



Cropping and Farming Systems

S. C. Panda



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FOREWORD

Students of agricultural science play the important role in the department of agriculture as agriculture is the backbone of our country. The need for comprehensive information on the Cropping and Farming Systems for sustainable crop production relevant to Indian conditions has been felt for quite some time. The text-cum-reference book to meet precisely the felt need is an outcome of the author's active involvement in teaching, research and extension guidance in the field of agronomy for over thirty years.

The author presented the book entitled, "**Cropping and Farming Systems**" in a scientific and systematic manner to understand the fundamentals clearly and easily which is the beauty of this book. Potential yield can only be achieved under ideal management in an optimal physical, chemical and biological environment. Farming Systems represent integration of farm enterprises as cropping systems, animal husbandry, fisheries, poultry farming, etc. for optimal utilization of resources bringing prosperity to the farmers. A judicious mix of cropping systems with associated enterprises like dairy, poultry, piggery, fishery, sericulture, etc. suited to the given agro-climatic conditions and socio-economic status of farmers would bring prosperity to the farmer.

I am confident that this book will serve as a text book for agronomy and veterinary students, a reference for research scientists and teachers in the areas of crop production, integrated farming systems, dry land agriculture, cropping systems, production technology management under different situations, soil fertility management, avian and animal sciences. This book will also serve as a guide to the extension officials of the department of agriculture. I congratulate Dr. S. C. Panda for his pains taking effort in bringing out this book covering the latest technologies for crop production associated with integrated enterprises in farming systems to meet the

growing interest in sustainable agriculture. I am confident that this book will be widely accepted among the students. I extend my best wishes to Dr. Sharat Chandra Panda for the success of this book.

Bhubaneswar

Dr. Bhagabat Panda

PREFACE

From time immemorial, mankind has been struggling hard to get the maximum yield per unit area per unit time. In modern times, this struggle takes the form of multiple cropping, intensive cultivation of high yielding varieties, integrated farming and mixed cropping with a view to keeping land, labour, capital and other resources occupied for the maximum period during the year, maintaining their productive efficiency at the highest level and thereby, attaining the highest yields in terms of agricultural production as well as return on the resources employed. In fact, multiple cropping, intensive cultivation, mixed cropping and integrated farming are interrelated and have to be viewed together.

The future of Indian agriculture depends on the development of appropriate farming system as applicable to resource poor farm families and as suited to different agro-ecological zones. Restricting the use of purchased inputs in farming could be achieved through multiple cropping and diversified farming including animal husbandry, forestry, dairy, duckery, fisheries, apiary, sericulture, etc. The demand must be met from limited resources such as land, water, energy and labour. Increasing food supplies with limited natural resources is a great challenge to the scientific communities. Under this situation, Integrated Farming System (IFS) seems to be the answer, considering the current scenario in agriculture in India. Besides, facilitating cash income and increased employment opportunities, Integrated Farming Systems minimize the quantum of purchased inputs in farming by effective recycling of products and by-products among the component enterprises, reduce the ill effects of inorganic fertilizers and chemicals (pesticides, herbicides etc.) or pollution hazards. Integrated farming system is not only a reliable way of obtaining fairly high productivity with substantial fertilizer economy, but also a concept of ecological soundness leading to sustainable agriculture.

Integrated farming system will generate appreciable employment potentialities providing more man-days in a year. Even for the educated

persons particularly agricultural graduates, such farming systems are likely to be more profitable than white collar jobs thus partially reducing the job demands by the graduates. As a whole, such system will increase production of agriculture in the state, particularly, fruits, vegetables and produce from dairy, poultry, duckery and fishery which are of very much shortage in the state.

At present, there is no comprehensive text book on 'Cropping and Farming Systems' and applied aspects suitable for farmers. This book will provide a comprehensive information on the subject matter and fulfil the needs of students and other professionals. This is a book containing all sorts of chapters on integrated farming and cropping systems. Though this book primarily written to serve as a text book/reference for the students of agriculture in under graduate and post graduate levels and technologists in developing organisations, it is hoped that this book will be valuable for similar groups in the third world countries of Asia and Africa. This book also serves as a valuable reference for the candidates preparing Agricultural Research Services and other competitive examinations. Professional Institutions in Soil Conservation, Krishi Vigyna Kendras and Rural Institutions and similar other Institutions would find this book very much helpful. The farmers may refer this book to practice integrated farming and cropping systems as the considerable emphasis is placed for obtaining maximum, profitable production per unit area per unit time.

The author acknowledges his indebtedness to authors of books from which most of the material in the text has been drawn. In several cases, it has not been possible to obtain permission for reproduction for which the author and publishers offer their sincere apologies.

The author is deeply indebted to ICAR for its assistance provided at various levels for preparing the manuscript. Special mention is made for the valuable help received from Sri K.C. Sahoo, Research Fellow of the Emeritus Scientist Project, OUAT, Bhubaneswar.

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In preparing this book, I have received helps, suggestions and encouragements from Dr. B. C. Nayak, Dean, College of Agriculture; Dr. P. K. Mahapatra, Professor and Head, Agronomy; Dr. L. M. Garnayak, Associate Professor, Agronomy and other staff members of the Department

of Agronomy, College of Agriculture, OUAT, Bhubaneswar. I am grateful to all of them who communicated the encouraging comments regarding the text and constructing suggestions for the improvement of the book.

I express my profound love and affection to my wife Mrs Kalpana Panda and son Ar. Mrutyunjay Panda for their immense help in preparing this manuscript.

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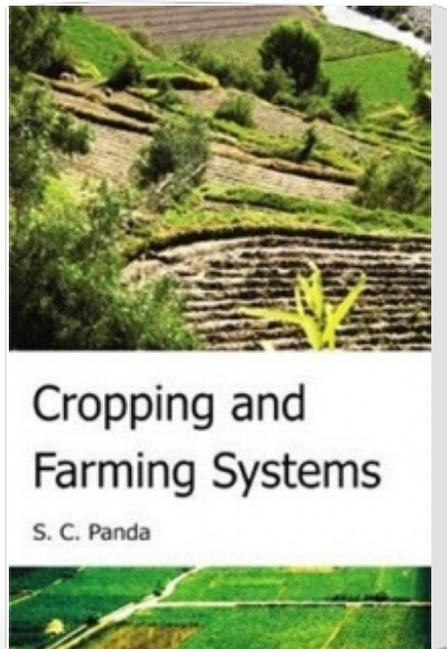
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