

*The Danger of Introducing Tristeza and Its Most
Efficient Vector into the Mediterranean Area*

DURING RECENT YEARS it has become evident that virus diseases constitute a great danger to citrus production in the countries of the Mediterranean basin, just as in other parts of the world. My organisation, the European and Mediterranean Plant Protection Organisation (EPPO), which is an intergovernmental organisation with a Convention signed by 30 member countries, has consequently found it necessary to give attention to the problem of the introduction and spread of such diseases and to the possibilities of keeping them in check by means of joint plant quarantine and direct control actions.

European cooperation in the field of plant protection started after World War II in 1947, when the International Colorado Beetle Committee was formed. In 1950 it was decided to widen the scope of cooperation to include also joint action against a number of other plant pests and diseases, and in 1951 EPPO was recognised as the regional organisation for Europe under the FAO Plant Protection Convention. The organisation now also includes some non-European, Mediterranean members.

Two special meetings concerning citrus viruses have so far been convened by EPPO. The first was the Working Party on Tristeza and Xyloporosis in Portici, Italy, in May, 1956, when representatives of the plant protection services of six Mediterranean countries, and also of FAO, discussed the situation with EPPO and recommended coordinated efforts to be made to meet the virus threat, including systematic surveys of prevailing stock-scion combinations in the area and experiments to

find the best resistant combinations; investigations on the influence of ecological factors; routine indexing for tristeza of all foreign introductions and local suspected varieties.

Following a recommendation of that Working Party, Professor Reichert of Israel was subsequently commissioned by EPPO to visit the main Mediterranean citrus districts and report on the spread of viruses—seven countries accepted the invitation to cooperate and were visited. His report was presented to an international conference on virus diseases of citrus, convened by EPPO in Acireale, Sicily, in September, 1959, which was attended by representatives of eight Mediterranean countries. Professor Reichert concluded that even if single trees suspected of being infected by tristeza had been revealed in Israel, Cyprus, Greece, Italy, and southern France these cases must be attributed directly to introductions of infected budwood and not to vector transmission, since no efficient vector seems to be present. Xyloporosis was frequently found in all the countries visited. Exocortis occurs in Yugoslavia and Italy on trees with trifoliolate rootstock.

During the discussions in Acireale several delegates added that the psorosis disease was widely spread and was causing great damage. Other disorders probably due to virus infections were also reported. The economic importance of citrus virus diseases was emphasised at the conference. Special attention was devoted to the findings of tristeza. The conference emphasised again the urgent need for a systematic survey of the citrus orchards in all the countries of the area and also for routine indexing of foreign introductions and local suspected cases. It was announced at the meeting that a specialist in aphidology had been commissioned by EPPO to investigate the vector problem in regard to tristeza, and especially the danger of *Toxoptera citricidus* introductions into the area.

These studies have now been carried out by Mr. H. L. G. Stroyan of the Plant Pathology Laboratory at Harpenden, England. According to his report, many questions have still to be answered before an effective programme can be worked out. His recommendations for further co-ordinated investigations include: testing of *T. citricidus* and *Aphis gossypii* as vectors for the Israeli and other Mediterranean strains of tristeza; further survey of the present distribution of *T. citricidus*, including its possible presence at low density in the Mediterranean region and also on the Cape Verde Islands, the Canaries, and the Azores; studies on the ecology and biology of *T. citricidus* and especially its possibilities of persistence throughout the year in the irrigated citrus

groves of Israel; experiments with aphid disinfestation of aircraft as a routine measure.

A very important part of the research programme outlined by Mr. Stroyan is the identification of those different species of aphids which may be considered as possible vectors or which may easily be mistaken for these species. In cooperation with Mr. J. P. Doncaster of the British Natural History Museum, and the artist, Mr. Arthur Smith, a series of detailed drawings and descriptions of the following seven species of aphids have just been prepared: *Aphis caccivora*, *A. gossypii*, *A. spiraeicola*, *Macrosiphum euphorbiae*, *Myzus persicae*, *Toxoptera aurantii*, and *T. citricidus*. The drawings and descriptions will be published in the FAO Plant Protection Bulletin.

In order to secure best possible coordination of efforts against the virus diseases, EPPO is in contact with the Permanent Liaison Committee of Mediterranean Agrumiculture (CLAM), which is a professional, nongovernmental organisation of producers and exporters in nine Mediterranean countries.

Quite recently EPPO has been informed that in Spain (in the Valencia region) many trees with suspected tristeza infection have been discovered. According to the Spanish experts no spread has been ascertained, but the infection is causing great concern among the Mediterranean citrus fruit producers and must be rigourously investigated and checked.

At this conference, where so many eminent citrus virologists are assembled, I sincerely hope to hear your views on the Mediterranean tristeza problem, and in the name of my organisation I wish to thank the International Organisation of Citrus Virologists for giving me this opportunity at the conference.