyapperuma, undergraduate student of Faculty of Agriculture, Rajarata University of Sri Lanka on study titled “Analysis of supply response of coconut in Sri Lanka”.

Supervision of Diploma Students

Dr. D. M. D. I. Wijebandara and Ms. B. H. R. Fernando supervised the industrial training programme of Mr. P. A. Prasad Rangana Wijesooriya, a student of School of Agriculture, Labuduwa.

Dr. D. M. D. I. Wijebandara and Ms. B. H. R. Fernando supervised the industrial training programme of Mr. M. D. H. Prasanga a student of School of Agriculture, Labuduwa.

Served as Referees

Dr. N. P. A. D. Nainanayake served as a reviewer for the Journal of Tropical Agricultural Research and Extension published by University of Ruhuna, Kamburupitiya.

Dr. N. P. A. D. Nainanayake served as a reviewer for the Ruhuna Journal of Science published by University of Ruhuna, Kamburupitiya.

Served as Visiting Lecturers

Ms. Kumudu Fernando served as a visiting lecturer for the B.Sc. under graduate course of latex and palm technology at the Uva Wellassa University of Sri Lanka during 2018.

Invitations as Resource person

Dr. M. K. Meegahakumbura delivered an invited lecture in the Molecular Biology Workshop of the Rubber Research Institute of Sri Lanka

Dr. N. S. Aratchige was invited as a Resource speaker in 48th APCC COCOTECH Conference and Exhibition

Served as a resource person

Dr D. M. D. I. Wijebandara served as resource person and delivered a lecture on “Soil Management and Crop Productivity” at the Workshop on “Soil Conservation and Management” organized by the –National Institute of Plantation Management, Asgiriya, on 18th November, 2018.

Dr D. M. D. I. Wijebandara served as resource person for the workshop on yield increase conducted for plantation companies on 22nd February, 2018.

Dr D. M. D. I. Wijebandara served as Resource person for the workshop on yield increase conducted for coconut growers on 07th August, 2018.

Dr D. M. D. I. Wijebandara served as Resource person to deliver a lecture on “Land Suitability Classification and New Recommendations in fertilizer Useage” at the Field Day in Coconut Research Institute for L. J. M. Peris 7 Co. Ltd on 09th November, 2018.

Dr D. M. D. I. Wijebandara served as resource person to discuss the course module on coconut fertilizer recommendations of the distance learning course module on coconut for the diploma in plantation management conducted by the National Institute if Plantation Management.

Dr. D. M. D. I. Wijebandara served as a resource person in one-day training programmes conducted by Coconut Research Institute.

Dr. D. M. D. I. Wijebandara served as resource person and delivered a lecture in International Certificate Course on Coconut Plantation Management for Coconut Development Officers of APCC member countries, conducted by Coconut Research Institute.

Dr. C. S. Herath served as a resource person to develop a National Competency Standard (NCS) for the Plantation Officer, conducted by Tertiary and Vocational Education Commission.

Dr. H. D. M. A. C. Dissanayake evaluated research grants of the National Science Foundation of Sri Lanka

Dr. I. M. S. K. Idirisinghe served as an evaluator for the SLCARP to evaluate the research proposals for funding and for evaluation of project progress reports and presentations.

Dr. I. M. S. K. Idirisinghe, Dr.P. M. E. K. Pathiraja, Ms. K. V. N. N. Jayalath and Ms. M. G. D. Abeysekara served as resource persons of APCC international taring program held in CRI on July, 2018.

Dr. I. M. S. K. Idirisinghe conducted a lecture on Principles of Estate Management and Farm Planning for Members of Growers Association in Kurunegala District, at Coconut Development Training Centre, 05th November 2018.

Dr. I. M. S. K. Idirisinghe conducted a lecture on Socio economics, management and record keeping in Coconut Estates, for NIPM undergraduate students, 28th October, 2018.

Dr. L. Perera served as a resource person to the consultative workshop on development of coconut risk assessment manual for Pacific under Coconut Industry Development for the Pacific Project. Joint initiative of the Pacific Coconut Community (SPC) and the European Union (EU), 10-15 December, 2018, Tanova International Hotel, Nadi, Fiji.

Dr. L. Perera served as an invited speaker and session chairman to the XLVIII APCC COCOTECH Conference, organized by Asian Pacific Coconut Community (APCC), 20-24 August, 2018, Bangkok, Thailand.

Dr. N. P. A. D. Nainanayake served as a resource person for the one-day training program held for coconut growers at the coconut Research Institute (June 2018).

Dr. N. P. A. D. Nainanayake served as a resource person for the special training program for the members of the LJM company held on 09th November 2018.

Dr. N. P. A. D. Nainanayake served as a resource person for the training program conducted for the participants from the Asian and Pacific Coconut Community (APCC) member countries in June 2018.

Dr. N. S. Aratchige, Dr. H. T. R. Wijesekara, Dr. A. D. N. T. Kumara, Mrs. N. I. Suwandharathne and Mr. P. H. P. R. De Silva of the Crop Protection Division served as resource persons in the First International Course on Management of Coconut Plantations organized by Coconut Research Institute and Asia Pacific Coconut Community.

Dr. N. S. Aratchige, Dr. H. T. R. Wijesekara, Dr. A. D. N. T. Kumara, Mrs. N. I. Suwandharathne and Mr. P. H. P. R. De Silva of the Crop Protection Division served as resource persons for the one-day training program held for coconut growers at the coconut Research Institute (August 2018).

Dr. N. S. Aratchige attended a special awareness program organized by the Planters Association of Ceylon for the Police Officers in the Southern Province and made a presentation on 'Coconut Research Institute Guidelines for sustainable cultivation of oil palm in Sri Lanka' on 6th August 2018.

Dr. N. S. Aratchige conducted lectures and demonstrations on pests of coconut for the students of the course on National Diploma in Plantation Management organized by the National Institute of Plantation Management on 17th September 2018.

Dr. N. S. Aratchige served as an invited member for curriculum development consultations of the Faculty of Agriculture, University of Peradeniya on 06th December, 2018.

Dr. N. S. Aratchige served as a member of the panel at the Panel Discussion on "Oil Palm

Cultivation: Is it sustainable” organized by the SLAAS on 23rd October 2018.

Dr. N. S. Aratchige served as a resource person at the Stakeholder meeting on ‘Roundtable Sustainable Palm Oil’ organized by the Watawala Plantations PLC on 10th May 2018.

Dr. N. S. Aratchige served as a resource speaker and made a presentation on ‘Agro-ecological zones and classification’ at the training program organized by the National Institute of Plantation Management for the staff of the Plantation Management and Monitoring Division of the Ministry of Plantation Industries on 23rd July 2018.

Dr. N. S. Aratchige served as a resource speaker at the oil palm training program organized by the National Institute of Plantation Management and made presentations on ‘Global palm oil industry’, ‘Suitability of lands for oil palm’ and ‘Pests, diseases and stress management of oil palm’ on 25th and 26th May, 2018.

Dr. N. S. Aratchige served as a resource speaker at the short course cum study visit on sustainable oil palm cultivation and processing organized by the National Institute of Plantation Management and made presentations on ‘Nutrient Management of oil palm’ and ‘Pests and diseases management in oil palm’ on 25th May 2018.

Dr. N. S. Aratchige served as a resource speaker at the training course for Executive Staff of the Regional Plantation Companies, organized by the National Institute of Plantation Management and made presentations on ‘Nutrient Management of Oil Palm’, ‘Mature Plantations Management’ and ‘Pest and Disease Management’ on 17th September 2018.

Dr. P. M. E. K. Pathiraja delivered a lecture to NIPM diploma students on “Overview of coconut industry” on 27th September, 2018 at NIPM.

Mr. P. H. P. R. De Silva provided theoretical and practical trainings for field officers working in the Weligama Coconut Wilt Disease Management Programme launching in the Southern Province on symptoms identification of the disease.

Mr. P. H. P. R. De Silva served as an interview panel member for recruiting field inspectors for the Weligama Coconut Leaf Wilt Disease Management project.

Mrs. G. S. Nirukshan served as Compere of the Inauguration and Closing (Awarding Ceremony) of in International Certificate Course on Coconut Plantation Management for Coconut Development Officers of APCC member countries, conducted by Coconut Research Institute.

Mrs. G. S. Nirukshan served as Examiner and resource person for the selection of Experimental Officer (Tamil Medium) for the Technology Transfer Division

Mrs. G. S. Nirukshan served as resource person for the laboratory practical sessions and field demonstrations in International Certificate Course on Coconut Plantation Management

Coconut Development Officers of APCC member countries, conducted by Coconut Research Institute.

Mrs. G. S. Nirukshan served as resource person for the Popularization of Soil Science, Questions and Answers Session Organized by the Students Chapter, Soil Science Society of University of Peradeniya in July 2018.

Ms. M. K. F. Nadheesha served as a resource person in one-day training programmes conducted by Coconut Research Institute.

Ms. M. K. F. Nadheesha served as resource person and delivered a lecture in International Certificate Course on Coconut Plantation Management for Coconut Development Officers of APCC member countries, conducted by Coconut Research Institute.

Ms. M. K. F. Nadheesha served as resource person in field demonstrations and laboratory practical sessions in International Certificate Course on Coconut Plantation Management for Coconut Development Officers of APCC member countries, conducted by Coconut Research Institute.

Workshops / Conferences held

Dr. L. Perera served as the chief organizer and the overall course coordinator of the first International Certificate Course on Coconut Plantation Management, 13th June to 3rd August, 2018, jointly conducted and organized with International Coconut Community.

Other Academic activities

Dr. N. S. Aratchige contributed as an author of the Training Manual for the International Certificate Course on Coconut Plantation Management organized by the Coconut Research Institute and the Asia Pacific Coconut Community.

Dr. N. S. Aratchige made a presentation on 'Role of the Coconut Research Institute in the oil palm industry in Sri Lanka' to the Coconut Research Board on 14th June 2018.

Dr. N. S. Aratchige served as a reviewer of the project proposal on Tropical predators from coconut to save Dutch tulip bulbs submitted to Netherlands Organization for Scientific Research.

Drs. C. S. Ranasinghe and N. S. Aratchige attended the meeting on 'Planting of oil palm' in Kegalle district, held at the District Secretariat, Kegalle on 27th April 2018.

Ms B. H. R. Fernando participated the World Metrology Day Celebrations held at Measurement Units Standards and Services Department on 25th May, 2018.

Ms. D. M. P. D. Dissanayake attended the Asia Resilience Conference (ARC 2018) at Seoul, Korea on 26-28 November, 2018.

Ms. D. M. P. D. Dissanayake attended the International Symposium on Agriculture and Environment (ISAE 2018) at Galadari Hotel, Colombo, Sri Lanka on 17th January, 2018.

Ms. D. M. P. D. Dissanayake attended the SETAC Asia-Pacific Conference 2018 at Daegu, Korea on 16-19 September, 2018.

Ms. D. M. P. D. Dissanayake attended the 4th Asia Pacific Biochar Conference (APBC 2018) at Foshan, China from 3-8 November, 2018.

Mr. P. H. P. R De Silva attended to the District Coordinating Committee (DCC) meeting on “Planting of oil palm and environmental issues in Galle district”, held at the District Secretariat, Galle on 23rd March 2018.

Mr. P. H. P. R. De Silva attended to the District Coordinating Committee (DCC) meeting on “Planting of oil palm and environmental issues in Galle district”, held at the District Secretariat, Galle on 23rd March 2018.

Mr. P. H. P. R De Silva attended to the progress review meeting on “Weligama Coconut Leaf Wilt Disease Management Programme in the Southern Province” held at the Coconut Cultivation Board, Matara on 1st June 2018.

Mr. P. H. P. R. De Silva attended to the Special meeting conducted by District Secretary, Galle on “Planting of oil palm and environmental issues in Galle district”, held at the District Secretariat, Galle on 21st May 2018.

Mrs. G. S. Nirukshan, Mr. L. A. T. S. Liyanarachchi and Ms B.H.R. Fernando participated the training programme on Transition of Laboratory Quality Management System to ISO/IEC 17025:2017 organized by Sri Lanka Accreditation Board (SLAB) on 19th and 20th of April, 2018 at SLAB, Sri Lanka.



STAFF MEMBERS OF THE COCONUT RESEARCH INSTITUTE

CHAIRMAN

Jayantha Jayewardene

DIRECTORATE

Director

Ms. L. C. P. Fernando (Up to November)

BSc (Sci), PhD (University of Sussex, UK) (Cover up Duty)

Additional Director

Ms. C. S. Ranasinghe

BSc (Sci), PhD (University of Sussex, UK)

Deputy Director (Research)

A. A. F. L. K. Perera

BSc (Agric.), MSc (Agric.), PhD (University of Dundee, Scotland)

Deputy Director (Admin.)

K. A. L. Kuruppu

B.Com, MBA (University of Goa, India), MPA (University of Sri Jayewardenepura)

AGRONOMY DIVISION

Head

I. M. S. K. Idirisinghe

BSc (Agric.), MSc (Peradeniya), PhD (Tomas Bata University, Czech Republic)
(Cover up Duty)

Senior Research Officer

Ms. S. C. Somasiri, BSc (Agric.), MSc, PhD
(Massey University, New Zealand)

Research Officers

A. A. A. J. Atapattu, BSc (Agric.)*
S. A. S. T. Raveendra, BSc (Agric. & Tech. Mgt)
Ms. Shermila Udumann, BSc (Agric.)

Experimental Officer

P. G. P. Fernando, BSc (Chem.)

Technical Officers

J. A. A. Gunasekara Dip. (Agric.)
W. M. Nuwan, HNDDT (Agric.)
Ms. K. G. A. Jayamali, BSc (Food Science & Nutrition)
Ms. K. R. M. P. Gayadari, Dip (Animal Husbandary)

Management Assistant

Ms. R. M. S. S. Rathnayake, Dip (Agric.)

Lab & Field Assistants

M. A. N. A. Kumara
B. A. A. Ranganath
H. S. G. De Silva
Ms. R. D. Seneviratne
Ms. K. A. T. Kumari

Lab & Field Attendant

S. M. R. C. Subasinghe

General Workers (Office Attendant)

A. K. D. L. Jayathissa
A. A. C. Dhammika

GENETICS AND PLANT BREEDING DIVISION

Officer-in-Charge

M. G. M. K. Meegahakumbura

BSc (Sci), MSc (Bio), PhD (Chinese Academy of Sciences, China)

Senior Research Officers

Ms. H. D. M. A. C. Dissanayake, BSc (Agric.),
MSc, PhD (University of Tsukuba, Japan)

Research Officer

S. V. G. C. R. Kumara, BSc (Agric.), MSc
(Environmental Forestry)

Ms. P. R. Weerasinghe, BSc (Botany)

Seed & Seedling Production & Certification Officer

L. M. S. R. Jayathilake, BSc (Agric.), MSc
(Agric.)

Assistant Seed & Seedling Production & Certification Officers

P. G. R. S. Premathilake, BSc (Agric.)

R. I. B. C. T. Herath, BSc (Agric.), MSc (Crop
Science)

M. N. Nadeeranga, BSc (Agric.)

R. C. M. Wijayaratne, BSc (Agric.)

L. J. Saman, BSc (Agric.)

A. S. Jayasundara, BSc (Agric.)

D. M. L. Amarasiri, BSc (Agric.)

Pushparaja Krishanth, BSc (Food Production
& Technology Management)

Senior Technical Officer

H. M. N. B. Herath, BSc (Plantation
Management)

Technical Officers

S. A. S. Chandrasiri, BIT

A. A. Fernando, Dip. (Agric.)

U. D. C. S. Kumara, HNDT (Agric.)

M. M. Hettiarachchi, Dip. (Food Technology)

Mrs. T. S. Baddegama, HND (Technology
Agri.)

Management Assistant

Ms S. S. R. Fernando, Dip. (Management)

Lab & Field Assistant

S. M. R. T. Senaratne

Ms. W. D. U. Fernando

U. M. C. C. B. Samarakoon

Senior Lab & Field Attendant

W. Wimalasiri

Lab & Field Attendants

G. D. A. Milroy

J. M. A. S. Kumara

T. A. S. R. T. Thenuwara

M. M. T. Kumara

Office Attendant

Ms. D. M. R. Chandani

SOILS AND PLANT NUTRITION DIVISION

Head

Ms. D. M. D. I. Wijebandara

BSc (Sci), MPhil (Peradeniya), M I Biol, PhD (University of Agric. Sci., Dharwad, India)
(Contract)

Senior Research Officer

Ms. M. K. F. Nadheesha, BSc (Chemistry),
MSc (Food Technology, USA)

Research Officers

Ms. P. G. Scynthiya, BSc (Agric.), MSc
(Environmental Soil Science)

Ms. D. M. P. D. Dissanayaka, BSc (Agric. Tech.
Mgt)*

L. A. T. S. Liyanarachchi, BSc (Agric.)

Ms B.H.R. Fernando, BSc (Agricultural
Technology & Management)

Experimental Officers

K. P. I. E. Ambagala, Dip. (Agric.)

K. P. A. Pathirana, Dip. (Agric.)

Technical Officers

B. S. V. J. Perera, Dip. (Agric.)

Ms. H. L. A. Padmini, Dip. (Agric.)

Ms. K. D. C. Premarathna, HND (Agric.
Production Technology)

Ms. K. G. S. Imasha, HNDDT (Agric.)

Ms. H. W. R. Madushani, BSc

Management Assistant

Ms T. M. D. Abeyratne

Lab & Field Assistants

Ms. B. M. A. U. Amarathunga

Ms. R. K. K. H. J. Jayasinghe, Dip. (Agric.)

M.D.P. Manathunga

Senior Lab & Field Attendants

E. A. Chandradasa

R. M. N. Sandasiri

Lab & Field Attendants

W. R. P. Tissera

H. M. S. Nayanakumara

L. M. G. D. Liyanage

M. A. G. Pathiraja

CROP PROTECTION DIVISION

Head

H. T. R. Wijesekara

BSc (Agric.), PhD (University of IARI, Delhi, India)

Principal Research Officer

Ms. N. S. Aratchige, BSc (Agric.), PhD
(University of Amsterdam, The Netherlands)

Lab & Field Assistants

C. W. S. P. Yapa
Ms. C. A. N. Anthony

Research Officers

A. D. N. T. Kumara, BSc (Agric.), MSc (Crop
Protection), PhD (University of Agricultural
Sciences, Bangalore, India)
P. H. P. R. De Silva, BSc (Agric.)
Ms. N. I. Suwandarathne, BSc (Agric.), MSc
(Zoological Science)
Mr. N. Jeyadharshan, BSc (Agric.)

Lab & Field Attendants

R. K. M. S. N. Rajapaksha
K. M. G. C. Kumarasinghe
P. M. G. S. Shelton
Ms. T. S. Abeyratne
A. M. P. Sanjaya

Experimental Officers

K. A. S. Chandrasiri
K. F. G. Perera
P. H. A. P. Siriwardena, BSc (Agric.)

General Workers

M. A. S. Chandana
Mrs. H. D. Suseetha
K. A. M. Indika

Technical Officers

S. P. Manoj
N. T. M. Wijewardena, HNDT (Agric.)
T. B. K. H. Neranjana, HNDT (Agric.)
Ms. G. A. N. P. Perera, HNDT (Agric.)

Driver

A. K. Pemadasa

TISSUE CULTURE DIVISION

Head

Ms. V. R. M. Vidanaarachchi

BSc (Agric.), PhD (University of Kagoshima, Japan)

Senior Research Officer

Mrs. H. N. D. A. Perera, BSc (Agric.),
MSc (Agric.) (Mississippi State University),
PhD (Agric.) (Mississippi State University)

Lab & Field Assistants

Ms. T. D. A. A. Keerthisinghe
Ms. E. M. N. Maduwanthi
Ms. R. M. K. G. S. Dissanayaka

Experimental Officer

E. S. Santha
Ms. T. R. Gunathilake, Dip. (Sci.)

Lab & Field Attendants

J. A. S. L. Jayasinghe
R. S. Nalin Kumara
Mrs. M. S. M. Dharmaratne
Ms K.P.A. Sanjeewani

COCONUT PROCESSING RESEARCH DIVISION

Head

Ms. L. L. W. C. Yalegama

BSc (Chem.), MSc (India), PhD (University of Peradeniya, Sri Lanka)

Research Officers

Ms. H. P. D. T. Hewapathirana, BSc (Agric.),
MSc (Molecular and Applied Microbiology)
Mrs. W. M. K. Lakdusinghe, BSc (Chemistry)

Technical Officers

Mrs. T. M. S. G. Weerasinghe, Dip. (Agric.)
J. A. D. Madusanka, HNDT (Agric.)
I. G. M. W. Imbulegama

Research Officer (Chemical)

Ms. J. A. K. M. Fernando, BSc (Engineering)

Lab & Field Assistants

Ms. S. H. K. G. Kumarasiri
Ms. W. N. M. Fernando
N. A. C. Udayasiri
Mrs. D. C. S. Sadamali
Mr. H. D. J. K. Jayasekara

Experimental Officers

G. R. A. Dharmasena, BSc (Sci.)
S. S. Rajapaksa, Dip. (Agric.)

General Worker (Office Attendant)

S. A. K. Sanjeewa
Mrs. S. H. M. Chandrawathie

PLANT PHYSIOLOGY DIVISION

Head

N. P. A. D. Nainanayaka

BSc (Sci.), MPhil (Peradeniya), PhD (University of Essex, UK)

Senior Research Officer

Ms. K. P. Waidyaratne, BSc (Agric.), PhD
(Lincoln University, New Zealand)

Research Officer

M. D. P. Kumarathunga, BSc (Agric.)*
Ms. T. H. Chandarathilaka, BSc (Sci.)

Experimental Officers

W. A. S. Wickramarachchi

Technical Officers

A. P. C. Pradeep, Dip. (Agric.)
Ms. G. A. M. Samanthi, Dip. (Agric.)
Mrs. H. M. L. J. Herath, BSc

Management Assistant

Ms. H. M. S. K. Herath

Senior Lab & Field Attendants

J. H. U. Jayamaha
M. M. N. Jayathissa

Lab & Field Attendants

R. D. A. Leonard
Mrs. A. M. J. N. Arthanayaka
H. A. C. P. Hettiarachchi

Office Attendant (Office Attendant)

J. A. R. Malintha

AGRICULTURAL ECONOMICS AND AGRIBUSINESS MANAGEMENT DIVISION

Head

I. M. S. K. Idirisinghe

BSc (Agric.), MSc (Peradeniya), PhD (Tomas Bata University, Czech Republic)

Senior Research Officers

Ms. K. V. N. N. Jayalath, BSc (Agric.), MPhil
(Peradeniya)*
Ms. P. M. E. K. Pathiraja, BSc (Agric.) MPhil
(Peradeniya), PhD (University of Melbourne,
Australia)

Research Officer

Ms. M. G. D. Abeysekara, BSc (Agric.)

Experimental Officer

S. D. J. N. Subasinghe, Dip. (Agric.)

Technical Officer

S.D. Gunawardana, HNDT (Agric.)

Lab & Field Assistant

Ms. W. A. S. Fernando

Lab & Field Attendant

Ms S. M. A. Chiranthi

TECHNOLOGY TRANSFER DIVISION

Officer-in-Charge

C. S. Herath

BSc (Agric.), MSc (Peradeniya), PhD (Tomas Bata University, Czech Republic)

Technology Transfer Officers

Ms. H. D. N. H. Fonseka, BSc (Agric.), MSc (Development of Extension and Education)

K. M. R. T. Wijekoon, BSc (Sci), MSc (Molecular and Applied Microbiology)

Ms. W. G. R. Subhathma, BSc (Agric.), MSc (Molecular Biology and Biotechnology)

Assistant Extension Officer

E. M. T. Bandaranayake, BSc (Agric.), MSc (Agricultural Extension)

Experimental Officer

Mrs. C. P. A. Kurundukumbura, BSc (Agric.)

Experimental Officer (Tamil)

M. T. M. Farzan, BSc (Green Technology)

Technical Officer

M. D. M. Perera. Dip. (Plantation Management)

Senior Lab & Field Assistant

N. A. W. Jayasiri

Lab & Field Attendants

Ms. W. S. S. Fernando

J. A. S. Niroshan

Book Binder

I. H. D. Senarath

Senior General Woker (Office Attendant)

K. A. S. C. N. Fernando

General Workers (Office Attendant)

S. A. A. Viraj

D. M. T. Sampath

LIBRARY

Librarian

Ms. P. D. U. C. Dharmapala

BLE, MSsc (University of Kelaniya)

Management Assistants

Mrs. J. A. D. R. U. Jayasinghe

Lab & Field Attendants

G. A. S. Nuwanpriya

ESTABLISHMENT UNIT

Assistant Director (Administration)

Procurement Officer

M. C. H. N. Fernando, BLE, Dip. in HRE-ACBRE

Personal Assistant to the Chairman

Ms. H. M. A. Herath

Personal Assistant to the Chairman

Mrs. W. J. M. D. M. A. Dias, Dip, (Productivity)

Administrative Officer

Ms. K. P. S. Jayathilake, Dip. (HRM)

Human Resource Officer

Ms. W. S. R. Fernando, Dip. (HRM)

Senior Management Assistants

Ms. U. I. Abeysinghe

Ms. I. N. Jayawardena

Management Assistants

W. M. S. Lowe

P. C. P. K. Fernando, BCom

P. D. Kathriarachchi

Ms W. A. H. Shenali, AAT

Mrs. M. A. N. Dilrukshi, BA (Special)

Mrs U. A. D. N. K. Chathurani, HNDT (IT)

Mrs. D. T. D. Dhanapala

Mrs P. D. Wickramanayake

Mrs. W. M. S. M. Rathnayake

Lab & Field Assistant

W. M. M. Gihan

Lab & Field Attendant

Ms. R. A. P. Jayamanna

Guest House Keeper

K. K. A. Mendis

Drivers

C. N. Luxman

K. P. S. Dissanayaka

J. A. D. B. D. Appuhamy

I. P. K. P. Perera

P. G. P. S. Karunarathna

H. M. Jayathunga

E. G. N. Bandara

E. G. A. P. Jinadasa

T. P. J. Chamendra

C. S. Basnayaka

W. M. J. Banda

W. M. S. Kumara

H. C. P. Thirimanna

M. A. R. Rupasinghe

B. M. W. G. S. N. Abeysingha

H. D. S. Dammika

S. M. Chaminda

L. Thirugnamoorthy

M.A.T.R. Marasinghe

General Workers (Office Attendant)

J. K. J. Perera

D. K. S. Senarath

Ms. H. A. T. Thilakumari

D. W. K. Madushanka

M. P. S. Fernando

Ms. R. D. Shiroma

P. V. N. W. Kumara

Vehicle Attendants

D. W. Nevil

T. M. A. P. Kumarasinghe

S. H. A. M. Premarathna

INTERNAL AUDIT UNIT

Internal Auditor

P. W. A. Fernando

BBMgt (Accounting), MBA (University of Wayamba)

Senior Management Assistant (Auditing)

Ms. M. M. J. R. Fernando

Management Assistant

G. P. K. Madhusanka

M. M. L. Silva, BSc (Entrepreneur)

Management Assistant (Auditing)

H. S. S. De Seram, AAT

Office Attendant

R. P. Nevil

Senior Management Assistant

Ms. S.N. Gunathilake

ACCOUNTS UNIT

Senior Accountant

R. M. U. Chandranath

BSc [Management (Public)], PgD (Public Administration), Fellow of APFA

Accountant

Ms. B. A. D. C. S. Bulathsinghala, BCom (Special)

Management Assistant (Shroff)

Ms. R. D. S. Priyadarshani, AAT

Senior Management Assistant (Accounting)

Ms. A. S. M. S. Abeywickrama

Management Assistant (Store-Keeping)

S. M. R. B. Subasinghe, AAT

Management Assistants (Book Keeping)

A. H. M. J. S. Abeyrathne, HNDBS

Ms. W. D. P. Fernando, AAT, BSc (Accountancy & Business Finance)

H. P. S. V. Herath

Ms. R. M. R. D. Rathnayake, BSc (Business Management)

Management Assistants

J. A. S. Indika

General Workers (Office Attendants)

P. K. C. Sampath

R. K. S. Wimalasiri

K. M. V. C. P. Kumarasinghe

K A A Kumara

Management Assistant (Accounting)

Ms. W. A. N. K. Wijesinghe

ENGINEERING UNIT

Resident Engineer

A. L. D. K. Amarasinghe

Dip. (Eng. Science), NDES (Civil)

Works Superintendent

P. H. D. T. S. Wimalaratne, Advance Dip.
(Construction Technology)

Technological Officer (Mechanical)

H. A. K. Bandara, Training Course in
Automobile Mechanics

Technological Officer (Civil)

Mrs. S. I. C. Sirimali, National Diploma in
Engineering

Management Assistant

Ms. P. P. D. T. N. Dayanicious
Ms. H. M. Mallikarachchi

Senior Motor Mechanic

R. M. S. G. Rathnayaka, NTC, NAB

Motor Mechanic

Y. P. N. D. Wijesinghe

Senior electricians

K. H. A. Chandrasiri
W. A. S. S. Weerasinghe
P. D. Perera

Carpenter

W.A.P. Hewarathne

Tinker

C. M. S. F. Leslipulle

Electrical Helper

H. M. N. Jayarathna

Building Helper

K. J. J. Appuhamy

Plumber

B. R. D. Silva

Linesman

M. M. D. C. Munasinghe

Lab & Field Attendant

W. M. R. Sisira
B. M. L. Dharmasiri

General Workers (Office Attendant)

E. M. U. Nishantha
R. P. S. J. Manchanayake

ESTATE MANAGEMENT DIVISION

Manager (Estates)

L. M. S. R. Jayathilake

BSc (Agric.), MSc (Agric.) (Cover up Duty)

Senior Management Assistant

Ms. M. G. Karunawathie

Management Assistant (Book Keeping)

M. A. G. Priyankara, BB Management
(Accountancy)

Management Assistants (Accounting)

Ms. H. A. N. Subhashini

General Workers (Office Attendant)

M. A. G. Ananda
W. A. T. Arunasiri

BANDIRIPPUWA RESEARCH CENTRE

Superintendent

W. A. H. Upali, Dip. (Plantation Management)

Management Assistant

Ms. R. P. Wasana Sanderenu

General Worker (Office Attendant)

W. A. S. Jayathilake

Senior Field Supervisor

A. G. B. G. Silva

Field Supervisor

W. S. M. U. D. Singhabahu

Field Supervisor

W. L. Thushara

RATMALAGARA RESEARCH CENTRE

Superintendent

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

Field Supervisor

W. M. D. R. Wijesinghe

Management Assistant

D. M. Jayawardena

Lab & Field Attendant

J. C. P. Jayamanna

AMBAKELLE GENETIC RESOURCES CENTRE

Estate Superintendent

I. P. S. A. Wanasinghe, BSc (Agric.)

Assistant Estate Superintendent

D. R. S. Wijegunathilake, BSc (Palm & Latex Technology & Value Addition)

Driver

W. D. C. S. Thushara

Lab & Field Attendant

W. M. G. Jayawardena

Watcher

D. M. L. Jayarathna

MADURUOYA GENETIC RESOURCES CENTRE

Assistant Estate Superintendent

W. M. G. K. G. D. K. Weerakoon, BSc (Agricultural Resource Management & Technology)

General Orker (Office Attendant)

Mrs. W. G. Mallika Manike

MIDDENIYA RESEARCH CENTRE

Officer-in-Charge

E. A. S. Kumara, Dip. (Plantation Management)

Supervisor

K. G. Wasantha

Driver

A. K. Pemadasa

WELIGAMA RESEARCH CENTRE

Officer-in-Charge

S. A. S. Kumara

WALPITA RESEARCH CENTRE

Officer-in-Charge

T.M.N. Menaka

POTHTHUKULAMA RESEARCH CENTRE

Officer-in-Charge

W. W. A. P. R. Fernando, Dip. (Plantation Management)

Management Assistant

R. M. N. K. Ratnayaka

Lab & Field Attendant

H. J. M. P. Nilanga

MAKANDURA GENETICS RESOURCE CENTRE

Estate Superintendent

W. M. U. Ratnayake, Dip. (Plantation Management)

Field Supervisor

W. M. N. G. Wijayatunga

General Orker (Office Attendant)

Ms. P. M. Kamalawathie

Driver

K.K. Piyatissa

PALLAMA GENETIC RESOURCES CENTRE

Superintendent

I. A. N. Hemasiri

Lab & Filed Attendant

Mrs. S. A. Sumanawathie

Driver

H. M. D. N. Herath

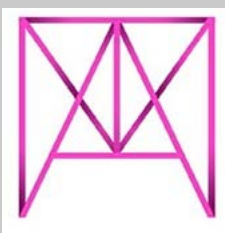
THABBOWA RESEARCH STATION

Officer-in-Charge

H. M. C. Bandara, BA

* Study Leave

** No pay Leave



STAFF : RECRUITMENTS, RETIREMENTS, RESIGNATIONS, PROMOTIONS & TRANSFERS

1. ESTABLISHMENT UNIT

The unit continued to assist research divisions in routine administrative matters and related affairs.

2. CADRE

The staff position of the Coconut Research Institute at the end of December 2018, is given in Table 1.

Staff Cadre as at 31.12.2018.

Salary Code	Appr.	Exis.	Vacan.
HM 2-3	1	0	1
HM 2-1	1	1	0
HM 1-3	19	10	9
HM 1-1	1	0	1
MM 1-2	7	3	4
AR 2	14	8	6
AR 1	26	22	4
JM 1-2	15	13	2
MA 4	28	22	6
MA 3	5	2	3
MA 2-2	59	34	25
MA 1-2	75	65	10
PL 3	49	32	17
PL 2	53	40	13
PL 1	38	38	0
	391	290	101

3. WELFARE

Welfare facilities provided to the employees from the Board were continued. Financial assistance provided to the employees is given below:

3.1. Financial Aid

Distress Loans : Granted for 44 employees, amounting to Rs 9,733,926.00

Transport Loans : Granted for 16 employees, amounting to Rs 850,000.00

3.2. Other facilities to employees

Financial assistance was also granted to Day Care Centre (Rs. 7,875.00), Death Donation Society (Rs. 9,000.00), Art Circle (Rs. 11,250.00) and the Recreation Club (Rs. 22,500.00) during the year 2018.

4. APPOINTMENTS

Following appointments were made during the year 2018, and the details are given in Table 2.

Name	Designation	Division / Unit	Date
Mr. W. A. P. Hewarathne	Carpenter	Engineering	15.02.2018
Mrs. D. C. S. Sandamali	Lab/Field Assistant	Coconut Processing Research	15.02.2018
Mr. H. D. J. K. Jayasekara	Lab/Field Assistant	Coconut Processing Research	15.02.2018
Miss W. D. U. Fernando	Lab/Field Assistant	Genetics & Plant Breeding	15.02.2018
Mr. U. M. C. C. B. Samarakoon	Lab/Field Assistant	Genetics & Plant Breeding	15.02.2018
Mr. H. S G. De Silva	Lab/Field Assistant	Agronomy	15.02.2018
Miss R. D. Senevirathne	Lab/Field Assistant	Agronomy	15.02.2018
Miss K. A. T. Kumari	Lab/Field Assistant	Agronomy	15.02.2018
Miss R.M.K.G.S. Dissanayaka	Lab/Field Assistant	Tissue Culture	15.02.2018
Miss A. A. A. G. Adikari	Lab/Field Assistant	Crop Protection	15.02.2018
Mr. M. D. P. Manathunga	Lab/Field Assistant	Soils & Plant Nutrition	15.02.2018
Miss B. H. R. Fernando	Research Officer	Soils & Plant Nutrition	15.02.2018
Mrs. W. M. K. Lakdusinghe	Research Officer	Coconut Processing Research	15.02.2018

Name	Designation	Division / Unit	Date
Miss P. R. Weerasinghe	Research Officer	Genetics & Plant Breeding	15.02.2018
Miss P. D. B. J. Palihakkara	Research Officer	Soils & Plant Nutrition	15.02.2018
Mr. H. A. K. Bandara	Technological Officer (Mechanical)	Engineering	15.02.2018
Mr. W. M. G. K. G. D. K. Weerakoon	Asst. Estates Superintendent	Estates Management	19.02.2018
Mr. D. R. S. Wijegunathilake	Asst. Estates Superintendent	Estates Management	19.02.2018
Mr. M. T. M. Farzan	Experimental Officer (Tamil)	Technology Transfer	27.02.2018
Miss K. R. M. P. Gayadari	Technical Officer	Agronomy	27.02.2018
Mrs. H. M. L. J. Herath	Technical Officer	Plant Physiology	27.02.2018
Mrs. T. S. Baddegama	Technical Officer	Genetics & Plant Breeding	27.02.2018
Mr. P. Krishanth	Assistant Seed Production & Certification Officer	Genetics & Plant Breeding	02.03.2018
Mrs. H. W. R. Madushani	Technical Officer	Soils & Plant Nutrition	27.03.2018
Miss C. A. T. D. Chandrapeli	Technical Officer	Coconut Processing Research	28.03.2018
Miss S. I C. Sirimali	Technological Officer (Civil)	Engineering	29.03.2018
Dr. H. N. D. A. Perera	Senior Research Officer	Tissue Culture	02.04.2018
Mr. K. A. L. Kuruppu	Deputy Director (Administration)	Establishment	11.06.2018
Miss R. P. W. Sandarenu	Management Assistant	Estates Management	11.06.2018
Mrs. R. M. S. S. Rathnayaka	Management Assistant	Agronomy	11.06.2018
Mrs. W. M. S. M. Rathnayaka	Management Assistant	Establishment	11.06.2018
Mrs. W. J. M. D. M. A. Dias	Personal Assistant to the Director	Establishment	11.06.2018

5. RESIGNATIONS, RETIREMENTS, VACATION OF POSTS & TERMINATIONS OF SERVICES & DEATHS

The details are given in Table 3

Retirements

Name	Designation	Division / Unit	Date
Mr. R. D. N. Premasiri	Experimental Officer	Plant Physiology	03.01.2018
Dr. D. M. D. I. Wijebandara	Head of the Division	Soils & Plant Nutrition	09.03.2018
Mr. J. M. C. Appuhamy	Senior Driver	Establishment	23.03.2018
Mrs. W. B. M. S. S. Fernando	Experimental Officer	Genetics & Plant Breeding	09.04.2018
Mr. J. R. C. R. Perera	Senior Electrician	Engineering	26.04.2018
Mr. J. A. D. N. Stanley	Pollination Labourer	Estates Management	28.05.2018
Mr. A. S. Nanayakkara	Administrative Officer	Establishment	11.06.2018
Mr. M. M. N. Jayatissa	Senior Lab/Field Attendant	Plant Physiology	02.09.2018
Mr. H. K. Prasanna	Senior Lab/Field Attendant	Agronomy	01.11.2018
Dr. L. C. P. Fernando	Director	Establishment	23.11.2018

Resignations

Name	Designation	Division / Unit	Date
Mr. K. W. B. M. P. Wijesundera	Deputy Director (Administration)	Establishment	08.01.2018
Mr. V. P. M. Prasanth	Manager (Estates)	Estates Management	10.01.2018
Mrs. H. A. E. Samaranayake	Research Officer	Coconut Processing Research	10.01.2018
Mr. J. A. R. T. Jayasinghe	Lab/Field Assistant	Soils & Plant Nutrition	28.02.2018
Dr. R. P. B. S. H. S. Senarathne	Head of the Division	Agronomy	07.05.2018
Mrs. W. D. T. Mihiranthi	Technical Officer	Crop Protection	14.05.2018
Mr. S. Krishnathas	Driver	Establishment	16.07.2018
Miss A. A. A. G. Adikari	Lab/Field Assistant	Crop Protection	18.07.2018
Mr. L. S. B. Liyanage	Estates Superintendent	Estates Management	13.08.2018
Mr. A. M. D. H. Abayakoon	Technical Officer	Agronomy	17.08.2018

Name	Designation	Division / Unit	Date
Mrs. K. A. R. Priyadarshani	Management Assistant (Accounting)	Accounts	22.08.2018
Miss M. Y. G. Perera	Technical Officer	Soils & Plant Nutrition	28.09.2018
Miss M. M. I. Thilinka	Technical Officer	Coconut Processing Research	29.09.2018
Mr. M. K. H. T. K. Peiris	Technical Officer	Genetics & Plant Breeding	01.10.2018
Miss P. D. B. J. Palihakkara	Research Officer	Soils & Plant Nutrition	05.10.2018
Mr. I. H. D. U. Dasanayake	Technical Officer	Soils & Plant Nutrition	22.11.2018

Terminations

Name	Designation	Division / Unit	Date
Mr. S.T. Rajapaksha	Technological Officer (Electrical)	Engineering	08.01.2018

6. Promotions

6.1. PROMOTIONS IN NON-EXECUTIVE GRADES

Promotions in Non-executive grades were not made during the year 2018.

6.1. PROMOTIONS IN EXECUTIVE GRADES

Promotions in Executive grades were not made during the year 2018.

7. Transfers

Name & Designation	Place to Transfer	Date
Mrs. C. P. A. Kurundukumbura / Experimental Officer	Soils & Plant Nutrition Division to Technology Transfer Division	10.04.2018
Mrs. R. M. S. S. Rathnayake / Lab / Field Attendant	Bandirippuwa Research Centre to Technology Transfer Division	25.04.2018
Mr. W. L. Thushara / Field Supervisor	Technology Transfer Division to Bandirippuwa Research Centre	25.04.2018
Mr. S. M. U. D. Singhabahu / Watcher	Maduruoya Genetics Research Centre to Bandirippuwa Research Centre	25.04.2018
Mr. H. A. C. P. Hettiarachchi / Lab/Field Attendant	Bandirippuwa Research Centre to Plant Physiology Division	25.04.2018
Mr. J. A. S. Niroshan / Lab / Field Attendant	Crop Protection Division to Technology Transfer Division	25.04.2018

Name & Designation	Place to Transfer	Date
Mr. K. A. M. Indika/ General Worker	Establishment Unit to Crop Protection Division	25.04.2018
Mr. J. A. D. R. U. Jayasinghe/ Management Assistant	Bandirippuwa Research Centre to Library	03.09.2018
Mr. W. M. G. K. G. D. K. Weerakoon / Assistant Estates Superintendent	Pallama Genetic Resource Centre to Maduru Oya Genetics Resources Center	03.09.2018
Mr. T.M.N. Menaka/ Field Supervisor	Bandirippuwa Research Centre to Walpita Research Centre	17.12.2018

8. Local Trainings (More than 7 Days)

No local trainings (More than 7 days) were granted for the employees of the CRI during the year 2018.

9. Transport Activities

Vehicles of the Coconut Research Institute as at 31.12.2018.

Buses	-	03
Lorries	-	02
Vans	-	06
Cars	-	02
Cabs	-	16
Jeeps	-	01
Motor bicycles	-	71
Three Wheelers	-	04
Tractor Trailer/ Bowser	-	28
Hand Tractors	-	<u>09</u>

189

Debtors due to violation of service agreements / bonds

Name	Designation	Bond Value
Dr. K. B. Dasanayaka	Senior Research Officer	Rs. 2,039,715.00
Dr. H. P. S. Jayasundara	Research Officer	Rs. 2,078,905.33
Dr. M. G. F. S. Jayasundara	Research Officer	Rs. 3,345,424.66
Mr. R. A. J. R. Perera	Research Officer	Rs. 1,068,165.00
Mrs. P. G. P. Hewawitharanage	Research Officer	Rs. 1,059,170.00
Mr. N. A. K. De Silva	Research Officer	Rs. 3,204,297.60

Name	Designation	Bond Value
Dr. J. M. M. A. Jayasendera	Senior Research Officer	Rs. 847,880.00
Mr. B. H. C. Mendis	Research Officer	Rs. 1,014,780.00
Dr. S. C. Somasiri	Senior Research Officer	Rs.11,907,933.05
Dr. H. M. I. K. Herath	Senior Research Officer	Rs. 3,090,747.03



STATEMENT OF FINANCIAL PERFORMANCE

Significant Accounting Policies

1. General

- 1.1. 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 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 Coconut Research Institute.
- 1.2. 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.
- 1.3. Principal Activities and Nature of Operations.
 - Conduct further scientific research on growth and cultivation of coconut palm, growing other crops, engages in animal husbandry in coconut plantation and prevent & cure of pests and 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.
 - Guide and advise coconut industry on all matters of technical nature.

- Establish and maintain institutes' seed gardens and experimental stations.
- Train advisory and extension workers to assist the coconut industry.

General Policies

1.4. 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 .

1.5. Basis of Preparation

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

1.6. 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 has 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

SLPSAS - 11 Revenue from Non-Exchange Transactions(Taxes and Transfers)

- SLPSAS - 12 Leases
- SLPSAS - 13 Investment Property
- SLPSAS - 14 Related Party Disclosures
- SLPSAS - 15 Presentation of Budget Information in Financial Statements
- SLPSAS - 16 Construction Contracts
- SLPSAS - 17 Segment Reporting
- SLPSAS - 18 Agriculture
- SLPSAS - 19 Employee Benefits
- SLPSAS - 20 Intangible Assets

1.7. 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.

1.8. 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.

1.9. Foreign Currency Translation.

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

1.10. Tax

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

1.11. 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 as straight line method spread for its useful life. (From the date of purchase to the date of dispose)

The Thabbowa Land was Valued on 20th February 2018 & the valuation report was received on 13th September 2018. The Value of this Property has been included in the Financial Statements of 2018.

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 Cultivation Board decide to allocate land own as Weligama for the seed garden as an operational lease which was leased to Coconut Research Institute for the period of 20 (Twenty) years commencing from 20th December 2016, the payment of Rs.1, 000,000.00(One Million Rupees) as an initial payment and the annual rent of Rs.25,000.00 (Twenty Five Thousand) during the first year and thereafter.

An extent of 75 ac. from the Middeniya farm has been temporary released for 30 years by the Assistant Divisional Secretary of Katuwana to the Ministry of Plantation Industries on October 7, 2004 and it was Vested to Coconut Research Institute on October 11, 2004 by the Ministry of Plantation Industries for stabilizing of sub Coconut Research Centre in Southern Province.

1.12. 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%

1.13. 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.

1.14. 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.

1.15. 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

1.16. 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.

1.17. Cash and Cash Equivalent

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

1.18. 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.

1.19. Liabilities and Provisions

Gratuity is a defined benefit plan. The institute is liable to pay gratuity in terms of the relevant statutes. In order to meet this liability, a provision is calculated based on Actuarial Valuation method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using the yield on Government Bonds at the reporting date and has maturity dates approximating to the terms of the Institute's obligations. 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.

The Institute recognizes actuarial gains and losses that arise in calculating the Company's obligation in respect of a plan in other comprehensive income. The present value of the defined benefit obligation depends on a number of factors that are determined on an actuarial basis using a number of assumptions.

Key assumptions used in determining the defined retirement benefit obligations are given in Note 20. Any changes in these assumptions will impact the carrying amount of defined benefit obligations. Provision has been made for retirement gratuities from the first year of service for all employees, in conformity with LKAS 19 - 'Employee Benefits'. However, under the Payment of Gratuity Act No. 12 of 1983, the liability to an employee arises only on completion of 5 years of continued service.

1.20. 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

1.21. 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 Centre (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.

1.22. 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.

1.23. 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.

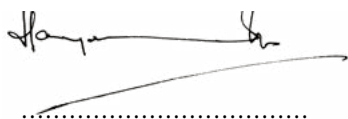
Research & Development Expenditure in the previous year's shown under division wise. From the year 2007 it's indicated under the following trust areas.

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

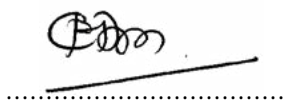
The previous practice was total Research and Development expenditure disclose as assets of the Balance Sheet and the presently theses expenses during the year under review have been charged against the Statement of Financial Performance.

FOR THE YEAR ENDED 31 ST DECEMBER 2018	NOTES	2018 APPROVED BUDGET Rs.	2018 ACTUAL Rs.	2017 ACTUAL Rs.
<u>OPERATING REVENUE</u>				
TRANSFERS FROM OTHER GOVERNMENT ENTITIES	03	265,000,000	236,930,000	214,620,000
GENETIC & RESEARCH CENTER REVENUE	04	248,212,000	174,611,822	202,969,957
OTHER REVENUE	05	15,000,000	112,705,923	112,797,092
TOTAL REVENUE		<u>528,212,000</u>	<u>524,247,745</u>	<u>530,387,048</u>
<u>OPERATING EXPENCES</u>				
WAGES SALARIES AND EMPLOYEES' BENEFITS	06	205,836,000	212,897,995	184,602,638
SUPPLIES & CONSUMABLES USED	07	47,972,000	54,755,023	49,170,990
DEPRECIATION & AMORTISATION EXPENCES	10		25,116,198	25,550,034
GENETIC & RESEARCH CENTER EXPENCES	04	192,722,000	202,176,193	166,231,916
RESEARCH & DEVELOPMENT EXPENCES WRITE OFF	08	-	39,548,514	44,236,707
OTHER EXPENSES	09	11,192,000	48,747,508	33,841,770
TOTAL EXPENSES		<u>457,722,000</u>	<u>583,241,431</u>	<u>503,634,056</u>
SURPLUS /(DEFICET) FOR THE PERIOD		70,490,000	(58,993,686)	26,752,992

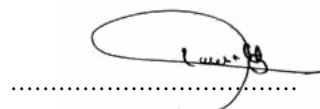
The Accounting Policies on pages 07 to 14 and Notes on pages 15 to 26 from an integral part of these Financial Statements. The Coconut Research Board of Directors is responsible for the preparation and presentation of these Financial Statements. These Financial Statements were approved by the Board of Directors and signed on their behalf.



CHAIRMAN
COCONUT RESEARCH BOARD



DIRECTOR
COCONUT RESEARCH INSTITUTE



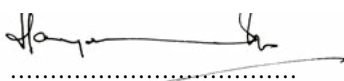
SENIOR ACCOUNTANT
COCONUT RESEARCH INSTITUTE

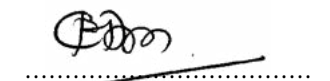
STATEMENT OF FINANCIAL POSITION

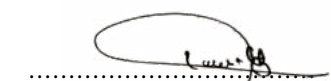
AS AT 31st DECEMBER 2018

	NOTES	2018 APPROVED BUDGET Rs.	2018 ACTUAL Rs.	2017 ACTUAL Rs.
<u>NON CURRENT ASSETS</u>				
INFRASTRUCTURE PLANT & EQUIPMENT	10	48,282,000	2,081,200,924	2,023,601,284
BIOLOGICAL ASSETS	11		6,893,116	8,362,081
OTHER NON FINANCIAL ASSETS	12	500,000	3,159,059	3,055,587
OTHER NON CURRENT ASSETS	13		60,797,159	65,294,123
		<u>48,782,000</u>	<u>2,152,050,258</u>	<u>2,100,313,076</u>
<u>CURRENT ASSETS</u>				
CASH & CASH EQUIVALANTS	14		97,570,088	143,646,147
RECIEVABLES	15		41,527,553	9,933,206
INVENTORIES	16		74,333,615	68,862,600
OTHER CURRENT ASSETS	17		65,087,502	44,200,358
		-	278,518,758	287,188,580
TOTAL ASSETS			<u>2,430,569,016</u>	<u>2,387,501,656</u>
<u>LIABILITIES</u>				
<u>CURRENT LIABILITIES</u>				
PAYABLES	18		47,997,606	88,671,667
EMPLOYEE BENEFITS	19		148,528,236	123,312,909
		-	<u>196,525,842</u>	<u>211,984,576</u>
<u>NON CURRENT LIABILITIES</u>				
CAPITAL CONTRIBUTED BY DONOR FUNDED PROJECTS	20		171,588,088	46,227,573
		-	171,588,088	54,776,594
TOTAL LIABILITIES			<u>368,113,930</u>	<u>266,761,170</u>
NET ASSETS			<u>2,062,455,086</u>	<u>2,120,740,486</u>
<u>NET ASSETS/EQUITY</u>				
CAPITAL CONTRIBUTED BY THE OTHER GOVERNMENT ENTITIES		48,782,000	401,471,466	397,061,481
RESERVES			1,689,612,302	1,689,612,303
ACCUMULATED SURPLUS/(DEFECIT)			(28,628,681)	34,066,702
		<u>48,782,000</u>	<u>2,062,455,086</u>	<u>2,120,740,486</u>
TOTAL NET ASSETS/EQUITY		<u>48,782,000</u>	<u>2,062,455,086</u>	<u>2,120,740,486</u>

The Accounting Policies on pages 07 to 14 and Notes on pages 15 to 29 from an integral part of these Financial Statements. The Coconut Research Board of Directors is responsible for the preparation and presentation of these Financial Statements. These Financial Statements were approved by the Board of Directors and signed on their behalf.


 CHAIRMAN
 COCONUT RESEARCH BOARD


 DIRECTOR
 COCONUT RESEARCH INSTITUTE


 ACCOUNTANT
 COCONUT RESEARCH INSTITUTE

CASH FLOW STATEMENTFOR THE YEAR ENDED 31st DECEMBER 2018

	2018 Rs.	2017 Rs.
CASH FLOW FROM OPERATING ACTIVITIES		
SURPLUS/(DEFICIT)	(58,993,686)	26,752,992
NON-CASH MOVEMENTS		
DEPRECIATION & AMORTIZATION	44,256,462	40,318,619
ASSETS & RESEARCH EXPENCE WRITE OFF		(63,087,234)
FIXED DEPOSIT INTEREST	(6,642,723)	(6,904,083)
PROVISION FOR DOUBTFUL DEBTS	5,000	-
INCREASE/(DECREASE) IN PAYABLES	(40,674,061)	35,208,238
INCREASE IN PROVISIONS RELATING TO EMPLOYEE COSTS	38,780,938	19,851,365
EMPLOYEE GRATUITY PAYMENT	(13,565,611)	(11,394,817)
(GAINS)/LOSSES ON SALE OF PROPERTY, PLANT & EQUIPEMENT	3,739,087	5,101,722
INCREASE IN OTHER CURRENT ASSETS	(20,333,917)	(19,569,753)
DECREASE IN INVENTORIES	8,608,484	(14,079,500)
DECREASE IN RECEIVABLES	(24,991,578)	(438,373)
DECREASE IN PREPAYMENTS		-
PRIOR YEAR PROFIT ADJUSTMENT	(3,701,699)	6,763,537
NET CASH FLOW FROM OPERATING ACTIVITIES	<u>(73,513,304)</u>	<u>18,522,714</u>
CASH FLOW FROM INVESTING ACTIVITIES		
PURCHASE OF PLANT & EQUIPEMENT TREASURY FUND	(107,514,337)	(78,579,515)
PURCHASE OF LIBRARY BOOKS & PERIODICALS	(103,471)	(180,024)
PURCHASE / SALE OF BIOLOGICAL ASSETS	1,468,965	(1,584,851)
PROCEEDS FROM SALE OF PLANT & EQUIPEMENT	1,919,149	1,065,601
ISSUED LOANS	7,709,978	(8,499,825)
SETTLEMENTS OF LOANS	(9,766,241)	7,369,442
INTEREST ON INVESTMENT	1,186,595	6,190,814
INVESTMENT IN FIXED DEPOSIT	6,000,000	(3,600,000)
NET CASH FLOW FROM INVESTING ACTIVITIES	<u>(99,099,363)</u>	<u>(77,818,358)</u>
CASH FLOW FROM THE FINANCING ACTIVITIES		
TREASURY CAPITAL GRANT	59,665,732	(7,025,484)
DONOR FUNDED PROJECTS CAPITAL GRANT	169,740,226	8,549,021
RESEARCH & DEVELOPMENT AND ASSETS WRITE OFF	(108,184,479)	63,087,234
NET CASH FLOWS FROM THE FINANCING ACTIVITIES	<u>121,221,479</u>	<u>64,610,772</u>
NET INCREASE / (DECREASE) IN CASH & CASH EQUIVALENTS	(51,391,188)	5,315,127
CASH & CASH EQUIVALENTS AT BEGINNING OF PERIOD	148,961,275	143,646,147
CASH & CASH EQUIVALENTS AT END OF PERIOD	<u>97,570,087</u>	<u>148,961,275</u>

	2018 Rs.	2017 Rs.
BANK OF CEYLON - DANKOTUWA - A/C NO 3002507	14,148,477	20,726,324
BANK OF CEYLON - DANKOTUWA - A/C NO 3002942	47,014,516	13,748,882
BANK OF CEYLON - DANKOTUWA - A/C NO 3002556	23,359,489	34,186,792
BANK OF CEYLON - DANKOTUWA - A/C NO 3003088	8,340,206	78,986,266
BANK OF CEYLON - DANKOTUWA - A/C NO 3001528	1,201,138	1,182,011
BANK OF CEYLON - DANKOTUWA - A/C NO 75852571	3,501,262	-
	<u>97,565,088</u>	<u>148,830,275</u>
NSB - NEGOMBO	-	-
BOC - NEGOMBO	5,000	5,000
CASH IN TRANSIT	-	126,000
	<u>97,570,088</u>	<u>148,961,275</u>

STATEMENT OF CHANGES IN NET ASSETS/ EQUITY

NOTE	CONTRIBUTED BY THE GOVERNMENT	REVALUATION RESERVE	ACCUMULATED SURPLUS/DEFICIT	TOTAL EQUITY
BALANCE AS AT 01-01-2018	397,061,481	1,689,612,303	34,066,702	2,120,740,486
CAPITAL GRANT-TREASURY	59,665,732			59,665,732
SURPLUS/DEFICIT FOR THE YEAR			(58,993,685)	(58,993,685)
ASSETS WRITE OFF FOR THE CURRENT YEAR	(34,482,233)			(34,482,233)
R & D WRITE OFF FOR THE CURRENT YEAR	(39,548,514)			(39,548,514)
RE-PAYMENT THE AMOUNT OF 172 NOS OF TEAK TREES OF RATHMALAGARA R C			(4,211,000)	(4,211,000)
PREVIOUS YEAR ESTATE INVESTMENT INCOME ADJUSTMENT			509,301	509,301
VALUATION OF THABBOWA DEMONSTRATION FARM	18,775,000			18,775,000
BALANCE AS AT 12-31-2018	401,471,466	1,689,612,303	(28,628,681)	2,062,455,087

Figures in brackets indicate deductions

The Accounting Policies and Notes as Set out on the pages 7 to 29 from an integral part of these Financial Statements.

Notes to the Financial Statements (Contd...)

GENETIC RESOURCE CENTER & RESEARCH CENTER (ESTATES) REVENUE & EXPENDITURE

	Bandirippuwa RC	Rathmalaraga RC	Ambakelle GRC	Potthukulama RC	Walpita RC	Makandura GRC	Maduruoya GRC	Middeniya RC	Pallama RC	Thabbowa RC	Estate Management Division	Technology Park	TOTAL 2018	BUDGET 2018	TOTAL 2017
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
REVENUE															
SALES OF COCONUT	13,491,952	2,777,155	51,683,116	6,947,527	4,789,500	8,444,319	30,156,846	4,788,811	11,880,029	1,437,175	-	-	136,396,430	191,739,000	163,835,636
SALES OF COPRA	227,227	31,108	299,414	59,919	3,976	94,212	249,648	45,240	101,698	-	-	-	1,112,442	1,955,000	2,316,593
SALES OF SEEDLING	319,400	230,860	3,476,960	763,178	84,660	1,005,390	243,100	3,005,000	5,892,350	1,232,430	-	-	16,253,328	40,379,000	18,095,884
SALES OF SUNDRIES	2,700,166	951,885	314,088	2,488,243	477,524	463,412	964,161	119,519	361,653	224,360	-	1,542,700	10,607,711	10,604,000	10,906,544
SALE OF ANIMALS PRODUCE & ANIMALS	852,338	-	17,180	423,720	-	-	327,131	-	2,254,700	-	-	-	3,875,069	3,535,000	1,817,919
FD INTEREST INCOME	-	-	-	-	-	-	-	-	-	-	7,284,058	-	7,284,058	-	6,190,814
TOTAL REVENUE	17,591,083	3,991,009	55,790,758	10,682,586	5,355,660	10,007,332	31,940,886	7,958,570	20,490,431	2,893,965	7,284,058	1,542,700	175,529,037	248,212,000	203,163,390
STOCK VARIANCES															
STOCK AS AT 01-01-2018	2,852,442	1,705,155	12,712,751	4,985,695	817,465	2,157,402	6,627,134	2,646,985	7,309,338	1,192,015	-	193,870	43,200,252	-	43,393,685
STOCK AS AT 31-12-2018	3,545,291	1,797,621	11,232,273	2,917,998	808,426	3,251,542	6,920,334	1,751,344	9,335,869	670,484	-	51,858	42,283,038	-	43,200,252
	692,849	92,466	(1,480,478)	(2,067,697)	(9,039)	1,094,140	293,200	(895,641)	2,026,531	(521,531)	-	(142,013)	(917,214)	-	(193,433)
ESTATE REVENUE	18,283,932	4,083,474	54,310,280	8,614,889	5,346,621	11,101,472	32,234,086	7,062,928	22,516,962	2,372,433	7,284,058	1,400,688	174,611,822	248,212,000	202,969,957
GENERAL CHARGES	8,092,323	7,464,513	16,164,096	5,311,376	1,528,278	3,757,460	5,695,245	3,272,375	9,081,836	718,359	16,538,095	1,262,595	78,886,550	61,047,000	65,126,520
STAFF SALARIES	5,811,324	2,331,216	3,356,535	1,899,130	667,692	3,246,872	1,209,831	1,190,707	3,067,328	518,221	3,537,007	-	26,835,864	27,831,000	25,320,102
UPKEEP	2,172,361	2,161,099	8,911,737	2,023,908	267,120	1,042,264	1,612,676	1,064,490	6,670,619	381,498	-	-	26,307,772	34,589,000	22,476,031
CULTIVATION	3,151,289	1,514,928	3,232,966	1,817,161	413,965	1,291,941	1,269,644	905,892	641,068	124,814	-	-	14,363,669	25,859,000	12,594,527
COST OF SEEDLING	1,394,634	1,411,848	6,217,994	1,329,227	394,874	2,473,363	204,432	2,937,283	7,290,858	1,632,052	-	-	25,286,566	21,791,000	13,506,438
HARVESTING	3,541,075	696,085	3,451,998	1,313,906	629,316	912,814	1,408,184	186,267	1,667,542	105,527	-	-	13,912,715	16,879,000	13,440,418
DEPRECIATION	748,841	1,055,159	1,025,164	485,596	150,164	502,789	398,251	442,669	708,856	111,324	107,891	-	5,736,704	-	2,789,208
TOTAL COST OF PRODUCT.	24,911,847	16,634,849	42,360,490	14,180,304	4,051,409	13,227,503	11,798,264	9,999,683	29,128,106	3,591,796	20,182,994	1,262,595	191,329,841	187,996,000	155,253,244
CURING INTO COPRA/ DISPOSE	90,869	27,778	196,931	77,000	40,098	77,528	66,417	80,949	117,340	29,452	-	-	804,361	1,200,000	1,479,731
ANIMAL HUSBANDRY	861,350	383,233	541,954	732,026	7,385	-	423,650	-	310,444	-	-	-	3,260,043	3,526,000	3,108,347
AMORTIZATION	707,901	323,492	730,301	230,719	103,677	329,365	138,623	690,735	2,207,824	-	1,319,313	-	6,781,948	-	6,390,594
TOTAL EXPENDITURE	26,571,967	17,369,352	43,829,676	15,220,049	4,202,569	13,634,396	12,426,954	10,771,367	31,763,715	3,621,248	21,502,306	1,262,595	202,176,193	192,722,000	166,231,916
NET SURPLUS/(DEFICIT)	(8,288,035)	(13,285,878)	10,480,604	(6,605,160)	1,144,052	(2,532,923)	19,807,132	(3,708,439)	(9,246,753)	(1,248,814)	(14,218,249)	138,093	(27,564,371)	55,490,000	36,738,041

Notes to the Financial Statements

As at 31 December

	2018 BUDGET Rs.	2018 ACTUAL Rs	2017 ACTUAL Rs
Note 03 TRANSFERS FROM OTHER ENTITIES			
RECURRENT GRANT	265,000,000	236,930,000	207,620,000
ESTATE PROFIT TRANSFER	8,000,000	-	7,000,000
	273,000,000	236,930,000	214,620,000
Note 05 OTHER REVENUE			
INTEREST ON LOAN & INVESTMENT		975,120	946,305
INCOME FROM MOTOR VEHICLES	750,000	724,183	555,933
SUNDRY INCOME	11,750,000	1,710,625	2,378,341
SALES CENTER INCOME	2,050,000	719,918	544,799
SALES OF PHEROMONE	450,000	382,798	482,225
SALES OF MONOCROTOPHOSE		-	-
INCOME PROJECTS		8,800	565,547
RESEARCH & DEVELOPMENT WRITE OFF		39,548,514	44,236,707
ASSETS WRITE OFF		34,482,233	31,967,778
PROJECTS EXPENSES WRITE-OFF		34,153,732	24,502,630
FOREIGN AID WRITEOFF		-	6,616,827
	15,000,000	112,705,923	112,797,092
Note 06 WAGES SALARIES AND EMPLOYEES' BENEFITS			
SALARIES ALLOWENCES & OVER TIME	163,009,000	158,409,231	141,543,564
BOARDS CONTRIBUTION TO ETF/EPF	22,265,000	21,183,312	19,872,704
BOARDS CONTRIBUTION TO MEDICAL AID	7,962,000	8,038,313	6,638,467
COCONUT ALLOWANCES	1,600,000	1,774,511	1,641,324
GRATUITY	11,000,000	23,492,627	14,906,578
	205,836,000	212,897,995	184,602,638
Note 07 SUPPLIES AND CONSUMABLES USED			
SUPPLIERS AND CONSUMABLES	8,400,000	12,668,564	10,087,645
CONTRACTUAL SERVICES	29,500,000	10,427,672	16,576,387
MAINTENANCE	10,072,000	31,658,787	22,506,958
	47,972,000	54,755,023	49,170,990

Notes to the Financial Statements (Contd...)

Note 08 Research & Development Expenses Write Off

Description (Thrust Area)	CODE	WRITE OFF YEAR 2018	WRITE OFF YEAR 2017
(1) Crop Protection			
1.1 Crop Protection Division			
Major Pests	257	20,630.82	1,602,696
Minor Pests	258		
Diseases	259	281,155.32	582,814
Protection services	260	1,433,716.54	3,011,916
Waligama Leaf Wilt Disease	287		
Maintenance of Predator Lab	289		
Plesisps Beetle	290	107,146.25	180,298
		1,842,648.93	5,377,724
(2) Crop Production			
2.1 Agronomy Division			
Soil Moisture Conservation	261	366,550.50	509,115
Low Yielding Palms	262	92,837.12	950,606
Farming System	263	1,159,078.09	483,002
Bio-energy Production	264	13,488.57	63,530
Inter Cropping	265	161,851.64	506,726
Weed Management	266		10,541
Poverty Alleviation Studies	267	2,591,378.83	1,931,211
Animal Husbandry	268	220,214.88	441,120
Vermi Culture	269		1,634
Coconut Planting Systems	270	609,016.36	782,839
Organic Farming	271	18,044.00	438,178
Coconut Sheep Intergrated Farm	445		
		5,232,459.99	6,118,500
2.2 Oil Plam			
Oil farm research	291		30,265
Land Suitability Assessment	292		120,000
Land & Field Management	293		7,100
Genetic Improvement	294		
Clonel Sudies	295		423
Soil & Fertilizer Studies	296		
Environment Physiology Studies	297		
Pest & Diseases Management	298	1,100.22	
		1,100.22	157,788

Description (Thrust Area)	CODE	WRITE OFF YEAR 2018	WRITE OFF YEAR 2017
2.3 Soil & Plant Nutrition Div.			
Low cost Material	272	684,116.43	451,303
Fertilizer Mixture	273	270,463.35	516,733
D.F.R.	274	175,280.34	260,331
Micronutrients	275	421,364.42	1,032,183
Fertilizer Application	276	9,262.00	42,740
Irrigation	277	1,975,779.97	1,608,694
Nutrient Mapping	278	79,528.00	298,024
Organic Manure	279	815,733.74	1,067,935
Land suitability assesment	288	4,431,528.25	5,277,943
		5,277,943.01	5,987,482
(3) Crop Improvement-GPBD			
Evalu. Exis. Co. Cultivars	280		5,703
Dev. New co. Cultivars	281	2,411,152.70	2,117,417
Conse. Eva. Co. Germplasm	282	1,560,091.92	765,185
		3,971,244.62	2,888,305
(4) Coconut Processing-CPRD			
Improv.Kernal Based Product	225	685,557.77	738,316
Sap Based Product	226	1,684,910.09	572,245
Project on Coconut Oil	255	4,225,079.19	5,051,304
Project on Product Develop.	256		63,980
		6,595,547.05	6,425,844
(5) Agriculture Economics			
Socio Economy Studies	286	417,410.81	593,269
		417,410.81	593,269
Total			26,839,374
(6) Development & Services Related to Crop Production			
Drought Study - Middeniya (PPD)	400	16,546.40	114,159
Phosphate Sources - Middeniya (PPD)	401	2,095,435.54	2,227,344
Monthly Harvesting Impact(PPD)	402	1,080,486.85	693,791
Development & Maintenance of Middeniya R.C.(ME)	403	260,055.50	684,357
Assessment & Improv. Of soil Quality Dep.Co.Land	404	152,360.88	1,322,392
Yield Improv. Co. Land by Rain Water Harve. Tech.	407	1,868,496.53	466,392
Consumer survey Nut Consumption & coco. Oil	408	247,526.49	80,204
Production of Dihaploids (TCD)	409	589,651.11	385,915
Balance c/d		6,310,559.30	5,974,554.48

Description (Thrust Area)	CODE	WRITE OFF YEAR 2018	WRITE OFF YEAR 2017
Balance c/f		6,310,559.30	5,974,554.48
Biofertilizer for co.Indigenouse arbuscular mycorrizza	428		
Applying Zn & Cu sources for coconut palm	429		
Formulation of an Effective Fertilizer Mix.Young Coco.	430		
Use of locally K sources as Fertilizer for coconut(Bio)	431		
Improv. of soil Ferti.coco. Land Through Vermiculture	446	-	-
		6,310,559.30	5,974,554.48
(7) Development & Services Activities Related to Genetical Improvement of Coconut (Gpb)			
Construction of a Coconut Genome map	411	207,470.71	309,782
Constr. Of a Population for Mpping QTL Acaria Mite	412		147,048
Estab. P.S.G. for mass Production of CRISL98	414	189,524.39	67,742
Upgrading ISG to Increase the Produ. Of CRIC 65	415	55,819.01	22,502
Function of the Seed Production Unit	417	935,045.55	3,629,209
		1,387,859.66	4,176,284
(8) Development & Services Related to Crop Protection			
Coconut Mite Research & Development (CPD)	418	244,412.10	155,624
Extension Programs for Mite Management	419	918,112.56	460,787
Impact of mite damage on yeild at spatial & temp. scale	420	823,684.43	17,555
Determi. Proba. Casues of palm decline multidis. Project	421	-	
Manag. Of black beetal using pherom. & Oryctes(CPD)	433	87,385.00	113,856
Power driven sprayer to tall coconut plams	434		
		2,073,594.09	747,822
(9) Development & Services Related to Coconut processing & Value Addition (CPRD)			
Dev. & Popula.organic Pro. & Processing Of Coconut	405		
Vergine oil - value addition	422	9,117.00	26,218
Dev.& Impro. Co. coir retting thro. Intrudu.Cons. Micro	423	871,942.82	232,666
Dev.& Impro. Coconut fibre based Products	424	312,438.48	151,349
Dev. Prod. Of high qua. Charcoal & Copra	425		
		1,193,498.30	410,234

Description (Thrust Area)	CODE	WRITE OFF YEAR 2018	WRITE OFF YEAR 2017
(10) Development & Services Related to Coconut processing & Value Addition			
Develop. Farm machinery for coconut sector (CPRD)	435	-	5,440
Coconut milk pouch for household use(CPRD)	436		
Coconut water vinegar manufacturing method(CPRD)	437		
		-	5,440
(11) Agricultural Economics			
Mechanization & the demand of machinery co. Indus.	438	69,808.00	70,865
Increasing farmers through toddy tapping	439		-
Fertilizer use in incre. Productivity & Profitability C. P.	440		-
		69,808.00	70,865
(12) Transfer of Technology			
Eletronic print media & Techn. transfer Prog (TTD)	441	5,080,448.03	4,116,634
Development of field models & exhibits (TTD)	442	115,908.97	281,316
Farmer field school Expansion (TTD)	443	-	25,630
Impro. farm practies in mini coco. Trangle Hambantota (TTD)	444	812,814.12	954,453
	445	12,084.00	634,101
		6,021,255.12	6,012,134
Total			
		39,548,514.34	44,236,707
GRAND TOTAL			
		39,548,514.34	44,236,707

Note 09 OTHER EXPENSES

	2018 BUDGET Rs.	2018 ACTUAL Rs.	2017 ACTUAL Rs.
TRAVELLING	1,502,000	1,383,402	646,437
EXPENSES- PROJECTS	-	37,044,762	24,502,630
EXPENSES- CESS	-	3,629,331	3,628,535
BOARD MEMBERS FEES	935,000	688,489	1,112,885
WELFARE	2,500,000	3,837,187	2,980,771
OTHER OPERATING EXPENSES	6,255,000	403,638	970,512
EXPENSES OF C.P.M COURSE	-	1,760,698	-
	11,192,000	48,747,508	33,841,770

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	VEHICLES	OFFICE , ENGINEERING, NETWORK, COMPUTER EQUIPMENT	OFFICE & HOUSEHOLD FURNITURE	TOTAL 2018	TOTAL 2017
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<u>COST</u>									
AS AT 01-01-2018	1,522,283,874	260,189,994	134,595,669	281,848,550	92,980,802	67,486,869	28,695,357	2,388,081,116	2,324,867,836
ADDITIONS	17,500,000	22,585,418	10,414,299	22,862,446	858,600	8,162,517	2,007,449	84,390,730	71,066,221
DSPOSALS	-	-	-	2,045,782	1,084,750	2,708,435	310,181	6,149,147.26	7,852,941
AS AT 31-12-2018	1,539,783,874	282,775,413	145,009,968	302,665,214	92,754,652	72,940,952	30,392,625	2,466,322,698	2,388,081,116
<u>ACCUMULATED DEPRECIATION</u>									
AS AT 01-01-2018	-	84,654,749	36,779,509	120,867,036	76,108,887	39,961,387	15,047,122	373,418,691.04	334,785,689.67
ADDITIONS	-	10,782,540	6,781,948	15,127,316	4,355,507	5,756,805	1,452,345	44,256,462	40,318,619
DSPOSALS	-	-	-	252,224	-	60,558	178,129	490,911.74	1,685,618
AS AT 31-12-2018	-	95,437,289	43,561,457	135,742,128	80,464,395	45,657,635	16,321,337	417,184,240.85	373,418,691.04
CARRYING VALUE	-	84,654,749	36,779,509	120,614,812	76,108,887	39,900,829	14,868,992	372,927,779.30	333,100,071.77
WORKING PROGRESS								32,062,467	8,938,860
AS AT 31 DECEMBER 2018	1,539,783,874	187,338,124	101,448,511	166,923,086	12,290,258	27,283,317	14,071,288	2,081,200,924	2,023,601,284
AS AT 31 DECEMBER 2017	1,522,283,874	175,535,245	97,816,161	160,981,514	16,871,915	27,525,482	13,648,235	57,599,640	(57,599,640)

AMORTIZATION - ESTATE IMPROVEMENT	6,781,948
ASSETS DEPRECIATION - HEAD OFFICE	25,116,198
ASSETS DEPRECIATION - ESTATES	5,736,704
ASSETS DEPRECIATION - CESS PROJECTS	3,629,331
ASSETS DEPRECIATION - DONOR PROJECTS	2,992,280
	44,256,462

Notes to the Financial Statements (Contd)

As at 31 December

	2018 Budget Rs.	2018 ACTUAL Rs.	2017 ACTUAL Rs.
Note 11	<u>BIOLOGICAL ASSETS</u>		
LIVE STOCK		6,893,116	8,362,081
		6,893,116	8,362,081
Note 12	<u>OTHER NON FINCIAL ASSETS</u>		
LIBRARY BOOKS & PERIODICALS	500,000	3,159,059	3,055,587
	500,000	3,159,059	3,055,587
Note 13	<u>OTHER NON CURRENT ASSETS</u>		
DISTRESS & TRANSPORT LOAN		17,062,986	15,796,450
TRANSPORT LOAN		1,134,173	897,673
ESTATE FUNDS INVESTMENTS		42,600,000	48,600,000
		60,797,159	65,294,123
Note 14	<u>CASH & CASH EQUIVALANTS</u>		
BANK OF CEYLON - DANKOTUWA - A/C NO 3002507		14,148,477	20,726,324
BANK OF CEYLON - DANKOTUWA - A/C NO 3002942		47,014,516	13,748,882
BANK OF CEYLON - DANKOTUWA - A/C NO 3002556		23,359,489	34,186,792
BANK OF CEYLON - DANKOTUWA - A/C NO 3003088		8,340,206	78,986,266
BANK OF CEYLON - DANKOTUWA - A/C NO 3001528		1,201,138	1,182,011
BANK OF CEYLON - DANKOTUWA - A/C NO 82721768		3,501,262	-
		97,565,088	148,830,275
	<u>SAVINGS DEPOSITS</u>		
CASH IN TRANSIT		-	126,000
BOC - NEGOMBO		5,000	5,000
		5,000	131,000
TOTAL		97,570,088	148,961,275
Note 15	<u>RECIEVABLES</u>		
SALES LEDGER CONTROL ACCOUNT		32,223,012	7,750,786

	2018 Budget Rs.	2018 ACTUAL Rs.	2017 ACTUAL Rs.
LESS - BAD & DOUBTFUL DEBTS PROVISION FOR THE YEAR		(534,737)	(539,737)
		31,688,276	7,211,049
POST MASTER GENERAL		31,620	31,620
INTEREST RECIEVABLE ON FD		9,496,260	3,530,831
SALARY CONTROL		3,050	3,000
SUNDRY RECIEVABLES		308,348	308,348
		41,527,553	11,084,848
Note 16 INVENTORIES			
COCONUT		22,494,226	21,416,010
COPRA		297,883	444,918
GENERAL STORES/ESTATE		4,757,429	4,665,778
FERTILIZER		8,825,637	10,496,661
CHEMICAL & GLASSWARE		21,994,623	29,357,168
SEEDLING STOCKS		12,545,956	12,846,920
STOCK OF PUBLICATIONS		3,417,863	3,714,645
		74,333,615	82,942,099
Note 17 OTHER CURRENT ASSETS			
ADVANCE TO LOCAL SUPPLIERS		13,759,408	12,412,680
ADVANCE TO STAFF		234,400	37,377
MOBILIZATION ADVANCE		38,015,080	19,351,450
ESTATE FUNDS INVESTMENTS (CURRENT)		5,000,000	5,000,000
SECURITY DEPOSIT RECIEVABLE		245,650	245,650
DISTRESS LOAN		5,928,763.00	5,454,036
TRANSPORT LOAN		468,500.00	390,000
WAGES ADVANCE		43,350	12,766
FESTIVAL ADVANCE		578,800	488,800
SPECIAL ADVANCE		4,000	-
SPECIAL SALARY ADVANCE		160,500	158,500
FESTIVAL ADVANCES TO LABOURERS		444,590	467,519
SPECIAL SALARY ADVANCES TO LABOURERS		101,711	181,581
PETTY CASH -ISG		102,750	-
		65,087,502	44,200,358

	2018 Budget Rs.	2018 ACTUAL Rs.	2017 ACTUAL Rs.
Note 18	PAYABLES		
	ACCRUED EXPENSES	36,736,586	79,087,606
	EXPENCE CREDITORS	1,338,457	2,486,286
	UNCLAIMED WAGES	15,521	14,579
	UNPAID SALARIES	3,150	200
	PROVISION FOR AUDIT FEES	800,000	1,200,000
	PROVIDENT FUND (LABOURER)	499,441	1,096,735
	SECURITY DEPOSITS	1,199,532	476,716
	RETENTION	5,640,560	2,369,235
	SECURITY DEPOSIT STAFF	49,000	49,000
	TENDER DEPOSIT PAYABLE	849,950	1,025,900
	SUNDRY PAYABLES	865,411	865,411
		47,997,606	88,671,667
Note 19	EMPLOYEE BENEFITS		
	PROVISION FOR GRATUITY	148,528,236	123,312,909
		148,528,236	123,312,909

Notes to the Financial Statements (Contd...)

Assumptions are based on institute's best estimates and recognized as follows.

- Discounting Rate: Government Bond rate near to the closing date of financial statement reporting period and 10 years' service per employee.
- Employee Turnover ratio: Consider the employee turnover for the period of 2018.01.01 to 2018.12.31.
- Expected salary increment ratio: Consider the salary increments for the period 2018.01.01 to 2018.12.31 based on MSD circular 2/2016.

Note 21	NON CURRENT LIABILITIES		
	CONTRIBUTED CAPITAL - PROJECTS	171,588,087.82	54,776,594
		171,588,087.82	54,776,594

*Notes to the Financial Statements (Contd...)***DISCLOSURE**

1. Actions have been taken to filled 10 cases against third parties by the CRI

The following cases are regarding the bond violated officers of CRI

NAME	RECIEVABLE BOND VALUE	ACTION TAKEN
Mr. B. H. C. Mendis	1,014,780.00	All the documents related to this case have been submitted to the Department of Attorney General(File No.C/245/15/CRI).Although the department of attorney general informed to submit this file to Mr.Merl E. Dalpadadu(attorney at law),his office was closed.then the relevant file sent back to the Department through the letter dated on 2018.10.12
Dr. (Mr.) K. B. Dasanayake	2,039,715.00	As per the case report issued on 2017.10.10 under the case no 2625/M,attorney general has already taken an action to send summon to the foreign address of this defendant.
Ms. M. G. F. S. Jayasundara	3,345,424.66	It is stated that there is a problem with foreign address of this depfendant.But a new address was revealed through the internet & informed it to the lawyer on 2017.10.20.Further,summons of the 2nd & 3rd defendant have been returned due to unavailability. Divisional secretary also has informed that the defendant was not available in this address(Case No.1917/M).we have already informed to the lawyer through the letter dated on 2018.02.08 for taking necessary action to find the addresses of above defendant through the commission of election .
Dr. (Mr.) N. A. K. De Silva	3,024,297.60	All the documents related to the written submission have been presented to the court on 28.09.2017 by the lawyer,which were issued by the department of attorney generals.The court ordered to enter the names of 2nd & 3rd defendants for this case(Case No.3010/M).written submission presented on 218.06.05.
Dr. (Mrs.)J.M.M.A. Jayasundara	847,880.00	Two advisory letters were received from the department of attorney general with the explanation of the complain done by Mrs.jayasundara at labour office.But,due to the difference between this two answers,further clarifications are waiting from the department of attorney general's.

Mr. H. P. S. Jayasundara	2,078,905.33	The summons have been already handed over to Mr. Densil Fonseka (attorney at law) to forward to the court (Case No.2096/M).
Mr. R. A. J. R. Perera	1,068,165.00	Department of attorney general has informed that this case file was closed since the address of the defendant couldn't be found for handing over the decision.
Mrs. P. G. P. Hewawitharana	1,059,170.00	She has been informed to pay off the total bond value of Rs.2,993,945.18. But she has already paid the sum Rs.1,934,775.18. The balance amount to be paid by her is Rs.1,059,170.00. She has requested to discuss with the department of attorney general to pay off this balance amount through her lawyer. But, the Board has decided to continue the case.
Dr.(Ms).C.S Somasiri	11,907,933.05	All the documents have been already submitted to the department of attorney general.
Dr(Mrs.).H.M.I.K.Herath	3,090,747.03	All the documents have been already submitted to the department of attorney general.

- An extent of 75 acres from the Middeniya farm has been temporary released for 30 years by the Assistant Divisional Secretary of Katuwana to the Ministry of Plantation Industries on October 7, 2004 and it was Vested to Coconut Research Institute on October 11, 2004 by the Ministry of Plantation Industries for stabilizing of sub Coconut Research Centre in Southern Province.
- The following Funds have been credited to the Capital Current Account (Ac No.3002556) of the Coconut Research Institute, which have been allocated for specified tasks of the CRI but not Utilized.

Rs.10,000,000.00	Sold amount of the Land of Makandura Seed Garden to the wayamba University.
Rs. 9,522,210.00	Returned amount from the Ceylon Electricity Board of the Payment for the Supply of 3 Phase Electricity to the Poonarin Seed Garden.
Rs. 4,110,400.00	Returned amount from the SL Army of the payment for the Clearance the Land of Poonarin Seed Garden.

- It is stated that Rs.6,165,732.04 has been granted by the ministry of plantation Industries for the Strengthening the Research Institute programme. This amount also has credited to the Capital Treasury grant Account.
- Unsettled Advance amount of Ambakelle Seed Garden is 102,750.00.

6. Committed Liabilities for the year 2018 are as Follows.

Company Name	Item	Amount	PO No
Avon Pharmo Chem	Chemical	8,305.30	9615
Analytical Instrument	Chemical & Glassware	80,624.55	10112
Exodus Lab Tech (Pvt) Ltd	Chemical & Glassware	114,300.00	10115
Microtech Biological (Pvt) Ltd	Chemical & Glassware	66,240.00	10119
Avon Pharmo Chem (Pvt) Ltd	Chemical & Glassware	253,555.00	10120
Exodus Lab Tech (Pvt) Ltd	Chemical & Glassware	646,100.00	10121
Analytical Instrument	Chemical & Glassware	105,742.50	10122
S & D Associates	Chemical & Glassware	8,671.50	10124
Analytical Instrument	Chemical & Glassware	206,031.70	10125
Avon Pharmo Chem	Chemical & Glassware	9,740.50	10262
		12,844.35	
		12,309.60	
Sanduni Offset Printers (Pvt) Ltd	Printing Technology Update - 2018	65,000.00	10354
		13,800.00	
Hemsons Internationl (Pte) Ltd	Chemical & Glassware	11,632.25	10269
		4,450.50	
Scientific Instruments (Pvt) Ltd	Chemical	15,924.58	10284
Analytical Instrument	Chemical	25,325.30	10361
P&T Trading (Pvt)Ltd	Centrifuge Rotar	258,865.00	10381
Analytical Instrument	Chemical/Glassware	20,345.80	10389
		40,910.10	
Avon Pharmo	Chemical/Glassware	15,387.00	10390
Hemsons Internationl (Pte) Ltd	Chemical/ Glassware	3,381.00	10391
		19,032.50	
Avom Pharmochem	Chemicals	2,585.20	10503
Analytical Instrument	Chemical/ Glassware	25,564.50	10504
Alpha Labs	Chemical/ Glassware	58,000.00	10505
		19,000.00	
Creative Information	UPS Batteray	11,400.00	10555
Ited Technologies	1.2 KVA UPS	8,500.00	10559
Ited Technologies	Monochrome Laser Printer	50,000.00	10560
Agstar PLC	SOP	39,000.00	10561
Polypak Secco (Ltd)	Polythene	13,893.87	10563
		11,265.30	

Company Name	Item	Amount	PO No
Kani Iron Works	Test Tube Racks	22,000.00	10564
Babylon Industries (Pt)Ltd	Test Tube Racks	139,000.00	10572
Pro Creations	Seedling Certification Tags	1,470,300.00	10578
Polypak Secco (Ltd)	Polythene	11,382.56	10584
Sri Lanka State	File Cupboards	43,649.98	10583
Industrial Safety Equipment	Chemical Masks	44,850.00	10592
Polypak Secco (Ltd)	Polythene	22,413.09	10659
Abans PLC	Air Conditioner	102,798.50	10662
Creative Information Technologies (Pvt) Ltd	Toner Cartridge	11,250.00	10591
Exprographic Book (Pvt)Ltd	Library Books	103,471.30	10551
Sesha Print & Grapic	Booklet	380,000.00	10553
Analytical Instruments (Pvt) Ltd	Chemical and Glassware	88,312.53	10668
		72,967.50	
Avon Pharmo Chem (Pvt) Ltd	Chemical and Glassware	205,873.00	10672
		27,071.00	
		32,637.00	
Microtech Biological (Pvt) Ltd	Chemical and Glassware	28,750.00	10673
Diabetes Endocrinology Center	Sample Collection	214,525.00	9649
Hemsons Internationl (Pte) Ltd	Chemical and Glassware	4,151.50	9079
Hemsons Internationl (Pte) Ltd	Chemical	6,940.25	9102
Avon Pharmo Chem (Pvt) Ltd	Chemical	2,585.20	9106
Ominro Medicals (Pvt) Ltd	Glassware	12,132.60	9122
Exodus Lab Tech (Pvt) Ltd	Chemicals	144,100.00	9124
Avon Pharmo Chem (Pvt) Ltd	Chemicals	6,720.60	9125
Exodus Lab Tech (Pvt) Ltd	Glassware	15,000.00	9148
Transmed Internaational (Pte) Ltd	Glassware	1,811.25	9255
Avon Pharmo Chem (Pvt) Ltd	Chemical and Glassware	19,757.00	9259
		26,827.20	
Avon Pharmo Chem (Pvt) Ltd	Chemical	14,756.80	9260
Pro Creations	Digital Posters	73,500.00	9460
Analytical	Glassware	49,984.75	9483
Lion chem	Chemical	47,955.00	9509
Total		5,705,201.51	

*Notes to the Financial Statements (Contd...)***Special Projects**

Company Name	Item	Amount	PO No
Abans PLC	A/C Machines - Modernization of CPRD Lab	1,674,781.80	10671
Abans PLC	A/C Machine 36000 BTU	303,050.30	
Iceman Technologies	Cool Room	4,492,590.00	
Hayleys Agriculture Holdings Ltd	Drip Irrigation System ISG- step i	1,127,000.00	9376
Jinasena (Pvt)Ltd	Hose Irrigation -Pallama step i	4,860,705.00	9395
Central Engineering Consultancy bureau	Consultant	1,700,000.00	
Jayarathna Contract	Irrigation Work MOSG	3,366,015.49	10175
Jinasena (Pvt)Ltd	Hose Irrigation Kinyama	5,474,154.41	10355
TechnoLabs Lanka (Pvt)Ltd	Chemical/ Glassware	36,000.00	10506
Sea Laboster Enterprises	Palm Oil	630,000.00	10549
Jinasena (Pvt)Ltd	Hose Irrigation -Pallama step ii	698,880.00	10599
Hayleys Agriculture Holdings	Drip Irrigation System ISG- step ii	1,319,213.30	10600
Abans PLC	Air Conditioner	152,999.45	10662
Wemara constructions Pvt Ltd	Construcion of CPRD Lab	44,224,437.54	
Total		70,059,827.29	
Grand Total		75,765,028.80	

தேசிய கணக்காய்வு அலுவலகம்
NATIONAL AUDIT OFFICE



மேன் தாயை
எனது இல. }
My No. }

පිට්ටේ/ඩි/පිආර්ඩි/01/18/03

உமது இல.
Your No.

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திகதி
Date } 2019 මැයි 30 දින



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පොල් පර්යේෂණ මණ්ඩලය

පොල් පර්යේෂණ මණ්ඩලයේ 2018 දෙසැම්බර් 31 දිනෙන් අවසන් වර්ෂය සඳහා වූ මූල්‍ය ප්‍රකාශන සහ වෙනත් තොතික නියාමන අවශ්‍යතා පිළිබඳව 2018 අංක 19 දරන ජාතික විගණන පනතේ 12 වන වගන්තිය ප්‍රකාර විගණකාධිපති වාර්තාව.

යථෝක්ත වාර්තාව මේ සමඟ එවා ඇත.

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පිටපත : 01. ලේකම්, වැවිලි කාර්මාන්ත අමාත්‍යාංශය

02. ලේකම්, මුදල් අමාත්‍යාංශය

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தேசிய கணக்காய்வு அலுவலகம்

NATIONAL AUDIT OFFICE



මගේ අංකය
எனது இல.
My No.

පිටල්පි/ඩි/සී.ආර්.සී/01/18/03

ඔබේ අංකය
உமது இல.
Your No.



දිනය
திகதி
Date

2019 මැයි 30 දින

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පොල් පර්යේෂණ මණ්ඩලය

පොල් පර්යේෂණ මණ්ඩලයේ 2018 දෙසැම්බර් 31 දිනෙන් අවසන් වර්ෂය සඳහා වූ මූල්‍ය ප්‍රකාශන සහ වෙනත් තේනෙකි හා නියමිත අවශ්‍යතා පිළිබඳව 2018 අංක 19 දරන ජාතික විගණන පනතේ 12 වන වගන්තිය ප්‍රකාරව විගණකාධිපති වාර්තාව

1. මූල්‍ය ප්‍රකාශන

1.1 තත්වගණනය කළ මතය

පොල් පර්යේෂණ මණ්ඩලයේ 2018 දෙසැම්බර් 31 දිනට මූල්‍ය තත්ත්ව ප්‍රකාශනය සහ එදිනෙන් අවසන් වර්ෂය සඳහා වූ මූල්‍ය කාර්යසාධන ප්‍රකාශනය , හිමිකම් වෙනස්වීමේ ප්‍රකාශනය සහ එදිනෙන් අවසන් වර්ෂය සඳහා මුදල් ප්‍රවාහ ප්‍රකාශනය සහ මූල්‍ය ප්‍රකාශන වලට අදාළ සටහන්, සාරාංශගත වැදගත් ගිණුම්කරණ ප්‍රතිපත්තිවලින් සමන්විත 2018 දෙසැම්බර් 31 දිනෙන් අවසන් වර්ෂය සඳහා වූ මූල්‍ය ප්‍රකාශන ශ්‍රී ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජයේ ආණ්ඩුක්‍රම ව්‍යවස්ථාවේ 154(1) ව්‍යවස්ථාව සමඟ සංයෝජිතව කියවිය යුතු 2018 අංක 19 දරන ජාතික විගණන පනතේ සහ 1971 අංක 38 දරන මුදල් පනතේ විධිවිධාන ප්‍රකාර මාගේ විධානය යටතේ විගණනය කරන ලදී. ආණ්ඩුක්‍රම ව්‍යවස්ථාවේ 154 (6) ව්‍යවස්ථාව ප්‍රකාරව මාගේ වාර්තාව යථා කාලයේදී පාර්ලිමේන්තුවේ සභාගත කරනු ලැබේ.

මාගේ වාර්තාවේ තත්ත්වගණනය කළ මතය සඳහා පදනම කොටසේ විස්තර කර ඇති කරුණු වලින් වන බලපෑම හැර, මණ්ඩලයේ 2018 දෙසැම්බර් 31 දිනට මූල්‍ය තත්ත්වය සහ එදිනෙන් අවසන් වර්ෂය සඳහා එහි මූල්‍ය ක්‍රියාකාරිත්වය හා මුදල් ප්‍රවාහ ශ්‍රී ලංකා රාජ්‍ය අංශයේ ගිණුම්කරණ ප්‍රමිතීන්ට අනුකූලව සත්‍ය හා සාධාරණ තත්ත්වයක් පිළිබිඹු කරන බව මා දරන්නා වූ මතය වේ.





1.2 තත්ත්වගණනය කළ මතය සඳහා පදනම

(අ) ශ්‍රී ලංකා රාජ්‍ය අංශ ගිණුම්කරණ ප්‍රමිත වලින් බැහැර වීම.

- ප්‍රමිත අංක 7හි 47 ඡේදය ප්‍රකාරව සෑම වර්ෂ තුනකට හෝ පහකට වරක් දේපල පිරිසිදු හා උපකරණ ප්‍රත්‍යාගණනය කළ යුතු වුවත්, පිරිවැය රු.1,522,283,874 ක් වූ ඉඩම් සහ පිරිවැය රු.210,074,759 ක් වූ ගොඩනැගිලි 2005 වර්ෂයෙන් පසුව ප්‍රත්‍යාගණනය කර ගිණුම් වලට ගෙන නොතිබුණි.
- ප්‍රමිත අංක 7හි 65 ඡේදය ප්‍රකාරව සම්පූර්ණයෙන්ම ක්ෂය කර තිබූ පිරිවැය රු.61,901,689 ක් වූ රථ වාහන 126 ක්, තව දුරටත් ප්‍රයෝජනයට ගනිමින් පැවතියද එම වාහන වල එල්දායි ජීවිත කාලය සලකා බලා ප්‍රත්‍යාගණනය කර නොතිබුණි.

(ආ) සමාලෝචිත වර්ෂයේ මණ්ඩලයෙන් ඉවත් කරන ලද වත්කම් මගින් ඉපයූ ලාභය ගණනය කිරීමේදී එම වත්කම් වලට අදාළ වර්ෂයේ ක්ෂය රු.82,750 ක් සහ රු.1,084,750 ක ක්ෂය වෙන් කිරීම්, ගිණුම් වලින් ඉවත් නොකිරීම හේතුවෙන් සමාලෝචිත වර්ෂයේ වත්කම් ඉවත් කිරීමේ අලාභය රු.1,167,500 කින් අඩු ගණනය වී තිබුණි. මේ හේතුවෙන් දේපල පිරිසිදු උපකරණ පිරිවැය රු.1,084,750 කින් මූල්‍ය තත්ත්ව ප්‍රකාශනයේ වැඩියෙන් දක්වා තිබුණි.

(ඇ) සමාලෝචිත වර්ෂයේ රසායනාගාර උපකරණ මිලදී ගැනීම් රු.2,200,000 ක් සහ මාර්ගයක් කොන්ක්‍රීට් කිරීම් රු.9,850,658 ක ප්‍රාග්ධන වියදම් වර්ෂයේ පුනරාවර්ජන වියදම් ලෙස දක්වා තිබීම හේතුවෙන් වර්ෂයේ ලාභය රු.12,050,658 ක් අඩුවෙන් දක්වා තිබුණි.

(ඈ) මූල්‍ය කාර්යය සාධන ප්‍රකාශයේ පාරිතෝෂිත වෙන්කිරීම් රු.39,139,186 ක් වුවත් මුදල් ප්‍රවාහ ප්‍රකාශයේ මෙහෙයුම් ක්‍රියාකාරකම් යටතේ මුදල්මය නොවන වෙනස් වීම් යටතේ එය රු.38,780,938 ක් ලෙස දක්වා තිබීම හේතුවෙන් මෙහෙයුම් ක්‍රියාකාරකම් වලින් ජනනය වන ශුද්ධ මුදල් ප්‍රවාහය රු.358,248 ක් අඩුවෙන් නිරූපණය විය.

(ඉ) විගණනය සඳහා සාක්ෂි නොවීම.

2018 දෙසැම්බර් 31 දිනට පැවති රු.32,223,012 ක ණය ගැනි හා රු.1,338,457 ක ණය හිමි ශේෂ තහවුරු කරගැනීම සඳහා ශේෂ සනාථ කිරීම් විගණනය වෙත ඉදිරිපත් නොවීය.



ශ්‍රී ලංකා විගණන ප්‍රමිතිවලට (ශ්‍රී.ලං.වි.ප්‍ර) අනුකූලව මා විගණනය සිදු කරන ලදී. මෙම විගණන ප්‍රමිති යටතේ වූ මාගේ වගකීම, මෙම වාර්තාවේ මූල්‍ය ප්‍රකාශන විගණනය සම්බන්ධයෙන් විගණකගේ වගකීම යන කොටසේ තවදුරටත් විස්තර කර ඇත. මාගේ තත්ත්වවගණනය කළ මතය සඳහා පදනමක් සැපයීම උදෙසා මා විසින් ලබාගෙන ඇති විගණන සාක්ෂි ප්‍රමාණවත් සහ උචිත බව මාගේ විශ්වාසයයි.

1.3 මූල්‍ය ප්‍රකාශන පිළිබඳ කළමනාකරණයේ සහ පාලනය කරන පාර්ශවයන්ගේ වගකීම

මෙම මූල්‍ය ප්‍රකාශන ශ්‍රී ලංකා රාජ්‍ය අංශයේ ගිණුම්කරණ ප්‍රමිතිවලට අනුකූලව පිළියෙල කිරීම හා සාධාරණ ලෙස ඉදිරිපත් කිරීම සහ වංචා හෝ වැරදි හේතුවෙන් ඇතිවිය හැකි ප්‍රමාණාත්මක සාවද්‍ය ප්‍රකාශනයන්ගෙන් තොරව මූල්‍ය ප්‍රකාශන පිළියෙල කිරීමට හැකිවනු පිණිස අවශ්‍ය වන අභ්‍යන්තර පාලනයන් තීරණය කිරීම කළමනාකරණයේ වගකීම වේ.

මූල්‍ය ප්‍රකාශන පිළියෙල කිරීමේදී, මණ්ඩලය අඛණ්ඩව පවත්වාගෙන යාමේ හැකියාව තීරණය කිරීම කළමනාකරණයේ වගකීමක් වන අතර, කළමනාකාරිත්වය මණ්ඩලය ඇවර කිරීමට අදහස් කරන්නේ නම් හෝ වෙනත් විකල්පයක් නොමැති විටදී මෙහෙයුම් නැවැත්වීමට කටයුතු කරන්නේ නම් හැර අඛණ්ඩ පැවැත්මේ පදනම මත ගිණුම් තැබීම හා මණ්ඩලයේ අඛණ්ඩ පැවැත්මට අදාළ කරුණු අනාවරණය කිරීමද කළමනාකරණයේ වගකීමකි.

මණ්ඩලයේ මූල්‍ය වාර්තාකරණ ක්‍රියාවලිය සම්බන්ධ වගකීම, පාලනය කරන පාර්ශවයන් විසින් දරනු ලබයි.

2018 අංක 19 දරන ජාතික විගණන පනතේ 16 (1) උප වගන්තිය ප්‍රකාරව, මණ්ඩලයේ වාර්ෂික සහ කාලීන මූල්‍ය ප්‍රකාශන පිළියෙල කිරීමට හැකිවන පරිදි ස්වකීය ආදායම්, වියදම්, වත්කම් හා බැරකම් පිළිබඳ නිසි පරිදි පොත්පත් හා වාර්තා පවත්වාගෙන යා යුතුය.

1.4 මූල්‍ය ප්‍රකාශන විගණනය සම්බන්ධයෙන් විගණකගේ වගකීම

සමස්තයක් ලෙස මූල්‍ය ප්‍රකාශන, වංචා සහ වැරදි නිසා ඇතිවන ප්‍රමාණාත්මක සාවද්‍ය ප්‍රකාශනයන්ගෙන් තොර බවට සාධාරණ තහවුරුවක් ලබාදීම සහ මාගේ මතය ඇතුළත් විගණකගේ වාර්තාව නිකුත් කිරීම මාගේ අරමුණ වේ. සාධාරණ සහතිකවීම උසස් මට්ටමේ සහතිකවීමක් වන නමුත්, ශ්‍රී ලංකා විගණන ප්‍රමිති ප්‍රකාරව විගණනය සිදු කිරීමේදී එය සැමවිටම ප්‍රමාණාත්මක අවප්‍රකාශනයන් අනාවරණය කරගන්නා බවට වන තහවුරු කිරීමක් නොවනු ඇත. වංචා සහ වැරදි තනි හෝ සාමූහික ලෙස බලපෑම නිසා ප්‍රමාණාත්මක අවප්‍රකාශනයන්



ඇතිවිය හැකි අතර, මෙම මූල්‍ය ප්‍රකාශන පදනම් කරගනිමින් පරිශීලකයන් විසින් ගනු ලබන ආර්ථික තීරණ කෙරෙහි බලපෑමක් විය හැකි බවට අපේක්ෂා කෙරේ.

මා විසින් වෘත්තීය විනිශ්චය සහ වෘත්තීය සැකසුමවින් යුතුව ශ්‍රී ලංකා විගණන ප්‍රමිති ප්‍රකාරව විගණනය කරන ලදී. තවද,

- වංචා හෝ වැරදි හේතුවෙන් මූල්‍ය ප්‍රකාශනවල ඇති විය හැකි ප්‍රමාණාත්මක සාවද්‍ය ප්‍රකාශනයන්ගේ අවදානම් හඳුනාගැනීමේදී හා තක්සේරු කිරීමේදී අවස්ථාවෝචිතව උචිත විගණන පටිපාටි සැලසුම් කිරීමෙන් වංචා හෝ වැරදි හේතුවෙන් ඇතිවන්නා වූ අවදානම් මඟහරවා ගැනීමට, ප්‍රමාණවත් සහ සුදුසු විගණන සාක්ෂි ලබා ගැනීම මාගේ මතයට පදනම් වේ. ප්‍රමාණාත්මක සාවද්‍ය ප්‍රකාශනයන්ගෙන් සිදුවන බලපෑමට වඩා වංචාවකින් සිදු වන්නා වූ බලපෑම ප්‍රබල වන අතර, දුස්සන්ධානය, ව්‍යාජ ලේඛන සැකසීම, වේතනාන්විත මහභූමි හෝ අභ්‍යන්තර පාලනයන් මඟහැරීම වංචාවක් ඇතිවීමට හේතුවේ.
- අවස්ථාවෝචිතව උචිත විගණන පටිපාටි සැලසුම් කිරීම පිණිස මණ්ඩලයේ අභ්‍යන්තර පාලනය සම්බන්ධයෙන් අවබෝධයක් ලබා ගන්නා ලද නමුත්, අභ්‍යන්තර පාලනයේ සම්පූර්ණත්වය පිළිබඳ මතයක් ප්‍රකාශ කිරීමට අදහස් නොකරයි.
- භාවිතා කරන ලද ගිණුම්කරන ප්‍රතිපත්තිවල සහ ගිණුම්කරන ඇස්තමේන්තු වල සාධාරණත්වය සහ කළමනාකරණය විසින් කරන ලද සම්බන්ධිත හෙළිදරව් කිරීම්වල යෝග්‍යතාවය අගයන ලදී.
- සිද්ධීන් හෝ තත්ත්වයන් හේතුවෙන් මණ්ඩලයේ අඛණ්ඩ පැවැත්ම පිළිබඳ ප්‍රමාණාත්මක අවිනිශ්චිතතාවයක් තිබේද යන්න සම්බන්ධයෙන් ලබාගත් විගණන සාක්ෂි මත පදනම්ව ගිණුම්කරණය සඳහා ආයතනයේ අඛණ්ඩ පැවැත්ම පිළිබඳ පදනම යොදා ගැනීමේ අදාලත්වය තීරණය කරන ලදී. ප්‍රමාණවත් අවිනිශ්චිතතාවයක් ඇති බවට මා නිගමනය කරන්නේ නම් මූල්‍ය ප්‍රකාශනවල ඒ සම්බන්ධයෙන් වූ හෙළිදරව්කිරීම් වලට මාගේ විගණන වාර්තාවේ අවධානය යොමු කළ යුතු අතර, එම හෙළිදරව්කිරීම් ප්‍රමාණවත් නොවන්නේ නම් මාගේ මතය විකරණය කළ යුතුය. කෙසේ වුවද, අනාගත සිද්ධීන් හෝ තත්ත්වයන් මත අඛණ්ඩ පැවැත්ම අවසන් වීමට හැකිය.
- හෙළිදරව් කිරීම් ඇතුළත් මූල්‍ය ප්‍රකාශනවල ඉදිරිපත් කිරීම්, ව්‍යුහය සහ අන්තර්ගතය ඇගයීමට ලක්කළ අතර ඒ සඳහා පාදක වූ ගනුදෙනු හා සිද්ධීන් උචිත හා සාධාරණ අයුරින් මූල්‍ය ප්‍රකාශනවල ඇතුළත් බව අගයන ලදී.



මාගේ විගණනය තුළදී හඳුනාගත් වැදගත් විගණන සොයාගැනීම්, ප්‍රධාන අභ්‍යන්තර පාලන දුර්වලතා හා අනෙකුත් කරුණු පිළිබඳව පාලනය කරනු ලබන පාර්ශවයන් දැනුවත් කරන ලදී.

2. වෙනත් නෛතික හා නියාමන අවශ්‍යතා පිළිබඳ වාර්තාව

2018 අංක 19 දරන ජාතික විගණන පනතේ පහත සඳහන් අවශ්‍යතාවයන් සම්බන්ධයෙන් විශේෂ ප්‍රතිපාදන ඇතුළත් වේ.

- 2018 අංක 19 දරණ ජාතික විගණන පනතේ 12 (අ) වගන්තියේ සඳහන් අවශ්‍යතාවන් අනුව, මාගේ වාර්තාවේ තත්ත්වගණනය කළ මතය සඳහා පදනම කොටසේ විස්තර කර ඇති කරුණු වලින් වන බලපෑම හැර, විගණනය සඳහා අවශ්‍ය සියලු තොරතුරු සහ පැහැදිලි කිරීම් මා විසින් ලබාගන්නා ලද අතර, මාගේ පරීක්ෂණයෙන් පෙනී යන ආකාරයට නිසි මූල්‍ය වාර්තා මණ්ඩලය පවත්වාගෙන ගොස් තිබුණි.
- 2018 අංක 19 දරණ ජාතික විගණන පනතේ 6 (1) (ඇ) (III) වගන්තියේ සඳහන් අවශ්‍යතාවය අනුව මණ්ඩලයේ ඉදිරිපත් කරන ලද මූල්‍ය ප්‍රකාශන ඉකුත් වර්ෂය සමඟ අනුරූප වේ.
- 2018 අංක 19 දරණ ජාතික විගණන පනතේ 6 (i) (ඇ) (iv) වගන්තියේ සඳහන් අවශ්‍යතාවය අනුව ඉකුත් වර්ෂයේදී මා විසින් සිදුකරන ලද නිර්දේශයන් ඉදිරිපත් කරන ලද මූල්‍ය ප්‍රකාශනවල ඇතුළත්ව ඇත.

අනුගමනය කරන ලද ක්‍රියාමාර්ග සහ ලබා ගන්නා ලද සාක්ෂි මත හා ප්‍රමාණාත්මක කරුණුවලට සීමා කිරීම තුල, පහත සඳහන් ප්‍රකාශ කිරීමට තරම් කිසිවක් මාගේ අවධානයට ලක් නොවීය.

- 2018 අංක 19 දරණ ජාතික විගණන පනතේ 12 (ඇ) වගන්තියේ සඳහන් අවශ්‍යතාවය අනුව මණ්ඩලයේ පාලක මණ්ඩලයේ යම් සාමාජිකයෙකුට මණ්ඩලය සම්බන්ධවී යම් ගිවිසුමක් සම්බන්ධයෙන් සෘජුව හෝ අන්‍යාකාරයකින් සාමාන්‍ය ව්‍යාපාරික තත්ත්වයෙන් බැහැරව සම්බන්ධයක් ඇති බව.
- 2018 අංක 19 දරණ ජාතික විගණන පනතේ 12 (ඊ) වගන්තියේ සඳහන් අවශ්‍යතාවය අනුව පහත සඳහන් නිරීක්ෂණ හැර යම් අදාල ලිඛිත නීතියකට හෝ මණ්ඩලයේ පාලක මණ්ඩලය විසින් නිකුත් කරන ලද වෙනත් පොදු හෝ විශේෂ විධානවලට අනුකූල නොවන ලෙස ක්‍රියා කර ඇති බව.



නීතිරීති / විධානයට යොමුව

විස්තරය

(අ) මු.රෙ. 396 (ඇ)

පාරිභෝගික ගෙවීම්, නඩත්තු වියදම් සහ රසායන උපකරණ මිලදී ගැනීම් වෙනුවෙන් ලබා දී තිබූ රු.349,140 ක් වටිනා චෙක්පත් 03 ක් මාස 06 කට වඩා වැඩි කාලයක් ගෙවීම් සඳහා බැංකුව වෙත ඉදිරිපත්ව නොතිබිය දී ඒ සම්බන්ධයෙන් මුදල් රෙගුලාසි ප්‍රකාරව කටයුතු කර නොතිබුණි.

(ආ) 2017 අංක 24 දරණ දේශීය ආදායම් පනතේ 85(i)(අ) වන වගන්තිය

කොන්ත්‍රාත් ගෙවීම් සඳහා ගෙවනු ලබන මුදල මසකට රු.50,000 ඉක්මවන්නේ නම් 5% ක රඳවා ගැනීමේ බද්දක් අඩු කර දේශීය ආදායම් දෙපාර්තමේන්තුව වෙත ප්‍රේෂණය කළ යුතු වුවත් පුද්ගලයන් 05 ක් සඳහා අවස්ථා 08 කදී ගෙවන ලද රු.7,778,442 ක් වන කොන්ත්‍රාත් ගෙවීම් සඳහා වන රු.388,922 ක රඳවාගැනීමේ බද්ද අඩු කර දේශීය ආදායම් දෙපාර්තමේන්තුව වෙත ප්‍රේෂණය කර නොතිබුණි.

- 2018 අංක 19 දරණ ජාතික විගණන පනතේ 12 (උ) වගන්තියේ සඳහන් අවශ්‍යතාවය අනුව මණ්ඩලයේ බලතල , කර්තව්‍ය සහ කාර්යයන්ට අනුකූල නොවන ලෙස කටයුතු කර ඇති බව.
- 2018 අංක 19 දරණ ජාතික විගණන පනතේ 12 (ඌ) වගන්තියේ සඳහන් අවශ්‍යතාවය අනුව මණ්ඩලයේ සම්පත් සකසුරුවම් ලෙස, කාර්යක්ෂම ලෙස සහ ඵලදායී ලෙස කාලසීමාවන් තුළ අදාළ නීතිරීති වලට අනුකූලව ප්‍රසම්පාදනය කර භාවිතා කර නොමැති බව

03. වෙනත් විගණන නිරීක්ෂණ

(අ) පොල් වගාව තුළ බැටළුවන් ඇති කිරීමේ ව්‍යාපෘතිය සඳහා 2016 සහ 2017 වර්ෂ වලදී රු.1,121,678 ක වියදමක් දරා තිබුණත් ව්‍යාපෘතිය භාරව සිටි නිලධාරියා සේවය හැරයාමේදී මෙම පර්යේෂණයට අදාළ තොරතුරු මණ්ඩලයට භාර නොදීම මත එකී ව්‍යාපෘතිය ක්‍රියාත්මක කිරීමට නොහැකි වී තිබුණි.



- (ආ) 2012 සහ 2013 වර්ෂ වලදී හඳුන්වා දී තිබූ කප්පුවන, කප්පෙන හා කප්පුව යන පොල් ප්‍රභේද ව්‍යාප්ත කිරීම සඳහා බීජ පොල් උයන් ස්ථාපිත කර බීජ නිෂ්පාදනය වැඩි කිරීමට මණ්ඩලයේ කලමණාකරණය ක්‍රියා නොකිරීම මත මෙම පොල් ප්‍රභේද ජනතාව අතර ව්‍යාප්ත වී නොතිබුණි.
- (ඇ) වියළි කාලගුණය හේතුවෙන් බීජ නිෂ්පාදනය අඩු වීම සලකා බලා අවශ්‍ය ජලය ලබා දීමට ප්‍රමාණවත් වාරි පද්ධති ස්ථාපිත කිරීම සහ නව පොල් ප්‍රභේද මගින් අස්වැන්න වැඩි කර ගැනීමට මණ්ඩලය විසින් ක්‍රියා නොකිරීම හේතුවෙන් 2017 වර්ෂයේ 1,107,642 ක් වූ බීජ නිෂ්පාදන 2018 වර්ෂයේදී 828,070 ක් දක්වා අඩු වී තිබුණි.
- (ඈ) වියළි කාලගුණ තත්ත්වයන් යටතේ පොල් ගසේ ක්‍රියාකාරීත්වය මනාව පවත්වාගෙන පොල් එලදාට ආරක්ෂා කර ගැනීමට උපකාරී වන පසේ ජීවත්වන ක්ෂුද්‍ර ජීවීන් හඳුනාගැනීමේ අරමුණින් ආරම්භ කරන ලද Isolation & Identification of Vascular Arbuscular Mycorrhizae (VAM) From Coconut Land ව්‍යාපෘතිය සඳහා සමාලෝචිත වර්ෂය අවසාන වන විට රු.273,000 ක වියදමක් දරා තිබූ අතර 2019 වර්ෂයෙන් නිම වීමට තිබූ මෙම ව්‍යාපෘති භාර පර්යේෂණ නිලධාරියා විදේශ ගත වීම හේතුවෙන් සමාලෝචිත වර්ෂයේදී නවතා දමා තිබූ අතර එම නිලධාරියා වෙනුවට වෙනත් නිලධාරියෙකු යොදවා පර්යේෂණ ක්‍රියාත්මක කිරීමට මණ්ඩලයට නොහැකි වී තිබුණි.
- (ඉ) ගොඩනැගිලි අළුත්වැඩියා වෙනුවෙන් 2012 වර්ෂයේ පෞද්ගලික ආයතනයකට රු.159,936 ක පූර්ව වැඩ සඳහා වූ අත්තිකාරම් මුදලක් ලබා දී තිබුණද අදාළ අත්තිකාරම් මුදල් පියවා ගැනීමට මේ දක්වා කටයුතු කර නොතිබුණි.
- (ඊ) වර්ෂ 1992 – 2014 කාල පරාසය තුළ විදේශ ගතව නැවත සේවයට නොපැමිණි විදේශ ශිෂ්‍යත්වලාභීන් 09 දෙනෙකුගෙන් ගිවිසුම් ප්‍රකාරව මණ්ඩලයට අයවිය යුතු රු.28,588,853 ක මුදල අදාළ නිලධාරීන්ගෙන් අයකර ගැනීමට නොහැකි වී තිබුණි.


 ඩබ්ලිව්.පී.සී. වික්‍රමරත්න
 විගණකාධිපති