Citrus Virus Diseases of Chile

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THIS REPORT is based on a survey made in Chile, starting in 1967. It describes virus diseases of citrus diagnosed from visual symptoms in trees in the field and in selected indicator plants in a greenhouse.

The production of citrus in Chile is restricted primarily to lemon and sweet orange fruit crops, with only limited interest being shown in grapefruit, lime, and mandarin varieties. In the past, all varieties of Chilean citrus have been grown almost exclusively on sour orange rootstock. Sweet orange is, however, being used as a stock in some of the recent plantings.

Virus Diseases

PSOROSIS.—Three forms of psorosis can be found in Chile. Blind pocket is the most frequently encountered form; it occurs commonly in combination with concave gum in mandarin, lemon, and sweet orange trees. Trees with either disease alone are rare, though it was difficult to determine whether the tree carried one of these forms of psorosis alone or both together.

Sweet orange trees with both leaf and trunk symptoms of psorosis A (scaly bark) were frequently seen. An occasional mandarin tree had scaly bark symptoms. In certain groves, almost all the sweet orange trees are affected.

EXOCORTIS.—Exocortis is a virus disease of trifoliate orange rootstock and its hybrids as well as of Rangpur lime. In Chile, rootstocks susceptible to exocortis virus are not presently used. Nevertheless, exocortis virus occurs latently in almost all

citrus and is probably the most prevalent and widespread citrus virus in Chile. It appears to be consistently and universally present in Genova lemon trees. When psorosis virus is also present in lemon trees as a complex with exocortis virus, bark splitting in the trunk, due to a synergistic interaction of the 2 viruses, is frequently observed. The virus is also widespread in orange and mandarin varieties.

CACHEXIA (XYLOPOROSIS).—Many mandarin trees were examined for cachexia by removing bark from the bud union. Only in 1 Clementine mandarin tree in the variety collection at Quinta Normal were cachexia symptoms evident. Whether or not this virus occurs latently in other citrus trees has not been ascertained. Transmission tests to appropriate indicator plants are presently under way.

WOODY GALL (VEIN ENATION).—Several trees had galling symptoms indicative of woody-gall virus. Definitive vein-enation symptoms were, however, absent, and transmission tests in the greenhouse were negative. All indexing tests with other citrus trees in the greenhouse were also negative. Apparently, the virus is not widespread in citrus in Chile, if present at all.

STUBBORN.—Stubborn symptoms were not identified with certainty in any trees in Chile. Stubborn, if present, appears not to be widespread.

TRISTEZA.—Many commercial orange trees on sour orange rootstock in Chile were observed to be declining, with symptoms resembling those of tristeza. In no instance, however, was tristeza virus retrieved from declining trees, and all tested trees were found to be declining from other causes. Furthermore, tristeza virus was never identified in any orange or mandarin tree in commercial plantings that were examined. It must be pointed out, however, that only a representative sample of trees has been examined and indexed; it is conceivable that the virus is present in commercial trees without having been detected.

Some satsuma mandarin trees and most Meyer lemon trees in other citrus areas of the world have been shown to be carriers of tristeza virus. A particular effort was therefore made to locate and examine satsuma mandarin and Meyer lemon trees in Chile to see whether or not they carried tristeza virus. Several trees of each kind were indexed to West Indian lime. One satsuma mandarin and all Meyer lemon trees in our tests were found to be carriers.

Meyer lemon trees in Chile are propagated and distributed by one nursery. In conversation with the propagator at the nursery, it was learned that several thousand Meyer lemon trees were propagated by cuttings and distributed throughout Chile following its introduction in the 1940s. In view of the positive results of our indexing of the propagative stock at the nursery, it can be assumed that most Meyer lemon trees in Chile, if not all, carry tristeza virus.

TATTERLEAF AND CITRANGE STUNT.—These viruses occur only in plants

of Meyer lemon and were found to be present in Meyer lemon trees in Chile.

Discussion

Although the use of tolerant rootstocks will insure that future plantings in Chile will not succumb to tristeza disease, there is no such assurance for older trees of sweet orange on sour orange rootstock. The virus is now known to be present in Meyer lemon trees throughout Chile. Furthermore, the vectors of tristeza virus and the susceptible host, sweet orange on sour orange rootstock, are present and in proximity to the virus. All the elements needed for an outbreak of tristeza disease in Chile are present.

Whether tristeza virus has been transmitted by insects from infected hosts to other citrus in Chile is not known. No trees of commercially grown varieties were seen with symptoms attributable to tristeza virus. The same situation may exist in Chile as is known in some areas in California and other citrus areas where tristeza-diseased Meyer lemon trees have been present for many years without any visible evidence of spread of the virus to adjacent sweet orange trees. There is always the possibility, however, that someone may place a tristeza-infected Meyer lemon bud in a sweet orange tree, thus infecting the sweet orange. The aphid vectors, then, could rapidly transmit the virus to other sweet orange trees.

Many countries have adopted the practice of destroying Meyer lemon trees in their citrus areas so as to eliminate the reservoir of tristeza virus. Unfortunately, there are several thousand Meyer lemon trees in Chile and the exact locations of many of them are not known. It is questionable therefore that this would be a feasible practice in Chile.

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