RESEARCH NOTES

OCCURRENCE OF TRISTE2A AND GREENING DISEASES OF CITRUS IN KERALA

Occurrence of tristeza and greening diseases of citrus (the latter recently shown to be due to mycoplasma) has been recorded from the various States of India such as Delhi, Punjab, Himachal Pradesh, Jammu and Kashmir, Rajasthan, Uttar Pradesh, Madhya Pradesh, Andhra Pradesh, Mysore, Bihar, West Bengal, Assam, Orissa and the Sikkim State (Nariani *et al.* 1965, 1966, 1967, 1970 and Nariani and Raychaudhuri 1968). Both these diseases were observed for the first time occurring in citrus species growing at the Orange and Vegetable Farm, Nelliyampathy and the Central Horticultural Research Station, Ambalavayal, during March 1970.

The tristeza virus was identified in Kagzi lime growing at the Centra) Horticultural Research Station, Ambalavayal, by the presence of vein-clearing and flecking of the leaves (Fig. 1). Another characteristic symptom of the disease was stem pitting; the plants did not show abnormality on the bark externally, while small pits or depressions could be noticed on the outer wood when bark was removed (Fig. 2). The two diseases were detected by indexing the budwood of samples on indicator plants in the glasshouse at Delhi. Tristeza virus was detected in Sathgudi orange growing at Nelliyampathy and mandarins in Ambalavayal. The greening pathogen was detected in both mandarins and Sathgudi oranges at both the places. The greening could also be identified in the field by the yellowing of midribs and lateral veins (Fig. 3) followed by various types of discolourations on the leaves. The affected plants showed symptoms of defoliation and die-back due to subsequent attack by fungi (Fig.*A*).

The aphid, *Toxoptera citricidus* (Kirk), a vector of tristeza virus (Vasudeva *et al.* 1959) and the psyllid, *Diaphorina citri* Kuway, the vector of greening (Capoor *et al.* 1967) were observed at Nelliyampathy and Ambalavayal.

Cultivation of resistant or tolerant varieties or scion-stock combinations and propagation of virus free budwood are the principal means of control of tristeza disease. The promising root-stocks in this respect are, rough lemon, Rangpur lime, Sweet orange, Sweet lime, Trifoliate orange and

Troyer citrange. Investigations on the relative tolerance or susceptibility of the different scion and stock varieties of citrus to the greening pathogen are in progress.

Grateful thanks are due to Dr. S. P. Raychaudhuri, Head of the Division of Mycology and Plant Pathology and the Principal investigator of the PL-480 Project on epiphytology of greening disease of citrus in India under whose guidance the above work was carried out as also to the U. S. D. A. for providing funds for the Project.

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Division of Mycology & Plant Pathology, Indian Agricultural Research Institute, New Delhi.

T. K. Nariani
S. M. Viswanath
M. R. Menon

(*Accepted* : 7-4-1971)

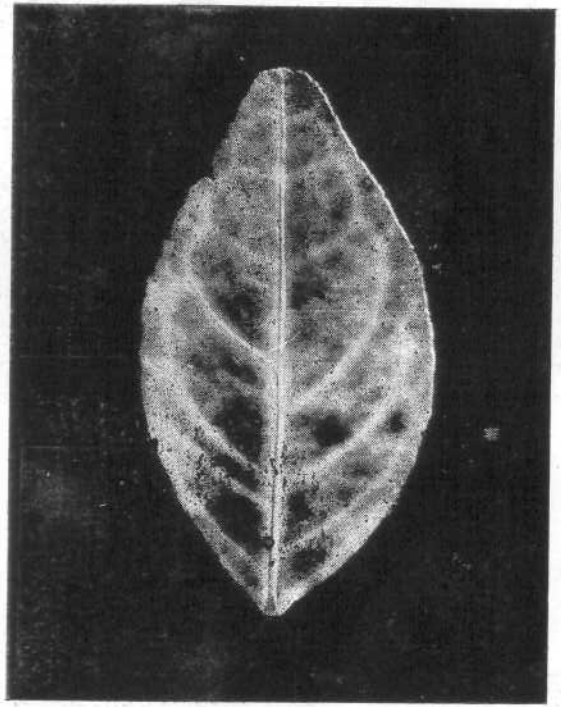

Fig. 3 Leaf of sweet orange showing symptoms of greening disease.

Fig 4. Greening affected citrus plant showing defoliation of twigs.

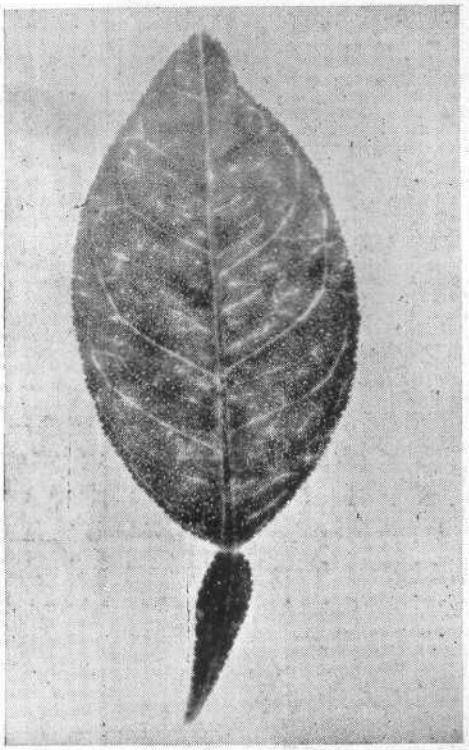

Fig. 1 Tristeza virus affected leaf of Kagzi lime

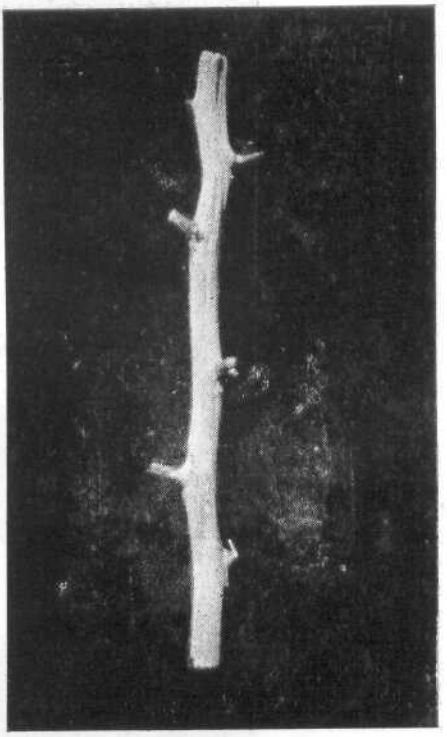

Fig. 2 Stem pitting on Kagzi lime caused by tristeza virus