Advances in Soil and Water Resource Management for Food and Livelihood Security in Changing Climate

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Foreword

In an endeavour to increase agricultural production, there has been over exploitation of the natural resources resulting in the degradation of soil and water resources. With increasing demand on land, mainly because of increase in population, life style changes, urbanization, industrialization and other non-farm uses of farm lands, diversion takes place not only from wastelands but also from agriculturally and ecologically significant areas such as forest, pasture lands and even cultivated lands.

Protection and improvement of land, water, biodiversity and climate resources is a pre-requisite for sustainable agriculture production. The social, economic, environmental and political impacts are significant to achieve sustained agricultural growth. Natural resources are critically important components of life support system, the efficient conservation and management of which are vital for economic growth and rural development. The degradation of our natural resources, soil and water has become a matter of serious concern for the farmers, researchers, academicians, scientists and policy makers, as these in turn affect issues like upliftment of rural people, food security and livelihood. The 3rd International Conference of Soil Conservation Society of India was organized during 10-13 February, 2015 in New Delhi, India, to address the issues and challenges ahead during the 21st century. The Conference focused mainly to protect, conserve and develop the natural resources and use them sustainably basis to alleviate hunger, enhance livelihood security and improve the quality of life in the changing climate. It was participated by academicians, scientists, extension workers, policy makers, researchers, students, farmers and other stakeholders from the field of natural resource management.

This book "Advances in Soil and Water Resource Management for Food and Livelihood Security in Changing Climate" is a timely contribution and it can show the pathway to achieving an evergreen revolution leading to an increase in productivity in perpetuity without associated ecological harm. My congratulations to Dr Suraj Bhan and the authors of different chapters.

M. S. Swaminathan

(M S Swaminathan)

Preface

Soil and water are the most important natural resource in the context of agriculture and their conservation is essential for sustaining agricultural productivity. Inadequate implementation of soil and water conservation practices is a major constraint in agricultural production. The shrinking forest and cultivated land resource have aggravated the problems of land degradation, thereby posing a greater challenge for resource conservation. The adoption of improved conservation practices is need to be sustained. Management of agro eco-system is the challenging task compounded further by the degrading natural resource and inadequate infrastructure. Growing biotic interference has resulted in considerable degradation of our valuable natural resources viz. land, water and vegetation creating ecological imbalances. Appropriate land use decisions are vital to achieve optimum productivity of the land and to ensure environmental safety. The focus should not be on the over exploitation and to check further degradation. Scientific & Judicious natural resource management may perhaps further improve the importance in ensuring livelihood security, food security, poverty alleviation and environmental protection as well as building resilience and adopting to climate change.

The compilation of the papers includes various issues of global concern and different regions of the country. Soil Erosion and Conservation, Water Quality and Waste Water Use, Hydrology, Catchment, Integrated Watershed Management, Remote Sensing and GIS, Environmental Impact Assessment and Mitigation, Socio-Economic Impacts, Public Participation, Education and Management and Climate Change Impacts. These aim to focus the advanced technological impacts for conservation and management of reserves of natural resources which need to be exploited and managed sustainably.

Climate change is one of today's most emerging global issues and will become increasingly important in the decades to come, a matter of concern. This publication will provide to a comprehensive holistic approach to the readers. This publication pursues a comprehensive approach so as to arrive to a better understanding of the implications of climate change on sustainable development, focusing on the perspective of soil and water. The technical papers presented in the International Conference on **"Natural Resource Management for Food Security and Rural Livelihoods"** held on 10th to 13th February, 2015 at New Delhi, will also help to explore the inter-relationships and inter-linkages between soil, water, plants, and climate change.

'Advances in Soil and Water Resource Management for Food and Livelihood Security in Changing Climate', is an attempt to address the present needs of conservation and management of soil and water resources, advanced approaches for on-farm management with the objective to enhance livelihood security. The publication is expected to benefit researchers, scientists, planners, policy makers and students and shall act as a good reference

base for future advancements in technology development for natural resource management. The authors feel that with the improved understanding of above issues, it would be possible not only to sustain but increase agricultural production without creating ecological imbalances in hilly terrains.

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Suraj Bhan
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