Message from the Chairman

I’m honoured to send a message to the Committee on Natural Resources Management, Sustainable Agriculture and Climate change, on the occasion of launching of the proceedings of the workshop on “Present status of research activities undertaken by NARS scientific institutes” on Climate Change Adaptation and Mitigation.

Natural Resources committee is one of the important committees appointed by SLCARP, recognizing the importance of impact of Climate Change on agriculture. SLCARP is charged with the responsibility of preparing the National Research Priorities in the agriculture sector, which covers Plantation, Non-Plantation, Fisheries, Livestock and Forestry sectors. SLCARP organized the above workshop with a view to assess evaluate and ascertain the adequacy and find gaps in National Research agenda with a view to ensure and effective research agenda in place to face the future challenges due to Climate change. The summery proceedings of the above workshop, I hope will be of immense use to the research leaders in evaluating the national preparedness in the agriculture sector to face emerging challenges due to Climate Change.

I take this opportunity to extend the appreciation of the Sri Lanka Council for Agricultural Research Policy to the Chairman members of the National Committee for their untiring efforts in organizing this important workshop.

Chairman
Sri Lanka Council for Agricultural Research Policy
Climate Change is a global phenomenon that poses a threat to food security for various countries including Sri Lanka. Extreme climatic conditions such as drought, floods, typhoons etc. brought by the changing climate adversely affect agriculture crop production systems. This phenomenon has serious implications in the agriculture sector in adopting to change climate, particularly in modifying cultural practices and the use of appropriate technologies to mitigate and/or cushion the impacts of climate change. Climate change adaptation can significantly reduce many potentially dangerous impacts and reduce the risk of key vulnerability factors.

Being a developing island nation subjects to tropical climate patterns, Sri Lanka is highly vulnerable to climate change impacts. Extreme weather events such as high intensity rainfall followed by flash floods and landslides and extended dry periods resulting in water scarcity are becoming common occurrences in Sri Lanka. Therefore, urgent action is necessary to take adaptive measures to build resilience of the country to face the adverse impacts of climate change.

In this context, the present status of research activities are important to provide guidance and directions for all the stakeholders to address the adverse effect of climate change efficiently and effectively.

It is hoped that this publication would provide the readers with up-to-date information on present status of research activities related to climate change adaptations.
Finally, I would like to sincerely thank all the authors of the papers, editor in chief Professor, Buddhi Marambe and all other contributors who supported directly or indirectly in organizing the workshop and producing this publication.

Secretary
Sri Lanka Council for Agricultural Research Policy
FOREWORD

Production and productivity of food crops and plantation crops mainly depend on the agro ecological setting, which the crop experienced in its lifespan. Out of all the parameters soil moisture availability and the day and night time temperature has significant impact for the production and productivity of crops. Climate change effects, which are now, experience by Sri Lanka is making significant impact to production and productivity of food crops and plantation crops. It is also shows significant effects on natural resources and bio diversity of the country.

Extreme weather events such as floods and droughts were more frequent in recent years when compare to past, highlighting the importance of possible adaptation and mitigation measures, which could be practiced to minimize the effect of changing and variable climate effect.

The National Climate Change Policy of Sri Lanka (2012) clearly endorses the need of appropriate adaptation strategies to take timely actions in order to reduce the impacts on crop production while ensuring the national food security. The National Adaptation Plan (NAP), which is the next logical step of this initiative, is a country-driven, gender-sensitive and a fully transparent approach to deal with climate change impacts on Sri Lanka, was published in 2016.

The National Adaptation Plan (NAP) of Sri Lanka has identified agriculture, fisheries, water, human health, coastal and marine, ecosystems and biodiversity, infrastructure and human settlements as the most vulnerable sectors to the adverse effects of climate change.

Long before the release of NAP, by National Climate change secretariat, scientists of the National Agriculture Research System (NARS) were engaged in research and development programs in developing varieties and associated technologies for drought, high
temperature conditions, soil salinity etc. In order to face the challenges for agriculture and plantation sector due to climate variability.

NAP has underscored the importance of strengthening these programs in more effective and coordinated manner to face the climate change impacts for agriculture and plantation sector. As the coordinating body to coordinate the research activities, SLCARP has identified the importance of reviewing the status of the research and development work related to climate change conducted by NARS research system and conducted a “Workshop on Present Status of Research Activities on Climate Change Adaptations” in November 2017.

This workshop has identified the status of climate change related research activities conducted and the importance given by each sector on development of varieties and technologies to face the climate change challenges.

Importance of strengthening the research and development program based on the identified trust areas in the national adaptation plan for agriculture and plantation sector was taken as the priority in the research agenda of the SLCARP in order to minimize the impact to agriculture and plantation crop production of Sri Lanka. Research Institutes/centers of NARS, individually or in collaborative manner coordinating with universities and other relevant organizations will launch vibrant research and development programs in achieving this noble task to arrest the negative effects of climate change for food and plantation sectors of Sri Lanka.

Chairman and Members
National Committee on Natural Resources Management, Sustainable Agriculture and Climate Change
Contents

Research and Development Activates on Climate Change at the Natural Resource Management Centre of the Department of Agriculture and Future Needs
A.B. Abeysekera 1-6

Rice Research on Climate Change in Sri Lanka: Impacts, Mitigation, Adaptation Activities and Future Directions

Threats and Related Research towards Adaptation of Other Field Crops to Climate Change in the Dry Zone of Sri Lanka

Impact of Climate Change on Vegetable Cultivation in Sri Lanka: A Review

Present Status of Research on Fruit Crops for Climate Change Adaptation and Future Needs of Sri Lanka
K.A. Renuka and E.R.S.P. Edirimanna 43-47

Climate Change Impacts on Export Agricultural Crops Production and Adaptation Strategies for Productivity Improvement: A Review of Current Status
H.M.P.A. Subasinghe and D.G.I.S. Ariyathilaka 49-57

Present Status of Research and Development Activities on Climate Change Mitigation and Future Needs: Contribution of Tea Research Institute of Sri Lanka
T.L. Wijeratne 59-69

Climate Change Impacts on Coconut Production and Potential Adaptation and Mitigation Measures: A Review of Current Status
C.S. Ranasinghe 71-82

Preparedness of the Natural Rubber Sector against Adverse Impacts of Climate Change and Variability
Wasana Wijesuriya and Priyani Seneviratne 83-100

Present Status of Research and Development on Climate Change Mitigation and Future Needs in the Sugarcane Sector in Sri Lanka
Effects of Climate Change on Livestock: Sri Lankan Perspectives  
W.M.P.B. Weerasinghe  
113-119

Climate Change Research on Fisheries and Aquaculture:  
A Review of Current Status  
K. Arulanathan  
121-126

Research and Development on Climate Change Mitigation and Adaptation in Forestry: Present Status and Future Needs  
R.M.D. Alawathugoda  
127-136

Climate Change Impacts on Agrarian Sector and Adaptation  
H.J.C. Jayasooriya and W.H.A. Shanth  
137-147

Research Programs related to Climate Change in the Department of National Botanic Gardens of Sri Lanka  
S.A. Krishnarajah and S. Ranasinghe  
149-151