RICE SCIENCE

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FOREWORD

"There is no greatest happiness than knowledge. Knowledge stretched – is book"

Agronomy is a science that helps the advancement of agricultural technologies to feed the world. We can call the Agronomy as backbone of all agricultural sciences, because, the management of soil and water, with a view to achieve the production potential of high yielding varieties in green revolution, is exclusively under an agronomic domain. It may not appear as glamorous as nuclear science working miracles but like Ayurvedic medicines, it has the capacity to reach the poorer section of the society to bring out the desired results. Agronomists can synthesize the production practices from several fields of specialization.

Fortunately the anticipated famine during these years, due to manifolding demographic pressure on inelastic, ever shrinking crop production resource base, has not been experienced only, because of higher food productivity and production in the country as a result of advancement made in Agricultural Science and Technology leading to green revolution. But still, we are unable to be enchanted / complacent because of multi faceted prevalent predicaments in the agricultural production system as a whole. Food and protein shortage, mal and under nutrition have become incessant problems and perpetual phenomena across various states in the country and in globe, apart from escalation of human population in a geometrical proportion.

Around 198.9 million people are below poverty line in the semi arid tropics alone. About 17 million children under the age of 5 die every year because of mal nourishment. About 180 million children, mostly in developing countries are seriously underweight. Nearly 800 million people, majority of them are women and children, go hungry to bed every day, paradoxically, the largest pockets of hunger existing in rural areas where food is grown. Though food production in the country crossed 209 million tones from the rock bottom level of 52 million tones immediately after independence, still there are problems of 3As. *viz.,* Affordability, Acceptability and Availability of food especially to the rural people who live below poverty line. Hungry people listen not to reason, not care for justice,

nor are bent by any prayers said a Roman Philanthropist at Seneca Roman 2000 years before. Under the predicament situations, the year 1966 was promulgated as International year of Rice (IYR) by Food and Agricultural Organization, Rome, mainly to relegate famine. Again the year 2004 was also declared as IYR to mainly accomplish sustainability in rice production by United Nations Organizations and FAO.

However, the essential factors in food production such as cultivated land and fresh water are decreasing continuously. Current trends on world agriculture shows that it is imperative to find a scientific and rational way to develop it, a way that cannot only steadily increase the output but also ensure long term sustainable use of resource in the process of promoting agricultural development.

I am happy that the authors have made efforts to compile the available information on rice science. It covers a wide range of topics. In this connection, publication of **"A Text Book of Rice Science"** by **Dr. B. Chandrasekaran, Dr. K. Annadurai** and **Dr. R. Kavimani** of TNAU, Coimbatore is quite appropriate and timely. In particular, I strongly believe that the book would help youngsters to channel their efforts so as to make inroads into some frontier areas such as evolving new plant types, precision farming, Integrated Farming systems, Organic farming, evolving new varieties like nutrient fortified and aromatic rice suitable for export market, system of rice intensification (SRI), integrated crop production technologies (ICM) etc.

The authors deserve commendation for their strenuous efforts and my congratulations to them. I am sure that the publication will prove to be a useful volume for students and researchers.

Prof. C. Ramasamy
Vice-Chancellor
Tamil Nadu Agricultural University

Place : Coimbatore

PREFACE

"Through understanding of what, pray does all this world become understood, sir?

Mundaka Uppanisad, 1-1-3

Agronomy deals with the principles and practices of crop production and soil management. In its broader sense, it includes crop ecology, crop production, crop nutrition, soil fertility, water management, weed control, seed technology etc. To be a good agronomist, one needs to have a sound knowledge of all these agronomic aspects and also some related aspects from other sciences.

Rice continues to be the most important food source in the world, with about 20% of the global population depending on it as a staple food. A compilation of available information on rice has been a felt need of students, teachers, research workers and administrators in Agronomy. This book is aimed at providing a comprehensive text on rice cultivation/production with major emphasis on rice based integrated farming system models, organic farming aspects, alternate cropping, new techniques like SRI, role of biotechnology etc., in an easily understandable manner.

We believe that this book will help to enrich the knowledge of young researchers in various fields of agriculture and in particular, agronomy, as well as to the teachers and researchers of the Agricultural Universities / Research Organizations. We believe that bringing available information together in one volume will contribute to the advancement of knowledge on Rice Science.

It is difficult to name and acknowledge each and every reference used in this compilation. We sincerely thank the authors known and unknown for whatever help we have received from the works.

We place on record our sincere gratitude to TNAU, Coimbatore for granting permission to bring out this book and to **Prof. Dr. C. Ramasamy, Ph.D., Vice Chancellor, TNAU** for providing the Foreword.

We are most grateful to our teachers and researchers. We thank **Dr. K. Alagusundaram**, National Fellow (ICAR) for his encouragement; **Dr. R. Marimuthu** Professor (Plant Breeding and Genetics) for his critical comments and suggestions for hybrid rice and breeding approaches; **Dr. A. Tajuddin** Professor (Farm Machinery and Power) for his valuable comments on rice mechanization, **all Scientists of Tamil Nadu Rice Research Institute, Aduthurai** in particular, **Prof. Dr. A. Arockiaraj, Prof. K. Natarajan and Prof. Dr. R. Rajendran,** as well as fellow scientists of Department of Agronomy, TNAU for their comments and critical suggestions. We thank **Dr. S. Ramasamy**, Professor (Agronomy) and **Dr. E. Somasundaram,** Associate Professor (Agronomy) for correcting the proof and their suggestions. In spite of the best efforts, it is possible that some errors may have crept into the compilation. The readers are requested to kindly let us know the mistakes so that these could be taken care of in the further edition. Finally we thank our publishers for bringing out this book so efficiently and promptly.

Authors

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