FOREWORD

Insects and plants as well as micro-organisms have been very closely associated throughout their evolutionary history during which there has been varying degrees of complexity in the nature of their association. The role of insects in the spread and development of plant diseases has been recognised for a long time and in recent years with the availability of diversified techniques for advanced studies, considerable progress has been made in the study of insect-host plant interactions. In order to properly assess the magnitude of the complexity of these interactions, a proper understanding of the morphology and physiology of the insect, the plant, and the pathogen (bacteria, fungus, virus, and mycoplasma) is a basic necessity. Such biological associations need not necessarily be only a detrimental one to the plant, but can also be mutually beneficial as in the case of insect pollination in flowering plants. Keeping these aspects in view and the increasing relevance of this field of investigation, it was thought fit to have a symposium on three fundamental areas of interactions between insects and plants viz. the role of insects as agents of gall induction, vectors of plant diseases, and as pollen vectors.

The problem of cecidogenesis, a highly specific and specialised plant reaction to the feeding activity of the concerned insect has been discussed in this volume on the basis of (a) the dynamics of root-knot nematode galls involving various enzymes of the nematode larvae associated with their feeding, the gall syncytium functioning as a nutrient sink drained by the nematode which is the metabolic sink. (b) Insect-fungal association in some plant galls wherein insect galls harbour specific fungi. (c) The biology of flower galls involving the flower as a cecidomorphogenetic centre functioning as an ideal ecological niche for the gall insects whose life cycles are suitably adapted with that of flowers. (d) Some aspects of the host finding and host acceptance of gall chalcids and (e) an overall assessment of gall insect-host plant relationship in terms of the inherent potential of the gall insects to establish a habitat through modification of the host plant tissue to make it a self contained nutritional guild.

The vector role of insects causing several plant diseases is highlighted in relation to the virus diseases of sugarcane, the role of aleyrodids or white flies in the transmission of the cowpea mild mottle virus; the leaf hopper/plant hopper, transmitted viruses of cereal crops; arthropod vectors of virus, mycoplasma and rickettsia-like pathogens in India as well as mycoplasma and allied diseases in forest trees in India. The disease symptoms, etiology, factors affecting distribution of disease and relation to host plant age, transmission potential, and biology and ecology of vectors, feeding habits of vectors and role of plant associates in maintaining vector populations are highlighted. The vector potential of mycophagous thrips as well as the nature of thrips-fungus interaction in relation to the carrying of fungal pathogens and vector host pathogen interaction have been adequately discussed. Information on the mechanism of viral acquisition by insect vectors and associated interactions and the differential responses of vectors to the different plant species tending to influence the virus transmissibility has also been discussed.

Flower-insect interaction in terms of pollination has been discussed in terms of the basic trends in floral evolution and the attraction needed to lure pollen vectors including pollen, nectar and stigmatic exudates and other floral tissues, as well as visual and odour attractants. In this connection emphasis is laid on the secondary adaptation of the weed *Lantana camara* to thrips pollination. Keeping these aspects in view, the role of butterflies and bees in pollination biology are highlighted, emphasising the nature of pollinator—flower interactions. Information on thrips-host plant interactions in terms of succession are also presented with reference to thrips species inhabiting the same host as also to the blooming periods of different species of flowers in a given area indicating that flowering phenology along with floral resources plays a role in the maintenance of pollinator population throughout the year.

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T. N. ANANTHAKRISHNAN
Convener