

Recent Advances in Sustainable and Smart Agriculture: Innovation for Future Farming

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Chapter - 27
**Climate Smart Agronomic Practices for
Sustainable Plantation Crop Yield**

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Chapter - 27

Climate Smart Agronomic Practices for Sustainable Plantation Crop Yield

Dr Sanket Kumar and Nitish Kumar

Abstract

Climate change, resource shortages, and changing pest-disease patterns are putting increasing burden on plantation crops, including coconut, oil palm, coffee, tea, cocoa, rubber, and spices. Climate-smart agronomic practices (CSAPs) are crucial for maintaining yields and farmer livelihoods since they improve production, resilience/adaptation, and mitigation all at once. This study summarizes current research on CSAPs that are relevant to plantation systems, explains how they increase resilience and productivity, assesses supporting tools and regulations, and suggests practical approaches to scale climate-smart plantation management. Digital decision-support tools, precision water and nutrient management, agroforestry and diversification, enhanced planting material and spacing, integrated pest and disease management (IPDM), and soil health management are some of the important CSAPs that were covered. We conclude with suggestions for policy, outreach, and research to hasten adoption while preserving ecological services.

1. Introduction-why climate-smart agronomy for plantations matters

Many tropical landscapes are dominated by plantation crops, which provide revenue for both big estates and millions of smallholders. However, they are susceptible to changes in the climate: rising temperatures, variations in the amount and timing of rainfall, and severe weather events all affect agricultural phenology, the pressure of pests and diseases, and the availability of water. Therefore, agronomic packages that boost production while enhancing resilience and lowering greenhouse gas footprints-the three pillars of Climate-Smart Agriculture (CSA)-are necessary to maintain sustainable harvests. It is necessary to modify techniques created for annual crops and adjust them to crop-specific biology and local conditions in order to use CSA in perennial, multi-layered plantation systems.