
Pre- and Postharvest Management Practices for Litchi Production in India

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Ravi Rajwanshi, Manoj Kumar, and Beche Lal

Abstract

Litchi (*Litchi chinensis*) is an important woody mycorrhizal fruit tree originated in China. In India, the agroclimatic conditions of foothills of the Himalayas in northern states like Bihar, West Bengal, Uttarakhand, Jharkhand, Punjab, and northeastern states such as Assam and Tripura provide immense scope for litchi cultivation. Various abiotic and biotic factors affect the litchi cultivation and production. Optimum temperature, humidity, soil nutrition, and climatic conditions are the deciding factors to support litchi cultivation, but insect and pest infestation severely affect the overall production of litchi. Insects are the major limiting factor affecting litchi production compared to the diseases. Various agricultural practices such as propagation methods and girdling also have an influence on the litchi plantation and overall productivity of this delicious fruit. The present chapter focuses on economically important pests and diseases and their control measures to reduce the infestation altogether with pre- and postharvest management practices to increase the productivity and shelf life of mature litchi fruits during storage as well as transportation process, respectively.

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Role of MiRNAs in Plant-Microbe Interaction

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Abstract

MicroRNAs are a class of small RNAs that play a pivotal role in post-transcriptional gene regulation. The role of miRNA in fine-tuning gene expression is essential for growth and development of the plant as well as to cope up with various abiotic and biotic stress conditions. Plant immunity is a well-regulated and complex system. Plants initiate a series of host immune responses upon infestation by microbes. miRNAs have been implicated to play a role in plant-microbe interaction not only in regulation of plant-pathogen interaction but also during symbiosis which is a beneficial interaction. The expression of resistance genes, transcription factors, hormone signaling, and nutrient homeostasis genes is fine-tuned by miRNAs to bring a balance between plant growth and defense. The present chapter will provide an insight into the role of miRNAs in response to bacterial, fungal, viral, aphid infection as well as during symbiosis.

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Keywords

miRNAs · Plant-microbe interaction · Target gene · Plant defense

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10.1 Introduction

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MicroRNAs (miRNAs) comprise a family of endogenous, non-coding regulatory RNAs of 19–28 nt in length, generated from double-stranded RNAs (dsRNAs). miRNAs regulate the expression of gene in a sequence-specific manner and

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