



NERDC NEWS

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Inside this..

Blending technology in Inland fishery

PAGE 02

NERDC gears to identify of engineering technologies to achieve food security in Sri Lanka

PAGE 03

NERDC new technologies and presentations

PAGE 04 / PAGE 05

Evolution of NERDC and the traditional oil extractor "Peha"

PAGE 06

Reducing post-harvest losses in Sri Lankan fisheries industry

PAGE 07

Trainings and Awareness Programmes

PAGE 08



Thermal Face Recognition and Access Control System

NERDC is pleased to introduce an innovative employee attendance registration and access control system that is referred to as "Thermal Face Recognition and Access Control System". This was developed as a solution for social distancing measures implemented due to Covid 19 pandemic outbreak, by introducing touch-less means of employee attendance registration as a replacement for widely used fingerprint scanners. This system uses face recognition algorithm to identify an employee by comparing the captured face image with a number of face images already registered in the system database. It saves the identified user details such as the name of the employee, time of detection, identification numbers such as EPF number and user's body temperature in the central database.

cont'd p.4

NERDC initiates pathway to improve livelihood of inland fisheries communities in Matale District

Smoked Fish Processing Unit is one of the innovations that NERDC has brought, in order to reduce post-harvest losses of fisheries while generating extra income to the families engaged in fishing, traditionally. NERDC manufactured nine units of smoked fish processers upon the request of Ministry



of Plantation Industries and Export Agriculture (Former Ministry of Primary Industries & Social Welfare) to support “freshwater value chain project”, which was funded by the same ministry. All of these smoked fish processing units were distributed among the selected fisheries societies in Ampara, Matale and Polonnaruwa districts. Initiating the first step of training of the fishing community in this process and the product, NERDC held the first demonstration programme on smoked fish processing technology at Murungawatta, Thotupola, Moragahakanda on 21st August 2020.

Fisheries societies formed in Nalandawewa and Moragahakanda reservoirs in Matale district were the main target group of participants, to train on this technology. Relevant officers from Ministry of Plantation Industries and Export Agriculture, National Aquaculture Development Agency (NAQDA), Resident Project Office (Moragahakanda Project) of Mahaweli Authority and members of fisheries societies of above two sectors attended to the programme. During the demonstration, participants of fisheries community in Nalandawewa and Moragahakanda reservoirs were trained on the operation, maintenance of the smoked fish processing unit and the processing technology and two smoked fish processing

units were given to above two fisheries societies. Further smoked fish processing technology was successfully disseminated among fisheries community and relevant officers.



Value addition to increase the revenue

One of the inland fish varieties, which has very low market demand as a raw fish was used to produce smoked fish during this demonstration. The final output produced as the smoked fish.

As per the views of relevant officers and the fisheries community, this valued-added smoked fish product was accepted as a successfully marketable product, than the raw fish of the same variety. Some even interested to start smoked fish processing as a small scale business at cottage level. The relevant officers from Ministry of Plantation Industries and Export Agriculture, NAQDA and Mahaweli Authority discussed to popularize this technology and hygienically produced smoked fish in the local market in collaboration with NERDC.



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NERDC Gears to Identify of Engineering Technologies to Achieve Food Security in Sri Lanka

Recent research and relevant statistics reveal that growth of agricultural production has virtually been stolen; the yields of major grain crops grow by only about 1% per year, which is lower than the world population growth rate. On the other hand, expanding the area available for cultivation is tremendously impossible to meet future needs to feed the growing global population, particularly the urbanized population, all with a higher demand for food. Yet, agricultural production and yield are affected due to various reasons of nature, including the effects of climate change. Besides, survey results revealed that currently, 30% to 40% post-harvest losses of fruits and vegetables are occurred in Sri Lanka.

Therefore, increasing agricultural productivity through minimizing losses is one way to handle this problem effectively. Introduction of innovative engineering technologies at an affordable cost is one of the key solutions for minimizing post-harvest losses in agricultural products.



Prof. L. Rajapaksha (Chairman NERDC)

Meanwhile, food security is one of the major goals among the 17 sustainable development goals that are defined by the United Nations to be achieved by 2030. The National Engineering Research & Development Centre (NERDC) of Sri Lanka, conducts ongoing research to identify the role of cold chain in minimizing post-harvest losses of locally grown fruits and vegetables. To extract the views, expertise knowledge & experience, NERDC conducted a stakeholder forum on 23.07.2020 at Kulasinghe Auditorium, in its'

premises. Specialized researchers on cold storages & researchers on post-harvest losses representing leading Sri Lankan universities, expertise from National Institute of Post-Harvest Management and representatives from private sector companies, representatives from NGOs work with community farmers were among the gathering.



Mrs. Nimalka Dias Prof. W.A.P. Weerakkody Eng. Nimal Gunarathne

The former Food Commissioner Mrs. Nimalka Dias, the Director General of National Institute of Post-Harvest Management Prof. Palitha Weerakkodi and the Group Manager- Production of Cargills Dairy Sector Eng. Nimal Gunarathne addressed the gathering and shared their experiences. The Chairman & the Director General of NERDC also addressed the meeting. Apart from experience sharing, another objective of the forum was to identify the urgent requirement to initiate fresh chain good practices for fruits and vegetables such as harvesting at correct maturity, careful handling, proper transportation, environmental conditions controlled storage and proper retailing to reduce huge post-harvest losses involved in these operations. In this context, it is important to identify suitable and appropriate equipment/instruments, machinery and environmental conditions controlled storage system for improved & stable fresh chain practices.

However, according to the expertise view, initiation & establishment of good fresh chain practices will be a complex & hard task, hence the post-harvest practices, the involvement of people and the status of channels engaged are in a very complex context or situation.

NERDC Launches Innovation in Crematorium Technology to Uplift its' Standards by Meeting New Environmental Standards

Crematorium manufacturing technology in Sri Lanka was introduced by NERD Centre, 26 years ago approximately. With continuous research & development process that NERDC engaged, further advancement to this existing technology was launched by NERDC. NERD Centre held a special forum to introduce and transfer this multi-chamber, two-stage burning system to the industry on 10th July 2020 at Kulasinghe Auditorium. All of NERDC licensees for crematorium manufacturing, representatives of relevant local authorities who engaged in the crematorium technology, and resource personnel from the Central Environmental Authority were among the gathering.



Research Fellow Eng. Nandana Edirisinghe introduced the innovation to the audience whilst Mr. Jayasooriya, Assistant Director of the Central Environmental Authority, highlighted the importance of this technology to meet the new environmental standards. The Director-General of NERDC and the Director of Techno Marketing Department also addressed the forum.

Cont'd from page 1 (Thermal Face Recognition.....)



The project group with Director General

2 in 1 - Beverage Machine

Commissioned at Small Scale Beverage Manufacturing Facility

NERDC has developed and introduced an automated machine, made for the filling and sealing of bottled beverages. This machine is aimed at the smaller scaled enterprises, and benefits to improve the efficiency and productivity in the beverage industry. This machine also can be used to fill and seal yoghurt cups.



This dual purpose machine includes: a cup loading unit, liquid filling unit, lid placing unit, heat sealing unit and a cup unloading unit. The capacity of the beverage tank is 40L and 400 cups can be loaded on to the cup loading unit. 700 cups per hour are filled and sealed and single phase electricity can be used. The rotary disk type machine ensures safety and productivity enhancement through the production. Many more benefits include: reduced labour, speedy process and hygienic levels.

The first machine developed is now commissioned at OMEE Products Ltd., a small scale beverage manufacturer in Pamunuwa, Ja-Ela. They produce fruit drinks & distribute within Gampaha District.

Key Features include:

- Identify the employee through none-contact mean (face recognition).
- Measurement of employee body temperature.
- Alarming designated parties through a text message in an event of higher body temperature.
- Notification to security guard room through the audible and visual alarming system.
- Integrate into any existing attendance database with least modifications.
- Operates on a low power mode whenever the system is in idle.

Sharpening Research Skills for a Better National Service

NERDC steps on promoting institutional research culture

NERDC, the national apex entity in engineering research & development has taken few steps forward to improve its' prevailing research culture. Engineering research being the major task of NERDC in various disciplines of engineering, and now stepped in to its' stand for further improvement. Forming of research teams with multidisciplinary associates for enhancing research activities on different streams of engineering and sharing expertise, are few steps that have taken forward. Further NERDC has initiated series of presentations for sharing expertise to empower its' research culture.



Dr. (Mrs.) M. Danthurebandara,



Eng. T. Ekanayake

The first presentation has been conducted by Senior Lecturer Dr. (Mrs.) Maheshi Danthurebandara, Chemical Engineer & LCA Practitioner, from the University of Peradeniya. In that session been discussed about “Role of journal club in developing organizational research culture”.

The second presentation has been conducted by Eng. Thilakasiri Ekanayake Chartered Engineer & Managing Director of Procons Infotech (Pvt) Ltd. and Pro Consultancy International (Pvt) Ltd. He has shared his expertise and best of his 27 years of industrial experience, in modern versions of marketing strategies, marketing of engineering products & services and areas of consumer behaviour. The topic of the presentation was “Marketing for Engineers”. The Chairman, Senior management and all engineers of NERDC participated the session, interacted experience sharing discussion and a milestone to improve NERDC impressive research & development (R&D) culture which influences for innovative products that lead to contribute socio-economic & livelihood enhancement of the country.

NERDC Professionals Share their Expertise to Boost up Research Skills to Take up Future Challenges

Since the inception of NERDC it was aimed for providing innovative engineering technology for development of the nation by quality research. To continue in this view and to boost up the research skills among the NERDC staff, recently we got to start presentation series conducted by internal professionals on their expertise fields.



Eng. K. Peiris

The first professional to share his knowledge was Research Fellow, Eng. Kapila Peiris, on “Physical, Mechanical & Biological Dichotomy in our environment and How it relates to the Sustainability”. It was held on 30th July 2020 and during the session many fruitful concepts were came out which will contribute to enhance a positive research culture.



Dr. T.A.S. Anuruddha

The second presentation was on “The multi-chamber and two-stage burn technology, a further improvement of crematorium technology introduced by NERDC to the country”. Research Fellow, Eng. Nandana Edirisinghe has shared his knowledge & expertise with peers, as a pre-launch of the innovation. Dr. T.A.S. Anuruddha shared experiences & knowledge of their team members on “Development of a non-contact mechanism to register attendance and body temperature simultaneously”. This was presented based on the development of thermal face recognition & access control system & held on 13th August 2020.

“Peha”

A “Peha” is an equipment which was traditionally used in the Ayurvedic and cosmetic industry to extract oil from seeds. However, using this type of equipment is impractical to keep up with industrial demands.

Seeds such as “Mee” are made into powder then steamed before it goes into the “Peha”. Then the material in the sack of the “Peha” is compressed.



This eases the oil extraction process. Oil extraction from seeds such as “Mee” is not easy, only when given a hard impact, the cell walls break and the oils are released. Due to various factors such as mass distribution and its vibration properties, the extensive use of the “Peha” is minimized.

Still this traditional equipment provides a remarkable way of removing oil from hard materials with less surface friction.

A model of this equipment is available at NERDC museum, knowledge seekers, school students and other interested parties are warmly welcome during any working days.

Evaluation of NERDC Centre

With its’ first chairman Vidya Jyothi Professor K.K.Y.W. Perera, NERDC started its’ operations acquiring a minimal number of staff. When it was shifted to the present location, NERDC was organized in better way of its’ office space and specific as well as précised work load for the staff. This was arranged according to the national objectives of forming NERDC as the national apex body for engineering research and development. He has done a remarkable service to the NERDC during his tenure. After his retirement, during the year 1977, Vidya Jyothi Dr. A.N.S. Kulasinghe was appointed as the second chairman of NERDC.



During his tenure of 17 years in NERDC, he invented many technologies, to support local enterprises. NERDC Cost Effective Building Technology in Civil Engineering field is one of the remarkable technologies that he invented. Many of Sri Lankan famous building structures were built using this technology. Planetarium, Colombo dockyard, Polgolla bund and Kaluthara Chaitya are some of them. He has contributed in the areas of Pre-cast concrete, Pre-stressed concrete, alternate low cost construction material, ferro-cement boat building and the applications of the several key engineering structures in Sri Lanka.

NERDC today has walked a long way of improved version of these technologies based on them. Today and in future, with guidance & the consultancy of NERDC, thousands of Concrete structures will be built in Sri Lanka, using NERDC Cost Effective Building Technology.

Cont'd to next issue...

Reducing Post-Harvest Losses in Sri Lankan Fisheries Industry Revolutionizing Multi-day Fishing Boat Practices through Modernizing in-boat Refrigeration System and Storage Mechanism

The consumer demand for fish and fish based products has tremendously increased due to the current perception towards red meats & white meats. To meet the demand, harvesting of fish has also increased & with dynamic development of fisheries, it was realized that living aquatic resources, although renewable, are not infinite and need to be properly managed.

Hence the stake holders involved in the industry including the government are investigating for an optimum & affordable practical solution to preserve freshness of tropical fish without compromising the quality.



During the past decades there have been many attempts to implement a fair system to reduce post-harvest losses in existing multiple day fishing boats. Meanwhile in present context, developing of a refrigeration & storage system has been identified as the prime requirement of domestic fishing industry.

Having the objective to reduce the unacceptable post-harvest losses (30% to 40%) and retain freshness of harvested fish by developing an impactful and feasible refrigeration & storage system for existing multiday (20-40 Days) fishing boats, this is initiated as a collaborative project of National Engineering Research and Development Centre (NERDC), National Aquatic Resources Research and Development Agency (NARA) and Department of Fisheries and Aquatic Resources (DFAR). The memorandum of

understanding between the institutes was signed on 15th of July 2020 at Ministry of Fisheries. On behalf of the institutions the MOU was signed by the Chairman of NARA, the Chairman of NERDC and the Director General of DFAR.



This occasion was graced by the participation of Honorable Minister Mr. Douglas Devananda and Honorable Minister Dr. Bandula Gunawardene.

This project lies for one-year time duration and expected outcomes are to establish standard storage system for existing multiday fishing boats, preserve live aquatic resources, create new livelihood opportunities and ultimately to upgrade the fishing industry to the next level.



The total estimated cost is 32 million LKR and by reaching of above outcomes, it will be contributing considerable amount to increase the Gross Domestic Production of the country.

Awareness Program on Operation of Small and Medium Industries to Reduce Environmental Impacts

NERDC held an awareness program on reducing environmental impacts of operations in small & medium industries in the area of Tissamaharama Pradeshiya Sabha. This was two days program and held on 2nd and 3rd September 2020, focusing on reducing the environmental issues faced by the small and medium scale industries, with special reference to industries operate in the residential areas. Approximately 45 participants participated in the program for two days, apart from the official representatives of Pradeshiya Sabha. During the first day, some operations were individually inspected to find out the loop holes occurred and to make people aware of potential improvements that would be taken to proceed. During the second day, the program was conducted aiming of entrepreneurs from a different type of industrial sector to operate their industries in a methodical way



which is environmentally friendly. Dust particles emission, excessive noise generated during some operations, over loading capacity in the limited land area were among the main issues faced by these SMEs. During the program, NERDC officials shared their knowledge and experience among these particular industrial sectors in to address and solve the nationally affected environmental issues and assist the industries to continue their processing plants in line with environmental regulations.

Special training programme for prospective small scale entrepreneurs

A special training program for a group of self employed was arranged by NERDC, joining with Regional Development Bank, Godagama branch. There were 30 participants in the program and held at Technology Park on 26 th of September, 2020. The aim of the program was to provide support to enhance the livelihoods of the needy personal, whom are trying to keep on their feet



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