NEWSLETTER

NATIONAL RESEARCH COUNCIL

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ABOUT NRC

The National Research Council (NRC) was founded in 1999 and formally established in 2007, as a special agency by H.E. the President, under Article 33 of the Constitution to assist the government to plan, coordinate and facilitate research and development in Science and Technology so as to build a vibrant national scientific and technological community. Cabinet approval was granted to establish the Council as a statutory body by parlimentary Act No 11 of 2016 in the year 2016.

The main functions of the NRC are to call ,assess and fund research proposals and to develop systems of national recognition and awards for successful research and innovations by Sri Lankan scientists.

VISION

Enable Sri Lanka to achieve Science and Knowledge-based developed country status.

MISSION

To promote, fund, facilitate and monitor fundamental and applied research and enhance human resource development for Sri Lanka to achieve Science and knowledge-based developed country status.

OBJECTIVES

- Assist the government to facilitate research relating to science and technology in order to build a vibrant scientific and technological community in the country.
- Promote and facilitate research relating to science and technology in higher educational institutions and public sector research institutes and other governmental institutes so as to develop a research base that will contribute to national needs.
- Solicit the co-operation of the private sector in the enhancement of research relating to science and technology.

MANDATORY FUNCTIONS OF THE NRC

1. To provide grants for the conduct of research relating to science and technology for the purpose of achieving the objectives of the Council
2. To facilitate, coordinate, supervise and monitor research relating to science and technology in respect of grants provided to higher educational institutions, public sector research institutes and other governmental institutions so as to ensure the efficient utilization of government investments in research
3. To import, plant, machinery and equipment required for the purpose of the Council and to receive equipment, funds and any other assistance from recognized local or foreign sources for the efficient conduct of the Council
4. To collect, print and publish reports, periodicals and papers on research relating to science and technology and related subjects
5. To award scholarships and fellowships for scientific study or scientific work at science and technology institutions local or foreign
6. To develop a national system to recognize and grant awards for research and innovations relating to science and technology; and
7. To conduct lectures, seminars and workshops on research relating to science and technology and related subjects.

PROGRAMS

1. Investigator Driven Grants (IDG)
2. Private Public Partnership Grants (PPP)
3. Target Oriented Multidisciplinary Research Grants (TO)
4. Outreach Program
5. President's Awards for Scientific Research (PASR)
6. Rapid Response Grants (RRG)

CHAIRMAN'S MESSAGE

Prof. Hemantha Dodampahala
Chairman NRC

The NRC was established to nourish and strengthen the research and development in this country and establish a powerful research culture.

To achieve the important objectives of the NRC, a number of research programms have been formulated which are, Investigator Driven Research Grant Program, Private-Public Partnership Program, Target Oriented Multi-Disciplinary Research Grant Program, Presidential Awards for Scientific Research, Outreach Program and the Public Awareness Program.

To address the urgent requirements on COVID-19 R&D, the 'Rapid Response Research Grants' scheme was introduced in 2020. Maximum amount per grant was LKR 500,000/-, new guidelines were developed, according to the directions given by the Ministry of Finance, with flexibility in utilizing the funds. A total of 35 proposals were received and 9 grants were awarded. Further, in the Year 2021, NRC started special grants scheme for ministry priority research for indigenous products development. NRC is now looking forward to forming foreign collaborations to strengthen future research & development.

At the release of the NRC first Newsletter, I wish to thank the Council members for their instinctive support given to us in all our efforts to take NRC to greater heights and for the corporation extended to us. I would also like to place on record my gratitude to my staff for their support.

Prof. Hemantha Dodampahala
Chairman NRC
Professor in Obstetrics & Gynaecology
Faculty of Medicine
University of Colombo, Sri Lanka

2022 Research Projects Awarded by NRC

Grant No	Title	Principal Investigator	Institute	Total Budget (Rs.Mn.)
Indigenous products for the export market				
MPG 21-02	Involvement of green nano-technology and bio-fermentation for Sri Lankan traditional Medicinal Preparation (basna): development of ready to use probiotic nutritional supplement.	Prof W. R. M. De Silva	Department of Chemistry, Faculty of Science, University of Colombo	2,429,000.00
MPG 21-03	Development of Nature-Based Anti-aging and Skin Brightening Products by utilizing Sri Lankan Plants	Prof P. A. N. Punyasiri	IBMBB University of Colombo	2,500,000.00
MPG 21-04	Product development of Ayurveda polyherbal nutraceutical/s: Evaluation of bioactivities of different dosage forms	Prof S. D. Hapuarachchi	Institute of Indigenous Medicine	2,478,400.00
MPG 21-10	Nutraceuticals developed by traditional medicine for the local and export market	Dr A. I. Kuruppu	General Sir John Kotelawala Defence University	2,482,500.00
MPG 21-17	Development of antidandruff and hair growth cosmeceutical products utilizing Sri Lankan herbs	Dr N. D. Kodithuwakku	Institute of Indigenous Medicine	2,366,390.40
IDG 20-119	Study of Sun-Moon relative position on earth's weather changes	Prof. K. P. S. C. Jayaratne	University of Colombo	1,900,000.00

SOME HIGHLIGHTS OF ACHIEVEMENTS OF NRC RESEARCH PROJECTS

Highlights of achievements of few research projects are presented in this newsletter and in, each Newsletter, NRC will present to the reader a few more outputs of research projects funded by the NRC.

Achievements In R&D In Nanotechnology-An Investment Enriching the Present and Future- A Success Story

A state-of-the-art Nanotechnology Research Facility at the Wayamba University of Sri Lanka, NRC Grant No: 05-029

The Wayamba University of Sri Lanka is proud to be the first-ever university which will go down in the annals of history to establish a Nanotechnology Research Laboratory (NRL) with state-of-the-art facilities by the National Research Council (NRC) Grant obtained. It was the brainchild of Prof. CAN Fernando, a prominent international researcher who comes from an impeccable research background. Although it was initially baptised in 2007 under the Department of Electronics of the Faculty of Applied Sciences to provide PhDand MPhil study programmes,

fully commissioning of the facility was only materialised when it was upgraded to the Department of Nanoscience Technology of the Faculty of Technology in 2014. It offers BSc honours in Engineering Technology Material and Nanoscience Technology degrees to students from the GCE (A/L) technology stream. About 350 undergraduates and 10 postgraduate students are currently reading for their respective degree programmes. This wouldn not have been possible if the NRC grant had not been obtained by Prof. CAN Fernando.

Prof. C. A. N. Fernando
Senior Professor
Department of Nanoscience Technology
Wayamaba University
Principal Investigator of NRC Grant No. 05-029

Modelling the way towards a 'learning thinking nation' is one of the key strategically significant aspects of developing Sri Lanka. One underpinning concept behind that would be transforming this country into a 'learning thinking nation'. The Department of Nanoscience Technology has played a pivotal role in modelling the way towards a 'learning thinking nation' as it imparts its service in several key areas. The services consist conducting undergraduate and postgraduate research programmes, striking up international research collaborations, carrying out awareness programmes to promote nanotechnology among A/L science students in Sri Lanka and undertaking research specifically on utilising nanotechnology in economic development programmes in the country. The Department of Nanoscience Technology has identified developing necessary human resources to take up challenges in the new epoch as its prime obligation. In a context where there is a severe dearth of experts in Nanotechnology, the Department of Nanoscience Technology is committed to filling this apparent gap, which is considered ,a national need of the hour. To be successful in this mission, the Department is a proud owner of a laboratory complex equipped with ultra-modern technologies. It consists of a biotechnology laboratory, a research laboratory, a computer science laboratory, and an electronics laboratory.

Currently, ten students are pursuing their PhD degrees at the Department under the shepherding of Prof. C. A. N Fernando. He dexterously spearheads the young breed of scholars aspiring to become stalwarts in the field of Nanotechnology. So far, the Department has produced seven PhDs and two MPhils in Nanotechnology. There have been nearly 82 research publications made under the auspices of the NRC Research Grant by Prof. CAN Fernando in collaboration with other eminent researchers since 2010.

Universiti Malaysia Perlis (UNIMAP), the Sharda University of India, the Coconut Development Authority of Sri Lanka and the SLINTEC Sri Lanka have signed MoUs to carry out research on Nanotechnology. These will immensely improve the quality of the present PhD programmes carried out by the NRL and expedite the process of making this facility the leading centre for nanotechnology research in South Asia. Apart from that, the NRL is closely working with the government of Sri Lanka by signing several MoUs with number of government institutions to provide the necessary knowledge base, for the development of a wide spectrum of industries such as coir, graphite, activated carbon and charcoal fuels.

Meanwhile, Prof. CAN Fernando has received several national research awards for his immense contribution to the field. They include the Presidential National Honours / Widyanidhi Award in 2006, SUSRED Award NSF/2016 in 2016, the President's Research Award in 2018, and SUSRED Award NSF/2020 in 2020.

Some of the short-term objectives of the NRL are to increase the number of PhD students, sign productive MOUs with foreign universities, local industries and government institutions, and expand its facilities on par with the new degree programmes introduced in technological studies. In the long run, its prime objective is to become the number one Nanotechnology research facility in South Asia by attracting more international students and scholars to do research, right here at the Wayamba University of Sri Lanka.

Achievements in Medical Research

Pilot field trial of Sterile Insect Technique (SIT) for integrated control of dengue vector mosquitoes in Sri Lanka, NRC Grant No: TO 14-04

Dengue, which has a significant effect on people's livelihoods, has been recognized to be a challenging, emerging and re-emerging infectious disease in Sri Lanka. Dengue vector control has become the most crucial strategy in controlling dengue in the country. Therefore, strengthening dengue vector control measures using novel control strategies is essential. Sterile Insect Technology (SIT) has been utilized successfully to control mosquito-borne diseases in different parts of the world. In current SIT-based projects, sterile male dengue vector mosquitoes are released to a selected environment, where eventually, the sterile male mosquitoes would mate with the female mosquitoes.

Research findings: This project resulted in creating an Intensive community awareness conducted at the field site resulted in successful community engagement for this activity. The pilot trial has resulted in suppression of dengue vector mosquitoes which has contributed for reduction in dengue cases in the selected area.

The outcome of this project, created a vital milestone in the R & D history related to SIT in Sri Lanka, the first application of this kind. As the Way forward, the next step in the field application of SIT would be to conduct an operational trial targeting a high dengue epidemic area as designated by the WHO and IAEA.

Though the female mosquitoes lay eggs, they would be infertile eggs, and therefore, the next generation of mosquitoes would not be produced. This process would result in suppression of vector population and reduction of dengue cases in the selected area. University of Kelaniya (Molecular Medicine Unit and Dept. of Sociology) was collaborating with the National Dengue Control Unit (NDCU) for a pilot field trial following guidelines given by the WHO and IAEA. This pilot field trial was supported by the National Research Council (TO 14/04 and OR 21-00-human resources and operational cost) and the IAEA (technical cooperation through equipment, training and ex pertise). After more than five years of research, a pilot trial for field releasing sterile male dengue vector mosquitoes was initiated in 2021 in a selected Grama Niladari (GN) division (Kidagammulla) covering a 30-ha area in the District of Gampaha, Sri Lanka.

Prof. Menaka Hapugoda
Molecular Medicine Unit
Faculty of Medicine
University of Kelaniya
Principal Investigator of NRC Grant No. TO 14-04

Achievements in Dairy Research

Improving dairy industry to achieve self-sufficiency in milk, NRC Target Oriented Project 14-10

The objective of the research project was to investigate major factors that would contribute to increasing milk production in Sri Lanka and to provide recommendations to achieve self-sufficiency in milk. The project focused on the improvement of (i) nutrition (ii) reproduction (iii) biosecurity and (iv) welfare of dairy cattle. Priority needs for each theme were identified through discussions with dairy cattle farmers, veterinary practitioners and other relevant stakeholders.

Mr. M.B.P. Kumara Mahipala
Senior Lecturer Department of Animal Science,
University Of Peradeniya
Principal Investigator of NRC Grant No. TO 14-10

Research findings:

Nutrition: The analysis of constituents of blood (metabolic profiles) confirmed that a large percentage of transition and early lactating dairy cows suffer from energy imbalance (negative energy balance).
Corn grain and fat (bypass fat 200-250 g/cow/day) included high energy rations which were recommended until 12-14 weeks period after calving (post-partum) to overcome the energy imbalance and increase milk production and consequent profit. Potential of hybrid fodder maize, sorghum and millet varieties for dairy cattle feeding was identified. Data on yield and nutritive value of locally available ruminant feed ingredients were recommended and published.

Reproduction: Recommended ovulation synchronization protocol (Co-Synch protocol) for cow insemination saves about LKR 4500 per insemination. Detection of non-pregnant cows as early as 20 days after insemination using ultrasound scanner (color doppler) is recommended for large scale farms. This will allow the non-pregnant cows to synchronize and insemination again as early as 20 days after the first insemination, thereby shortening the period for the next calving (calving interval) by about 45 days, resulting more lifetime and herd milk production. Genetic markers were identified to select more potential dairy calves; managing them will increase herd productivity and overall profit of dairy cattle farming.

Welfare: The research conducted studies on conditions on local cattle sheds and recommended ideal cubical dimensions and flooring (soft bedding) for greater milk production. Useful relationships were established among cattle shed conditions (spacing, flooring) and common welfare related problems in dairy cattle (lameness, wound, occurrence of mastitis).

Biosecurity: The research revealed an unexpectedly high occurrence of the major udder disease namely subclinical mastitis. The proposed vaccination hygienic protocol ensured protection of cows from the disease, while limiting the adverse influence of using excessive antibiotics on beneficial microbial and human populations. The research also detected the highly rapidly spreading (contagious) Mycoplasma bovis as a cause of mastitis among the recently imported dairy cows for the first time in Sri Lanka. More stringent quarantine protocols are recommended while importing dairy cattle.

Research outcomes:

The findings were disseminated via training programs, scientific publications, presentations and training of scientists (1 PhD and 5 MPhils). It opened many avenues for dairy cattle research and husbandry, including analysis of blood composition (metabolic profiling), energy supplementation, improved fodder production, use of genetic markers, ovulation synchronization protocols, improving cow comfort, vaccination for udder disease and improving biosecurity. An in-vitro feed evaluation facility has been established at the Veterinary Research Institute (VRI) and provides service to the animal feed industry. The Department of Animal production and Health (DAPH) has granted approval for two private sector companies to import and supply bypass fat for dairy cattle farmers while the Central Province Department of Animal Production and Health has included bypass fat as the main energy supplement in its "transition and early lactating cow management programme".

Several private sector companies commenced promotion of hybrid fodder (maize, sorghum) varieties for dairy cattle feeding.

The Department of Animal Production and health permitted importation of mastitis disease vaccines for dairy cattle, and few dairy cattle farms commenced such vaccination of dairy cattle against mastitis.

Large scale dairy cattle farms (Ridiyagama farm, Manikpalama farm) of the National Livestock Development Board (NLDB) have already adapted the recommended Co-synch protocol for the synchronization of the dairy cow herd. A formal collaboration was established with University of Melbourne for further study of Mycoplasma bovis infection in dairy cattle in Sri Lanka.

EVENT HIGHLIGHTS

On 2nd May 2022 National Research Council celebrated its 23rd Anniversary by chanting pirith at NRC premises with the participation of NRC staff, present chairman Prof. Hemantha Dodampahala, and Chief Executive Officer Dr. (Mrs) Shanika Jayasekera. Thereafter a staff appreciation program to appreciate the service.

New Appointment of CEO: Dr. Shanika Jayasekera

The National Research Council is pleased to announce the appointment of Dr. (Mrs) Shanika Jayasekera as our Chief executive officer. She took over NRC with effect from February 14, 2022 from our previous CEO, Mrs Rajapakse. Dr. Jayasekera holds a Ph.D. in Agriculture from the Indian Agricultural Research Institute (2005). In the year 2003, her research was awarded the best award in Biosystematics Research at the National Symposium, India. Dr Jayasekera has 23 years of working experience in research management at the SLCARP, which includes research funding, monitoring and evaluation, international linkages and has handled programs on motivating researchers and providing recognition to scientist for their contribution to research. She is a member of SLAAS, Member, Institute of Biology, Member, Editorial Board of Indian Journal Entomology. She has gained sound knowledge in Research management and working experience in financial management.

We are glad that she has joined us and look forward to moving ahead through the challenging times ahead.

Confirmation of NRC Staff

N. C. Karunarathna
Scientific/ Research Officer

M. S. Perera
Scientific/ Research Officer

Thilina Sandaruwan
Driver

Retirement of: Mrs. Manisha Rajapakse, CEO, NRC

Ms. Manisha Rajapaksa began her employment with the NRC as Executive Secretary in 1999. She played a key role in creating a proper funding mechanism for investigator-driven research grants and implemented the above mechanism in the Sri Lankan research community since the year 1999.

She played a major role in designing of recognition programs for scientific achievements among Sri Lankan scientists by starting the President's Awards for Scientific Research, for the improvement of the research grants program.

She played a major part in designing a new program to obtain support from the private sector involvement for the research development in the year 2012 by starting a Private Public Partnership program in the year 2012.

In the year 2014, as per the request of the government, NRC developed a target-oriented multidisciplinary research project to solve major issues/problems in the country. This solution was developed by a multidisciplinary research group of experts from different fields.

Mrs. Rajapakse, along with the then Chairman, NRC, Prof H.J. de Silva, has been working hard for the NRC act establishment and established permanent cader positions in year 2016, which ensured employees' job security. As a research institute, this was a great achievement for NRC.

During that time NRC has moved to the new office premises and the office became a more attractive place for staff and stakeholders. Mrs. Rajapaksa has taken many steps forward to develop NRC's future.

She was the first CEO of NRC who has remarkable management skills and endless courage. She retired from NRC on the 13th of February 2022 by ending her government service.

Compiled By
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Scientific Research Officer /National Research Council