Special Issue
on

Sustainable Land and Water Management in the 21st Century

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Foreword

The Editorial Board of the Faculty of Agriculture has the pleasure to release the Jubilee issue of the journal "Tropical Agricultural Research & Extension", to mark the 25th Anniversary of the University of Ruhuna, Matara, Sri Lanka. The theme selected for the special issue "Sustainable Land and Water Management in the 21st century" is very much in keeping with the current burning issues in Agriculture and Natural Resource Management.

The global scenario shows a high degree of land degradation due to human interventions, including physical, chemical and biological degradation. Of the human induced land degradation, about 58% are associated with soil erosion by water and 26% are due to wind erosion. Using the land in a sustainable manner is an important issue, as the world population of 5.5 billion people have access only to 11% of the land area for agriculture. It is estimated that in Asia approximately 70% of land is already degraded.

Here in Sri Lanka, soil erosion is the major cause of land degradation, mainly resulting from deforestation, ad hoc land-use practices and non-adoption of soil conservation measures. The extent of land degradation in Sri Lanka is amply demonstrated by the increasing pressure on limited land resources, as indicated by land/man ratio of 0.35 ha and declining forest cover from about 90% at the turn of the century to about 22% as it stands today. Therefore, one of the major challenges in the 21st century is to restore degraded land and to manage agricultural land in a sustainable manner. Intensive land utilization and adoption of appropriate soil conservation measures are some of the critical issues that need to be addressed in this regard.

In today's context water and water management has to play a key role in development issues. As stated in the Fort Collin Conference (2000), US, success in agricultural productivity over recent decades has been described as not so much a "green revolution" but as a "blue revolution", where benefit of controlled water application were made possible by vast irrigation systems, If we are to meet the increasing demand for water in the year 2025, which is estimated to be about 50%, the effectiveness of irrigation should be increased. By the year 2050 population will exceed 8 billion ,compared to current 5.5 billion. As argued by Malthus in 1798, without the check of diseases, war and famine, human kind was doomed to eventually outgrow its ability to feed itself. Now in the 21st Century, the growing scarcity and competition for water add a new dimension to the debate of the Malthus theory.

The total amount of water on earth today is nearly the same as it was millions of years ago at the beginning of the earth, with the possible exception of any imports from outer space by cosmic snow balls. If one is to take in to account the available water for human consumption according to IMMI's estimates is just 3% out of total amount and constitutes 9000 m^3 per person per year.

Water demand has exploded in Agriculture as a result of green revolution, and agriculture has become heavily dependent on large quantities of water for irrigation. It uses more than 80% of the available water. Therefore need arises to develop new technologies to go ahead with precision use of water. The efficiency of tank irrigation system which lies below 60% has a serious threat in respect of water economy. It is already established that around 50% of the increasing demand for water by the year 2025 could be met by increasing the effectiveness of irrigation management.

Asian region where more than 90% of irrigation water is used for rice irrigation has to take extraordinary measures to save water since irrigation base of South Asian societies is showing numerous signs of vulnerability, salinity and siltation are increasing due to neglect of infrastructure, and unexpected climatic change.

Modern irrigation age is characterized by engineering of whole river basins and mechanized control over vast quantities of stream water. Water is an obsession in large-scale irrigation schemes where enormous water quantities are said to be necessary in order to produce large yields. Long term maintenance of water resources and productivity improvement are not ensured. Groundwater over pumping, may be an even more serious problem. In addition, irrigation growth has not eradicated poverty in the overall situation and the distribution of its benefits is thus largely skewed and unequal.

During the last thirty years, water consumption has increased more rapidly than population, economic revenue and agricultural production. The water resources have become scarce not only in quantity but also with degrading quality while competition for its use is increasing. Insecurity, conflicts and violence among users have escalated. Therefore an integrated approach is urgently needed to address the current problems.

This special issue includes, both Review and Research papers that address various land and water management strategies for sustainable agricultural development. It is hoped that this publication will provide base material in formulating and developing future research and development programmes for the benefit of all those engaged in agriculture and natural resource management.

Prof. KDN Weerasinghe
Dr. M de S. Liyanage
Co-Editors

04.10.2003

Appreciation and Editorial Comments

The first issue of the journal was launched in 1998 by Prof. Ranjith Pathirana, Faculty of Agriculture, who as the first EditorinChief put his soul and heart to initiate a truly international journal from this part of the world. Since then, journal has published five volumes as a biennial publication. With the passage of time, the journal has received wide publicity among agricultural scientists in different parts of the world. Prof. Pathirana devoted much time and effort to elevate the journal up to the present standard. However, circumstances did not permit him to continue as the Chief Editor of the journal, following his decision to leave Sri Lanka in 2002. For the jubilee issue Dr. M. de S. Liyanage joined the Editorial Board in 2003, and he worked tirelessly and with commitment to publish the special issue on time. For the jubilee year, Editorial Board has decided to incorporate some new features to the journal in order to benefit the readers. The design and lay-out of cover page has been changed and it has been decided to publish the Journal annually as a cost cutting measure. The benefit of cost reduction measures has been transferred to the numerous readers by reducing the subscription rates.

We greatly appreciate the valuable contributions made by the authors in their own speciality and thank the editorial assistance of Mr. M.K.D.K Piyaratne and V.G. Chinthaka Naleen, without whom publication of this special jubilee issue would not have been possible.