

Book Review

Title : **Fruit Tree Physiology**
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Tree physiology is a difficult and challenging area for working. Knowledge on physiology of growth and development of fruit tree is essential for a horticulture researcher/teacher. Even though many books on tree physiology are available, books on fruit tree physiology are rare to find except for a few edited books on the physiology of fruit trees. However, these books are relatively old ones and no text books are available for researchers, teachers and students working in the area of fruit crops. In this regard, the book entitled “Fruit Tree Physiology” authored by Drs. W.S.Dhillon and Z.A.Bhat is timely and very informative for horticulturists as well as physiologists who are working on fruit crops.

This book consists of 12 chapters which include, bud dormancy, chilling requirement in fruit crops, heat units and thermoperiodism, physiology of flowering in horticultural crops, fruit growth and development, unfruitfulness in fruit crops-causes and control measures, alternate bearing in fruit plants-causes and management, parthenocarpy-A mechanism for seedlessness, graft incompatibility- causes and remedial measures, physiology of dwarfism in fruit plants, fruit ripening- biochemistry, physiology and regulation and abscission in fruit plants.

Bud dormancy chapter includes the classification of dormancy, site of dormancy, physiological and molecular basis of dormancy, factors affecting and methods to overcome dormancy.

Chilling requirement in fruit crops chapter has covered various crops which require chilling temperatures for flowering. It includes various aspects of chilling like importance of chilling,, length of chilling requirement in fruit species, resting phase, effective chilling temperatures, effect

of high temperatures on the chilling requirement, models for fruit trees etc.

Heat Units and thermoperiodism chapter explains the degree days concept, heat requirement in fruit various crops like apple, grapes, date palm, mango, plum, citrus, raspberry, peach, apricot, banana, pineapple and olive. This chapter also deals with thermoperiodism in fruit crops. The chapter is useful to understand the temperature requirement for different phenological events in fruit crops and their modeling.

Physiology of flowering in horticultural crops: This chapter deals with the one of the most complex developmental process in fruit crops called flowering. Flowering chapter covers many interesting aspects like photoperiodism, phytochromes, radiation experiments to show the importance of phytochromes in flowering, hormonal balance, florigen concept, vernalisation, and molecular aspects of flowering. Authors have highlighted many papers which deal with the identification of genes, transcription factors associated with flowering.

Fruit growth and development chapter has covered the pattern of fruit growth in many fruit crops and the factors associated with fruit growth.

Unfruitfulness in fruit crops-causes and control measures. Influence of many environmental factors, light, temperature, rainfall, wind, humidity, tree age, soil nutritional status, horticultural practices like pruning, grafting, etc have been explained in this chapter. Alternate bearing in fruit crops and its causes and control measures is also explained with respect to endogenous and exogenous factors.

Mechanism of parthenocarpy, factors affecting parthenocarpy, genetics of parthenocarpy, physiology of parthenocarpy and induction of parthenocarpy in fruit crops is explained in a simple and more understandable way.

Graft incompatibility-causes and remedial measures chapter include classification of incompatibility, structural or anatomical basis, biochemical basis and other

microorganism basis has been explained neatly in this chapter. Various methods to detect incompatible combinations have also been given in this chapter. This will be useful for students as well as researchers.

Along with graft incompatibility, dwarfism is also very important in fruit crops. Dwarf plants are highly preferred in all the fruit crops especially for the high density orcharding. This chapter deals with physiology of dwarfism, use of root stocks, interstocks, bioregulators, pruning and training, phenols. Use of girdling, scoring, bark inversion, root pruning, and paclobutrazol is also highlighted in this chapter. Use of biotechnology to induce dwarfness in apple is briefly explained. Available dwarfing root stocks have also been given for different fruit crops like cherry, apple, mango, plum, pear, peach, guava and ber.

Fruit ripening chapter gives only brief account of biochemical events. It covered climacteric and non-climacteric fruits, mechanism of ripening, ethylene biosynthesis, chlorophyll degradation, starch hydrolysis, cell wall degradation etc. Regulation of ripening by controlled atmosphere storage, chemical usage, MCP and bioregulators is also briefly covered in this chapter. However, for biochemistry of ripening still books by Hulme is the best.

Last chapter of the book is abscission in fruit plants. This chapter deals with morphological and anatomical and biochemical changes, formation of abscission zones, significance of abscission zones, control of abscission. It has also touched briefly the factors affecting the abscission.

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