ANNUAL REPORT 2018

NATIONAL INSTITUTE OF POST-HARVEST MANAGEMENT

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National Institute Of Post Harvest Management,
No 08,
Battaramulla Road,
Athulkotte.

Hon. Minister of Agriculture,
Ministry of Agriculture,
No 28,
Sri Jayawardenapura Mw,
Rajagiriya.

Hon Minister,

ANNUAL REPORT – 2018

In terms of section 14(2) of the Finance Act No 38 of 1971, we wish to submit Annual Report and the Statement of Accounts of National Institute Of Post Harvest Management, for the year 2018.

your faithfully

T.H.M.P. Sagara
Chairman
National Institute Of Post Harvest Management

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ACT AND LEGISLATIONS

The National Institute of Post-Harvest Management (Institute of Post-Harvest Technology) functioning under the purview of Ministry of Agriculture established on 19th June 2000 by the Extraordinary Gazette of the Democratic Socialist Republic of Sri Lanka No. 1137/10 for the purpose of carrying out post-harvest research and development on all agricultural crops. The newly established institute has taken over the functions of the Rice Processing Research and Development Centre (RPRDC) of the Paddy Marketing Board at Anuradhapura, which was set up with FAO/UNDP assistance in 1976. The new Institute has been assigned the functions and responsibilities for carrying out post-harvest research and development on not only rice and grains but also on other field crops, vegetables, fruits, spice crops and cut flowers. The name of the institute was changed as National Institute of Post-Harvest Management by the Extraordinary Gazette, 2093/26 of the Democratic Socialist Republic of Sri Lanka on 27.10.2018

MANDATE

According to the mandate given in the gazette notification, The National Institute of Post-Harvest Management is supposed to serve as the coordinating body to bring together all agencies concerned for the purpose of identifying and prioritizing the research needs and implementation of programs for the development of the postharvest technology in Sri Lanka.

VISION

To be the center of excellence in sustainable postharvest development for national food security

MISSION

Sustainable development of national food security through efficient and effective postharvest technological interventions to strengthen the supply and value chains of the agricultural produce and products with high quality and safe food, to cater to the domestic and export markets at competitive price.

BOARD OF MANAGEMENT

As at 31st December 2018

Chairman

Mr. T.H.M.P Sagara

Vice Chairman

Mr. Nishantha Liyanage

Members

Mr. R.M.D.K.G.N.B.Ranathunge

Lawyer.S.P.Kumara Gunarathna

Mr. M.S. Karunarathne

Mr. Priyantha Jayatissa

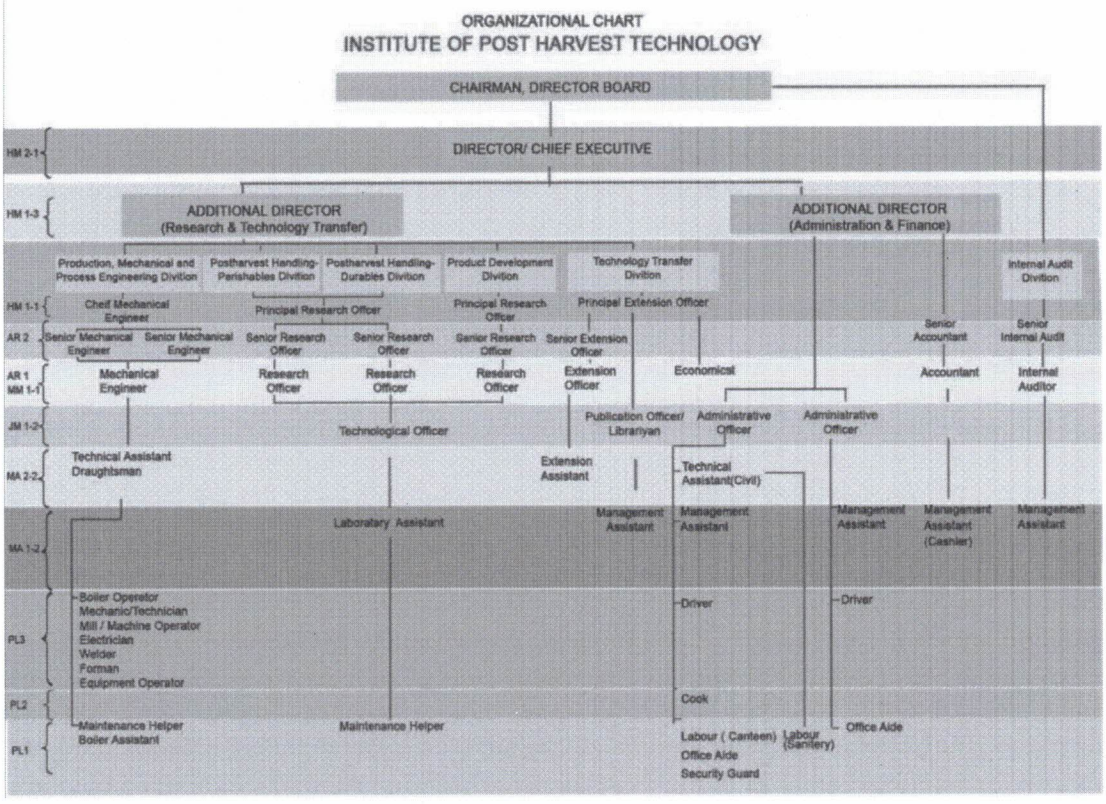
Mr. Ganegoda

Secretary to the Board

Eng. Mr.Mahesh Dissanayake
Acting Director of the Institute

ORGANIZATION STRUCTURE

Organization Structure as per the Scheme of Recruitment (SOR) approved



Institute has re-structured its divisions in 2018 as follows and is in the process of re-structuring total organizational structure and cadre.

1. Research division
2. Engineering division
3. Extension division
4. Development Project division
5. Laboratory Service division
6. Planning and Monitoring division
7. Administration division
8. Finance division
9. Academic division
10. Internal Audit Unit

SENIOR MANAGEMENT

As at 31st December 2018

DIRECTOR/CHIEF EXECUTIVE OFFICER
Eng. Mahesh Dissanayake

ADDITIONAL DIRECTOR (RESEARCH AND TECHNOLOGY TRANSFER)
Eng. H.M.A.P. Rathnayake

ADDITIONAL DIRECTOR (ADMINISTRATION AND FINANCE)
Mr. R.K.A.P. Ramanayake

RESEARCH DIVISION
Dr. (Mrs.) Nilanthi Wijewardhane
HOD | Principle Research Officer

ENGINEERING DIVISION
Eng. B.D.M.P.Bandara
HOD | Mechanical Engineer

EXTENSION DIVISION
Mrs. Chamindi Dissanayake
HOD | Senior Extension Officer

LABORATORY SERVICE DIVISION
Mr. Chaminda Gunawardhane
HOD | Research Officer

DEVELOPMENT PROJECT DIVISION
Mr. W.M.C.B.Wasala
HOD | Senior Research Officer

PLANNING AND MONITORING DIVISION
Mrs. Ruwanka Rathnayake
HOD | Research Officer

ADMINISTRATION DIVISION
Mr. R.K.A.P.Ramanayake
HOD | Additional Director (Admin & Finance)

FINANCE DIVISION
Mr. Niluka Illangasinghe
HOD | Accountant

ACADEMIC DIVISION
Eng. (Mrs.) Daminda Athaptthu
HOD | Mechanical Engineer

INTERNAL AUDIT UNIT
Mr. R.M.D.Rathnayake
HOU | Internal Auditor

MANAGEMENT COMMITTEES

As at 31st December 2018

AUDIT AND MANAGEMENT COMMITTEE

Name	Position
Mr. M.S.Karunarathne	Chairman
Mr. R.M.D.K.G.N.B.Ranathunge	Member
Eng. Mahesh Dissanayake	Secretary
Mr. R.M.D. Rathnayake	Convenor
Mr. J.A.S. D. Perera	Observer
Mr.U.S.L.Kumara	Observer

ADMINISTRATION COMMITTEE

Name	Position
Mr. R.M.D.K.G.N.B.Ranathunge	Chairman
Additional Director (A & F)	Secretary
Director	Member
Administrative Officers	Member

FINANCE COMMITTEE

Name	Position
Mr. M.S. Karunarathne	Chairman
HOD/Finance	Secretary
Additional Director (A & F)	Member

LEGAL COMMITTEE

Name	Position
Mr. Lawyer SPK Gunarathne	Chairman
Additional Director (A & F)	Secretary
Director	Member

INCOME DEVELOPMET COMMITTEE

Name	Position
Mr. Priyantha Jayatissa	Chairman
HOD/Development Project	Secretary
Additional Director (A & F)	Member
Additional Director (R & TT)	Member
HOD/Extension	Member
HOD/Engineering	Member
HOD/Lab Service	Member
HOD/Planning and Monitoring	Member

DEVELOPMENT PROJECT COMMITTEE

Name	Position
Mr. A.M.A.G.N.Karunathilake	Chairman
HOD/Planning and Monitoring	Secretary
HOD/Extension	Member
HOD/Development Project	Member

RESEARCH RELEASING COMMITTEE

Name	Position
Additional Director (R & TT)	Chairman
HOD/Extension	Secretary
HOD/Research	Member
HOD/Engineering	Member
HOD/Planning and Monitoring	Member

CHAIRMAN'S MESSAGE

The National Institute of Postharvest Management former Institute of Post-Harvest Technology (IPHT), operating under the Ministry of Agriculture and all areas of postharvest industry is addressed by its activities with the goal of enhancing food security in the country. The Institute of Post-Harvest Technology was established on 19th June 2000 by the Extraordinary Gazette of the Democratic Socialist Republic of Sri Lanka No. 1137/10 under the provisions of the State Agricultural Corporations Act. No. 11 of 1972 for the purpose of carrying out postharvest research and development activities pertaining to cereals, pulses, oil seeds, other field crops, fruits, vegetables, spice crops, ornamental plants and cut flowers. The name of the institute has been changed as National Institute of Post-Harvest Management by the Extraordinary Gazette of the Democratic Socialist Republic of Sri Lanka No. 2093/26 on 27.10.2018

With the aim of ensuring national food security, the institute has conducted 13 research projects and 08 development projects during the year of 2018. All these projects addressed the key issues of supply and value chains of economically important agricultural commodities. Further, proper post-harvest practices were introduced to the postharvest sector via development project and especially through awareness creation programs and continuous training and demonstrations of stake holders. And also, the project beneficiaries were provided with necessary infra-structure facilities for sorting, grading, safe ripening, packing and transportation, which have been identified as the key points in minimization of postharvest losses, both in quantity and quality. The institute initiated fruit handling and processing units with improved postharvest practices island wide.

Along with this, the institute was able to establish handling and processing units for mango (44 Units Island wide), banana (12 units in Anuradhapura district), papaya (12 units in Anuradhapura district) and guava (27 units in Anuradhapura district). Producing/providing 'safely ripen fruit in good quality' fruits was the foremost theme of these projects. By launching these handling and processing units, living standards of the beneficiaries have increased distinctly. Further, good quality fruits; mango, banana, papaya and guava are being provided to the consumers at a reasonable price while confirming higher income not only for the farmer but also for all the other stakeholders involved in the chain. The total fund received through the ministry of agriculture for research and development projects during the year of 2018was Rs.Mn.95.58225 Million.

Finally, with the success of these projects, reduction of postharvest losses is expected and it would lead to create a marked impact on agriculture of the country while uplifting the nation.

Based on the experience gathered during the year of 2018, I am confident that the Institute would be able to improve the postharvest industry in the years to come.

T.H.M.P Sagara
Chairman

EXECUTIVE REPORT | YEAR AT A GLANCE

The Year 2018 was very successful year to the institute. All four main activities of the institute viz. research and development, extension, training, consultancy & other services were aligned for the improvement of supply and value chain management practices of agricultural crops with special focus to the fruits and vegetable sector of the country.

RESEARCH AND DEVELOPMENT

During the year 2018 thirty two (32) research projects has been carried out. It consists three (03) research projects continued from year 2017 and twelve (12) research projects initiated in 2018.

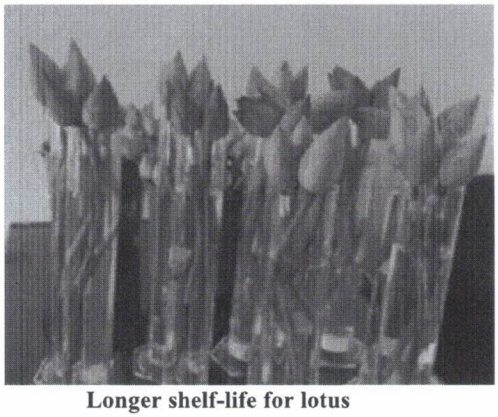
Besides, three (03) research projects were conducted as public-private partnership projects and funded by private sector. Two (2) projects were conducted as external funding research under the grant of NSF & NRC.

Another twelve (12) projects were conducted as student projects supervised by the Research officers, Extension officers and the Engineers of the institute.

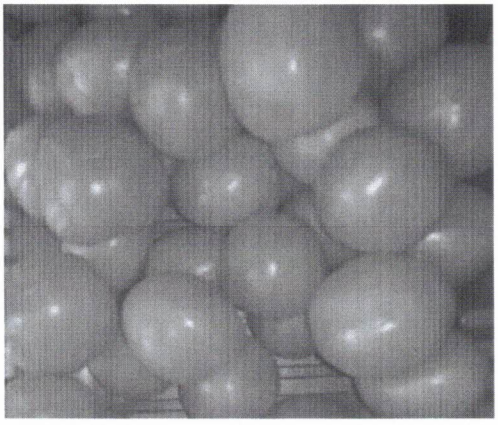
New Outputs

- Correct and novel technologies to improve the postharvest quality of agricultural commodities
- Increasing availability of the quality improved fruits in the market
- Quality improved products for the consumers and increased income of the producers

Legume based granular bar



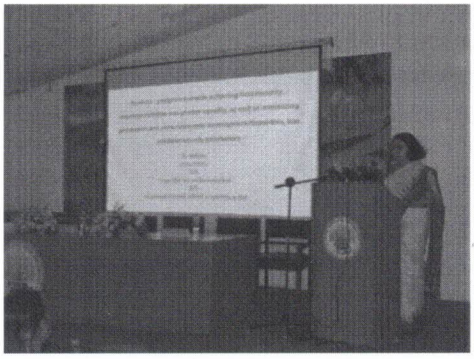
Longer shelf-life for lotus



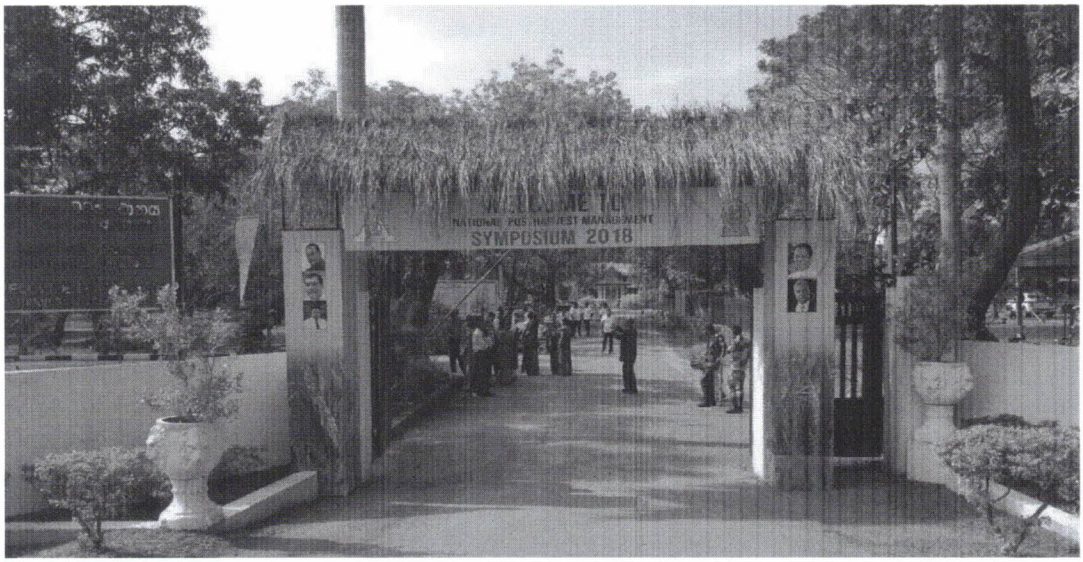
Optimum storage conditions for enhancing shelf life of tomato

National Postharvest Research Symposium 2018

We were able organized 2nd National Post Harvest Research Symposium on 19th October 2018 with the theme of '**our food –our future**'.

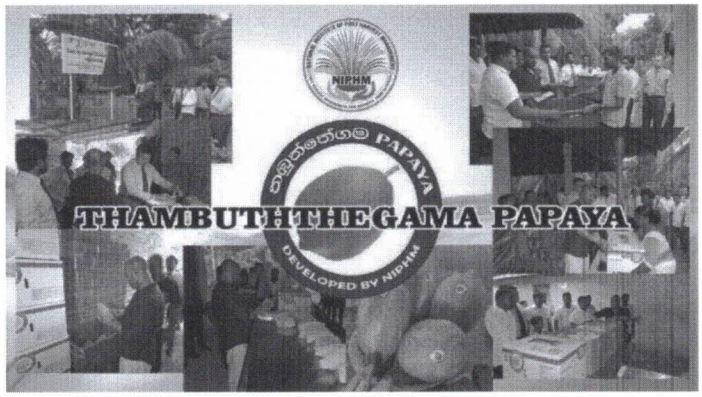


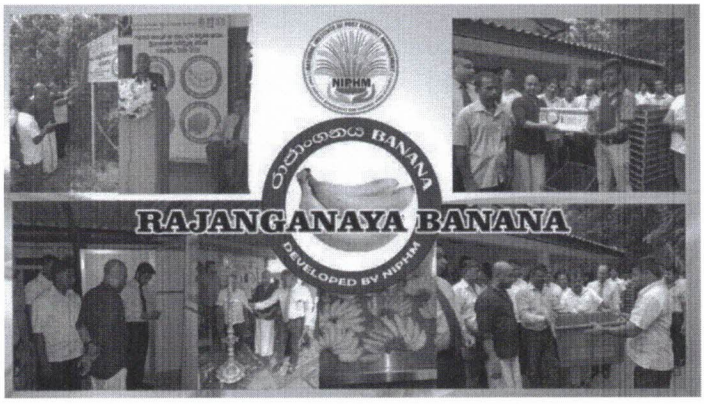
Dr. Shanthi Wilson former chairman of NIPHM and eminent scientist in the field of post-harvest technology of the country addressed the gathering as the key note speaker of the National Post Harvest Research Symposium 2018.



EXTENSION

Towards national food security by adopting new and appropriate technologies via Development Projects





Establishment of Mango, Papaya, Banana and Guava handling & processing units via the development projects were conducted in year 2018 too throughout the country.

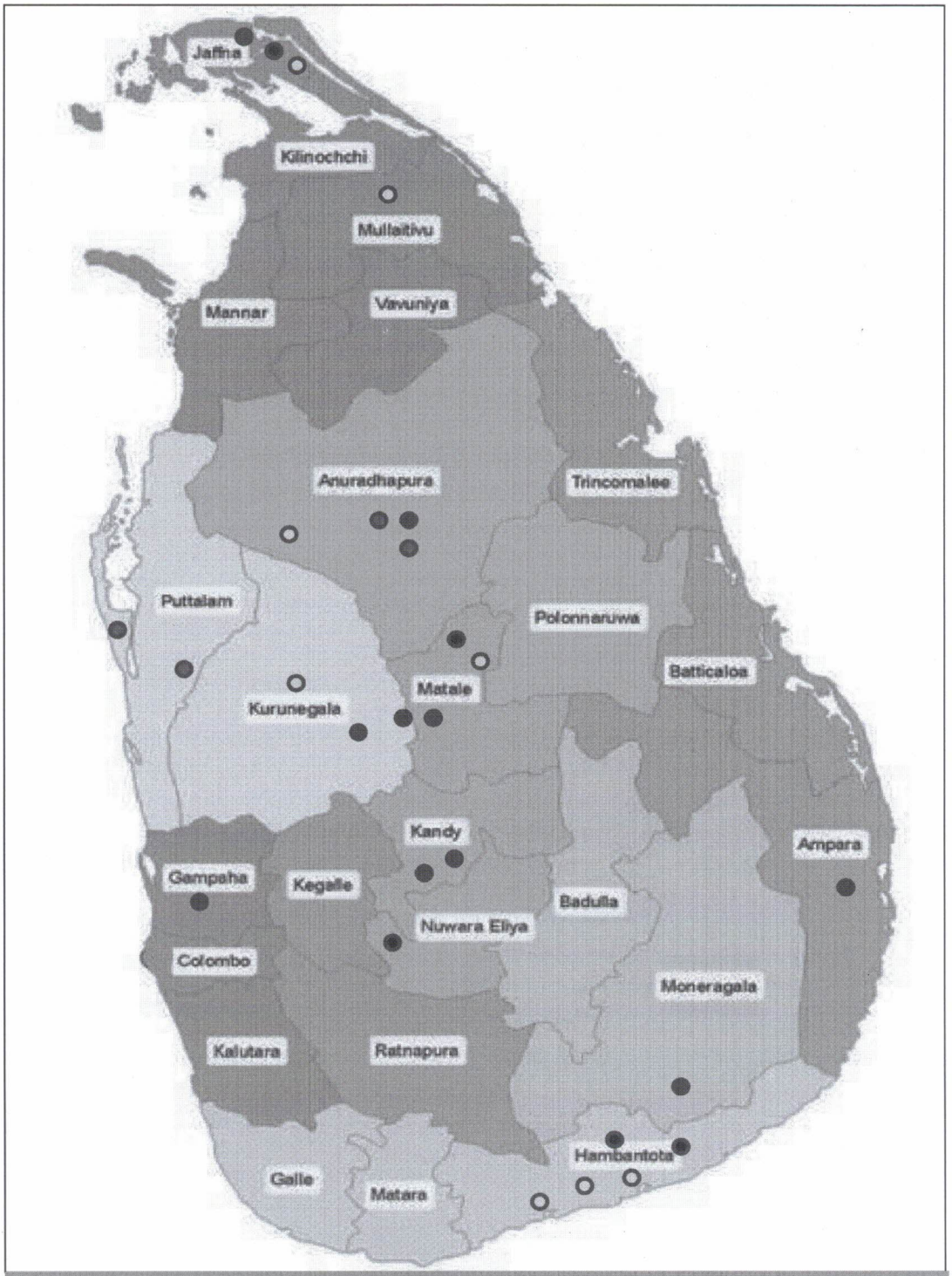
Following ten brand names have been introduced to the market in 2018.

Bogahakanda Mango
Galoya Mango
Wellawaya Mango
Jaffna Mango
Minuwangoda Mango
Galewela Mango
Eppawala Mango

with

Rajanganaya Banana
Thambuththegama Papaya
Mahailluppallama Guava

Branding of fresh produce is the way of future since it creates premium



● Mango 11, ● Banana 10, ● Guava 04, ○ Papaya 08

TRAINING

The institute conducts production/extension oriented residential and non-residential training programs for producers, processors, traders and workers, students from universities and other educational institutions in the field of Postharvest Technology of grains, cereals, root & tubers, fruits and vegetables.

During the year under report forty nine (49) residential training courses including study visits were conducted and 1522 individuals were trained. One hundred and ten (110) non residential courses were conducted at field centres and 2962 individuals were trained.

A team of Australian students visited to the institute for a training on post-harvest engineering and accommodated at the institute for 2 months.

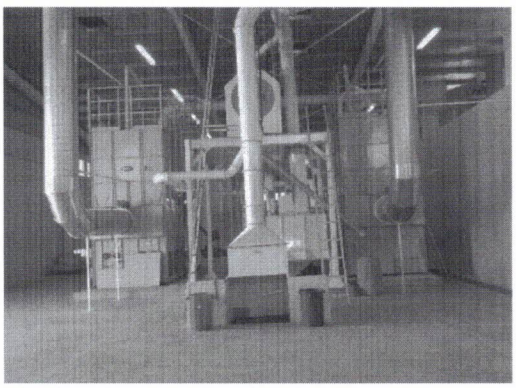
NVQ course on Rice Milling Machinery

The institute begins to prepare National Vocational Qualification level 3 and 4 (NVQ 3 & 4) course on rice milling machinery with the help of TVEC.

There is no this type of NVQ program in the country and hence It is planned to promote this course among the skill workers in rice milling industry. The program could be initiated in 2019 with the batch of 30 students as a six month course.

CONSULTANCY AND OTHER SERVICES

NIPHM provides consultancy and advisory services to public, private and cooperative sector organizations that are either directly or indirectly involved in post-harvest industry. In the year 2016, IPHT has worked as consultant to "Warehouse Receipt Project" of Department of Development Finance of General Treasury. This was continued in 2018 too. Under this project, warehouses with pre cleaning and drying facilities were established in Embilipitiya, Medirigiriya and Kilinochchi.

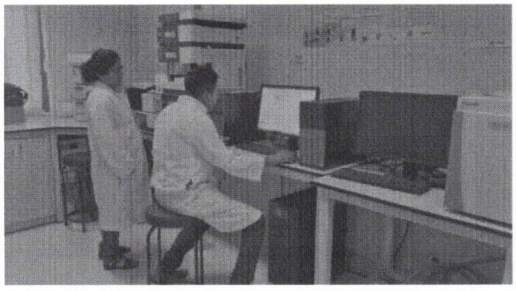


Further, NIPHM has given their technical support on Rice milling, Rice flour milling, Pulse de-hulling, Spice Processing and dehydration of fruit and vegetable.

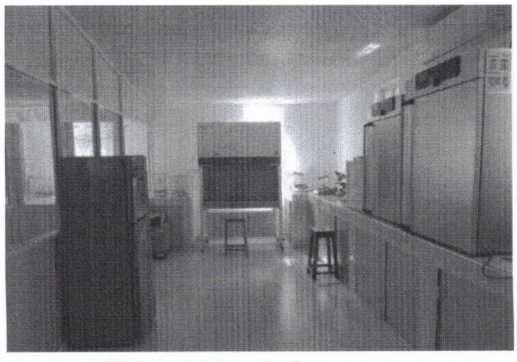
Moreover, the project of "Establishment of Cold Stores" conducted by Ministry of Rural Economy was technically supported by NIPHM. Details on consultancy services are listed in a latter chapter of this report.

Improved laboratory services as a commercial entity

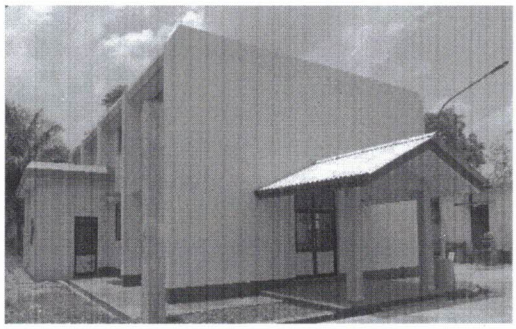
National Institute of Post-Harvest Management has provided laboratory services to the stake holders during the year 2018. Institute commences to outsource the laboratory facilities for our stake holders.

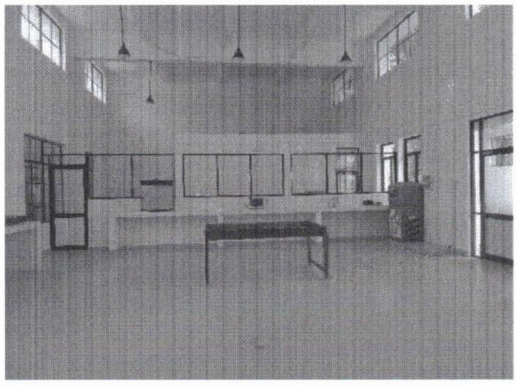


The institute has received Rs. Mn. 26 under 'National food production drive for laboratory upgrading. Under this project 2 laboratories; microbiology and food processing have been renovated and activities are going on to obtain laboratory accreditation.



Developed Microbiology Laboratory

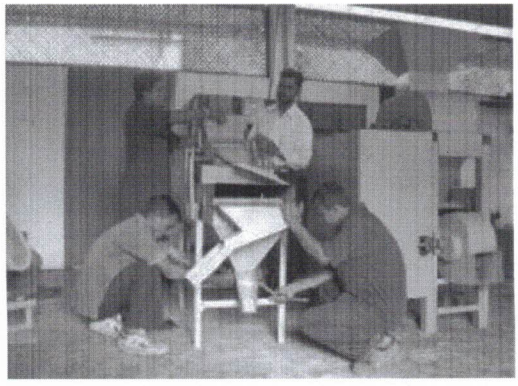




Renovated Food Processing Laboratory

IPHT Developed machineries to the postharvest sector

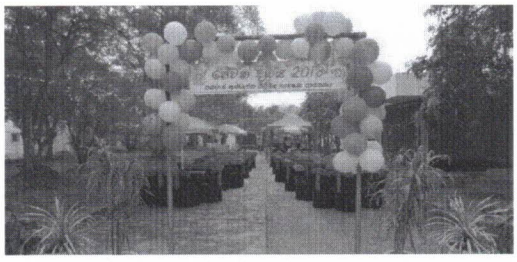
NIPHM evaluated the appropriateness of the machinery produced or imported in the post-harvest sector. And also, the institute has manufactured some machines for selling to the industry. One best-selling machine was pulse de-hulling machine thus in the year 2018, three (03) machines provided to the stakeholders.

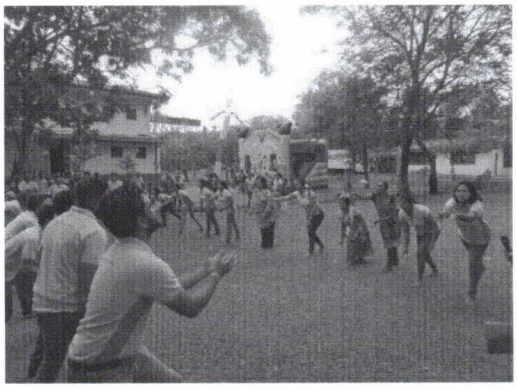


SOCIAL, WELFARE AND RELIGIOUS ACTIVITIES

The institute continued its welfare activities to build up employee relations and friendliness among staff and their families. 'Workers day' was held in 10th April 2018. The same day evening, the welfare society of the institute arranged a 'Bakmahaulela', a staff and their family get-together.

Appreciation of long service was done in parallel to "Workers Day" event. A cheque worth of Rs. 50 000.00 was given to those who have completed 25 years of service to the institute.





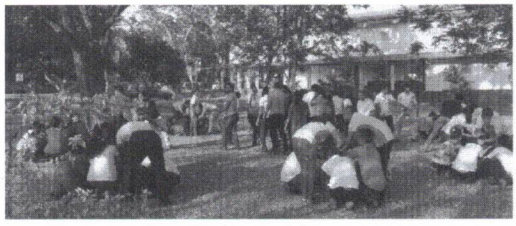
It has passed 18 years since the institute was established in 19th June 2000 as the successor to the Rice Processing Research and Development Centre of Paddy Marketing Board. That moment was celebrated by organizing a religious sermon, annual "Sarvarathrika Pirith sajjayanaya" on 25th June 2018.

FINANCIAL PERFORMANCE

Compared to the year 2017, financial performance of the year 2018 showed positive improvement.

HR DEVELOPMENT

Three human resource development programs were conducted for whole staff on financial planning and stress management.



HUMAN RESOURCE

One senior research officer resigned from the institute to join to the university staff. One research officer has resigned from the institute and joined with the private sector organization. Two new extension officers and an economist were recruited to strengthen the research and development team of the institute.

Eng. Mahesh Dissanayake
Director/CEO

PERFORMANCE HIGHLIGHTS

RESEARCH AND DEVELOPMENT

Research, being the main activity of the NIPHM, was directed towards solving technological problems confronting the postharvest industry. According to the research program for 2018, the research activities included both fundamental and applied research, although the latter predominates in the research efforts.

During the year 2018 thirty two (32) research projects has been carried out, which consisted three (03) research projects continued from year 2017 and twelve (12) new research projects initiated in 2018. Out of that three (03) research projects were funded by private sector and two (2) projects were funded by National Science Foundation (NSF) and National Research Council of Sri Lanka (NRC). Further, seven (12) projects were conducted as student projects.

In addition to disseminating the research finding as new technologies within the postharvest sector for its improvement, the results of the studies were published in peer reviewed national and international journals, Institute of Engineers of Sri Lanka, Symposia conducted by different universities.

Reseach Projecs Continued from 2017 to 2018

1. Evaluation of appropriate low temperature storage condition for locally available economically important vegetable crops.
2. Ensuring the safety of edible oil used in food industry by developing methodologies to detect and quantify polymer migration from plastic bottles to edible oils
3. Pre-harvest and post-harvest disease management of green chilies using rice husk Silicon as an alternative strategy for synthetic fungicides.

New Research Projects in 2018

01. Evaluation of the effectiveness of freeze drying and vacuum packing technology for preservation of fresh fruits (Papaya , Guava , Pineapple)
02. Use of Potential Biological Control Agents in Controlling Post Harvest Diseases of Mango with special reference to Anthracnose
03. Prebiotic potential of resistant starches and dietary fibers of Sri Lankan traditional rice varieties and its application in food industry
04. Influence of pretreatments on post-harvest quality and shelf life extension of Mango cv.Karuthakolomban
05. Development of a food additive to preserve food by incorporating of oil extractions of nutmeg (*MyristicaSp)* and cinnamon (*Cinnamon Zeylanicum)*
06. Design & construction of a tunnel type forced air cooler for cooling or fresh Mango
07. Development of value added legume based granular bar boosted with antioxidant activity

08. Process improvement for freeze preservation of vegetables (Carrots, Beans, Beet-root)
09. Feasibility analysis to use geospatial tools to improve the mango supply chain via enhancing the traceability: A case study based on Omaragolla mango collector group
10. Identification and development of strategies for enhanced quality and postharvest life of lotus
11. Design & development of an image processing based low cost fruit maturity identification instrument
12. Effect of Citronella grass leaf extracts on degree of insect infestation and storage quality of the stored maize in Sri Lanka

External funding Research project

1. Studies on fruit phenology, per-harvest foliar treatments on fruit quality and enhancement of postharvest life of lime (*Citrus aurantifoila*Swingle) (Funds received by National Science Foundation under the grant NSF /538)
2. Development of postharvest treatments and storage strategies for enhancement of postharvest life of lime (*Citrus aurantifoila*Swingle) (Funds received by National Research Council, Sri Lanka under the Grant No. 15-154)

Private Funded Research Projects

1. Application of blast freezing technology to preserve TJC mango and Dragon fruit. Research was funded by Sashreeka Agro Management(Pvt) Ltd. 711/18 A, Jaya Mawatha, Gonawala
2. Production of parboiled rice at commercial level without soaking paddy. Research was funded by 'Sandaru Sahal' , Gamsabha Mawatha, Puliyankulama, Anuradhapura
3. Efficacy of amorphous silica against major insects of stored grains in Sri Lanka. Research was funded by Semiochem Lanka Pvt Ltd. Colombo 2

Student Projects

No.	Student	Supervisor	Research Title
1	R.W.M.A.U.K.Warnalula sooriya	Miss Ayesha Jayarathne Dr. (Mrs.) R.M.N.A. Wijewardane	Development of value added products from Nelli (*Phyllanthusemblica*) and their quality evaluation
2	K.W.N.Premathilake	Miss S.S.K.Weerasinghe Dr. (Mrs.) R.M.N.A. Wijewardane	Effect of wax coating, LDPE packing and storage conditions on prolonging the shelflife of fresh lime (*Citrus aurantifolia*) fruit
3	Ms. M.D.T.Perera	Dr. (Mrs.) R.M.N.A. Wijewardane	Development of a protocol for artificially ripening of papaya (Carica papaya)
4	Ms. K.G.N.H.Kumari	Dr. (Mrs.) R.M.N.A. Wijewardane	Development of a protocol for artificially ripening of Embul banana (Musa spp)
5	Ms. G.M.A.S.Galappaththi	Mrs. D.P.Senanayake	Design and development of a multi crop hot air solar dryer
6	Ms. J.A.S.S.Jayaweera	Dr. (Mrs.) R.M.N.A.	Formulation of nutritionally superior energy

		Wijewardane	drink using locally available fruits , vegetables and flowers
7	M.P.D.D.K Bandara	Mr.T.M.R.Dissanayake	Development of a IR assisted air drier for drying of fresh pepper
8	H.M.VB.V.B.Herath	Mrs.C.A.K.Dissanayake	Effect of ascorbic acid and aloe verajel coating on extending the shelf life of fresh cut TJC mango
9	Ms.A.A.S.N.Lakmali	Mrs.R.M.R.N.K.Ratnayake	Evaluation of the commercial viability of organic ripening agent
10	Ms.C.M.C.V.Chandrasekera	Mrs.R.M.R.N.K.Ratnayake	Application of ozone as a postharvest treatment for controlling bacterial soft rot in carrot (*Daucascarota*)
11	R.G.U.S.Bandara	Mr.W.M.C.B.Wasala	Extending the shelf-life of TJC Mango by application of 1Methyl cyclopropane
12	Ms. Sherani Fernando	Miss. T.M.A.N Weerasinghe	Development of protocol for freeze preservation of green chilies (Capsicum annum)

COMPLETED RESEARCH PROJECTS

1. Pre harvest and postharvest disease management of green chilies using rice husk Silicon as an alternative strategy for synthetic fungicides

Beneficial effects of Silicon (Si) on disease control have been shown in a number of plant pathosystems. The present study ascertained the effect of root application of soluble Si on postharvest quality of green chilies (*Capsicum annum* L) with special reference to the disease development by *Colletotrichum sp.* Plants were treated with rice husk ash (RHA) by amending the soil mix to achieve the silicon level 200 mgSi /kg soil. Treatments were started at the four leaf stage and continued up to 28 days at seven days intervals.

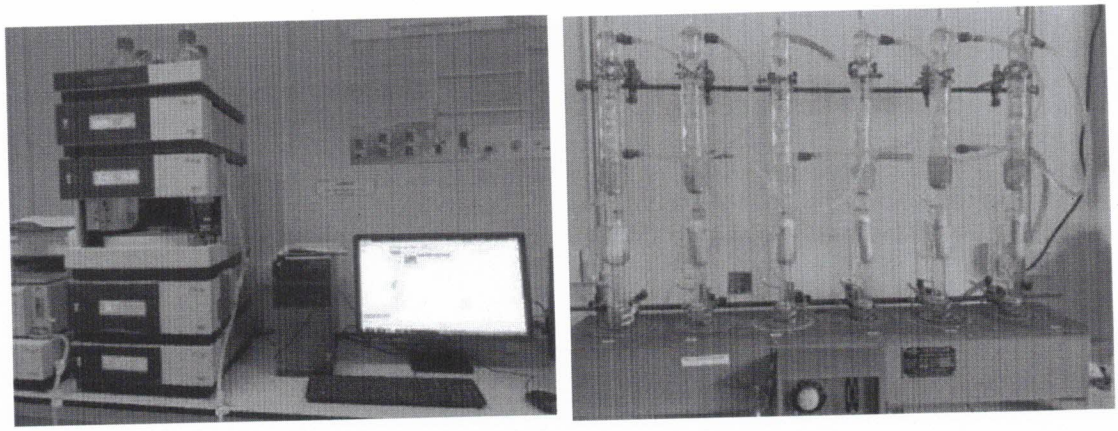
Soil amendments with RHA significantly reduced the postharvest weight loss and extended the shelf life by 7 days. Si analysis in green chilies, harvested from RHA+ plants revealed that pod tissues accumulated nearly1.5 times as much silicon (0.54 % dry weight) as those grown in control (RHA-) mix (0.36 % dry weight). Extracts from RHA+ plants exhibited a stronger antifungal activity on thin layer chromatography (TLC) against *Cladosporiumcladosporioides.* Methanolic extracts of fruit pericarp separated on TLC plates showed three antifungal zones at Rf 0.17, 0.48, and 0.85. Antifungal zone at Rf 0.48 was present only when RHA+pods were challenged with the fungus. Electron micrographs and XRD analysis revealed the presence of accumulated silicon in high concentrations on leaves and approximately similar or low concentrations in pods compared to the control (RHA-). These results suggest that by using soil application of soluble Si, postharvest quality of green chilies can be improved and shelf life can be enhanced by 7 days compared to the control. RHA is a good source of soluble silicon and it opens up a new avenue for alternatives of synthetic fungicides. Enhanced fungitoxic activity may have some role in Si-induced disease resistance against postharvest fungal pathogens.

2. Ensuring the safety of edible oil used in food industry by developing methodologies to detect and quantify polymer migration from plastic to edible oils

Consumers' demand and consumption of crispy snacks like manioc chips and other deep fried bites has been increased significantly during recent past. Very recently several media and consumers complained that the crispy snack manufacturers incorporate mineral water bottles in to oils which are used to deep fry these snacks in order to make them crisp and last. This rumour was discussed among the authorized institutes in Sri Lanka, and they simply rejected and ignored the myth without having proper scientific study for the evidence Hence, in terms of consumer health and safety, this study has been conducted to develop a method and to validate the method to investigate this problem scientifically and provide scientific evidences for relevant authorities for formulating regulations regarding the consumer well-being.

There is no any properly established method to quantify the Terephhalic acid (TPA) and Isophthalic acid (IPA) in deep fried snacks. Reporting method is comprised with extraction of oils from the deep fried manioc chip samples using a soxhlet extractor, Centrifugation of samples to facilitate solvent extraction, sample preparation prior to inject HPLC and HPLC analysis of samples along with the TPA and IPA standard series. Method validation was done by analyzing the Specificity, Linearity, Precision, Accuracy and Limit of quantification of the reported method. The percentage recoveries remain in between 80-120% for TPA and IPA reference substance concentrations of 6 ppb, 24 ppb and 120 ppb. Therefore, it can be concluded that the results are in good agreement with acceptable values for the validation of an analytical procedure. The intraday assays for TPA and IPA were expressed as Relative Standard Deviation (RSD) 5.123% and 2.015% respectively while inter-day precision assays for TPA and IPA were expressed as relative standard deviation (RSD) 2.089% and 2.105%, respectively; indicating that the data is tightly clustered around the mean and method presents a good precision. Analytical curves for TPA and IPA were found to be linear over a wide concentration range (6ppb – 120ppb) with a correlation coefficient of 0.998 for TPA and 0.999 for IPA. The lower limit of quantification was determined to be 6 ppb, with a relative standard deviation lower than 10%.TPA and IPA in sample are well separated from each other and from the background oil.

The study shows that the method presented in the methodology can be used as a suitable method for analytical determination of Terephtahlicacid and Isophthalic acid in deep fried manioc chips with high precision and with accuracy.



Oil extraction from deep fried manioc samples and HPLC analysis.

3. Evaluation of appropriate low temperature storage conditions for locally available economically important vegetable crops

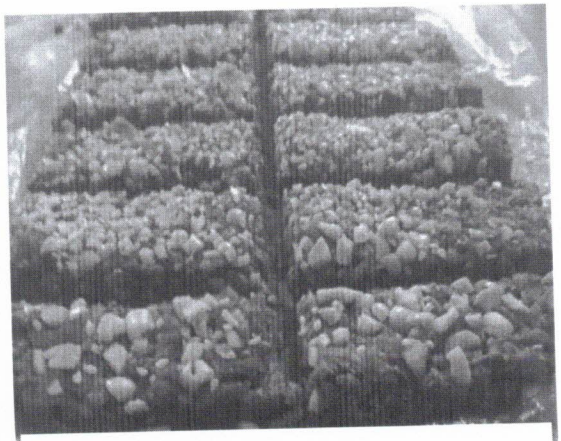
Sri Lanka producing variety of fruits and vegetables. Recently, the fruit and vegetable industry is mostly concentrated in rural areas catering to the requirement of immediate urban areas situated in a radius of around 50 to 100 Km. Fruits & vegetables, being perishable in nature require certain techniques of preservation for retaining the freshness intact and making them an acceptable item even after few days of ripening. It also facilitates the farmer to realize a better price instead of selling the product at a throw away price due to the perishability. This necessity as evolved a new concept of storing these items at below or just above sub-zero temperatures known as cold storage.

Many developed countries in western and Asian part of the world, had done many research in this sector with the aim of improving the supply chain management by maintaining cold chain itself, to improve the product quality, nutritional statuses and of minimizing the post-harvest loss. Sri Lanka mostly adopts the knowledge generated by other countries and most of these technologies have been developed to address the issues and conditions of their own. This creates many technological gaps in the sector causing a remarkable postharvest loss. Therefore it is very important to evaluate the present conditions and application of appropriate technologies for proper utilization of perishables, and find out the necessary remedies in order to develop Sri Lankan fruit and vegetable industry. It was identified that the Post-harvest loss of bitter gourds can be minimizing by, maintaining low temperature management as postharvest practice and also it may help to maintain qualitative and quantitative properties in bitter gourd during export procedure.

The results indicate that 6°C ± 2 was the optimum cold storage temperature for bitter gourd in Sri Lankan environmental conditions due to lower WLP and higher TCC, chlorophyll a and b content, firmness, and extended storage period. Capsicum can be stored in 7°C ± 2 temperature and 85% RH condition in cold storage condition without changing colour. However there is significant differences in Firmness, phenolic content and weight loss between non-wax and wax coated capsicum. Tomato can be stored under 12°C ± 2 for one month period by protecting its physical, chemical and biological characteristics.

4. Development of value added legume based granular bar boosted with antioxidant activity

Oxidative stress attributed by hyperglycemia, generating many health issues, as a result of excessive formation of free radicals in the body. Specially, long lasting oxidative stress, cause with free radicals, creating long term complications by damaging to most important tissues and organs inside the body. The detrimental action of these free radicals can be controlled by certain specific chemical components called antioxidants which are vital to minimize oxidative stress and associated health risks. Instead of natural defense mechanism, antioxidant potential in the body can be enhanced either by ingestion with therapeutic agents or through antioxidant rich foods/ diets or its supplementations.



Developed product

Therefore, main objective of this study is to develop legume based (green gram) ready to eat granular bar boosted with antioxidant activity, as a supplementary diet, to reduce oxidative stress causes due to the hyperglycemia. In order to achieve that, initially, tea extract was prepared using refused green tea were treated with green gram (MI6). The effectiveness of the treatment was evaluated by screening the variations of antioxidant potential before and after the treatments. Hence, antioxidant potentials of treated and non-treated samples were determined by using different bioactivity assays (TPC, TFC, ABTS, FRAP) with spectrophotometric methods. According to the research finds up to now, the green gram sample treated with tea extract was shown significant increment ($p<0.05$) in antioxidant Activities, in terms of TPC, DPPH & ABTS assays. However, there is no significant increment ($p>0.05$) was indicated for TFC & FRAP assays for the same samples. At all times, tea extract displayed significantly higher ($p<0.05$) antioxidant activities for all above assays compared to green gram samples (treated & non-treated).

After finding the effective treatment or treatment combination that can be used to boost antioxidant activity, final product (granular bar) was developed and then its keeping quality is being determined.

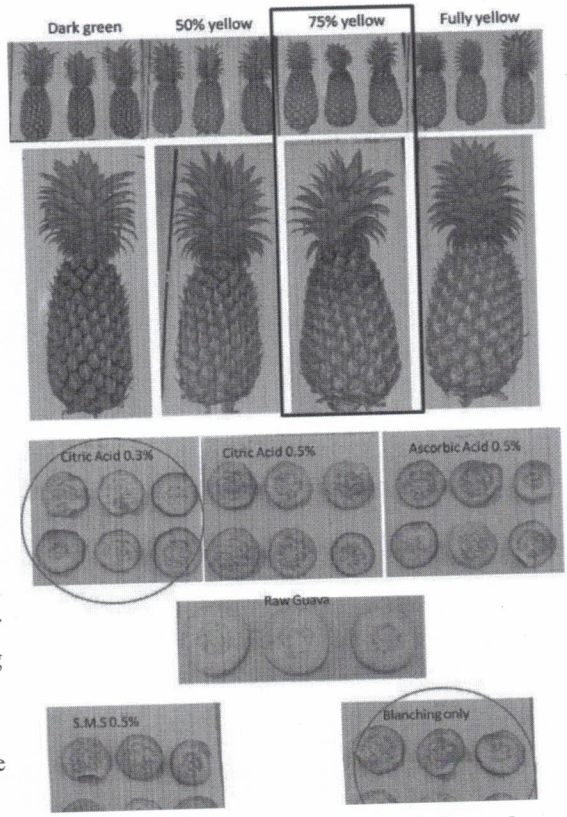
ONGOING RESEARCH PROJECTS

1. Evaluation of the effectiveness of freeze drying and vacuum packing technology for preservation of fresh fruits (Papaya, Pineapple, Guava)

Freeze drying is a relatively new process of drying in vacuum at very low temperatures which is a water removal process typically used to preserve perishables to extend shelf life and to preserve the pharmaceuticals. Freeze drying of fruits and vegetables allow extending the shelf life without compromising the flavor, aroma, appearance and the nutritional value. This method of drying is remarkable because it causes very low or no damage to the nutrition of the food being preserved.

In order to produce higher quality dehydrated fruit products, it is very important to identify optimum ripening stage of fruits and anti-browning agents. Experiments were conducted to identify Optimum ripening stage of Papaya (cultivar Red lady) and pineapple cultivar Mauritius as well as to identify anti browning treatments for guava cultivar *apple guava*.

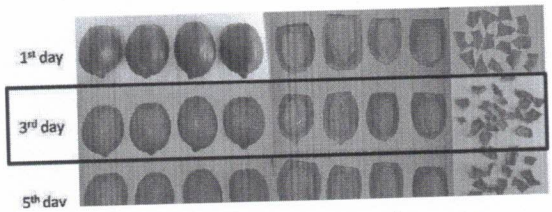
Results revealed that the optimum ripening stage of Papaya (cultivar Red lady) for dehydration is the stage at which three days after harvesting ($P>0.05$). At this stage peel color values were 61.76 ± 1.45 (L*), 5.45 ± 0.86 (a*), 52.58 ±



Identified Optimum ripening stage of pineapple and anti-browning treatments for guava

1.83 (b*), firmness was 67.80 ± 2.08 N, Total soluble solid content was 11.13 ± 0.21 and pH value was 4.81 ± 0.22.

Optimum ripening stage of Pineapple *cv.* Mauritius accepted by the consumers for dehydration is the fruits at which 75% of yellow color developed stage($P<0.05$). At this stage brix value was 17.10 ± 0.76, pH value was 3.67 ± 0.04, titratable acidity was 0.80±0.02, and firmness was 12.76± 1.13 N. Ideal anti browning treatment to prevent browning of guava *cv.apple guava* was dip in 0.3% citric acid solution for 10 minutes followed by blanching in 60 °C for 2 minutes. Blanching treatment in 60 °C for 2 minutes without dip in citric acid also showed satisfactory results.

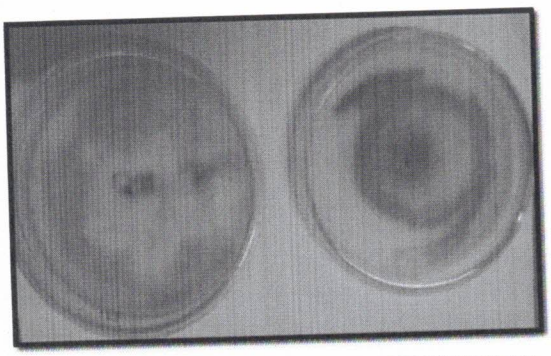


Identified Optimum ripening stage of papaya

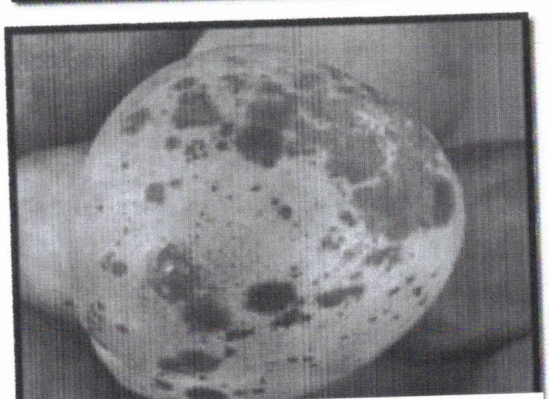
2. Use of Potential Biological Control Agents in Controlling Post-Harvest Diseases of Mango

One of the major reasons for the post-harvest losses in fruits and vegetables is due to pest and disease problems occur at the post-harvest stage. Considering economics and emerging problems of world hunger, it is imperative to understand the importance of postharvest diseases and continually strive to reduce postharvest losses from pathogens. The most common way of controlling postharvest diseases is through application of synthetic fungicides. However, rising consideration over food safety has placed the use of synthetic fungicides under study, thus creating a need to develop alternative methods to control these diseases.

Therefore, the overall aim of this study is to find out new microbial biological control agents (BCAs) for the control of postharvest diseases of fruits with special reference to anthracnose disease in mango. These BCAs can be further used in formulations for commercial applications for controlling postharvest diseases of fruits specially Mango with low cost methods than the synthetic chemicals.

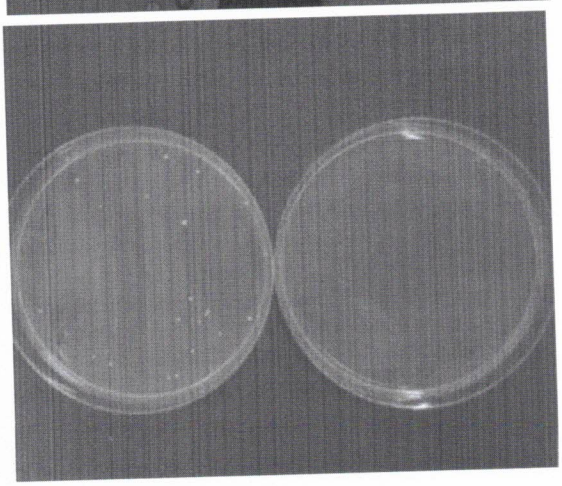


This is a two year project and in the first year procurement procedures were done to obtain the necessary chemicals and equipment for the study. Also some of the preliminary studies have been undergone. Probable pathogen/s responsible for causing anthracnose have been isolated and identified morphologically. Pathogenicity confirmation will be done using Koch's postulates and Molecular identification for the confirmation of identity of the pathogens has being planned for the second year. Isolation of the probable antagonistic microorganisms which


Pure culture of *C.gloesporioides (Top)* and Diseased Fruit (Bottom)

are in the natural environment is in progress and their antagonisms will be checked against the anthracnose pathogens. Finally, the effective antagonist will be used in formulating a bio pesticide.

3. Prebiotic potential of resistant starches and dietary fibers of Sri Lankan traditional rice varieties and its application in food industry.



In Sri Lanka, cultivated nearly 2000 traditional rice varieties in past and nowadays we can see some of main traditional rice varieties in the market such as Suwandel, Kaluheenati etc. Resistant starch (RS) and Dietary Fibers (DF) are the starch that escapes human small intestine digestion. Nowadays, most of food scientists focus on the health benefits of probiotics and prebiotics. Resistant starches are indigestible in human stomach as same as prebiotics. Therefore traditional rice varieties can act as a vehicle to supply the DF and RS to human and there is a possibility of having a prebiotic potential of their fiber fraction. The general aim of this study is to determine prebiotic potential of resistant starches and dietary fibers of traditional rice varieties in Sri Lanka and its application in food industry.

Initially paddy samples of Suwandel, Kaluheenati, Pachchaperumal, Kuruluthuda and Neeroga rice varieties were collected from Bathalagoda Rice Research and Development Institute. BG 358 was use as the control sample. Then dietary fiber content was analyzed via the AOAC method 2009.01 & 2011.25. The dietary fiber value for 100 gram brown rice of BG 358, Suwandel, Kaluheenati, Pachchaperumal, Kuruluthuda and Neeroga are 4.2%, 6.4%, 6.8%, 6.6%, 6.6% and 5.3% respectively. Analysis of resistant starch is in progress now.

In microbial studies, culture medium was prepared using the rice flour as preliminary study. *Lactobacillus plantarum*probiotic culture was inoculated in to the culture medium. Ciprofloxacin antibiotic was used as a control chemical for other lactic acid bacteria and it can facilitate to selectively growth of *L. plantarum* species. The culture medium was prepared by incorporating 62 grams of MRS agar with 20 grams of rice flour and adds 5 milligrams of Ciprofloxacin. Then the mixture was dissolved in 1 liter of distilled water.

Analysis of resistant starch content, calculate prebiotic activity score by using the CFU values, development of fermented rice idli, sensory evaluation, statistical analysis and report submission to be carried out during the year 2019.

4. Influence of pretreatments on post-harvest quality and shelf life extension of Mango cv. Karuthakolomban

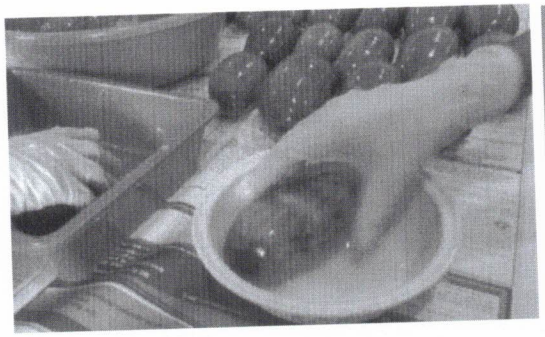
Mango *(Mangifera indica* L.) is a major fruit crop of the tropical and sub-tropical regions of the world, especially in Asia. Delicious taste, juiciness, sweetness, attractive fragrance, colour and unique flavor with high nutritional value have made it equally popular across the globe. Rapid ripening process is responsible for short shelf life of mango fruit and it represents a serious constraint for efficient handling and transportation. Therefore, techniques for storage of mango fruit have to be standardized and employed to enhance the storage life.

Natural products are taking place as an alternative approach for delaying ripening and reducing postharvest deterioration of fruits. Edible coatings act as a barrier, decrease gas exchange between fruit and the surrounding atmosphere, result in modified internal atmosphere (high CO2 and low O2), as well as decreased water loss. Edible coatings are used as a postharvest management tool to maintain fruit quality and minimize the size of non-biodegradable packaging materials. Lipid based edible coating (wax) which was developed by IPHT (IPHT bio wax) has discovered that the shelf life of fresh fruits can be extended without quality deterioration.

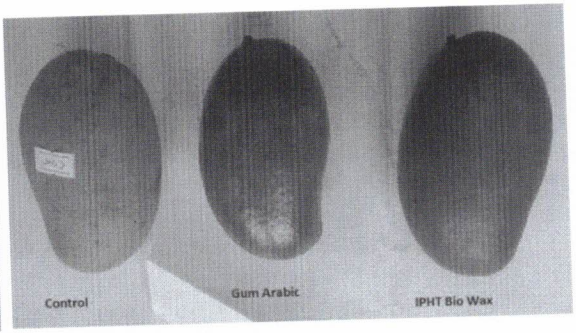
Gum Arabic is a polysaccharide natural secretion from Acacia species and used in industries for film forming, emulsification and encapsulation purposes. Chitosan is a non-toxic, biodegradable, bio functional and biocompatible compound. They can be easily applied to the fruits by dipping in formulated coating solutions with distilled water.

Therefore, the application of IPHT bio wax, chitosan coating and Gum Arabic coating are crucial to maximize profit for agricultural businesses and provide a quality consumer product including reduction of postharvest loss leading to better life of farmers and entrepreneurs.

In this background, proposed work aims to study the effect of applying IPHT bio wax, chitosan and Gum Arabic as postharvest treatments on storage life and quality of mango fruit cv. Karuthakolomban in order to overcome market surplus during peak season that results in significant price drop.

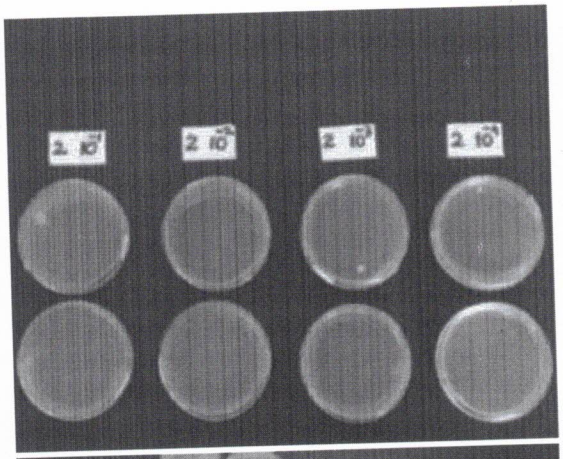


Conducting Experiment



Wax treated and non-treated fruits

5. Development of a food additive to preserve food by incorporating of oil extractions of nutmeg (*Myristica Sp.)* and cinnamon (*Cinnamon Zeylanicum*)



Antimicrobial agents are very much important in food industry to preserve prepared food commodities retarding the growth of bacteria and fungi. One most widely used synthetic antimicrobial compound is Sodium benzoate. Sodium benzoate is a chemical preservative which inhibits the activity of the microorganisms in very low concentration. But researches findings have revealed that allergic conditions are generated in people, mostly in people suffering from asthma, due to using of sodium benzoate in food. Cinnamon essential oil contains high cinnamaldehyde and eugenol contents which are the main components in cinnamon. Cinnamaldehyde and eugenol have shown high antimicrobial activities.

This research aim is to develop a natural food preservative to replace some artificial food preservatives.

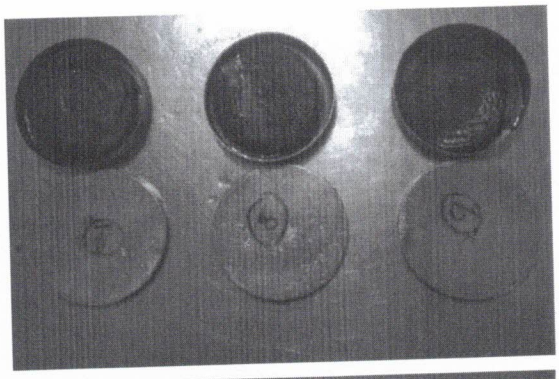
Initially tomato sauce was selected as the food product and then checked for antimicrobial potential of Cinnamon bark oil, Cinnamon leaf oil and nutmeg seed oil by separately treating freshly prepared tomato sauce product by these oil extractions. Via a sensory evaluation it has selected that 0.05% concentration of these spice oil is the best combination to treat tomato sauce.

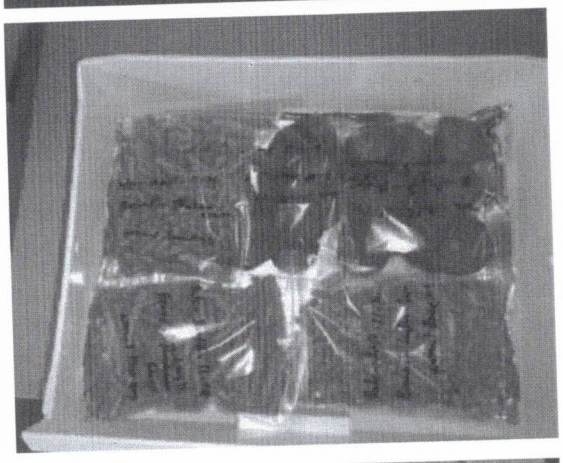
This study is 02 year research and at the end of 2018, research results have shown a positive result for their high potential of antimicrobial property. During 2019 it has planned to carry out a shelf life analysis for stored tomato sauce product treated with developed food additive using these spice oil extractions.

7. Process improvement for freeze preservation of vegetables (Carrot, Beans and Beetroot)

High postharvest losses of vegetables during peak production periods has become a tremendous problem in Sri Lanka as our country still undergoes around 30-40% postharvest losses in vegetable sector from the past. A "surplus" creating imbalance between the existing supply and the demand for

the vegetables is the major reason for the postharvest losses. Even though some of profit oriented mind groups willingly engage in preserving the stuff that is having a risk to undergo a high postharvest loss after catering the consumers demand, most of large scale and medium scale farmers, and vendors are not concerned on the above problem. It is due to their incapability of employing technological aspects into their professions due to lack of technological and technical support from outside party. But still a fistful of individuals do even the exportation of vegetables after applying many preservation techniques.





By paying attention on these matters and by considering their requests came through the stake holder meetings held by National Institute of Post-Harvest Management, Anuradhapura, it is planned to do a research on process improvement for freeze preservation of vegetables (Carrots, Beans and Beetroot) since the frozen vegetable industry holds a considerable market share in foreign countries and there is a potential to boost the frozen vegetable industry in our country with economic development and the busy life styles of the people.

The research project has planned for 1.5 years focusing on identification of a form of value addition for vegetables, Optimization of process parameters, evaluate the quality under frozen storage and ensure the preservation of nutritional, sensory and physical properties. Presently, the preliminary studies are going on to find out the best pre-treatment combinations for blast freezing of Carrot, Beans and Beetroot. Chemical, Physical, Biological properties and the Sensorial properties of the processed vegetables are measured just after freezing. The parameters mentioned above will be measured after storing the frozen vegetables under -18°C for three months period and the final product.

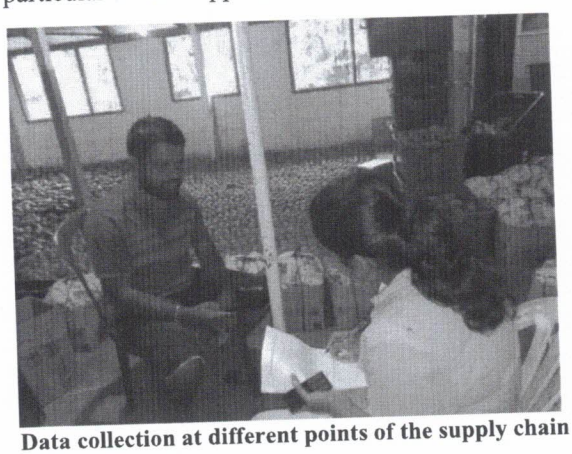
The blast freezing protocol will be developed based upon the data gathered through these experiments. This research project ensures the employing the latest technology in perishable food industry, increase the market availability of high quality freeze product ensures consumer access for quality and diversified produce, product commercialization and ultimately, postharvest loss minimization.

8. Feasibility Analysis to Use Geospatial Tools to Improve the Mango Supply Chain via Enhancing the Traceability: A Case Study Based on Omaragolla Mango Collector Group

Technological advancement of geospatial tools has been used for the efficient management of supply chain. There, the concept of geo-traceability is used as a supplement for conventional traceability systems that include the GPS location of product movements. When considering the fruits and vegetable supply chain, tracking the GPS location of fruits and vegetable movements will facilitates managing of supply chain effectively by reducing transportation delays, avoiding unnecessary movements and reducing postharvest losses by accelerating supply chain movements. Finally it will improve the quality of fruits that goes to consumers and increase economic benefits gained by all the stakeholders. Hence, this research is conducted to study the feasibility of geospatial tools especially to enhance the fruit and vegetables supply chain geo-traceability. This is a two year research and currently on-going as a case study based on the supply chain linked with Omaragolla Mango Collectors and this report elaborates the progress within year 2018 in brief.

Within year 2018, a literature survey was conducted and procurement of a GPS receiver and purchasing of mobile tracking software as a consultancy service was done. Selection of the supply chain for the case study was done through field visits and interviews. Orchards were selected from Seeppukulama, Galkulama and Galewela areas. Two collectors were selected from Omaragolla mango processing zone. Keels collecting centre was selected as a supermarket. Wholesalers were selected from Manning market. Retailers are located at Pannipitiya, Gass Paha, and Negambo areas.

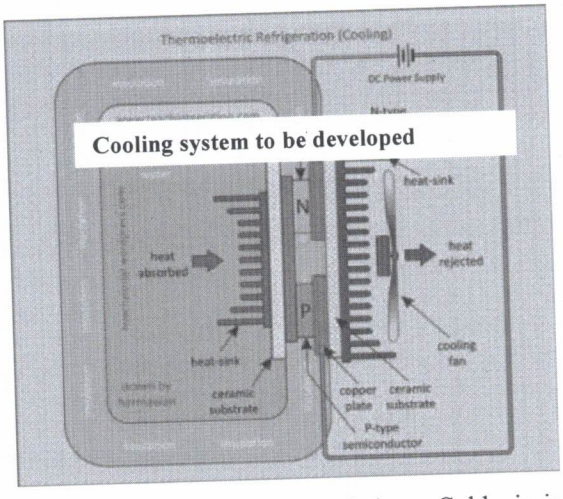
A geo-database was prepared related to the selected supply chain entities by conducting a GPS survey. The purchased software consists with two system features; Web application and Mobile application. The mobile application was installed for android phones belong to selected supply chain players. Testing of the mobile application is in progress currently to identify the functionality. And also some improvements are on-going. It is expected to start the tracking within January. Mobile tracking will provide information of GPS location and the time between 5 minutes time gaps. So it will help to identify unnecessary movements, travel distances, unnecessary delays and the time of the day that a particular action happens.



Data collection at different points of the supply chain

9. Design & Construction of a Tunnel Type Forced-Air Cooler for Cooling of Fresh Mango

Fresh fruits and vegetables are an important and necessary part of a healthy and nutritious diet. Mainly mangos contain over 20 different vitamins and minerals, fiber and poly-phenolic flavonoid antioxidant compounds. Also, it is fat free, sodium free and cholesterol free. In Sri Lanka, postharvest losses in mango nearly ranged from 30 to 35% [M. Thantirige et. al., 1993]. So it is imperative to improve safety and quality of fresh mango and reduce post-harvest losses thus overcome market excess and price fluctuation in year round marketing in Sri Lanka.



Temperature is the most significant factor which affects the storage life and quality of fresh fruits. Rapid and uniform cooling immediately after harvest helps to slow down rate of respiration and other biological processes and provide a longer shelf life. Also, lowering the temperature reduces the rate of ethylene production and moisture loss, as well as the inhibit growth of some microorganisms. The process of pre-cooling is the removal of field heat as soon as possible after harvest. It can be achieved via different methods like room cooling, forced-air cooling, hydro cooling, top icing, vacuum cooling etc. The simplest, but slowest, cooling method is room cooling, in which the commodity is placed in a refrigerated room for several days. Cold air is circulated within the room and around the commodity by the refrigeration fan/s. In forced air cooling, chilled air is forced to flow around each piece of commodity. It is considered an improved technique compared by the room cooling method. Also, it is a widely used method of cooling fruits and vegetables [R. Guillou, 1960, R.A. Parsons et. al., 1970 and C.D. Baird, et. al., 1988].

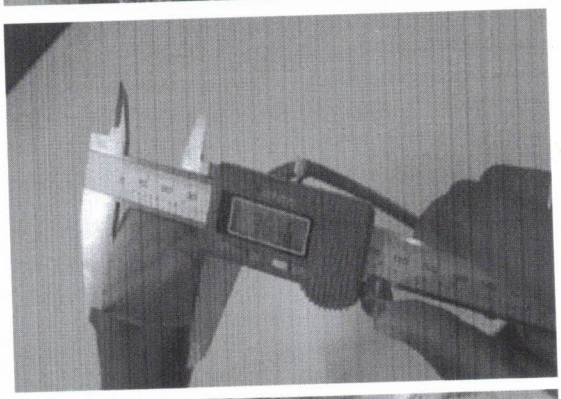
Therefore, under this project we are going to design and construction a low coast forced-air cooler to remove field heat from fresh mango to extend storage life. The output of this research will be beneficial to the people who are actively engage in mango fruit supply chain as growers, collectors, transporters or whole sellers and consumers to increase the quality and shelf life of the product, there by reduction the postharvest losses. Thus helps to increase their income.

The main activities of literature review, verification of model by using CFD modeling, procurement of chemicals, equipment, materials and construction of the model setup were carried out within the year 2018.

10. Identification and development of strategies for enhanced quality and postharvest life of lotus

Lotus flowers are widely distributed in dry zone of Sri Lanka. Anuradhapura is one of the main lotus flowers producing area due to availability of water tanks. Rural community people engaged in cut lotus flower industry but flowers are end up with short vase life resulted high wastage. Therefore they are unable to earn good income.

Problem with this sector is short post-harvest life due to poor handling practices. Proposing activity is to develop a package of practices to improve quality and shelf life of cut lotus flowers. The project started at 01.01.2018 and will be end on 30.06.2019. The output of this research will be disseminated among target community through training programs, workshops and research symposia which will be held biannually. The direct beneficiaries are the people who are engaged in lotus cut flower industry and indirect beneficiaries are flower consumers.



The output of this research will be helped to the people who are actively engage in lotus flower trade as pluckers, collectors, sellers to increase the quality and shelf life of the product, there by reduction the postharvest losses. Thus helps to increase their income.

Lotus (*Nelumbonucifera*) flowers were collected from Anuradhapura area. Following experiments were conducted. Experiment one was conducted to find out best maturity stage and harvesting time of the day for flowers. Harvested maturity stages were: two different flower bud stages and partially bloom flower stage. Flowers were harvested at three different day times such as early in the morning, late morning and late afternoon. The best results I have taken were early in the morning is most suitable time for flower plucking and best maturity stage were flower buds one day prior to bloom.

Second experiment was done to find out best harvesting method (by pulling and using secateurs) and best packing method for transportation among three packing. Harvested and packed flowers as has been mentioned above were transported to the laboratory as soon as possible. At the laboratory, data were taken. The third experiment will be conducted to identify best preservative solution and storage condition which will be carried out simultaneously. These flower stems will be placed in preservative solutions. Selected different storage conditions are kept in controlled temperature or under ambient temperature.

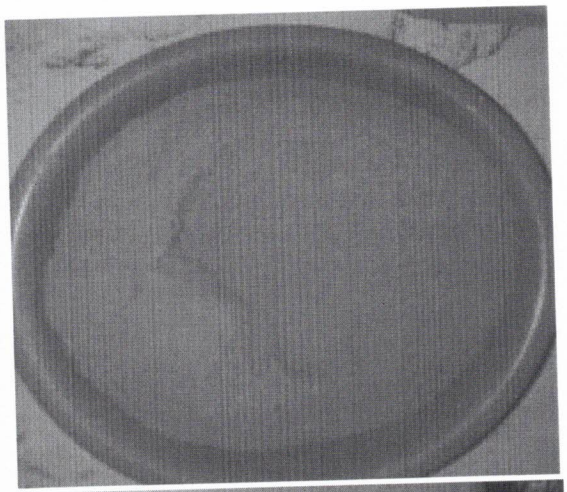
11. Design & development of an image processing based low cost fruit maturity identification instrument

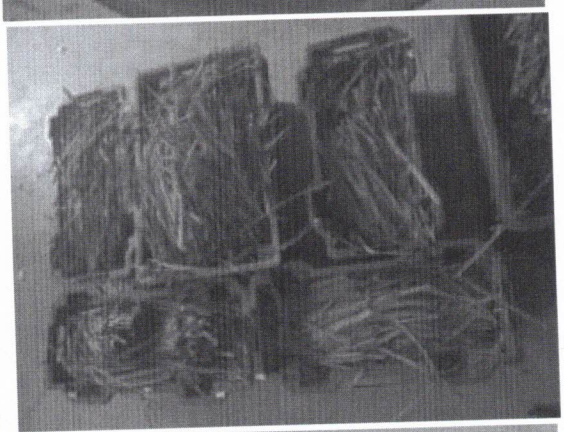
A requirement under the project is to provide a proper mature mango to consumer and minimize the post-harvest loss. This research idea was identified through stakeholder discussions and mango farmers and collectors will be directly benefited. Broad objective of this research is to find optimum harvest maturity stage in order to minimize post-harvest losses. There are some instrument which is

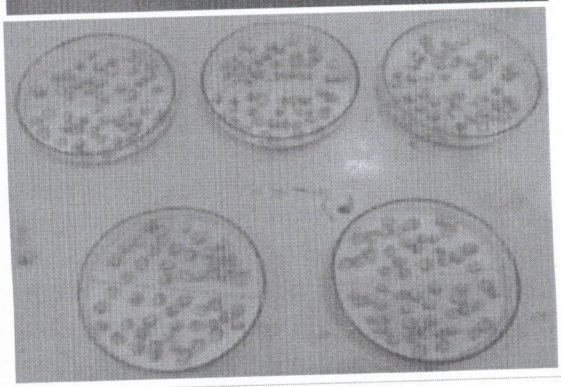
used to find optimum harvest maturity stage but they are expensive. In order to address the above problems, Computer Vision Systems (SVC) has been developed based on digital images to inspect and estimate the color of fruits .So this research aims to design and develop a portable instrument which is having ability to measure the chemical composition of the commodity's based on color information

Literature review was done via internet, IPHT library and gathered information were studied. Two farm sites were selected for Karathakolomban and TJC which are located Nachchaduwa and Nochchiyagama respectively. Mango tagging was started for first season in March 2018 and second season is in progress now. Collected samples were analyzed for required properties. Mathematical modeling is in progress.

12. Effect of Citronella grass leaf extracts on degree of insect infestation and storage quality of the stored maize in Sri Lanka







Total Maize production of the country was 261 million metric tons in 2015 (Central Bank Report, 2015) which obtains the second highest extent of land next to rice in Sri Lanka. Insect pests cause heavy food grain losses in storage, particularly at the farm level in tropical countries. The control of insect infestations has been practiced primarily through the use of fumigants and residual chemical insecticides to augment the more obvious approach of hygiene. There are number of serious direct and indirect problems are associated with the chemical insecticides used in grain storages such as environmental pollution, pesticide residue in food grains, pesticide resistance and toxicity to non-target organisms, high cost, difficulties in application etc.

Research on the evaluation of local materials for stored product protection is vital in Sri Lanka. Therefore this study is undertaken to examine the effect of Citronella grass leaf extracts on degree of insect infestation and storage quality of the stored maize in Sri Lanka.

Review note was completed. Method for extract preparation has been finalized; Citronella grasses were collected from down south region. Leaves of citronella grass were cut into pieces and then dried in an oven under a temperature of 40°C and blended into powder.20 g of powder of dust was mixed with 150 ml of distilled water. The mixture was stirred for 60 min by a magnetic stirrer (at 650 rpm) and maintained for 24 h. The mixture was then filtered through a fine cloth and again through filter paper. The filtered mixtures were

gathered in flasks and concentrate by evaporation of distilled water in a water bath at 80 °C to make the volume of 10 ml.Preparation of different concentrations; Four different concentrations, 15, 20, 50 and 100µl/ml were prepared by dissolving the stock solution in the distilled water. Insect Cultures of Sitophiluszeamaize were obtained from infested stock of maize in local market. Reared on wholly, un-infested maize grains in glass jars covered with muslin cloth held in place with rubber bands for the passage of air. One week old adult maize weevils were used for all experiments. Repellent effect of leaf extracts has been tested for 4 defined concentrations. The repellent effect was evaluated using the area preference bioassay adopted after McDonald (1970), Talukder and Howse (1993) with some modifications. Data were analyzed utilizing analysis of variance (ANOVA) using SPSS 20 and percentages were apart by the Tukey's test (P=0.05).Significantly highest repellency index was recorded in treatment 3 (50µl/ml).

TECHNOLOGY TRANSFER ACTIVITIES VIA DEVELOPMENT PROJECTS

The development projects carried out by the NIPHM during the year 2018 in order to ensure technology adoption and their impact on the postharvest industry are described below. While the national priorities aimed towards increasing production, exploration of export markets, agribusiness development and assuring food security, postharvest technology has become a more priority area of the national scope. In this context, NIPHM carried out development projects to address the issues in postharvest sector thus aimed to minimize postharvest losses and quality improvement of agricultural produce. And also these development projects aimed to introduce improved technologies for agribusiness development throughout the country.

During the year of 2018, the National Institute of Post-Harvest Management has conducted 08 development projects island-wide for effective dissemination of postharvest technologies and these projects were funded by the Ministry of Agriculture under 'National Food Production Programme'.

The total fund received through the ministry of agriculture during the year of 2018 was Rs.Mn.85.19955. Those development projects were as follows;

a. Improvement of supply and value chain management practices of mango in Sri Lanka
b. Improvement of supply and value chain management practices of Guava in Sri Lanka
c. Improvement of supply and value chain management practices of Papaya in Sri Lanka
d. Improvement of supply and value chain management practices of banana in Sri Lanka
e. Management of supply and value chains of agricultural produces in Sri Lanka
f. Pilot project to implement the defined distribution network for rice
g. Awareness Creation for public Health inspectors on using improved Post- harvest technologies for food safety
h. Upgrading the laboratory facilities to provide better services for the stake holders for achieving safe food and enhancing food security in the country

a. Improvement of supply and value chain management practices of mango in Sri Lanka

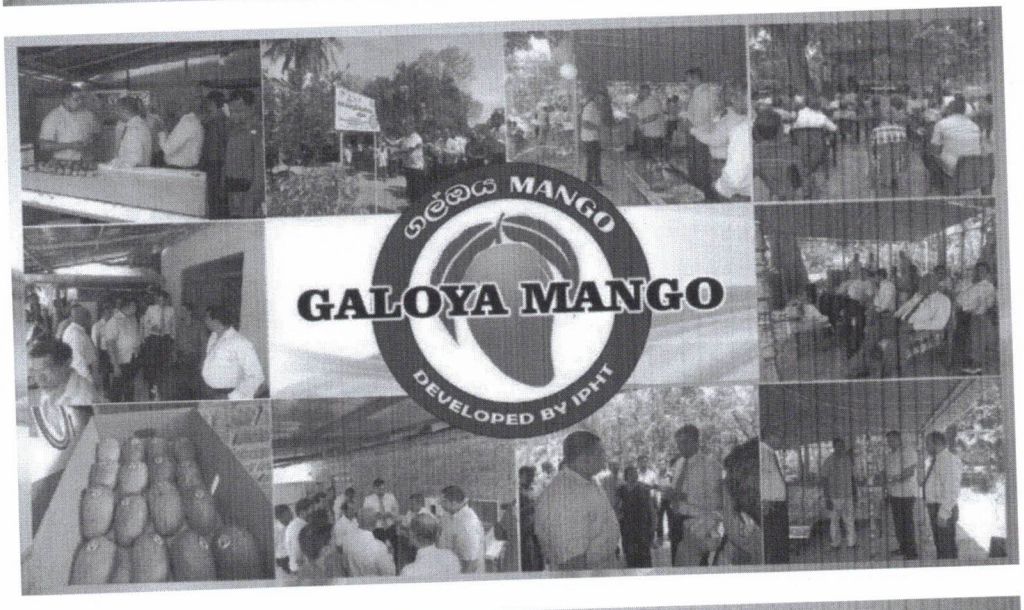
Mango is abundantly cultivated in home gardens and as commercial cultivations, due to its high taste and nutritional value. There is a high demand for high quality tasty mango in the local as well as in the international market. But the industry is facing a huge problem in dealing with low quality fruits with

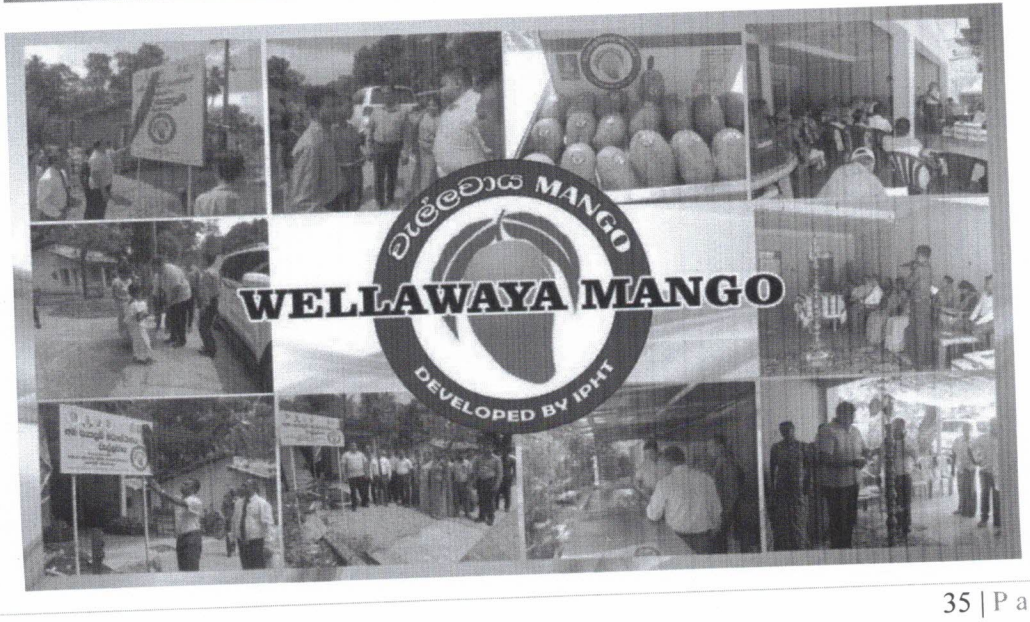
use of improper postharvest practices and high postharvest losses. This had made the mango industry to limit its benefits given to the consumers and all other beneficiaries related to mango in reducing their profits, increasing the market price, and reducing the quality of the fruit.

To solve these issues a development project was initiated in 2016 and it continued up to 2017 and 2018 as well. The project includes activities of improving the supply and value chains of mango. The project undertook mainly a baseline survey, training and establishment of handling and processing units throughout the country. The main activity of the project was to establish mango processing zones where all appropriate postharvest technologies are used and high quality mangoes are marketed. The technologies introduced include, harvesting, handling and packaging, ripening, branding and other marketing strategies as well.

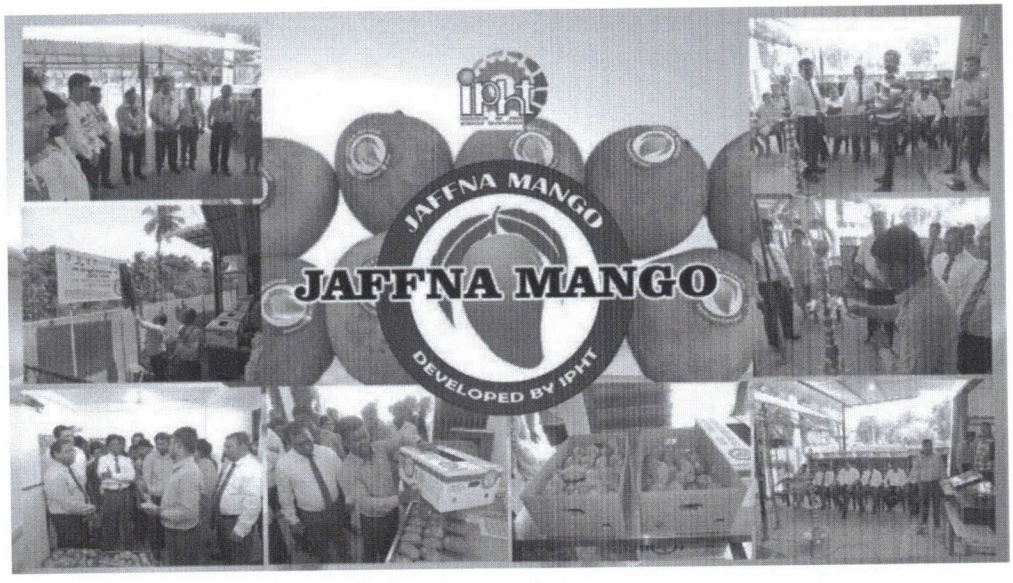
In the year 2017, two mango processing zones were established in Omaragolla (Kurunegala district) and Peradeniya (Kandy district) with 11 mango handling and processing centers. In 2018, eight mango processing zones were established in Bogahakanda (Kandy district), Galewela (Matale district), Uduvil (Jaffna district, Galoya (Ampara district), Wallawaya (Moneragala district), Minuwangoda (Gampaha district), Eppawala (Anuradhapura district) and Beligamuwa (Matale district) with 44 handling and processing units.

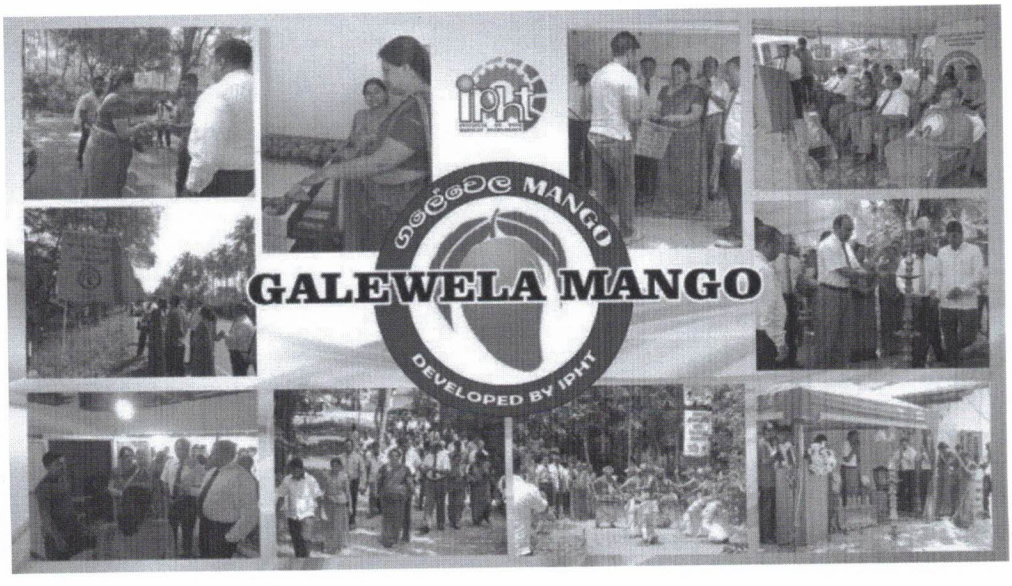

බොගහකන්ද MANGO
BOGAHAKANDA MANGO
DEVELOPED BY IPHT


ගල්ඔය MANGO
GALOYA MANGO
DEVELOPED BY IPHT


වැල්ලවාය MANGO
WELLAWAYA MANGO
DEVELOPED BY IPHT


මිනුවන්ගොඩ MANGO
MINUWANGODA MANGO
DEVELOPED BY IPHT


JAFFNA MANGO
JAFFNA MANGO
DEVELOPED BY IPHT


ගලේවෙල MANGO
GALEWELA MANGO
DEVELOPED BY IPHT

High quality mangoes are now marketed under different brand names as follows. A high demand was observed for these ten brands among consumers and traders.

b. Improvement of Supply and value chain management practices of Guava

Guava is one of the emerging fruit crops mainly cultivated in dry zone areas. Sri Lankan climatic conditions and other factors are highly favorable towards cultivation of Guava giving high yields. But high postharvest loss which is approximately 30-35% and low quality and associated safety issues such as use of improper postharvest practices had made the industry less profitable and problematic. Therefore, with the aim of solving these issues, the project was initiated in year 2017 at pilot scale in Anuradhapura district and with the successful implementation, the project was scaled up to the other parts of the country in 2018.

Under this project one of the main activities was awareness creation to improve the knowledge of stakeholders on improved technologies of postharvest practices on guava thus 57 beneficiaries by 03

programs in 2017 and 108 beneficiaries by 05 programs in 2018 were trained. In order to reduce the postharvest loss and improve the quality and practices of the guava supply chain, the guava processing zones were established. To facilitate use of introduced practices, equipment and other facilities were given to selected beneficiaries island wide. Therefore, 27guava handling and processing units were established in Mahailuppalama in Anuradhapura district and the number was scaled up to 20 guava handling and processing Units Island wide. Thus proper postharvest practices including, Proper sorting and grading based on the size, Guava bags to cover the fruit at pre harvest stage, Pheromone traps to avoid fruit fly attack, Transportation using safe packages (from field to pack house using plastic crates; pack house to local market by 5-ply corrugated fiber board boxes-CFB-) were introduced to the beneficiaries by providing them with sorting and packing tables, plastic crates, fruit bags, pheromone traps, CFB boxes and stickers for branding of the process.

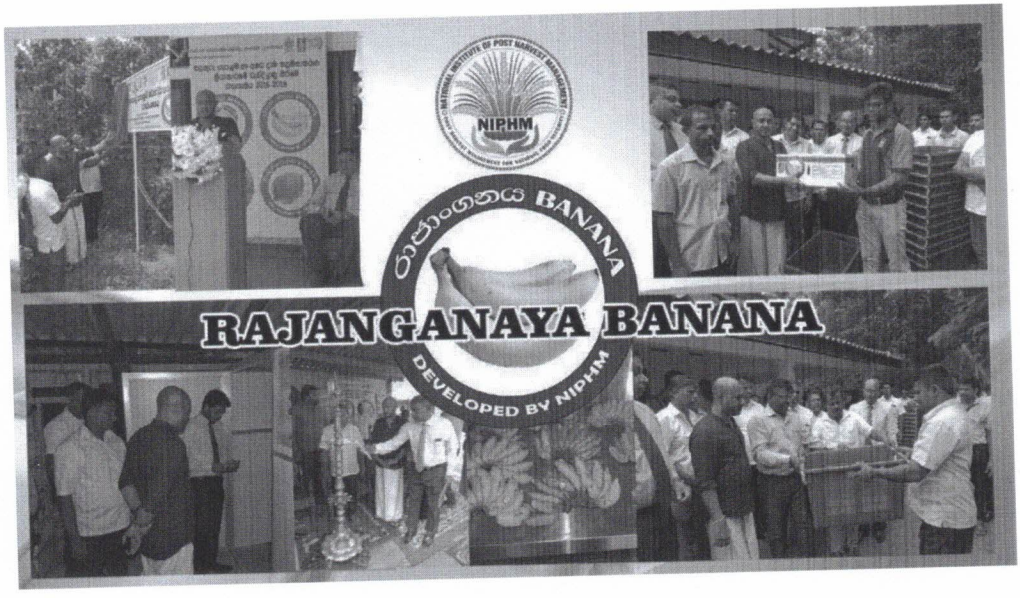
However units establishment were unable to be completed in 2018 due to delays in supplying some of the equipment which were required to distribute among beneficiaries. After receiving the remaining other equipment, they will be distributed and zones will be established in year 2019 and 03 new guava brands; 'Ipalogama, Polpithigama and Kalpitiya guava' will be introduced to the local market.

c. Improvement of Supply and value chain management practices of Banana

Banana is the major fruit crops cultivated in Sri Lanka in terms of land extend production and consumption. Sri Lankan climatic conditions and other factors are highly favorable towards cultivation of banana giving high income year around. But high postharvest loss and low quality and associated safety issues due to use of improper postharvest practices had made the industry less profitable and problematic. The annual banana production is around 3.3 million bunches. The annual quantitative post-harvest loss is 30% which makes the loss to be around 0.99 million bunches per year. This means that banana worth around Rs.1 billion is being wasted every year.

Therefore, the project was conducted to improve all steps in both supply and value chains of banana through improving knowledge and infrastructure facilities to popularize the use of appropriate postharvest practices during supply and value chain activities with relation to banana.

The project was initiated in year 2017 at pilot scale in 2017 in Anuradhapura district and with the successful implementation, the project was scaled up to the other parts of the country in 2018continued up to 2018. Under this project one of the main activities was awareness creation of stakeholders to improve the knowledge on improved postharvest practices of banana. Therefore, 21beneficiaries were trained by 01programmein 2017 and 473beneficiaries were trained by 23 programs in 2018.In order to reduce the postharvest loss and improve the quality and practices of the banana supply chain, the banana processing zones were established/ready to be established island wide with necessary infra-structure facilities. Therefore, 12 banana handling and processing units were established in in Rajanganayain Anuradhapura district and 'Rajanganaya banana' was introduced to the market. Postharvest handling and processing practices were improved in these units thus proper postharvest practices including, mature harvesting (Avoid immature harvesting), Proper sorting and Grading based on the size, Safe, artificial ripening using ethylene gas, Transportation using safe packages (from field to pack house using plastic crates; pack house to local market after ripening by 5-ply corrugated fiber board boxes-CFB-), were introduced to the beneficiaries by providing them with sorting and packing tables, ripening chambers, plastic crates, CFB boxes and stickers for branding of the process. Thus, Sixty (60) banana handling and processing units were made ready to be established island wide and 09 new banana brands namely, Rangiri-ambulu, Mawanella, Ridiyagama, Angunakolapelassa, Jaffna, Kothmale, Embilipitiya, Mullaitivu and Moneragala will be introduced to the market in 2019, since the establishment of those units were unable to be completed in 2018 due to the delays in delivery of some of the required equipment.



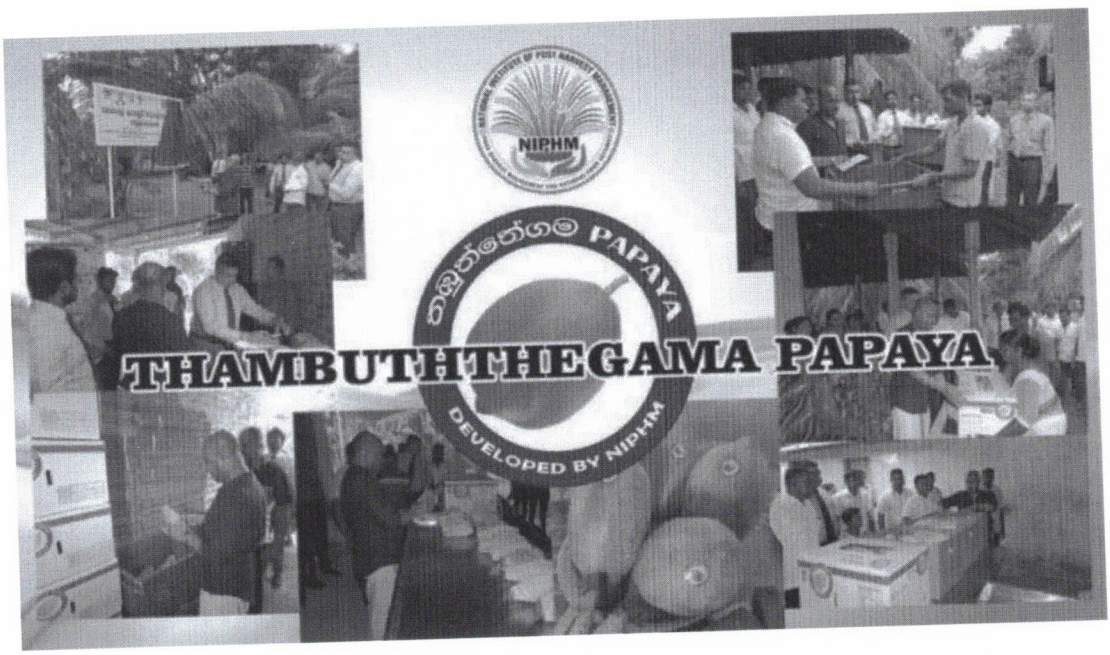
d. Improvement of Supply and value chain management practices of Papaya

Papaya is one of the major fruit crops mainly cultivated in dry zone areas. Sri Lankan climatic conditions and other factors are highly favorable towards cultivation of papaya giving high yields. However, high post-harvest level and poor quality at the due to use of improper postharvest practices had made the industry less profitable and problematic in conventional supply chain. The annual papaya production is around 26 million fruits. The annual quantitative post-harvest loss is 46% which makes the loss to be around 11 million fruits per year. This means that papaya worth around Rs.300 million is being wasted every year.

In this background, the project was initiated to improve all steps in both supply and value chains of papaya through improving knowledge and infrastructure facilities to popularize the use of appropriate postharvest practices during supply and value chain activities with relation to papaya. The project was initiated at pilot scale in 2017 in Anuradhapura district in year 2017 and continued up to 2018. Under this project one of the main activities was awareness creation to improve the knowledge of stakeholders on improved postharvest technologies and their applications on banana.

Under the project, 51beneficiaries were trained by 03 programs in 2017 and 255 beneficiaries were trained by 16 programs in 2018. In order to reduce the postharvest loss and improve the quality and practices of the papaya supply chain, the papaya processing zones were established. To facilitate use of introduced practices, equipment and other facilities were given to selected beneficiaries island wide. 12 papaya handling and processing units were established in Thambuththegama in Anuradhapura district in 2018 and 50 new handling and processing zones were made ready to be established island wide; Thambuththegama (Anuradhapura district), Ambanpola (Kurunegala district), Anamaduwa (Puttalam district), Bandagiriya, Ambalantota and Thissamaharamaya (Hambantota district), Jaffna (Jaffna district) and Hattota-Amuna (Matale District) although it was unable to be completed in 2018. Thus, new 07 papaya brands namely; 'Ambanpola, Anamaduwa, Bandagiriya, Ambalantota, Thissamaharamaya, Jaffna and Laggala papaya' will be introduced to the market in 2019.

Through these handling and processing zones mature harvesting (Avoid immature harvesting), Proper sorting and Grading based on the size, Safe, artificial ripening using ethylene gas, Transportation using safe packages (from field to pack house using plastic crates; pack house to local market after ripening by 5-ply corrugated fiber board boxes-CFB-), were introduced to the beneficiaries by providing them with sorting and packing tables, ripening chambers, plastic crates, CFB boxes and stickers for branding of the process.



e. Management of supply and value chain of agricultural produces in Sri Lanka

Price fluctuation along the value chain of perishables is one of the major issues in industry. During the harvesting time prices fall much below the minimum floor price due mainly to the excess supply of grains and perishables. Also expansion of supply chain which leads to high post-harvest losses is happened resulting low quality of agricultural produce. Poor distribution of agricultural produce is another problem encountered within the industry which leads to surplus during the season and deficit during rest of the year. Strengthening and coordination of the distribution network can solve many more problems in the industry.

Therefore, a development project was conducted to initiate the rearrangement of perishable supply chain in Sri Lanka. Initially, secondary date related to crop production and consumption was gathered from government institutions such as Department of Agriculture, HARTI, etc. Crop production data at DS levels were collected from census and statistics divisions of DS office.

Loss assessment study of vegetables
A. Investigations on Mechanical damages caused by transportation
B. Loss assessment activity at field

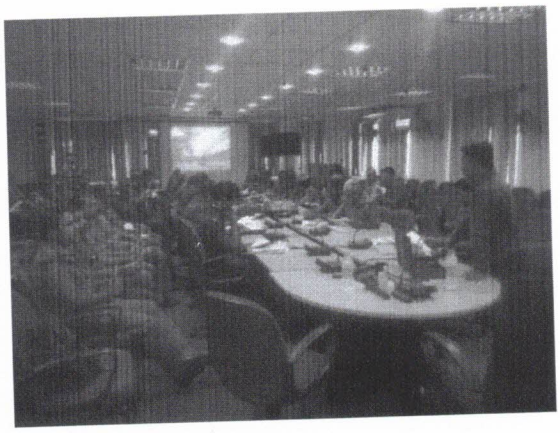
Further, crop production data at APRA levels was obtained using questionnaire booklets. The post-harvest weight loss of 12 vegetables and three fruits; tomato, brinjal, carrot, snap bean, long bean, okra, snake guard, bitter guard, cucumber, beet, leeks, green chili, papaya, banana and guava, were studied along 10 supply chains throughout the country.

f. Awareness creation for public health inspectors on improved postharvest technologies for food safety

Although there are food safety issues emerging every day and many regulations are imposed in order to rectify them, field implementation and abiding to these rules lay a problem even at present. The department of health plays the key role in regulation of the food standards and prevention of using mal practices in the supply and value chains of food. And mostly, these improper practices give away unacceptable results in the final product that comes to the market.

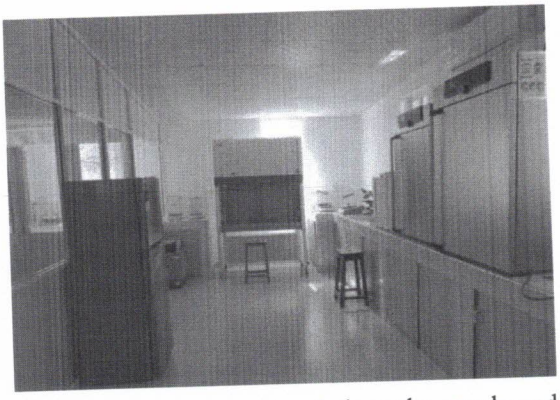
The National institute of Post-Harvest Management (NIPHM) as the other key role player in introducing proper postharvest practices in order to safeguard the food supply and value chains in order to provide a better and a safe food to the consumers, proposes to conduct awareness creation programs on food safety issues and solutions to all Public Health Inspectors who are key role players

in inspecting the food in the country. This also makes a proper and strengthened coordination/ collaboration between aforesaid two institutions. Therefore this project was initiated with the objective of Conduct awareness creation programs to 1500 Public Health Inspectors in all (25) districts to assist a proper food inspection program and to safeguard the food safety in the country and to introduce laboratory facilities and technical assistance of IPHT for carrying out their inspection duties to determine food quality and safety.

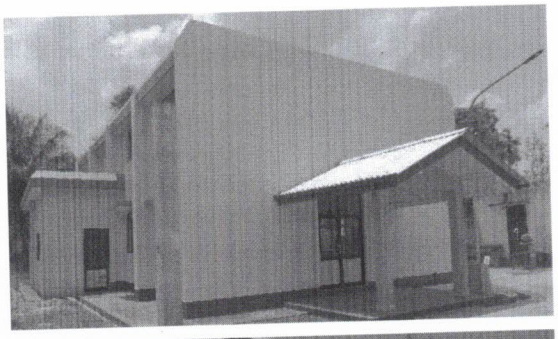


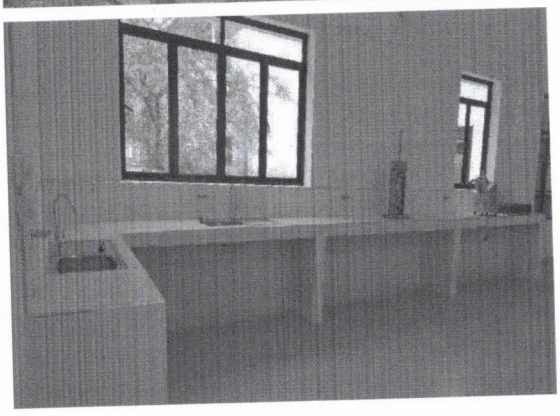
It was able to conduct 19 programmes and 916 public health inspectors were made aware on food safety and analytical tools. The trainings were arranged as residential and non-residential programmes.

g. Upgrading the laboratory facilities to provide better services for the stake holders for achieving safe food and enhancing food security in the country



Food safety and quality analysis are key factors in achieving food security all over the world thus several analytical techniques have been proposed. Since foods can become contaminated at any point along the production process, number of control programs globally accepted have been designed and implemented in the industry to reduce food safety risks. Open trade policies of the country allow the consumers to acquire much variety of food in the local market. NIPHM planned to deliver better laboratory service to a wide range of clients with the aim of eliminating food safety issues encountered along the supply and value chain management activities such as heavy metal contaminations, pesticide residues, microbiological contaminations, nutritional quality losses and some other physical quality changes including moisture content, firmness changes etc.





Further, application of harmful chemicals as pesticides can be replaced by improved techniques such as fumigation. Few years ago, commercial stores of paddy marketing board, rice millers, co-operative societies in Sri Lanka were fumigated by NIPHM but the available fumigation unit is obsolete and the most of the parts of it are expired now. Therefore, this service is not available for many grain processors all over the country emphasizing the need of re-establishment of fumigation unit. This will further assist in reducing the high amount of postharvest loss at grain storage. Therefore, this project for laboratory development aimed to provide much needed facilities to the food sector as said above. In this context, laboratory upgrading project was initiated with the objectives of providing laboratory service; physical, chemical and microbiological for the stake holders, providing fumigation facilities to the commercial grain stores and Improving research and training facilities of the institute. Thus the improvement of institute's laboratories, especially, Microbiological and Food processing laboratories were done via the project activities. Improving these laboratory facilities will enable the main activities of the institute; research and training. And also this will open a new avenue for modern technology development via research. Further, number of stakeholders will be benefitted through this project directly or indirectly as they can achieve developed laboratory facilities. The training capacity also will be improved with the renovation of food research laboratory.

EXTENSION

Extension division carries out its technology dissemination activities through it island wide extension Centers in liaisons with government and non-government organizations. Technology dissemination through field level extension work, which is one of the major activities of the institute, was continued during the year 2018.

Main different Sectors Selected for Technology Transfer activities.

a) Minimization of postharvest losses in agricultural crops

b) Introducing technologies for storage methods

c) Processing of rice, pulses and other grains

d) Spice processing

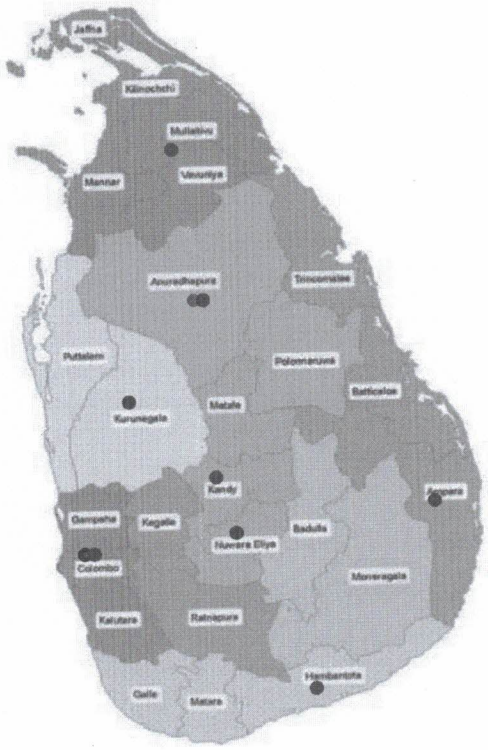
e) Value addition for fruits and vegetables

f) Rice and pulse based product development

g) Awareness programs on human nutrition and food habits in Sri Lanka

The island wide extension network will consists of seven Post-Harvest Technology Centers located in the following major crop producing areas:

1. Anuradhapura (covering Anuradhapura, Polonnaruwa, Trincomalee)
2. Abanpola (covering Kurunegala, Puttalam)
3. Kandy (covering Kandy, Matale, Kagall)
4. NuwaraEliya (covering NuwaraEliya, Welimada and Badulla)
5. Ampara (covering Ampara, Monaragala, part of Baticallo, Mahawelli System C)
6. Hambantota (covering Hambantota, Matara, Gall, Ambilipitiya)
7. Kilinochchi (covering Kilinochchi, Vavuniya, Mulathiv, Jaffna, Mannar)
8. Colombo (covering Colombo, Gampaha, Kaluthara)



Currently island wide technology transfer activities are covered by 8 extension centers

During the period under review, many extension activities were conducted aiming towards farmers, collectors, processors, traders, extension workers both from public and private sector organizations, students from schools, technical colleges, universities and other educational institutions.

One of the main activities conducted under the extension program was conducting training programs. These Training programs are being conducted every year by the institute. The training activities of the NIPHM are aimed towards updating the knowledge of producers, processors, traders and workers, from both public and private sector agencies, in the field of Postharvest Technology of grains, cereals, root & tubers, fruits and vegetables.

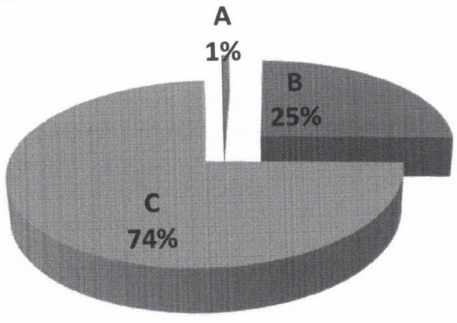
TRAINING

Training programs were conducted in following two strategies; conducting programs at the institute which are referred to as residential training programs and the programs conducted in the field. All these programs are based on stakeholder requirement and were organized to cater to the training need of the beneficiary trained.

- Residential training programs
- Non-residential programs

Residential Training Programs

These training programs were conducted at Research and Development Center at Anuradhapura. During the year 2018, 49 short-term residential training courses were conducted and 1522 persons were trained in various disciplines of Post-Harvest Technology and the details are given in the figures.



Residential trainees of NIPHM in 2018

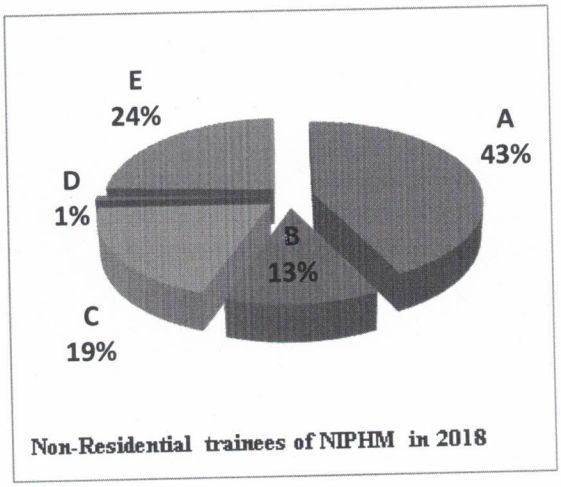
The training programs were aimed towards all stakeholders of the supply and value chains of the agricultural produce. These stakeholders were mainly farmers/farm women, collectors, transporters, whole sellers, retailers/traders and processors. Further these programs were also conducted under training of trainer aspect for officers of government and non-governmental organization, students of universities, technical colleges and schools. These programs were aimed towards awareness creation on postharvest technology, entrepreneur development, loss reduction, process and product quality improvement, postharvest machine operation and maintenance, etc.

Group	Description	No. of programs	No of trainees
A	Project beneficiaries and small/medium scale entrepreneurs	01	11
B	Extension Officers from public, cooperative, private sectors and NGO	16	384
C	Students from Secondary schools, Universities, Schools of Agriculture and Technical Colleges	32	1127
Total		**49**	**1522**

Non-residential/ Field training programs

These programs are conducted in the field itself. These are conducted by the R&D center in Anuradhapura and the extension centers of NIPHM. During the year 2018, 110 field training programs and demonstrations were conducted and 2962 individuals were trained.

The training programs were aimed towards the stakeholders of the supply and value chains of the agricultural produce were mainly targeted towards farmers/farmwomen, collectors, transporters, whole sellers, retailers/traders and processors. Awareness creation on postharvest technology, entrepreneur development, loss reduction, process and product quality improvement, postharvest machine operation and maintenance, etc. are covered under these programs.



Non-Residential trainees of NIPHM in 2018

Many of these beneficiaries are using the technologies given in these training programs. Through the technical knowledge attained, knowledge improvement, quality enhancement of produce, income generation, rural empowerment and many other benefits were achieved. This directly contributes to the loss reduction and quality improvement of the local produce in the agriculture sector, which is one of the main limiting factors in the national development in line with food security.

Group	Description	No. of training programs	No of trainees
A	Farmers, farm woman and members of farmer organizations	77	1648
B	Project beneficiaries and small/medium scale entrepreneurs	18	497
C	Collectors, transporters and traders of agricultural produce	29	740
D	Processors of agricultural produce	1	34
E	Extension Officers from public, cooperative, private sectors and NGO	46	928
Total		**171**	**3847**

Further the training of stake holders had contributed to industrial development, economic development and social development with improved living standards as well. Some beneficiaries who had initiated/ developed their industries under these programs are listed below.

No.	Name	Address	Telephone No.
01	Sakunthala kumara wanninayake	Thilakepura, kalakarbewa	072-8893558
02	Niluka abenayake	DP/48,dayapura,Ampara	071-5850193
03	S.H.W.Thusari	L/80/1,New Town, Ampara,	071-9394964
04	G.V.Tharidhu thiwanka the Silawa	C/557,Kalmunai Rd,Ampara	076-9200862
05	K.N.Dilrukshi	KPA/44/1,Ist Lane, Nawagampura,Ampara	077-5813783
06	K.W.Nilantha	No 98,Thissapura,Ampara	071-6324967

07	W.M.Wijayawathi	37/2/A,Dewalahida	071-4247708
08	T.R.M.Chinthaka	52/2,School Rd, Damana	071-6976155
09	W.M.Pathma Kumari	3/ඒ/84,Kotawehera ,Parakale	071-9854782
10	M.W.wasantha Priyangani	No.145/1,udamakuruppa, Rikillaagaskada	071-6159181
12	N.Sampath	No. 57,Wajira Mawatha, Hawa Eliya,Nuwara Eliya	0715611910
13	Kandy fresh fruits(pvt) limited	Kiribathkubura,Peradeniya	0768208950
14	T.M.N.Nisansala	184/01,Werapiyaya Road, Theldeniya	075-9633362
15	W.G.Chanaka Mahesh	Anwarama, Mawanella	0718868183
16	Y.D.Shantharathna	492/2,Rajanaganaya,Yaya 06, Warawewa	0717900140

Certificate course on Postharvest Machineries

Engineering division routinely conduct certificate course on postharvest machineries. Details relevant to the year 2018 are as follows.

No	Date	Description
01	09.08.2018	Certificate course on operation and Maintenance of Rice Processing Machinery
02	07.08.2018	Certificate course on operation and Maintenance of Spice grinding Machinery
03	08.08.2018	Certificate course on operation and Maintenance of Rice flour Processing Machinery
04	10.08.2018	Certificate Course on fruit and vegetable technology

There are no courses for developing skill persons for operating post-harvest machinery and equipment. Hence, the institute made the first move to start NVQ 3&4 courses on rice milling.

In-plant / Industrial training

During the period under review following students were accommodated as trainees at our Institute.

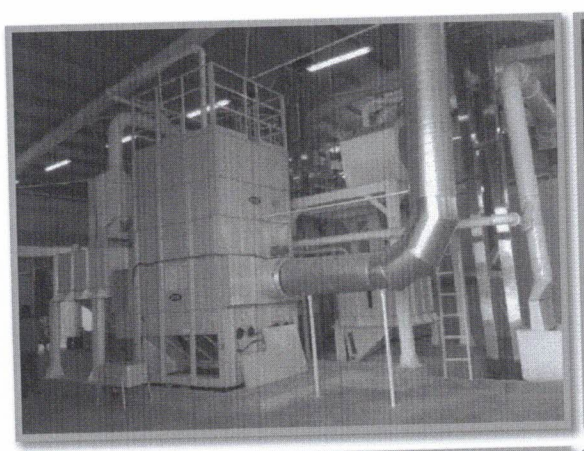
No	Name	Institute	Training	Duration
01	P.G. Lakshmika Priyadarshani	College of technology	Agriculture field assistant	2017/07/17-2018/01/16
02	K.M.P.G.S.M.K Navarathne	College of technology	Agriculture field assistant	2017/07/17-2018/01/16
03	P.S.M Prematthilaka	College of technology	Agriculture field assistant	2017/07/17-2018/01/16
04	R.W.M.S.V Polkotuwa	College of technology	Agriculture field assistant	2017/07/17-2018/01/16
05	P.A.N Weerakoon	College of technology	Agriculture field assistant	2017/07/17-2018/01/16

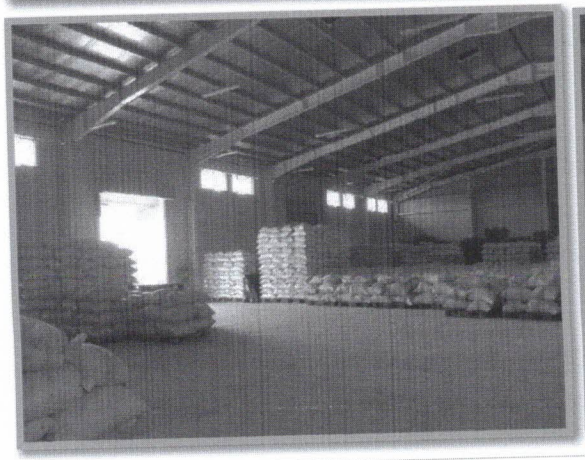
06	E.M.M.D Ekanayake	College of technology	Agriculture field assistant	2017/07/17-2018/01/16
07	P.B.E.M Dissanayake	College of technology	Agriculture field assistant	2017/07/17-2018/01/16
08	M.P.G.I.M Wijerathne	College of technology	Food technology(Diploma)	2017/08/03-2018/02/02
09	Mr.H.R.MRanasinghe	Jaffna University	Agric. Engineering (Post harvest engineering)	2017/08/08-2018/08/31

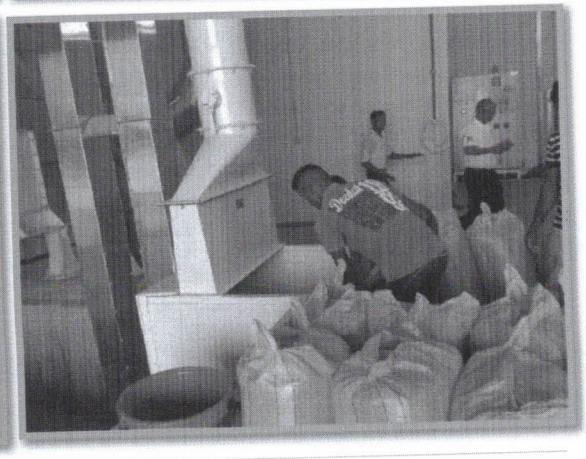
CONSULTANCY AND OTHER SERVICES

The NIPHM has progressively been sought after for consultancy and other services by both public and private sector organizations, as well as the Cooperative sector, which are either directly or indirectly involved in postharvest operations. By providing these services, the institute was successful to provide 15 numbers of consultancies in 2018 to establishing several new processing plants, modernizing existing plants and to solve technological problems encountered by rice millers and food processors in their day-to-day operations.

In 2016, the institute has worked as consultant to "Warehouse Receipt Project" of Department of Development Finance of General Treasury. This was continued in 2018 too. Under this project, warehouses with pre cleaning and drying facilities were established in Embilipitiya, Medirigiriya and Kilinochchi areas.





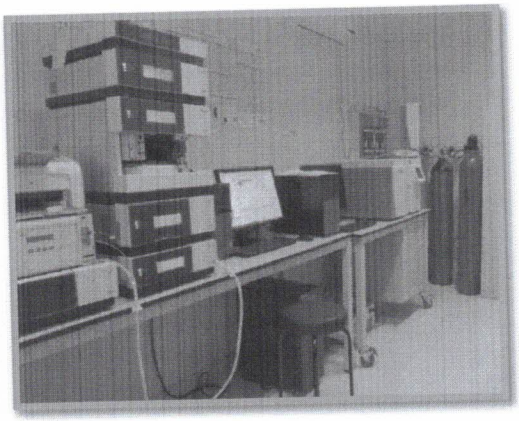


Other Consultancy and Advisory Services

No	Name of the Customers	Services
01	Warehouse Receipt Financing Project (WHRFP), Ministry of Finance, Colombo-01.	Consultancy on Warehouse
02	Rice Processing Unit ,Yaya 9 , Rajanganaya	High quality Rice milling
03	District Secretary office Batticaloa.	Providing Specifications of rice Mill
04	M.A.Rasika Sujith, 1325-A Abhayapura,Padawiya,Sripura.	Consultancy on rice flour milling
05	P.Busakaran, Queen Production,Oddusuddan Road,Puthukuduiruppu,Mullaithive	Mill visit and project report for
06	Sri Lanka Women's Development Service Corporative Society, Vavuniya	Consultancy on Pulse de-hulling
07	Industrial Services Bureau, 141, Kandy Road, Kurunegala.	EDB model Project report
08	Sri Lanka Women's Development Services Cooperative Society Ltd	Conducting a consultancy on pulse de-hulling
09	Paddy Marketing Board,Colombo-02-	Technical Report on testing of rice production standards and percentage
10	K.B.S.H.Bandara.No19, Moragahadigiliya, Horowpothana.	Project Proposals for cold storage facility under Enterprise Sri Lanka
11	M.H.M.Gaws Atlas Metals Engineering (pvt) Ltd, Kegalle.	Inspection of multi crop dryer
12	T.R.M.Chinthaka Pradeep, Damana, Ampara.	Project report on Spice Processing unit

Laboratory Services

The Institute played an important role in exercising quality control of agro/food products in the country by analyzing samples received from both private and public sector organizations for their physical, chemical and microbiological quality. NIPHM is equipped with well-developed chemical laboratory facilities; especially the chemical laboratory is equipped with Atomic absorption spectrophotometer, Gas chromatography and high performance liquid chromatography, Gas chromatography Mass spectrometer.

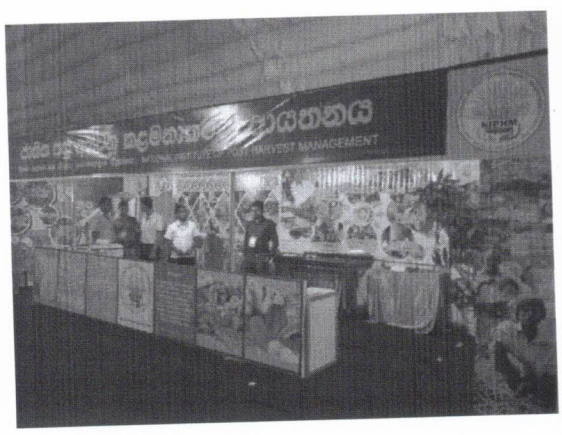


In the year 2018, institute received Rs Mn. 26 through 'National food production drive' to upgrade the laboratory facilities of the institute. Using this financial support the institute was able to renovate its microbiology and food processing laboratories. NIPHM has commenced to outsource the laboratory facilities and also taking accrediation for some of its laboratory analyses.

Exhibitions

The institute participated in many exhibitions held island wide. Through participation to exhibitions the institute expected to disseminate the technology to many stakeholders in the country. The details of the exhibitions are given below.

Date	Programme	Location	Institute
01.02.2018-02.02.2018	100th anniversary of A/ Galenbindunuwewa Central College.	Anuradhapura	A/ Galenbindunuwewa Central College.
04.04.2018-06.04.2018	Mihindu Vidu Prathibha	Anuradhapura	A/ Mihinthale Maha Vidyalaya
21.05.2018-23.05.2018	100th Anniversary Educational Exhibition	Kekirawa	Sri Rewatha Maha Vidyalaya, Madatugama
29.08.2018-31.08.2018	2025 Enterprise Sri Lanka	Moneragala	
04.10.2018-08.10.2018	Agriculture beyond horizon	Mahailluppallama	Faculty of Agriculture-MI Sub campus, University of Peradeniya
03.10.2018-07.10.2018	Educational Exhibition on'19+ Jayagrahi Mawatha k Kara'		
07.12.2018-09.12.2018	Food Festival 2018	Colombo	
11.12.2018-16.12.2018	Agriculture Modernization	Colombo	Ministry of Agriculture



CAPACITY BUILDING & PRODUCTIVITY DEVELOPMENT

Institute takes a keen interest to enhance the knowledge of its employees. The following officers of the Institute underwent postgraduate study and training in the fields pertaining to Post Harvest Technology during the year 2018.

Post-graduate Degree Programme (Continue)

Eng. T.M.R. Dissanayake
PhD in Bio System Engineering
Post Graduate Institute of Agriculture(PGIA)
University of Peradeniya

Eng. (Mrs.) D.M.S.P. Bandara
PhD in Bio System Engineering
Post Graduate Institute of Agriculture(PGIA)
University of Peradeniya

Mrs.R.M.R.K. Rathnayake
PhD in Plant Sciences
Post Graduate Institute of science (PGIS)
University of Peradeniya

Short term training/ Meetings/Conferences (Foreign training)

No	Name of the participant	Details of the Course / Workshop / Training Details	Participating country	period
01	Mr. W.M.C.B.Wasala – Senior Research Officer	Training Programme on "Warehouse Management for Scientific Storage of Food Grain	India	26/03/2018-30/06/2018
01	Mrs. R.M.R.N.K.Rathnayake Research Officer	18 -AG-45-GE-WSP-B: Workshop on Innovation in Postharvest Handling of Perishables:	Dhaka, Bangladesh	20/05/2018-24/05/2018
02	Mr.C.R.Gunawardane - Research Officer	Training Workshop on Harvesting and Post-Harvest Mechanization to Support Food Security in Asia and Africa.	Nanjing, China	21/05/2018-27/05/2018
03	Mr.T.M.R.Dissanayake - Director	Leader ship Training on Agricultural Research Management at Asian Institute of Technology (AIT)	Thailand	30/05/2018-10/06/2018
04	Mr. Kavinda C. Dissanayake - Chairman	2018 Ministerial Seminar on Financial for Developing	China	11/06/2018-17/06/2018

		Countries		
05	Mr. Kavinda C. Dissanayake - Chairman	Jack Fruit Symposium	India	08/07/2018-16/07/2018
06	Miss. W.M.S.S.K.Weerasinghe - Research Officer	Jack Fruit Symposium	India	08/07/2018-16/07/2018
08	Mr.H.M.A.P.Rathnayake – Add. Director (Acting)	Regional Workshop on Public – Private Partnership to Develop Agricultural Value Chains	Nay Pyi Taw, Myanmar	30/07/2018-31/07/2018
09	Mr.N.Somakanthan – Extension Officer	Short Term Training on Post-Harvest Handling of Fruits and Vegetables	Malaysia	15/10/2018-19/10/2018
10	Mr.C.R.Gunawardane – Research Officer	Training Workshop on Food Processing and Rice Fortification	China	28/10/2018-03/11/2018

AWARDS AND RECOGNITIONS

Eng. TMRDissanayake

- Chairman of Agricultural and Plantation Engineering Sectional Committee of Institution of Engineers, Sri Lanka
- Area Director, Area H3 Division H, District 82 of Toastmaster International
- External member of faculty board of Faculty of Agriculture, Rajarata University of Sri Lanka.

Eng. H.M.A.P. Rathnayake

- Committee Member of Agricultural and Plantation Engineering Sectional Committee of Institution of Engineers, Sri Lanka
- Member of the working committee of the Sri Lanka Standard Institution for Formulation of Standards for Paddy and rice Member of the national committee of developing policies for agriculture mechanization

Dr. Nilanthi Wijewardana

- Steering Committee Member of the SLAAS, Sri Lanka
- Member of the working committee of the Sri Lanka Standard Institution for Formulation of standards for papaya

PATENTS, PUBLICATIONS AND AWARDS

Technologies developed via research projects were published in indexed and non indexed journals. Details are given below.

Publications	Technology/ Contribution to the sector
Bandara, B.D.M.P., Senanayake, D.P., (2018). Development of medium scale rice flour shifter. Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Center, NIPHM, Anuradhapura.	New rice flour sifter was introduced for the medium scale entrepreneurs.
Jayathunga, K. G. L. R,.Mohammed Thanish., Jayathilaka, S. and Nilmini, A. H. L., (2018). Impact of lipid type and quantity of lycopene bio accessibility of tomato paste. Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Center, NIPHM, Anuradhapura.	This finding Opens a novel avenue for food processing, since Bio accessibility plays a major role in human nutrition. Developed techniques will be used in future research in tomato processing.
Kumara, B.A.M.S., Wijewardane, R.M.N.A., Weerasinghe, W.M.S.S.K. and Hettige, K.D.T.,(2018). Identification of optimum ripening stage of papaya (Carica papaya) cv. Red Lady for dehydration". Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Center, NIPHM, Anuradhapura.	Quality of dehydrated product depends on the processing parameters, Thus, the finding introduces the optimum stage of maturity to be used in dehydration of papaya cv. Red Lady.
Kularathne, T. M., Dissanayake, C.A.K., Sivashankar, P. and Herath, M.M., (2018). Study on role and empowerment of women involved in Mango supply chain in Omaragolla Mango processing zone". Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Center, NIPHM, Anuradhapura.	Women empowerment is an essential tool in developing social and physical wellbeing of a nation. This research revealed the value of established mango processing zones.
Kulasinghe, W.M.A.A, Wimalasiri, K.M.S., Samarasinghe, G., Silva, R., Gunawardane, C.R., Madhujith, T.,(2018). Evaluation and comparison of vitamin profiles of selected traditional yams grown in Sri Lanka. Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Center, NIPHM, Anuradhapura.	Revealed the potential of traditional yams to increase food nutrition in the country. These findings will be utilized in future studies.
Rathnayake, H.M.A.P.,Wijewardana, R.M.N.A., Dissanayake, T.M.R., Marasinghe, C.K.,(2018). Optimization of the dehydration process of pumpking in tyray Dryer. Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Center, NIPHM, Anuradhapura.	Optimum dehydration parameters for pumpkin has identified and introduced to the postharvest industry.
Rathnayake, R.M.R.N.K.,Ganehenege, M.Y.U., Ariyarathne, H.M., Daundasekara, W.A.M., (2018). Soil application of rice husk as a natural silicon source to enhance some chemical defense responcses against foliar fungal pathogens and growth	Alternative method for chemical fungicide is introduced.

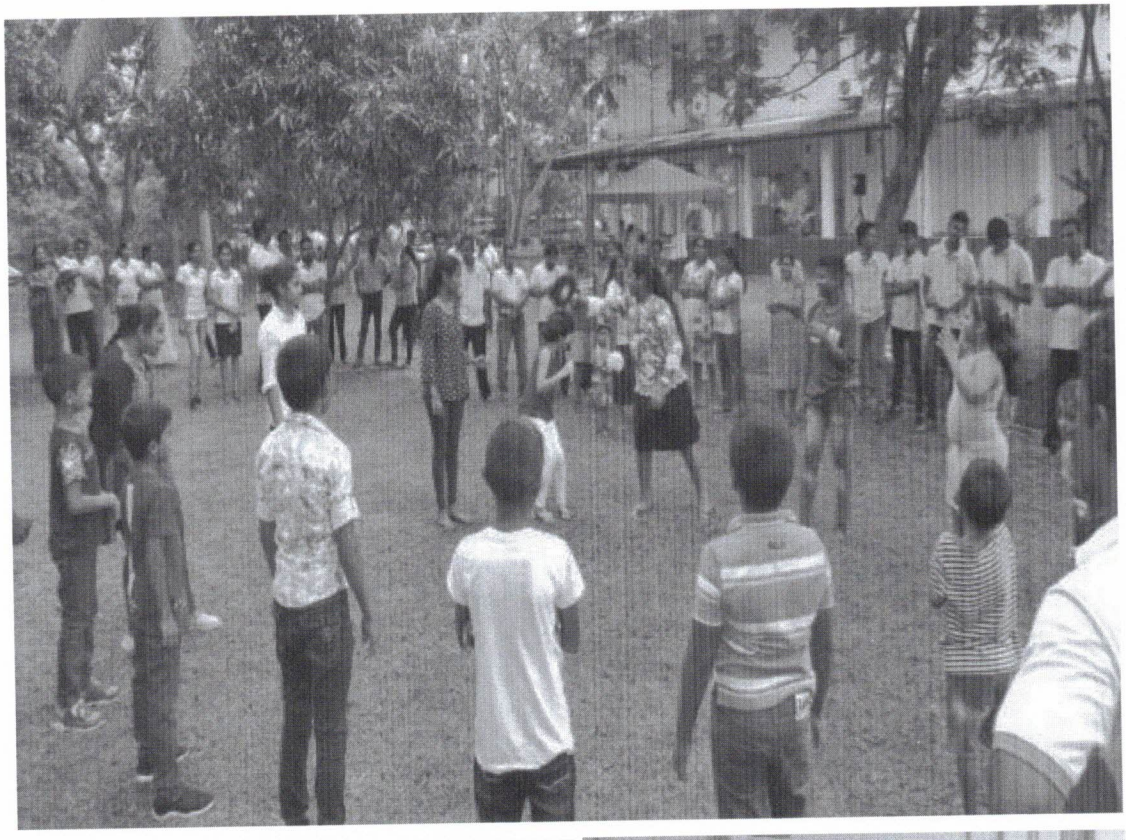
performance of Bitter Gourd (Momordica charantia L.). Ceylon journal of Science 47(1) 2018: pp49-55.	
Rathnayake, R.N.K., Danundasekara, W.A.M., Ariyarathne, H. M., Ganehenege, M.Y.U., (2018). Pre-harvest root application of soluble silicon improves post-harvest quality and induces antifungal compounds in bitter gourd (*Momordica charantia L.)".*Phytoparasitica. Vol.46, Issue 4, pp. 541-549.	
Sasanka, P.I., Wijewardane, R.M.N.A., Wijesinghe, W.A.J.P., Jeewanthi, P.W., (2018).Nutritional textural and sensory quality of busicuts supplemented with dehydrated Embul Banana (Musa spp.) and Candied Citrus Peel. Proceedings Wayamba International Conference, Wayamba University of Sri Lanka.	New food product was developed and it will be introduced to the market in the future.
Sasanka, P. I., Wijewardane, R. M. N. A.,Wijesinghe, W. A. J. P. and Jeewanthi, P. W.,(2018). Quality attributes of biscuit made from wheat flour fortified with banana flour. Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Center, NIPHM, Anuradhapura.	
Samaradiwakara, S. D.,Champa, W. A. H., Eeswara, J. P., (2018). Effect of Harvest maturity on postharvest life of lime (Citrus auranrifoliaSwingle) under ambient storage. Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Center, NIPHM, Anuradhapura.	This finding reveals the importance of considering maturity indices of lime for shelf life extension. High Post harvest loss and price reduction during the gluts is a major problem in lime, hence this finding helps to extend the shelf life of lime.
Senanayake, D.P., Rathnayake, H.M.A.P., Bandara, B.D.M.P., Dissanayake, T.M.R., Rathnayake, R.M.R.N.K.(2018). Performance evaluation of the de-scaled compartment separator for Finger Millet. Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Centre, NIPHM, Anuradhapura	Affordable machine for finger millet processing was introduced.
Senanayake, D.P., Rathnayake, H.M.A.P., Bandara, B.D.M.P., Dissanayake, T.M.R., Bandara, D.M.S.P. (2018). Performance evaluation of redesigned Finger Millet De-stoner. Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Center, NIPHM, Anuradhapura.	
Wijewardane, R. M. N. A., Wickramasooriya, S. N., Kumari, D.W. M. M. M. (2018). Optimum cold storage temperature for Hybrid pale F1 Bitter Gourd (Momordica charantia L.). Proceedings of the 3rd International Research Symposium on Postharvest Technology, Research and Development Center, NIPHM, Anuradhapura.	Cold storage parameters were identified for locally available bitter gourd. It will help in initiation of cold chains in the future.

SOCIAL, WELFARE AND RELIGIOUS ACTIVITIES

SOCIAL AND WELFARE

The institute continued its welfare activities to build up employee relations and goodwill among staff and their families. Similar to the previous year workers' day was held in 09th April 2018. The same day evening, the welfare society of the institute held staff and their family get-together.

Appreciation of long service was done in parallel to "Workers Day" event. A cheque worth of Rs. 50 000.00 was given to those who have completed 25 years of service to the institute.



RELIGIOUS ACTIVITIES

NIPHM celebrated 18 years of establishment as Institute of Post-Harvest Technology in 19th June 2000 as a successor to the Rice Processing Research and Development Centre of Paddy Marketing Board. To mark this and increase team idea, networking people in the area, "Sarvarathrika Pirith sajjayanaya" was held in 25th June 2018.

HUMAN RESOURCES

The total permanent staff of the Institute was 156. This total comprised of 52% in the technical divisions and 48% in the supporting divisions. Research, Engineering and Extension are the main divisions of the institute.

As at 31st December 2018

Staff	Total Cadre Positions	Filled Cadre Positions
Principal Research Officer	02	-
Chief Mechanical Engineer	01	01
Principal Extension Officer	01	-
Senior Research Officer	03	02
Senior Mechanical Engineer	02	02
Senior Extension Officer	01	01
Research Officer	14	11
Mechanical Engineer	06	05
Extension Officer	05	04
Economist	01	01
Total	**36**	**27**

No.	Staff	Total Cadre Positions	Filled Cadre Positions
Scientific staff			
01	Research and Development staff	36	27
02	Support staff	52	41
03	Librarian	01	01
Supporting staff			
01	Senior Managers	03	01
02	Accountant	01	01
03	Internal Auditor	01	01
04	Administrative officer	02	01
05	Supportive staff (MA, TO and other)	58	58

Distribution of R&D Officers

No.	Area	Male	Female	Total
01	Agriculture	06	09	15
02	Engineering	05	03	08
03	Science	01	01	02
04	Food Science	01	01	02
05	**Total**	**13**	**14**	**27**

Expertise of Research and Technology Transfer Staff

In the area of post-harvest technology, the institute has good expertise in rice processing, grain storage and considerable expertise in fruit and vegetable, spice. The research and technology staff consists of engineers, agriculturists, chemist, microbiologists, food scientists etc. This help to analyses problems in different areas.

EXECUTIVE STAFF

As at 31st December 2018

DIRECTOR/CHIEF EXECUTIVE OFFICER
Eng. Mahesh Dissanayake
BSc. Eng, MEng. CEng. MIE (SL), PhD (Reading)

ADDITIONAL DIRECTOR (RESEARCH AND TECHNOLOGY TRANSFER)
Eng. H.M.A.P. Rathnayake
BSc. Eng, MEng. CEng. MIE (SL)

ADDITIONAL DIRECTOR (ADMINISTRATION AND FINANCE)
Mr. R.A.K.P.Ramanayake
BSc. Mgt. *Licentiate Certificate, ICA, MIPFDA*

RESEARCH DIVISION

HOD | Principle Research Officer
Dr. (Mrs.) NilanthiWijewardhane
BSc. Agric, MSc. Agric, MPhil, PhD

Research Officers

Mr. H.R.M.G.C. Thilakarathna
B.Sc. in Food Science &Technology. Ph.D in Food sci. & Tech. (Reading)

Mrs. Y.M.P. Samarasinghe
B.Sc. Agric. MSc in Geo Informatics

Mr. B. A. M. S. Kumara
B.Sc. Agric. M.Sc.(Organizational Management)

Miss. T. M.A. N. Weerasinghe
B.Sc. in Export Agriculture (special),M.Sc. in Food Science & Technology (Reading)

Miss G. E. D. A. M. Jayarathna
B.Sc. Food Science & Tech. (special),M.Sc. in Food Science and Nutrition (reading)

Miss W. M. S. S. K. Weerasinghe
B.Sc. Agric. M.Sc. in Organizational Management

Mrs W. B. W. M.R. C. P. Aluwihare
B.Sc. Agric.

Mr K. D. T. Hettige
B.Sc. Agric., M.Sc. in Food and Nutrition

Mrs G. D. N. Menike
B.Sc. Agric. M.Phil. in Molecular and Applied Microbiology(Plant Protection)

ENGINEERING DIVISION

HOD | Mechanical Engineer
Eng. B.D.M.P.Bandara
BSc. Eng, MEng. CEng. MIE (SL)

Chief Mechanical Engineer
Mrs. D. P. Senanayake
BSc. Eng, MPhil. CEng. MIE (SL)

Mechanical Engineers
Mrs. C. K. Marasinghe
B.Sc. Eng., M.Phil.(Eng.), AMIE (SL)

Mr. Y.G. Harischandra
B.Sc.Eng.M.Sc. (Reading), AMIE (SL)

EXTENSION DIVISION

HOD | Senior Extension Officer
Mrs. ChamindiDissanayake
BSc. Agric, PGDIP Agric, Mphil. Agric, PhD (reading)

Extension Officer
Mr. P.G. LalithWasantha
B.Sc.Sp.Agric., MSc Agric.

Mr. M.M. Herath
B.Sc Agric., Dip. in Counseling

Mr. Somakanthan
B.Sc Agric., MSc Agric.

Ms. Lakmini Senavirathne
B.Sc Agric.,

DEVELOPMENT PROJECT DIVISION

HOD | Senior Research Officer
Mr. W.M.C.B.Wasala
BSc. Agric, MSc. Agric, MPhil.

LABORATORY SERVICE DIVISION

HOD | Research Officer
Mr. Chaminda Gunawardhane
BSc (Chemistry) special.

Technological Officer
Mr. Champika Kumara
NCT (Electrical)

PLANNING AND MONITORING DIVISION

HOD | Research Officer
Mrs. Ruwanka Rathnayake
BSc.Sp. (Botany), MSc., PhD in post-harvest Technology (Reading)

Economist
Ms. K.A.T.S. Kumari
BSc. Agric,

ADMINISTRATION DIVISION

HOD | Additional Director (Admin & Finance)
Mr. R.K.A.P.Ramanayake
BSc. Mgt. Licentiate Certificate, ICA, MIPFDA

Administrative Officer
Mr. Janaka Subasinghe
BSc.

FINANCE DIVISION

HOD | Accountant
Mr. Niluka Illangasinghe
B.Com (Sp.), APFA, ACPM, MBA (Reading)

ACADEMIC DIVISION

HOD | Mechanical Engineer
Eng. (Mrs.) DamindaAthapaththu
BSc. Eng, MEng.

Librarian
Keshala Priyadarshani
BSc (Library Science)

INTERNAL AUDIT UNIT

HOU | Internal Auditor
Mr. R.M.D.Rathnayake
BSc (Accounting)

NATIONAL INSTITUTE OF POST HARVEST MANAGEMENT
STATEMENT OF FINANCIAL POSITION AS AT DECEMBER 31, 2018

	NOTES	2018 RS.	2017 RS.
ASSETS			
NON - CURRENT ASSETS			
Property, Plant and Equipment	6	210,805,889.78	191,032,336.83
Investments	7	30,000,000.00	30,000,000.00
Intangible assets	8	-	7,840.00
Other non-current assets	9	9,724,265.61	9,615,807.67
TOTAL NON CURRENT ASSETS		**250,530,155.39**	**230,655,984.50**
CURRENT ASSETS			
Cash and cash equivalents	10	12,096,343.75	27,861,853.60
Receivables	11	59,998,784.09	48,921,925.28
Inventories	12	954,445.90	1,274,712.95
Advances	13	167,795.50	321,176.07
Other current assets	14	1,973,986.97	1,446,372.27
TOTAL CURRENT ASSETS		**75,191,356.21**	**79,826,040.17**
TOTAL ASSETS		**325,721,511.60**	**310,482,024.67**
EQUITY AND LIABILITIES			
EUITY	15		
Initiate Capital		69,907,594.42	69,907,594.42
Government Grant		8,368,214.00	8,368,214.00
Foreign Loan		72,750,229.02	72,750,229.02
General Capital Fund		131,636,167.28	114,690,471.79
Assets Revaluation Surplus		34,702,988.00	34,702,988.00
Accumulated Surplus / (Deficit)		(98,340,039.30)	(89,211,227.47)
TATAL EQUITY		**219,025,153.42**	**211,208,269.76**
LIABILITIES			
NON-CURRENT LIABILITIES			
Provision for Gratuity Fund	16	29,144,228.80	33,945,662.45
TOTAL NON-CURRENT LIABILITIES		**29,144,228.80**	**33,945,662.45**
CURRENT LIABILITIES			
Payables	17	**77,552,129.38**	65,328,092.46
TOTAL CURRENT LIABILITIES		**77,552,129.38**	**65,328,092.46**
TOTAL LIABILITIES		**106,696,358.18**	**99,273,754.91**
TOTAL EQUITY AND LIABILITIES		**325,721,511.60**	**310,482,024.67**

The accounting policies and notes from page 05 To 22 an integral part of these Financial Statements.

These Financial Statements are in compliance with the requirements of the Sri Lanka Public Sector Accounting Standards (SLPSAS).

.....
I .M. N.P. Illangasinghe
Acountant/HOD - Finance

.....
R.K.A.P. Ramanayake
Additional Director (Admin & Finance)

The 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.

.....
T. M. R. Dissanayake
Director /CEO(Actg)

.....
Dr. A. R. Ariyarathne
Chairman

NATIONAL INSTITUTE OF POST HARVEST MANAGEMENT
STATEMENT OF FINANCIAL PERFORMANCE FOR THE YEAR ENDED DECEMBER 31, 2018

	NOTES	2018 RS.	2017 RS.
REVENUE			
General Treasury Fund - Recurrent	18	115,993,467.18	95,083,608.41
Transfers from other agencies	19	35,067,444.60	30,639,749.80
Self Generated Income	21	13,537,858.79	9,794,232.15
Other Income	22	6,281,145.40	4,411,173.77
Amortization of Capital Grants	20	27,020,326.74	17,755,504.80
TOTAL REVENUE		**197,900,242.71**	**157,684,268.93**
EXPENSES			
Wages, salaries and employee benefits	23	95,516,861.02	88,029,648.15
Supplies and consumables used	24	25,274,466.74	15,633,438.51
Depreciation and amortization expense	25	27,020,326.74	17,755,504.80
Other expenses	26	30,237,412.52	13,878,294.96
Project Expenses	27	35,067,444.60	30,551,345.74
Finance costs	28	22,603.37	29,109.37
TOTAL EXPENSES		**213,139,114.99**	**165,877,341.53**
SURPLUS / (DEFICIT) FOR THE PERIOD		**(15,238,872.28)**	**(8,193,072.60)**

The accounting policies and notes from page 05 To 22 an integral part of these Financial Statements.

NATIONAL INSTITUTE OF POST HARVEST MANAGEMENT
CASH FLOW STATEMANT FOR THE YEAR ENDED DECEMBER 31, 2018

	NOTES	2018 RS.	2017 RS.
CASH FLOWS FROM OPERATING ACTIVITIES			
Surplus /(Deficit)		(15,238,872.28)	(8,193,072.60)
Effect to Cash flow from Adjustments of Accumilated Surplus	29	6,110,060.45	175,826.49
Non - Cash Movements			
Depreciation		27,020,326.74	17,755,504.80
Amortization of Capital Grants		(27,020,326.74)	(17,755,504.80)
Interest Income	21.8	(3,876,197.39)	(3,356,255.21)
Increase/(Decrease) in payables (Operating)	30	(5,971,795.68)	47,940,664.60
Increase/(Decrease) in Provisions for Gratuity Fund	31	(4,801,433.65)	5,747,473.45
(Increase)/Decrease in other current assets (Receivables-Operating)	32	12,805,859.52	(47,962,049.61)
Net cash flows from operating activies		**(10,972,379.03)**	**(5,647,412.88)**
CASH FLOWS FROM INVESTING ACTIVITIES			
Purchase of Property,Plant and Equipment	33	(28,598,047.09)	(26,753,844.85)
(Increase)/Decrease non current assets	34	(100,617.94)	567,178.62
Net interest Received	21.8	3,876,197.39	3,356,255.21
Net cash from investing activities		**(24,822,467.64)**	**(22,830,411.02)**
CASH FLOWS FROM FINANCING ACTIVITIES			
Capital Grants	35	20,029,336.82	26,535,726.59
Net cash flows from financing activities		**20,029,336.82**	**26,535,726.59**
Net increase/(decrease) in cash equivalents		**(15,765,509.85)**	**(1,942,097.31)**
Cash and cash equivalents at beginning of period	36	**27,861,853.60**	**29,803,950.91**
Cash and cash equivalents at end of period	37	**12,096,343.75**	**27,861,853.60**

The accounting policies and notes from page 05 To 22 an integral part of these Financial Statements.

NATIONAL INSTITUTE OF POST HARVEST MANAGEMENT

STATEMENT OF CHANGES IN EQUITY FOR THE YEAR ENDED DECEMBER 31, 2018

Attributable to owners of the controlling entity							Total net assets
	Initiate capital	Gov.grant	Foreign loan	Funds from Gen. Trea.	Assets Revaluation Surplus	Accumulated surpluses/(deficitts)	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
B/B/F as at Dec.31, 2017	**69,907,594.42**	**8,368,214.00**	**72,750,229.02**	**114,690,471.79**	**34,702,988.00**	**(89,211,227.47)**	**211,208,269.76**
Change in net assets for 2018							-
Capital Grants				43,966,022.23			43,966,022.23
Amotization of Deffered Income				(27,020,326.74)		-	(27,020,326.74)
Assets Revaluation Surplus							-
Changes in Accumulated Surplus						6,110,060.45	6,110,060.45
Surplus / (Deficit) for the period						(15,238,872.28)	(15,238,872.28)
Balance as at Dec. 31, 2018	**69,907,594.42**	**8,368,214.00**	**72,750,229.02**	**131,636,167.28**	**34,702,988.00**	**(98,340,039.30)**	**219,025,153.42**

The accounting policies and notes from page 05 To 22 an integral part of these Financial Statements.

NATIONAL INSTITUTE OF POST HARVEST MANAGEMENT
NOTES TO THE FINANCIAL STATEMENTS

Accounting Policies

1 Reporting Entity

1.1 Corporate Information

Institute of Post Harvest Technology is a body corparate, established on 19th June 2000 by the Extraordinary Gazette of the Democratic Socialist Republic of Sri Lanka No.1137/10 under the provisions of the State Agricultural Corporations Act. No. 11 of 1972. And, Institute's name has been revised as " National Institute of Post Harvest Management" on 17th October 2018 by the Extraordinary Gazette of the Democratic Socialist Republic of Sri Lanka No.2093/26

1.2 Principal Activities and Nature of Operations

The Institute carrying out post harvest research and development activities pertaining to cereals, pulses, oil seeds, other field crops, fruits, vegitables and spice crops.

1.3 Approval of Financial Statements by the Board of Directors

The Financial Statements of the Institute have been authorized for issue by the Board of Directors

2. Basis of Preparation

2.1 Statement of Compliance

The Financial Statements of the Institute have been prepared and presented in accordance with Sri Lanka Public Sector Accounting Standards (SLPSAS).

2.2 Responsibility of Financial Statements

The Board of Directors is responsible for the preparation and fair presentation of the Financial Statements of the Institute as per the Sri Lanka Public Sector Accounting Standards.

The Board of Directors acknowledges this responsibility in the Statement of Financial Position of the Institute.

2.3 Basis of Measurement

The Financial Statements have been prepared on the historical cost basis.

2.4 Functional and Presentation of Currency

The Financial Statements are presented in Sri Lankan Rupees which is the Institute's functional and presentation currency except when otherwise indicated.

2.5 Presentation of Financial Statements

The assets and liabilities of the Institute presents in its Statement of Financial Position are grouped by nature and listed in an order that reflects their relative liquidity and maturity pattern. No adjustments have been made for inflationary factors affecting the Financial Statements.

2.6 Materiality and Aggregation

Each material class of similar items is presented separately in the Financial Statements. Items of dissimilar nature or function are presented separately unless they are immaterial as permitted by Sri Lanka Public Sector Accounting Standards SLPSAS 1 'Presentation of Financial Statements'.

2.7 Offsetting

Assets and liabilities and income and expenses are not set-off unless permitted by the Sri Lanka Public Sector Accounting Standards.

2.8 Significant Accounting Judgements, Estimates and Assumptions

2.8.1 Going Concern

The Institute's management has made an assessment of its ability to continue as a going concern and is satisfied that it has the resources to continue in operations for the foreseeable future. Furthermore, management is not aware of any material uncertainties that may cast significant doubt upon the Institute's ability to continue as a going concern. Therefore, the Financial Statements continue to be prepared on the going concern basis.

2.8.2 Useful Lifetime of the Property Plant and Equipment

Useful economic lives of Property, Plant and Equipment are estimated as disclosed in Note 3.1 to the Financial Statements.

3. Significant Accounting Policies - Recognition of Asset and Liabilities

Accounting policies set out below have been applied consistently to all periods presented in the Financial Statements of the Institute unless otherwise indicated. Further, comparative year's information has been presented.

3.1 Property Plant & Equipment

Property, plant and equipment are tangible items that are held for use in the production or supply of goods or services, for rental to others or for administrative purposes and are expected to be used during more than one period. The Institute applies the requirements of Sri Lanka Public Sector Accounting Standard – SLPSAS 7 - 'Property, Plant and Equipment' in accounting for these assets.

Basis of Recognition

Property, Plant and Equipment are recognised if it is probable that future economic benefits service potential associated with the asset will flow to the Institute and the cost of the asset can be reliably measured.The institute policy recognition of property, plant and equipment is the value higher than Rs.5000.

Measurement

An item of Property, Plant and Equipment that qualifies for recognition as an asset is initially measured at its cost. Cost includes expenditure that is directly attributable to the acquisition of the asset. The cost of self constructed assets includes the cost of materials and direct labour, any other costs directly attributable to bringing the asset to a working condition for its intended use and the costs of dismantling and removing the items and restoring the site on which they are located. Purchased software that is integral to the functionality of the related equipment is capitalised as part of computer equipment. When parts of an item of property or equipment have different useful lives, they are accounted for as separate items (major components) of property and equipment.

Cost Model

The Institute applies cost model to all Property, Plant and Equipment, and records at cost of purchase or construction together with any incidental expenses there on less accumulated depreciation and any accumulated impairment losses. Such cost includes the cost of replacing part of the equipment when that cost is incurred, if the recognition criteria are met.

Subsequent Cost

The subsequent cost of replacing a component of an item of Property, Plant and Equipment is recognised in the carrying amount of an item, if it is probable that the future economic benefits embodied within that part will flow to the Institute and it can be reliably measured. The costs of the day-to-day servicing of Property, Plant and Equipment are charged to the statement of Financial Performance as incurred. Costs incurred in using or redeploying an item is not included under carrying amount of an item.

Depreciation

Depreciation is recognised in profit or loss on a straight-line basis over the estimated useful lives each part of an item of Property and Equipment since this method most closely reflects the of expected pattern of consumption of the future economic benefits embodied in the asset. Freehold land is not depreciated. The estimated useful lives are as follows:

Asset Category	Period
Building	40 Years
Plant & Machinary	13.3 Years
Office Equipment	10 Years
Lab & Research Euipment	10 Years
Other Equipment	10 Years
Furniture	10 Years
Electrical & Other Fittings	10 Years
Library Books	10 Years
Computer & Accessories	4 Years
Telephone & Fittings	5 Years
Vehicles	5 Years
Software	5 Years

Assets Revaluation

Class of vehicle was revalued asat 31/12/2017.Revalued amount of vehicle is shown in the books. Revaluation surplus was credited to revaluation surplus A/C.

Assets Disposal

Tollaly depreciated asset which was not physically, agro - farm was removed from the books.

3.2 Events after the Reporting Period

Events after the Reporting period are those events, favorable and unfavorable, that occur between the Reporting date and the date when the Financial Statements are authorized for issue. In this regard, all material and important events that occurred after the Reporting period have been considered and appropriate disclosures are made in the the Financial Statements where necessary.

3.3 Inventories

Inventories are valued at lower of cost and net realizable value. Cost is dertermined on the FIFO basis and includes expenses incurred in acquiring the inventories and bringing them to their existing location and condition.

3.4 Employee benefits

Defined contribution plans - Employees' Provident Fund and Employees' Trust Fund

All employees who are eligible for Employees' Provident Fund contribution and Employees' Trust Fund contribution are covered by relevent contribution funds in the line with respective statutes and regulations. Employees contribute 10% and, Institute contributes 12% and 3% of gross emoluments of employees to Employees' Provident Fund and Employees' Trust Fund respectively.

Defined Benefits Plan - Gratuity

A Defined Benefit Plan is a post-employment benefit plan other than a Defined Contribution plan as defined in Sri Lanka Accounting StandardLKAS19 on"Employee Benefits".The Institute is liable to pay retirement benefits under the Payment of Gratuity Act, No.12 of 1983.Provision has been made in the Financial Statements for retirement gratuity as Employee benefit liability after the 5 years of service for all employees. Gratuity plan defines an amount of benefit that an employee will receive on retiremant, usually dependant on one or more factors such as years of service and compensation. The liability recognised in respect of employee benefit liability in the Statement of Financial position is the present value of the defined benefit obligation at the reporting date together with adjustments for unrecognized past service costs. The employee benefit liability is calculated annually.

3.5 Provisions

Provisions are recognised if, as a result of a past event the institute has a present leagal or constructive obligation that can be estimated reliably and it is probable that an outflow of economic benefit will be required to settle the obligation. Provisions and liabilities are recognised in the Statement of Financial Position.

4. Significant Accounting Policies - Income and expense

4.1 Revenue Recognition

Revenue is recognised to the extent that it is probable that the economic benefits will flow to the Institute and such revenue can be reliably measured. All Government and other grants are recognised initially as Recurrent Grant and are then transferred into the Capital Grant which used for Capital needs. The Capital Grants are recognised initially as deffered income and are then recognised in profit or loss as Amortization of deffered income on a systematic basis over the useful life of the assets.

4.2 Borrowing Cost

All borrowing costs are expensed in the period in which they occur. Borrowing costs consist of interest and other costs that an entity incurs in connection with the borrowing of funds.

4.3 Tax Expense

As per the Sri Lanka Accounting Standard-LKAS 12 on 'Income Taxes', tax expense (tax income) is the aggregate amount included in determination of profit or loss for the period in respect of current and deferred taxes.Income tax expense is recognized in the Statement of Financial Performance except to the extent it relates to items recognised directly in equity or in Other Comprehensive Income (OCI), in which case it is recognised in equity or in OCI.

4.4 Research and Development Expenses

Research and Development expenses are allocated from capital budget.But Capital neture expenses are only recognised as assets. Recurrent nature expenses are charged to profit and loss.

5. Statement of Cash Flow

The Statement of Cash Flow has been prepared by using the 'IndirectMethod', in accordance with Sri Lanka Public Sector Accounting Standards – SLPSAS 2 on 'Cash Flow Statements '

06. Property Plant and Equipments

Rs.

Description	Building	Plant & Machinary	Office Euipment	Lab. & Research Euipment	Other Euipment	Furniture	Electric & Other Fittings	Library Books	Computer & Accessories	Telephone & Fittings	Vehicles	Software	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Balance at the beginning of the period	121,005,770.16	55,846,191.08	4,758,258.50	97,354,763.82	16,564,802.50	15,183,476.70	1,652,004.37	1,529,998.55	10,798,761.06	504,047.66	39,815,000.00	-	365,013,074.40
Additions during the year	11,578,166.99	1,097,656.00	1,601,327.15	3,453,233.30	23,533,412.25	2,042,456.50	20,700.00	625,605.00	2,578,822.50	-	-	262,500.00	46,793,879.69
Written off during the year													-
Balance at the end of the year	**132,583,937.15**	**56,943,847.08**	**6,359,585.65**	**100,807,997.12**	**40,098,214.75**	**17,225,933.20**	**1,672,704.37**	**2,155,603.55**	**13,377,583.56**	**504,047.66**	**39,815,000.00**	**262,500.00**	**411,806,954.09**
Accumulated depreciation													173,980,737.57
Balance at the beginning of the year	50,743,762.71	52,354,525.25	3,340,559.19	42,015,072.26	2,415,615.98	10,866,656.83	1,367,627.09	1,450,008.39	8,942,868.52	484,041.35	-	-	27,020,326.74
Charge for the year	3,183,373.06	466,805.71	413,577.82	8,322,112.29	3,984,612.88	844,272.26	53,673.70	103,504.60	1,622,358.13	10,536.30	7,963,000.00	52,500.00	-
written off during the year													201,001,064.31
balance at the end of the year	53,927,135.77	52,821,330.96	3,754,137.01	50,337,184.55	6,400,228.86	11,710,929.09	1,421,300.79	1,553,512.99	10,565,226.65	494,577.65	7,963,000.00	52,500.00	
Carrying value as at 31st December 2018	78,656,801.38	4,122,516.12	2,605,448.65	50,470,812.57	33,697,985.90	5,515,004.11	251,403.58	602,090.56	2,812,356.92	9,470.01	31,852,000.00	210,000.00	**210,805,889.78**

		2018 (Rs.)	2017 (Rs.)
7	**Investments - Deposits**		
	National Saving Bank 2- 0001- 21-28195 -Kollupitiya	10,000,000.00	10,000,000.00
	National Saving Bank 2- 0001- 21-28187 -Kollupitiya	10,000,000.00	10,000,000.00
	National Saving Bank 2- 0001-21-28179 -Kollupitiya	10,000,000.00	10,000,000.00
		30,000,000.00	**30,000,000.00**
8	08 Patent Certificates invented by Researchers of the Institute yet.	-	**7,840.00**
9	**Other Non - Current Assets**		
	Distress Loan	8,831,982.45	8,920,746.12
	Special Loan	892,283.16	695,061.55
		9,724,265.61	**9,615,807.67**
10	**Cash & Cash equivalents**		
	Bank of Ceylon - Torinton	5,530,171.51	4,780,171.51
	People's Bank -Anuradhapura	3,171,927.26	13,215,927.11
	Patty Cash	-	5,000.00
	National Saving Bank 1- 0005- 04-9129-2-Anuradhapura	829,394.81	798,133.30
	National Saving Bank 1- 0001- 07-3208-7-Kollupitiya	2,564,850.17	9,062,621.68
		12,096,343.75	**27,861,853.60**
11	**Receivables**		
	Debtors Control Account	489,577.39	491,927.39
	Accrued Income	59,509,206.70	48,429,997.89
		59,998,784.09	**48,921,925.28**
11.1	**Debtors Control Account**		
	Others	488,358.39	490,708.39
	Sale -stole	1,219.00	1,219.00
		489,577.39	**491,927.39**
11.2	**Receivables**		
	Genaral	5,158,863.09	1,993,841.28
	Regional Economic Advancement Project 1 -Matale	-	49,354.70
	Sri Lanka Council for Agricultural Research Policy	-	30,940.67
	Receivables for Mahaweli	504,800.00	504,800.00
	Receivables for NSF	190,000.00	-
	Receivables for Ampara	-	-
	- Receivables for TOT	-	113,400.00
	- Receivable for Supply & Value Chain	6,364,408.95	176,832.00
	- Receivable for Mango Project	2,074,156.44	17,391,408.28
	- Receivables for Organic	-	5,407,920.00
	- Receivable for Guava Project	6,132,374.67	7,172,371.71
	- Receivable for Papaya Project	14,867,806.81	4,027,194.90
	- Receivable for Banana Project	17,983,252.02	3,544,880.70
	- Receivable for Research Project	2,934,526.56	
	- Receivable for Lab Upgrading Project	3,299,018.16	
	- Receivable for Green chillies Project	-	52,785.00
	- Receivable for Edible Oil Project	-	335,908.65
	- Receivable for Heavy metal Project	-	5,350,000.00
	- Receivable for Wap Magula Event	-	2,278,360.00
		59,509,206.70	**48,429,997.89**

			2018 (Rs.)	2017 (Rs.)
12	**Inventories**			
	Noodles		-	29,246.40
	Rice Mill -Rice		-	1,606.50
	Stores -Paddy			34,119.62
	Research projects		101,500.00	101,500.00
	Machinery - Raw material		62,975.07	4,821.00
	Machinery		125,395.00	444,745.00
	Diesel - Factory		-	111,434.48
	- Generator		131,111.48	39,107.00
	Stationary Stock		332,359.11	261,091.95
	Consumable Stock		201,105.24	247,041.00
			954,445.90	**1,274,712.95**
13	**Advances**			
	Festival		40,000.00	67,050.35
	Traveling		33,138.90	37,979.40
	Special Advance		4,800.00	-
	Interim Advance		49,750.00	199,039.72
	Interim Advance - Head Office		17,106.60	17,106.60
	Petty Cash Advance		23,000.00	
			167,795.50	**321,176.07**
14	**Other current assets**			
	Services		675.00	675.00
	House Rent Deposit		950,000.00	950,000.00
	Work in Progress		930,492.51	495,697.27
	Salary Over Paid		92,819.46	
			1,973,986.97	**1,446,372.27**
15	**Equity**			
	Initiate Capital		69,907,594.42	69,907,594.42
	Government Grant		8,368,214.00	8,368,214.00
	Foreign Loan		72,750,229.02	72,750,229.02
	General Fund - Capital		131,636,167.28	114,690,471.79
	Asset Revaluation Surplus		34,702,988.00	34,702,988.00
	Accumulated Surplus / (Deficit)		(98,340,039.30)	(89,211,227.47)
			219,025,153.42	**211,208,269.76**
16	**Provision For Gratuity Fund**			
	Gratuity fund		29,144,228.80	33,945,662.45
			29,144,228.80	**33,945,662.45**
	Current Liabilities			
17	**Payables**			
	Advances	**17.1**	1,902,113.24	1,779,328.14
	Accrued Expenses	**17.2**	64,170,364.55	50,591,650.37
	Deposits	**17.3**	443,250.00	413,070.00
	Retention	**17.4**	1,055,898.38	811,009.28
	Creditors Control Account	**17.5**	9,593,877.58	11,346,409.04
	Reciepts in advance	**17.6**	386,625.63	386,625.63
			77,552,129.38	**65,328,092.46**

		2018 (Rs.)	2017 (Rs.)
17.1	**Advances** - Suspense Account - General	201,090.56	201,090.56
	- EPF	1,212,618.88	1,111,274.20
	- ETF	165,357.14	151,537.39
	- Stamp Fees	10,025.00	9,550.00
	- Payee/WHT	303,612.48	296,466.81
	Special Salary Advance	9,409.18	9,409.18
		1,902,113.24	**1,779,328.14**
17.2	**Accrued Expenses** -Accrued Tax for Interest	95,606.12	95,166.41
	-Accrued Expenses- General	19,763,790.09	5,924,468.17
	-Head Office creditor	130.00	130.00
	- Payable for Wap Magula Event	-	2,278,360.00
	- Payable for NSF Project	213,384.11	175,000.00
	- Payable for Organic Method	-	5,407,920.00
	- Payable for Supply & Value Chain	33,250.00	150,370.00
	- Payable for Mango Project	1,690,899.42	16,267,643.28
	- Payable for Guava Project	5,954,027.92	7,172,371.71
	- Payable for Papaya Project	12,750,079.51	4,027,194.90
	- Payable for Banana Project	17,842,036.37	3,544,880.70
	- Payable for Green chillies Project	-	52,785.00
	- Payable for Edible Oil Project	-	335,908.65
	- Payable for Heavy metal Project	(0.00)	1,843,645.70
	- Payable for building	-	3,315,805.85
	- payables for Lab Upgrading Project	3,299,018.16	
	- Payables for Research Projects	2,528,142.85	
		64,170,364.55	**50,591,650.37**
17.3	**Deposits**		
	Tender - R&D	443,250.00	413,070.00
		443,250.00	**413,070.00**
17.4	**Retention**		
	Contract Works	761,614.64	247,831.15
	Unpaid - salary	-	268,724.39
	Unpaid - salary - Head office	-	200.00
	Cancelled cheques	155,011.74	154,981.74
	Regional Economic Advancement Project 2 -Matale	139,272.00	139,272.00
		1,055,898.38	**811,009.28**
17.5	Creditors Control Acc. Other creditors - Various products	329,295.00	329,295.00
17.5.1	Plastic crates-Fund	16,500.00	640,900.00
	Paboling Vassals-Fund	4,318,284.04	4,318,284.04
	Sales of Old vehicles	-	6,057,930.00
	Noodles Plant Sale	3,058,500.00	
	Bond Recovery	1,871,298.54	
		9,593,877.58	**11,346,409.04**
17.5.1	**Plastic crates-Fund** - Balance as at 01.01.2018	640,900.00	2,687,630.00
	- Sales	7,050.00	
	- paid to ministry	629,100.00	2,058,530.00
		18,850.00	629,100.00
	Plastic crates sales - Adjustments	2,350.00	11,800.00
		16,500.00	**640,900.00**
17.6	**Reciepts in Advance**		
	Reciepts in advance - Deyata kirula	285,486.80	285,486.80
	Reciepts in advance - Saarc	101,138.83	101,138.83
		386,625.63	**386,625.63**

		2018 (Rs.)	2017 (Rs.)
18	**General Treasury Fund - Recurrent**	**115,993,467.18**	**95,083,608.41**
19	**Transfers from Other Agencies**		
	MOA - For Research Projects		
	Freeze Drying & Vaccum Packaging	304,163.04	
	Post Harvest Dideases of Mango	458,465.52	
	Traditional Rice Varieties	337,512.53	
	Influence of pretreatments	362,021.94	
	Oil Extraction of nutmeg & cinn.	316,300.22	
	Tunne Type Forced air Cooler	133,500.06	
	Legum Based Granular bar	246,713.63	
	Fressze Prevention of Vegitables	249,402.85	
	A Case Study of Omaragolla Mango	141,202.00	
	Enha.quality & PH Life of Lotus	129,977.28	
	Low Cost Fruit Matu.Iden.Lns	236,152.00	
	Citronella Grass Leaf Extracts	84,422.40	
	Green Chillies	24,670.95	484,181.95
	Edible Oil	64,953.15	545,729.51
		3,089,457.57	
	MOA - Development Projects		
	- TOT	-	947,481.00
	- Mango Project	4,700,887.79	14,008,503.28
	- Supply chain	519,408.95	676,832.00
	- Banana Project	9,479,505.07	2,514,191.75
	- Papaya Project	10,263,656.31	3,648,754.95
	- Guava Project	5,604,349.67	4,622,924.71
	Receipts for Dstri.Net Work	164,971.67	
	Lab Updrading Project	297,890.25	
	Awareness Creation for PHI	912,317.32	
		31,942,987.03	
	Other Projects		
	- NSF	35,000.00	639,477.23
	- Wap Magula Event	-	2,278,360.00
	- Exchibition - BMICH	-	273,313.42
		35,000.00	
		35,067,444.60	**30,639,749.80**

		2018 (Rs.)	2017 (Rs.)
20 Amortization of Capital Grants			
Buildings		3,183,373.06	2,893,918.88
Plant & Machinary		466,805.71	436,017.96
Office Equipment		413,577.82	308,574.35
Laboratory & Research Equipment		8,322,112.29	8,009,214.76
Other Equipment		3,984,612.88	1,647,416.75
Furniture & Fittings		844,272.26	680,271.25
Electric & Other Fittings		53,673.70	51,603.70
Computer & Acceceries		1,622,358.13	1,118,240.00
Telephone & Fittings		10,536.30	13,303.05
Library Books		103,504.60	40,944.10
Vehicles		7,963,000.00	2,556,000.00
Software		52,500.00	
		27,020,326.74	**17,755,504.80**
21 Self Generated Income			
Machinery Sales	**21.1**	(57,346.93)	(50,886.50)
Hostel Income - Accomodation	**21.2**	4,183,865.00	2,872,795.00
Hostel Income - Food & Beverage	**21.3**	2,886,614.14	321,214.75
Training Program	**21.4**	488,674.62	701,920.11
Consultancy fees	**21.5**	2,129,095.15	214,425.60
NVQ & Machinary Certificate Training Course	**21.6**	(15,969.50)	105,594.00
Receipts From Foreign Students	**21.7**	776,112.31	
Auditorium fees		2,344,800.00	1,565,850.00
Sale of Publications		22,100.00	16,400.00
sales of Garden		-	3,600.00
Sample test fees		-	366,700.00
QC Certification of Fruits		459,714.00	282,740.00
Income from Laboratory Services		320,200.00	3,393,879.19
		13,537,858.79	**9,794,232.15**
22 Other Income			
Interest Income	**21.8**	3,876,197.39	3,356,255.21
House Rent		343,550.00	394,750.00
General Income		1,454,888.63	622,318.76
No Pay		100,316.35	3,451.80
Sales of By products		-	34,398.00
Fines		45,013.44	-
Late Charges		461,179.59	
		6,281,145.40	**4,411,173.77**

	2018 (Rs.)	
21.1 Machinery Manufacturing Trading Profit & Loss Account		
Machinery Sales Parboiling Vessels	-	
Machinery Sales - Rice Flake Machines	357,775.00	357,775.00
Raw Material Balance as at 1.1.2018	4,821.00	
Add: Purchases Raw material	153,926.00	
	158,747.00	
Raw Materials Balance as at 31.12.2018	62,975.07	
Machinery Manufacturing Cost C/F	**95,771.93**	
Machinery Balance as at 1.1.2018	444,745.00	
Machinery Manufacturing Cost B/F	95,771.93	
	540,516.93	
Add: Purchases of Machineries	-	
	540,516.93	
Machinery Balance as at 31.12.2018	125,395.00	
Production Cost -Sale of Machinery	**415,121.93**	**415,121.93**
Profit		**(57,346.93)**

	2018 (Rs.)	
21.2 Hostel Income - Accomodation		
Income	4,183,865.00	
Expenditure	-	
		4,183,865.00
21.3 Hostel Income - Food & Beverage		
Income	7,186,220.00	
Expenditure	4,299,605.86	
		2,886,614.14
21.4 Training Program		
Income	735,718.00	
Expenditure	247,043.38	
		488,674.62
21.5 Consultancy fees		
Income	2,612,777.00	
Expenditure	483,681.85	
		2,129,095.15
21.6 NVQ & Machinary Certificate Course		
Income	131,200.00	
Expenses	147,169.50	
		(15,969.50)
21.7 Receipts From Foreign Students		
Income	835,810.04	
Expenses	59,697.73	
		776,112.31

		2018 (Rs.)	
21.8	**Insterest Income**		
	NSB 1-0005-04-9129-2 A/pura	32,500.44	
	NSB 1-0001-07-3208-7 Kollu	389,324.44	
	NSB 2-0001-21-28187 Kollu	1,085,342.47	
	NSB 2-0001-21-28195 Kollu	1,085,342.47	
	NSB 2-0001-21-28179 Kollu	1,085,342.47	**3,677,852.29**
	With Holding Tax		
	NSB 1-0005-04-9129-2 A/pura	1,238.93	
	NSB 1-0001-07-3208-7 Kollu	22,095.95	
	NSB 2-0001-21-28187 Kollu	54,267.12	
	NSB 2-0001-21-28195 Kollu	54,267.12	
	NSB 2-0001-21-28179 Kollu	54,267.12	186,136.24
	Banks Net Interest Income		**3,491,716.05**
	Interest Income Other		
	Special advance Interest	9,571.36	
	Distress Loan Interest	343,049.78	
	Special Loan Interest	31,860.20	**384,481.34**
			3,876,197.39
	EXPENSES		
23	**Wages,salaries and employee benefits**		
	Salaries & Wages-Permanent staff	55,385,289.80	51,011,942.84
	Casual staff	3,664,603.81	2,373,201.93
	E.P.F.	8,188,375.74	7,566,985.92
	E.T.F.	2,047,094.05	1,850,184.04
	Cost Of Living	13,107,740.00	11,719,110.00
	Professional Allowance	2,547,000.00	
	Overtime and Holiday Pay	4,533,126.71	2,239,985.03
	Other allowance	383,200.00	296,000.00
	Research Allowances	356,152.65	1,907,874.68
	Incentives	588,667.81	525,545.66
	Gratuity	4,715,610.45	8,538,818.05
		95,516,861.02	**88,029,648.15**
24	**Supplies and consumables used**		
	Printing and Stationery	1,918,591.84	1,245,989.50
	Office Needs & Sundry expenses	2,037,766.34	1,906,826.55
	Consumable for Research projects	22,761.70	835,707.49
	Consumable for Laboratory	896,256.81	
	Lab Equipment Maintenance	1,418,134.00	
	Safty Measures	450.00	
	Running expenses of Hostel and kitchen	1,102,252.23	290,184.00
	Research Projects	159,355.18	1,104,491.41
	Running expenses vehicles	6,512,325.23	3,582,411.13
	Vehicles maintenance	4,026,354.90	3,441,558.10
	Buildings Maintenance	6,092,687.85	2,888,032.91
	Machinery Maintanance	1,087,530.66	338,237.42
		25,274,466.74	**15,633,438.51**

		2018 (Rs.)	2017 (Rs.)
25 Depreciation			
Buildings		3,183,373.06	2,893,918.88
Plant & Machinary		466,805.71	436,017.96
Office Equipment		413,577.82	308,574.35
Laboratory & Research Equipment		8,322,112.29	8,009,214.76
Other Equipment		3,984,612.88	1,647,416.75
Furniture & Fittings		844,272.26	680,271.25
Electric & Other Fittings		53,673.70	51,603.70
Computer & Acceceries		1,622,358.13	1,118,240.00
Telephone & Fittings		10,536.30	13,303.05
Library Books		103,504.60	40,944.10
Vehicles		7,963,000.00	2,556,000.00
Software		52,500.00	
		27,020,326.74	**17,755,504.80**
26 Other Expenses			
Traveling expenses-Domestic		1,139,513.10	850,944.25
Traveling expenses-Foreign		1,434,725.82	1,399,555.32
Staff tea		668,644.50	761,153.50
Periodicals, journals and news papers		300,466.50	73,240.00
Seminars		121,829.00	80,000.00
Training Programs		-	-
Entertainment		887,266.00	687,597.11
Contract Labour		361,789.75	208,500.00
Welfare		-	-
Insurance and licenses		488,535.29	563,403.65
Telecommunication		2,988,760.74	2,592,792.70
Postal charges		161,807.00	111,811.00
Electricity		2,316,268.76	1,836,336.26
Water,		1,087,442.39	1,370,884.12
Rent		6,103,080.00	1,224,956.00
Lease rental for vehicles		7,258,800.00	1,209,800.00
Rates and Taxes		185,550.98	-
Exhibition		339,960.94	19,969.40
Publicity		242,506.25	189,750.00
Human Resources Development		405,078.50	375,598.65
Research Symposium	21.6	483,927.00	
Audit fees		350,000.00	250,000.00
Leagal Charges		-	-
Uniform Allowances		-	72,003.00
Transport		207,760.00	
Cleaning Service		-	
Security Service		2,703,700.00	
		30,237,412.52	**13,878,294.96**

		2018 (Rs.)	2017 (Rs.)
26.1	Research Symposium		
	Expenses	757,927.00	
	(Less) Receipts	(274,000.00)	
			483,927.00
27	**Project Expenses**		
	MOA - For Research Projects		
	Freeze Drying & Vaccum Packaging	304,163.04	
	Post Harvest Dideases of Mango	458,465.52	
	Traditional Rice Varieties	337,512.53	
	Influence of pretreatments	362,021.94	
	Oil Extraction of nutmeg & cinn.	316,300.22	
	Tunne Type Forced air Cooler	133,500.06	
	Legum Based Granular bar	246,713.63	
	Fressze Prevention of Vegitables	249,402.85	
	A Case Study of Omaragolla Mango	141,202.00	
	Enha.quality & PH Life of Lotus	129,977.28	
	Low Cost Fruit Matu.Iden.Lns	236,152.00	
	Citronella Grass Leaf Extracts	84,422.40	
	Green Chillies	24,670.95	484,181.95
	Edible Oil	64,953.15	545,729.51
		3,089,457.57	
	MOA- Development Projects		
	- TOT	-	947,481.00
	- Mango Project	4,700,887.79	14,008,503.28
	- Supply chain	519,408.95	676,832.00
	- Banana Project	9,479,505.07	2,514,191.75
	- Papaya Project	10,263,656.31	3,648,754.95
	- Guava Project	5,604,349.67	4,622,924.76
	Receipts for Dstri.Net Work	164,971.67	
	Lab Updrading Project	297,890.25	
	Awareness Creation for PHI	912,317.32	
	Organic method	-	4,980.00
		31,942,987.03	
	Other Projects		
	Exhibition - BMICH		273,313.42
	Expenses for NSF Project	35,000.00	546,093.12
	Wap Magula Event Expenses		2,278,360.00
		35,000.00	
		35,067,444.60	**30,551,345.74**
28	**Finance Costs**	22,603.37	29,109.37
		22,603.37	**29,109.37**

		2018 (Rs.)	2017 (Rs.)
29 Effect to Cash flow from Adjustments of Accumilated Surplus			
Credited Amount to Accumilated Surplus		8,354,974.00	654,005.00
Debited Amount to Accumilated Surplus		(2,244,913.55)	(434,150.51)
		6,110,060.45	219,854.49
Amount not effected to cash flow			44,028.00
Cash flow increase due to adjustments to Accumilated Surplus		**6,110,060.45**	**175,826.49**
30 Payables			
Advances	17.1	1,902,113.24	1,779,328.14
Accrued Expenses	30.1	45,974,531.95	50,591,650.37
Deposits	17.3	443,250.00	413,070.00
Retention	17.4	1,055,898.38	811,009.28
Creditors Control Account	17.5	9,593,877.58	11,346,409.04
Reciepts in advance	17.6	386,625.63	386,625.63
		59,356,296.78	**65,328,092.46**
Balance as at 1.1.2018		65,328,092.46	17,387,427.86
Less : Balance as at 31.12.2018		59,356,296.78	65,328,092.46
Increase / (Decrease) Liabilities		**(5,971,795.68)**	**47,940,664.60**
30.1 Accrued Expenses	17.2	64,170,364.55	
Less :- Non-trade creditors		(18,195,832.60)	
Trade Creditors		**45,974,531.95**	
31 Non- Current Liabilities			
Provision For Gratuity Fund			
Balance as at 1.1.2018	16	33,945,662.45	28,198,189.00
Less : Balance as at 31.12.2018		29,144,228.80	33,945,662.45
Increase / (Decrease) Liabilities		**(4,801,433.65)**	**5,747,473.45**
32 Current Assets			
Stocks	12	954,445.90	1,274,712.95
Advances	13	167,795.50	321,176.07
Deposits	14	1,973,986.97	1,446,372.27
Debtors Control Account	11.1	489,577.39	491,927.39
Accrued Income	32.1	35,572,521.29	48,429,997.89
		39,158,327.05	**51,964,186.57**
Balance as at 1.1.2018		51,964,186.57	4,002,136.96
Less : Balance as at 31.12.2018		39,158,327.05	51,964,186.57
Increase / Decrease Current Assets		**(12,805,859.52)**	**47,962,049.61**
32.1 Accrued Income	11.2	59,509,206.70	
Less :- Funds receivables for Capital		(23,936,685.41)	
Trade Receivables		**35,572,521.29**	

		2018 (Rs.)	2017 (Rs.)
33	**Property,Plant and Equipment**		
	Additions during the year	46,793,879.69	66,568,844.85
	Asset Revalued Amount	-	(39,815,000.00)
	Less :-Assets acquired on credit basis	(18,195,832.60)	
	Assets acquired on cash basis	**28,598,047.09**	**26,753,844.85**
34	**Investment - Deposits**		
	National Saving Bank 2- 0001- 21-28195 -Kollupitiya	10,000,000.00	10,000,000.00
	National Saving Bank 2- 0001- 21-28187 -Kollupitiya	10,000,000.00	10,000,000.00
	National Saving Bank 2- 0001-21-28179 -Kollupitiya	10,000,000.00	10,000,000.00
		30,000,000.00	**30,000,000.00**
	Distress Loan	8,831,982.45	8,920,746.12
	Special Loan	892,283.16	695,061.55
	Intangible assets	-	7,840.00
		9,724,265.61	**9,623,647.67**
	Total Non - Current Assets	**39,724,265.61**	**39,623,647.67**
	Balance as at 1.1.2018	39,623,647.67	40,182,986.29
	Less : Balance as at 31.12.2018	39,724,265.61	39,615,807.67
	Increase / Decrease Non Current Assets	**100,617.94**	**(567,178.62)**
35	Capital Fund	43,966,022.23	
	Less :- Fund Receivables	(23,936,685.41)	
		20,029,336.82	
36	**Cash & Cash equivalents at the beginning of period**		
	Cash at Bank		
	Bank of Ceylon - Torinton	4,780,171.51	5,795,171.51
	People's Bank -Anuradhapura	13,215,927.11	17,459,429.11
	Patty Cash	5,000.00	5,000.00
	National Saving Bank 1- 0005- 04-9129-2-Anuradhapura	798,133.30	766,106.46
	National Saving Bank 1- 0001- 07-3208-7-Kollupitiya	9,062,621.68	5,778,243.83
	Cash & Cash equivalents as at 01.01.2018	**27,861,853.60**	**29,803,950.91**
37	**Cash & Cash equivalents at the ending of period**		
	Cash at Bank		
	Bank of Ceylon - Torinton	5,530,171.51	4,780,171.51
	People's Bank -Anuradhapura	3,171,927.26	13,215,927.11
	Patty Cash	-	5,000.00
	National Saving Bank 1- 0005- 04-9129-2-Anuradhapura	829,394.81	798,133.30
	National Saving Bank 1- 0001- 07-3208-7-Kollupitiya	2,564,850.17	9,062,621.68
	Cash & Cash equivalents as at 31.12.2018	**12,096,343.75**	**27,861,853.60**

NATIONAL INSTITUTE OF POST HARVEST MANAGEMENT
NOTES TO THE FINANCIAL STATEMENTS

38 That plastic crates given to farmers traders and collectors at 50% subsidy for promote packaging methods to transportation reduction to Post Harvest Losses in Fruits and Vegetables That stock not yet given to them Plastic crate stock 2018.12.31 at Cost **177,463.10**

39 Assets transferred from the Paddy Marketing Board to the I.P.H.T. on 25 th October 2006. However, the Accounts shown in book values of the P.M.B. transferred Assets . The transferred Assets are being the P.M.B. transferred Assets . The transferred Assets are being revalued

40 One of our building Contractors Ms K.D Ebert & Sons Holding (pvt) Limited have signed two agreements to contract building at Anuradhapura office They have done some extra work un authored the agreement. After stopping payment for the un authored extra work.They have sent two letter of demand on 28 th November 2006 demanding to pay Rs30,806,979.10 . One being Rs5,329,344.62 as payment of extra work and the other Rs5,477,634.48. Total payment 10,806,979.10 and their loss and damages Rs20,000,000.00 the total amount Rs30,806,979.10 requesting to pay whiting 14 days if not action will be taken But we have not responded the request neither they have not filed action against us according to the letter of demand.

41 The initiate Capitals of the INSTITUTE OF POST HARVEST TECHNOLOGY shown Rs 500,000,000.00

NCP/AP/E/NIPHM/FA/19/20 24 December 2019

Chairman
National Institute of Post Harvest Management

Report of the Auditor General on the Financial Statements and Other Legal and Regulatory Requirements of the National Institute of Post Harvest Management for the year ended 31 December 2018 in terms of Section 12 of the National Audit Act, No. 19 of 2018.

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1. Financial Statements

1.1 Qualified Opinion

The audit of the financial statements of the National Institute of Post Harvest Management for the year ended 31 December 2018 comprising the statement of financial position as at 31 December 2018 and the statement of financial performance, statement of changes in equity and the consolidated cash flow statement for the year then ended, and the notes in relation with the financial statements, including a summary of significant accounting policies was carried out under my direction in pursuance of provisions in Article 154 (1) of the Constitution of the Democratic Socialist Republic of Sri Lanka read in conjunction with provisions of the National Audit Act No. 19 of 2018 and Finance Act No. 38 of 1971. My report to Parliament in pursuance of provisions in Article 154 (6) of the Constitution will be tabled in due course.

In my opinion, except for the effects of the matters described in the basis for Qualified Opinion section of my report, the accompanying financial statements give a true and fair view of the financial position of the National Institute of Post Harvest Management as at

31 December 2018 and of its financial performance and its cash flows for the year then ended in accordance with Sri Lanka Public Sector Accounting Standards.

1.2 Basis for Qualified Opinion

(a) Although the assets amounting to Rs. 118,207,445 shown under plant and equipment as at 31 December in the year under review had been fully depreciated in terms of Paragraph 42 of Sri Lanka Public Sector Accounting Standard No. 07 , and also these assets are still being used, actions had not been taken rectify and adjust the estimated misstatement in accounts as per the Sri Lanka Public Sector Accounting Standard No.3 .

(b) Although the amount of Rs. 3,058,500 received from the sale of the Noodles Plant in the year under review should be shown as cash inflows under the investment activities of the cash flow statement, it had not so specified. Similarly, even though the received capital funds were Rs. 18,006,533, since the received capital funds were shown as Rs. 20,029,336 when computing net cash flow from financing activities , the net cash flow received from finance activities had been overstated by Rs. 2,022,803 .

(c) Even though a sum of Rs. 27,020,326 had been shown as the amortization within the income in the year under review, the depreciation amounted to Rs. 7,963,000 pertaining to revalued vehicles but should not be considered whilst computation had been included.

(d) Even though the laboratory materials valued at Rs.10,290,742 had been released from the store to the laboratory during the year under review, the balance stock of the laboratory had not been computed and taken into the financial statements as at 31 December of the year under review.

(e) The amount worth of Rs. 3,058,500 received from selling of a noodles machine cost at Rs. 29,110,000 during the year under review had been shown under non-current liabilities in the financial statements without calculating the profit and loss associated with the sale of that asset .

(f) The gratuity balance paid to an officer who had retired during the year under review amounting to Rs. 138,740 had been consisted in the payable gratuity provision as at the end of the year under review.

(g) When the income from accommodation fee shown under hostel income, a sum of Rs. 4,183,865 thereof was shown in the financial statements as the net income and any direct expenses incurred to generate that income had not been disclosed under accommodation fee.

(h) A difference of Rs. 32,362,703 was observed between the balance in the Ledger Accounts and the balances shown in the financial statements with regard to the 03 items. Similarly, a difference totalled to Rs. 1,212,131 was observed between the Register of Hostel Income and the three corresponding ledger account balances.

I conducted my audit in accordance with Sri Lanka Auditing Standards (SLAuSs). My responsibilities, under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of my report. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my qualified opinion.

1.3 Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation of financial statements that give a true and fair view in accordance with Sri Lanka Public Sector Accounting Standards, and for such internal control as Management determine is necessary to enable the preparation of

financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, Management is responsible for assessing the Institute's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless Management either intends to liquidate the Institute or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Institute's financial reporting process.

As per Section 16(1) of the National Audit Act No. 19 of 2018, it is required to maintain proper books and records of all its income, expenditure, assets and liabilities, to enable annual and periodic financial statements to be prepared of the Institute.

1.4 Auditor's Responsibilities for the Audit of the Financial Statements

My objective is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Sri Lanka Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Sri Lanka Auditing Standards, I exercise professional judgment and maintain professional scepticism throughout the audit. I also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Management.

- Conclude on the appropriateness of the Management's use of the going concern basis of accounting and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Institute's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. However, future events or conditions may cause to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

2. Report on Other Legal and Regulatory Requirements

Specific provisions for following requirements are included in the National Audit Act, No. 19 of 2018 .

- Except for the effect of the matters described in the Basis for Qualified Opinion in my report, I have obtained all the information and explanation that required for the audit and as far as appears from my examination, proper accounting records have been kept by the Institute as per the requirement of Section 12 (a) of the National Audit Act, No. 19 of 2018.

- The financial statements presented by the Institute is consistent with the preceding year as per the requirement of Section 6 (1) (d) (III) of the National Audit Act, No. 19 of 2018 .

- The financial statements presented includes all the recommendations made by me in the previous year as per the requirement of Section 6 (I) (d) (iv) of the National Audit Act, No. 19 of 2018 .

Based on the procedures performed and evidence obtained were limited to matters that are material, nothing has come to my attention to make declaration on following;

- to state that any member of the governing body of the Institute has any direct or indirect interest in any contract entered into by the Institute which are out of the normal cause of business as per the requirement of Section 12 (d) of the National Audit Act, No. 19 of 2018 .

- to state that the Institute has not complied with any applicable written law, general and special directions issued by the governing body of the Institute as per the

requirement of Section 12 (f) of the National Audit Act, No. 19 of 2018 except for the observations appear below;

	Reference to Laws , Rules Directives	Description
(a)	Establishments Code of the Democratic Socialist Republic of Sri Lanka	
	Paragraph 1.7 of Chapter XII	Although government agencies should maintain a Leave Register as per General Form 190, it has not been maintained by the Institute since 2017.
(b)	Financial Regulations of the Democratic Socialist Republic of Sri Lanka	
	(i) No. 373	Even though the petty cash obtained should have been returned by 31 December a petty cash balance amounted to Rs.23,000 had remained in the custody of the officers at the end of the year under review.
	(ii) No. 1645	Even though signatures should be made in running charts when using vehicles for duties by the officers , the signatures had not been made by the officers so at 28 occasions by the officers who used two vehicles.

(c)	Section 6.5.1 of the Public Enterprises Circular No. PED / 12 dated 02 June 2003 and Treasury Circular No. 01/2004 dated 24 February 2004	Although the Annual Financial Statements of Statutory Boards should be submitted to the Auditor General within 60 days of the end of the year , the financial statements for the year 2018 were submitted to the Auditor General on 02 October 2019 .
(d)	Public Finance Circular No. 2015/01 dated July 14, 2015	Although the advance should be paid within 10 days of the completion of the task, the advances obtained at 17 occasions had been settled in delay ranging from 01 month to 06 ½ months.
(e)	Paragraph 11 of the Management Services Circular No. 03/ 2018 of 18 July 2018	The staff should not be recruited without the prior approval of the Department of Management Services, and although the Head of the Institute and the Head of the Finance Division are responsible for the recruitment carried out without following the aforesaid instructions, on the contrary, 10 casual workers were recruited and a sum of Rs. 914,428 had been paid as salaries and allowances from September to December 2018 .

- to state that it had not performed according to Institute's powers, functions and duties as per the requirement of Section 12 (g) of the National Audit Act, No. 19 of 2018 .

- to state that the resources of the Institute had not been procured and utilized economically, efficiently and effectively within the time frames and in compliance with the applicable laws as per the requirement of Section 12 (h) of the National Audit Act, No. 19 of 2018 .

(a) Although 100 GPS Trackers Units had been purchased on 05 April 2018 at a cost of Rs. 1,290,000 to analyze the vehicles transporting vegetables and fruits from farmer to retail merchant, 98 of those devices had remained in the store even by 15 November 2019, the date of the audit and the remaining 2 GPS trackers had been obtained for another research project. A sum of Rs. 600,000 had been paid for the installation without the installation of that equipment.

(b) A 100 temperature data loggers had been purchased for Supply and Value Chain Management Project in Agricultural Produce at a cost of Rs. 4,680,000 for the year under review and 70 out of them had remained idle even by the date of the audit. The 30 temperature data loggers that were issued had been utilized for other research projects of the Institute. It was observed that the remaining of such sensitive electronic equipment in the warehouse for more than a year would be at a risk to jeopardize its operation.

(c) The Gas Chromatograph Mass Spectrometer (CGMS) Machine which had been purchased for a Rs. 15,216,575 in the year 2015 and operates at full air condition atmosphere incurring with a maintenance cost of Rs. 275,000 per year had been remained in idle without being used for any purpose of the Institute until now.

3. Other Audit Observations

(a) There are 05 balances receivable totalled to Rs. 1,093,154 remained in accounts for the period from 2003 to 2016 and it was observed that these balances consisted of officers currently serving and also the officers who had deceased. Actions had not been taken to identify these balances and settle them or to make arrangements in accordance with the Financial Regulations.

(b) Actions had not been taken for the 03 balances totalled to Rs. 695,730 which were not settled to pay off or to take into the revenue as per the Financial Regulations during the period ranging from the year 2011 to 2017. Similarly, the beneficiaries contribution amounted to Rs. 4,318,284 of the sale of aluminum equipment of paddy boiling that had been given to the beneficiaries on concessionary basis under the development projects had been stated as a current liability in the financial statements since 2009 without remitting to the Line Ministry .

(c) Arrangements had not been taken in respect of the amount received during the year under review from the sale of debris and charges of breaching of bonds totalled to Rs. 4,929,799 to the Consolidated Fund .

(d) Even though a sum of Rs. 9,572,717 had been incurred in the initiated year for the Project called 'Induction of Fruit Ripening by Organic Methods' which was implemented from the year 2016 to August 2019 and all the relevant equipment thereon had been purchased, all of those equipment had been utilized for other research projects of the Institute. Similarly, it was also observed that 10 desk tops, 05 lap tops and 05 tablets purchased for the project were being used in other divisions of the organization without using for the purposes of the Project.

(e) Although the progress of all projects should be reported once in every two month in accordance with the Research Guidelines of the Institute, the Progress Reports of the above Project had not been submitted after the month of December 2017 even up to 15 November, the date of the audit. Even though a sum of Rs. 9,572,717 had been spent on this research for the purpose of obtaining the patent for the findings of this Research and disseminating the results of the research on a commercial scale, it is observed that the physical progress of that is at a lower level at present.

(f) Five hundred samples tests that had been carried out at a cost of Rs 1,956,120 in the year 2017 for the project implemented to ascertain whether the 04 types of heavy metals contained in 07 foods import under the National Food Production Programme by the provisions of the Ministry of Agriculture. According to the project report, which included those tests, had been ascertained that certain foodstuffs had exceeded the maximum safety standards, including heavy metals such as Cadmium, Arsenic and Leaf. However, as per the conclusions and proposals of that report, the Institute had not conducted further examination on the food items contain heavy-metals and provided information to all parties responsible for the proper remedies. As a result, it was observed in audit that the cost incurred for the Research was a futile expense. In addition, a sum of Rs. 5,350,000 had been reimbursed from the Ministry of Agriculture for the expenses of the Project.

(g) Even though the laboratory had been modernized purchasing of equipment incurring a sum of Rs. 61.6 million during the year 2015 for the modernization of Laboratory belonging to the Institute as an internationally recognized laboratory, due to the lack of internationally accredited certificates for that Laboratory, it had failed to gain recognition for researches carried out by this Institute. Even though the agreements had been entered into amounting Rs. 1,236,664 to service the machines twice (2018/2019) in the year under review, it was observed that the interruptions would be occurred for the function

and the durability of the machines due to the failure of carrying out service by now.

(h) Within the objectives of the establishment of the Institute, the minimization of the loss of post harvest in agricultural crops was a main objective and as per a preliminary survey conducted in 2009 for that, the loss of post harvest in agricultural crops were recognized remaining in between 30 per cent and 40 per cent. Even though about 09 years had elapsed by the end of the year under review and there were no database to identify the extent to which post harvest losses were minimized as a percentage at the moment.

(i) Even though as a result of researches carried out by the Institute since 2009 , patents had been obtained for 08 inventions, due to the any required information were not provided to audit to ascertain the contribution made to the economy of the country through the field of agriculture and post-harvest from those findings, it was observed that the results of the researches were limited to obtain patents.

(j) The Board of Directors had decided to allocate a vehicle with 150 liters of fuel per month for a non-executive member of Board of Directors who is not entitled to an official vehicle as per the Circular No. PED 01/2015 of the Secretary to the Ministry of Finance dated 25 May 2015. However, an assignment of duties had not been made regarding the revenue promotion activities and the revenue targets also not been given. The progress of the monthly work done had also not been submitted to the Institute by the relevant member of the Board of Directors and a sum of Rs. 1,540,869 had been incurred from the funds of the Institute for him for the period from 25 April 2017 to the end of the year under review as vehicle maintenance, fuel and salaries and allowances of the driver.

(k) A Senior Research Officer of the Institute had obtained study leave with pay on the bonds of Rs. 1,998,980 from 23 July 2006 to 29 July 2009 to follow a doctorate and although he had to serve to the Institute from 29 June 2009 to 29 June 2019 as per the bond signed and, though he had reported to work and commenced his duties on 29 June 2009 after completing his doctorate, without serving for 10 years he had left the service on 07 January 2016. However, actions had not been taken to recover the loss incurred by the Institute by breaching the above bond.

W.P.C Wickramarathne
Auditor General