



Dr. Maya Bisen was born on 1st Sep.1998. She is presently working as Assistant professor, Department of Horticulture, Dr. APJ Abdul Kalam University. She is also awarded by Young Horticulturist Award, Excellence in research award, Best research scholar award, Best Academic & research award & Best thesis Award. She has Recognition awarded organising secretary on the occasion of 1st International Agriculture conference on Exploring Recent Innovations in Agriculture & Allied Sciences & Organising secretary award on the occasion of International Conference on OATHE 2025. She has the Executive member of Commerce & Industry Development Foundation (CIDF), New Delhi. She has the membership of several magazines and journals. She is also serving as scientific officer & Chief training coordinator of organising committee in Eco fast agri solution. She was contributed in publication of fourteen books, thirty book chapters, sixteen book Abstract, forty nine Articles, eighteen research papers, Nine Patent Design, Twenty one review Paper, five practical manual in national and international reputed journals and Magazines & various products in food processing & value added sector & is working on startup with trainees. She is committee member of Hindustan Agriculture research welfare society (HARWS). She has done research on "Influence of organic manures on growth, yield and quality of strawberry (Fragaria X ananassa) under Bundelkhand region". Her research also focused on "Studies on effect of organic nutrition practices on growth & yield parameters of Papaya (Carica Papaya L.) under precision farming techniques".



Mr. Sanjay Yadav is currently pursuing a Ph.D. in the Department of Soil Conservation and Water Management at Chandra Shekhar Azad University of Agriculture and Technology, Kanpur (U.P.). He completed his B.Sc. (Agriculture) (Hons.) from Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya (U.P.), and earned his M.Sc. in Soil Conservation and Water Management from Chandra Shekhar Azad University of Agriculture and Technology, Kanpur (U.P.). His academic and professional contributions include authorship of books, publications in reputed research journals and edited volumes, as well as several popular articles. He has actively participated in various trainings, seminars, workshops, and conferences, and holds life-time memberships in several professional and academic societies.



Dr. Vikas Singh was born in Kanpur district of Uttar Pradesh. He obtained his Doctorate in Soil Conservation and Water Management from Chandra Shekhar Azad University of Agriculture & Technology, Kanpur, Uttar Pradesh, where he also completed his graduation and post-graduation. He has made significant academic contributions through numerous research papers, review articles, book chapters, books, practical manuals, and abstracts. Dr. Singh is a patent holder in the field of soil and water management innovations and holds lifetime memberships in various professional and academic societies. He has actively participated in several national and international conferences and attended multiple training programs related to his area of specialization.



Dr. Satendra Kumar was born on 14th February 1985. He completed his B.Sc. (Ag) from Sardar Vallabh bhai Patel University of Agriculture and Technology, Meerut, followed by an M.Sc. in Agronomy from Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, and a Ph.D. in Agronomy from G.B. Pant University of Agriculture and Technology, Pantnagar. Currently, Dr. Kumar is working as a Scientific Officer (Agro) in the Division of Agronomy at UPCSR-Genda Singh Sugarcane Breeding and Research Institute, Seorahi, Kushinagar, Uttar Pradesh. Previously, he worked as an Assistant Seed Officer at National Seeds Corporation Ltd. Dr. Kumar has received several honors, including the ICAR-SRF, Young Scientist Award, Best Agronomist Award, Distinguished Scientist Award, Best Poster Presentation Award, and Young Agriculture Scientist Award. He holds memberships in several professional magazines and journals. He has contributed extensively to academic literature, including books, book chapters, twenty book abstracts, numerous articles, thirty-five research papers, and review papers. He has organized two Kisan Melas and serves as Chairman of the Farm Advisory Committee and as a member of the Survey Committee at his institute. His research focuses on tillage, fertilizer management, modern planting techniques, organic farming, and weed management in sugarcane. Dr. Kumar has also managed ICAR-AICRP on sugarcane projects and projects funded by the U.P. Council of Sugarcane Research. He has participated in more than 50 national and international conferences and seminars.



Kunwar Akhand Pratap Singh has completed his B.Sc. (Ag) Hons. (2011-15) from CSJM University Kanpur, M.Sc. AG (Agronomy) from CSJM University, Kanpur (2019-21). Agronomy is his area of specialization. He has been working in ICAR-ATARI, Kanpur, Working in compilation of Project information like Progressive reports, area provided by the organization ARYA, TSP, SCSP, MGMG, Field data. He attended many seminar and workshops.



A K INTERNATIONAL PUBLICATION

39/4 A, Rajinder Nagar Po-Babyal, Ambala Cantt, Haryana - 13300
(M): 07495053348 Email: akinternationalpublication@gmail.com
www.akinternationalpublication.com

ISBN 978-81-996255-8-7



₹ 0000



Dr. Maya Bisen • Mr. Sanjay Yadav
Dr. Vikas Singh • Dr. Satendra Kumar
Kunwar Akhand Pratap Singh

Essentials of Agriculture



Essentials of Agriculture

**Dr. Maya Bisen • Mr. Sanjay Yadav
Dr. Vikas Singh • Dr. Satendra Kumar
Kunwar Akhand Pratap Singh**

Published in 2026



by A K INTERNATIONAL PUBLICATION

Haryana, INDIA

© Dr. Maya Bisen, Mr. Sanjay Yadav, Dr. Vikas Singh,
Dr. Satendra Kumar & Kunwar Akhand Pratap Singh

Typeset in Times New Roman

All rights reserved. The right of the author of this book is attested in accordance with the Copyright, Design and Patents Acts 1988, Govt. of India.

No part of this book may be reproduced, restored, reprinted or utilised in any form or any electronic, mechanical or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system without permission in writing from the publisher.

The views and opinions expressed in this book are the authors' own and the facts and references are as reported by them. The publishers are in anyway not liable for the same.

ISBN: 978-81-996255-8-7

Printed in India

Contents

1. Scientific Principles of Tillage and Land Preparation	1
<i>Dr. Satendra Kumar</i>	
2. General Principles of Horticultural Science	17
<i>Vadite Ramesh Naik and Viswanadha Raghuteja P</i>	
3. Production Technology for Major Fruit Crops	27
<i>Vadite Ramesh Naik and Viswanadha Raghuteja P</i>	
4. Commercial Vegetable Cultivation and Management	35
<i>Anushka Singh and Dr. D. K. Rana</i>	
5. Post Harvest Management and Value Addition.....	43
<i>Amulya S P, Amit Kumar, Sahil and P Shailaja</i>	
6. Essentials of Agricultural Entomology and Pest Control.....	64
<i>Dr. Seema Tripathy</i>	
7. Principles of Plant Pathology and Disease Management	72
<i>Dr Debanjana Debnath and Dr Chinmayee Mohapatra</i>	
8. Introductory Nematology and Soil Health Protection.....	81
<i>Viswanadha Raghuteja P and Vadite Ramesh Naik</i>	
9. Integrated Pest Management Strategies for Sustainable Farming.....	90
<i>Viswanadha Raghuteja P and Vadite Ramesh Naik</i>	
10. Soil Formation and Morphological Classification	98
<i>Dr Rini Labanya and Dr Debanjana Debnath</i>	
11. Soil Fertility and Plant Nutrient Management in Crop Production	104
<i>Dr. Mandeep Kumar</i>	
12. Advanced Irrigation Methods and Water Use Efficiency	115
<i>Vikas Singh, Sanjay Yadav, Rajat Mishra and Veerendra Singh</i>	

13. Management of Problem Soils and Drainage Systems	123
<i>Sanjay Yadav, Vikas Singh, Veerendra Singh and Rajat Mishra</i>	
14. Fundamental Principles of Agricultural Economics.....	131
<i>Dr. G Chalapathi</i>	
15. Agricultural Marketing Systems in Indian Scenario.....	138
<i>Masuma Rahaman</i>	
16. Agricultural Marketing Systems and Global Trade.....	146
<i>Prof Dr M Devendra and Dr Siddalingappa</i>	
17. Farm Production Economics and Resource Use Efficiency	156
<i>Shazia Noor, Dr. Priyanshi Gupta and Mohammad Danish Hussain</i>	
18. Cost of Cultivation, Returns and Farm Profitability Analysis	164
<i>Shazia Noor, Dr. Priyanshi Gupta and Mohammad Danish Hussain</i>	
19. Agricultural Policies, Institutions and Rural Development	172
<i>Shazia Noor, Dr. Priyanshi Gupta and Mohammad Danish Hussain</i>	
20. Sustainability, Risk and Future Challenges in Agricultural Economics	180
<i>Shazia Noor, Dr. Priyanshi Gupta and Mohammad Danish Hussain</i>	
21. Farm Finance and Agricultural Risk Management.....	188
<i>Dr. Zahid Husain Ibne Hasan Ansari</i>	
22. Forest Ecosystem and Biodiversity: Structure, Function and Conservation.....	195
<i>Dr. Dhiraj Kumar Yadav</i>	
23. Forest Resources Utilization: Timber, Non-Timber Products and Value Addition	204
<i>Dr. Dhiraj Kumar Yadav</i>	
24. Seed Production Technology of Cowpea [Vigna unguiculata (L.)].....	213
<i>Sunita Sahu, Dr. C C Kulkarni, Ankita Rout and Dr. SP Monalisa</i>	

Chapter 18

Cost of Cultivation, Returns and Farm Profitability Analysis

Shazia Noor

PhD Scholar, Department of Economics, Integral University, India

Dr. Priyanshi Gupta

Assistant Professor (Economics), Department of Humanities and Social Sciences, Integral University, Lucknow, Uttar Pradesh, India.

Mohammad Danish Hussain

PhD Scholar, Department of Economics, Integral University, India

Abstract

Cost of cultivation and farm profitability analysis form the backbone of agricultural economics and farm management studies. While agricultural production is often viewed through the lens of yields and output, the true success of farming lies in its economic viability. Farmers operate under conditions of limited resources, uncertain weather, fluctuating market prices and rising input costs. In such a scenario, understanding the cost structure of cultivation, estimating returns accurately and analysing profitability are essential for informed decision-making. This chapter presents an in-depth academic discussion on the concepts, components and methods of cost of cultivation, returns and farm profitability analysis. It explores different cost concepts, measurement of returns, indicators of profitability, enterprise-wise analysis and their relevance in practical farm management. The chapter also discusses how cost and return analysis supports technology adoption, crop planning, risk management and policy formulation.

Keywords: Cost of cultivation, farm returns, profitability analysis, farm management, cost concepts, gross returns, net income, benefit–cost ratio, agricultural economics.