**Conservation Agriculture in India: A Paradigm Shift for Sustainable Production**

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Conservation Agriculture is the fastest adopted technology globally, covering >200 M ha and showing a double digit annual growth (>10%) over the last 2 decades. Presently, it occupies around 15% of the global cropped area, mainly in the countries of South America (>65% coverage), North America (>30%), Australia and New Zealand (50%). The adoption in other parts of the globe including Russia, Asia, Africa and Europe is low (<5%) but it is picking up in the recent times. It is envisaged to cover 50% of the global cropped area under Conservation Agriculture by 2050.

In India, green revolution during mid-1960s resulted in tremendous increase in foodgrain production leading to food sufficiency over the next two decades by mid-1980s. However, the productivity levels stagnated thereafter, and also there were emerging concerns about resource degradation due to excessive exploitation of natural resources in the highly productive zones of the country. Indiscriminate use of chemical fertilizers and other agro-chemicals, excessive exploitation of ground and surface water for flood irrigation, energy for intensive tillage operations, crop residue burning and decreased use of organics are also responsible for deteriorating soil health. Further, climate change has emerged as a major challenge showing its adverse effect on agricultural productivity in the conventional farming systems.

Research on Conservation Agriculture in India is going on since mid-1990s, and picked up from mid-2000s as seen from the number of research articles published in the leading Indian journals, and elsewhere. Most research on Conservation Agriculture in different regions of the country on crops like wheat, rice, maize, soybean and other crops has shown that in >80% of the cases, the yields are either more or equal to that with conventional agriculture system but with less use of inputs, and thus resulting in increased profitability and beneficial effects on soil health. However, the adoption levels on the farmers’ fields are low, except in some localized regions of north-western and central India for wheat cultivation, coastal areas of Andhra Pradesh for maize and sorghum cultivation, north-eastern hill region for mustard cultivation, and Konkan region of Maharashtra for rice and other crops. This is mostly due to lack of awareness and expertise available, farm machinery, incentives and policy support.

This book examines Conservation Agriculture in India, discussing the current situation, levels of adoption, management practices, and the future outlook of Conservation Agriculture in India, and also in other tropical and subtropical regions of the world. While Conservation Agriculture is proposed as an important means to combat climate change, improve crop productivity and food affordability, and to protect the environment, the adoption of Conservation Agriculture in India, and south-east Asia more broadly, has been slow. This volume reflects on the current status of Conservation Agriculture in India, asking why adoption has been slow and putting forward strategies to improve its uptake. The chapters cover the various aspects of crop management such as soil, water, nutrients, weeds, crop residues, machinery, and energy, in a range of environments, including irrigated and rainfed regions. The impact of climate change and the economic considerations behind the adoption of Conservation Agriculture are also discussed. The volume concludes by discussing the future outlook for Conservation Agriculture in India, in particular drawing out parallels with other tropical and subtropical regions of the world.

This book is the first up-to-date compilation on the available information on various aspects of Conservation Agriculture in the Indian context. This presents practical experiences of the research workers associated with this subject for more than two decades. It covers global scenario and status of Conservation Agriculture in India; management options; soil health and GHG emissions; economics, adoption and future of Conservation Agriculture in India, in 4 different sections and 17 chapters. Besides, internationally-renowned scientists, Prof. Rattan Lal, World Food Laureate (2020) and Dr. R.S. Paroda, Padma Bhushan Awardee (2012) have forwarded their inputs for promotion of Conservation Agriculture in India.

It is hoped that this book will provide insights and encouragement to fellow Agronomists and other resource management scientists to become not only preachers but practitioners of Conservation Agriculture to achieve the target of covering 20 M ha in the country by 2030. It will be immensely useful to the postgraduate students, teachers and researchers, policy makers, extension personnel and other stakeholders to enrich their knowledge and further refine this technology in their respective domains. This book will be of great interest to students and scholars of Conservation Agriculture, sustainable agriculture, crop and soil management, and environmental and natural resource management more broadly.

The editor of this book has acquired adequate knowledge and experience since late 1990s on Conservation Agriculture based on researches in the hilly regions of western Himalayas, alluvial soils of Indo-Gangetic plains, Vertisols of central India, and now in the impoverished soils of Bundelkhand region.

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