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### *Citrus Virus Diseases in Corsica*

**A** CITRUS EXPERIMENT STATION was established in Corsica in December, 1958, as part of a program for a better economical development of the island. Although Corsica lies between the 41st and 43d parallel, the northern limit of citrus culture in Europe, there was no citrus industry in the island. The existing groves, often not even planted with commercial varieties, were very badly taken care of. The first objectives of the young Citrus Experiment Station were mainly teaching better cultural practices and making a survey of citrus diseases existing in the island. Special importance was given to virus diseases.

#### *Virus Diseases Present in Corsica*

**PSOROSIS.**—Among the various forms of psorosis that have been described, 3 at least can be found in Corsica: blind pocket and concave gum are very common; symptoms of psorosis A are very rare.

*Blind pocket.*—Blind pocket is the most frequently encountered form of psorosis in Corsica. All the commercial citrus species are affected: mandarin, clementine, orange, grapefruit, and lemon. The most severe symptoms can be seen on mandarin trees. In certain groves of the Casinca district, planted with 10- to 70-year-old trees, all the mandarin trees are affected.

The trees show extremely pronounced symptoms. The trunk and branches are full of holes, pockets, and concavities that go deeply into the wood. All these trees show foliar symptoms of psorosis during the spring-growth-flush.

*Concave gum.*—Symptoms of concave gum are also frequently encountered in Corsica. As with blind pocket, the most severe symptoms are seen on old trees. The trunk and branches of the most affected trees are badly misshapen and covered with numerous concavities, which give the trees a most contorted aspect. Foliar symptoms appear on the spring flush.

Trees showing typical symptoms of either blind pocket alone or concave gum psorosis alone are rare. But often, on trees showing very pronounced symptoms, it is hard to say whether one deals with one or the other of those two forms of psorosis, or both together.

*Psorosis A.*—So far, psorosis A has been found only very rarely; a few isolated orange trees show typical symptoms. The most typical aspect of the disease has been observed on 2 orange trees in a back-yard grove of the Ajaccio district. Scaling was affecting very large parts of the trunk, and the trees were very stunted. In all the other cases, scaling was limited to small areas of the trunk and could not be seen on the main branches. All these trees show foliar symptoms in the spring.

Thus, it should be stressed that, in contrast with the situation in North Africa, psorosis A symptoms are extremely rare in Corsica. But we know, with a good degree of certitude, that many trees of many citrus species do carry blind pocket. Wallace has shown cross protection reactions among the various strains of psorosis virus. Is it not possible that in Corsica we deal with such a cross-protection reaction on a large scale? The presence of the blind pocket strain of the virus would more or less prevent the expression of the psorosis A bark symptoms.

It is possible that in the near future the percentage of psorosis-A-affected trees will increase because of uncontrolled introductions of trees from North Africa.

*XYLOPOROSIS.*—More than 100 clementine and mandarin trees, 20-64 years old were examined by taking a bark sample from the bud-union line. On about 1/3 of the mandarin trees, the symptoms were pronounced, with huge pegs on the inner side of the bark, and corresponding pits in the wood. The bark was stained with gum pockets. On all the other mandarin trees, and on most of the clementine trees, the symptoms were less pronounced, although clear-cut.

*STUBBORN.*—Many trees with an abnormal appearance have been noticed all through the citrus-growing area. Out of season blooming has been noticed on trees of the following species or varieties: clementine, mandarin, several orange varieties among which especially Ovale Cala-

braise, Washington Navel, and Thomson Navel. The fruits from these trees are often misshapen. On 10-year-old clementine trees, and on 20-year-old Marsh seedless grapefruit trees, some lopsided fruits were found.

Most of the noted trees had branches with small-sized leaves. The leaves were more or less folded along their central vein, and stood erect along the shoots. The internodes are short, thus giving the tree a bushy appearance.

Many mandarins and clementines showed the inverse color pattern during the ripening period; the peduncular end becomes orange much before the stylar end, whereas on normal fruits it is the other way around. The blue albedo symptom on grapefruit has not been found.

EXOCORTIS.—*P. trifoliata* has not been used a great deal as a rootstock in Corsica. We know of only one grove, in the Tavignano Valley, established on *P. trifoliata*. The trees are about 20 years old. The tops are of the following species and varieties: Washington Navel, Thomson Navel, Local Corsican orange variety, *Citrus aurantium*, and Marsh seedless.

The trees, with a maximum height of only 1.5 meters, are very much smaller than their neighbours of the same age, grafted on sour orange. The part of the trunk corresponding to the rootstock (*P. trifoliata*) has a much bigger diameter than the top part. However, no clear-cut scaling of the trifoliata bark can be seen. Some trees present very small scales, but even then it is difficult to diagnose exocortis for sure. Thus we do not know at the present time whether we deal with exocortis, or with a bad affinity; in other words, with a virus, or with a physiological trouble.

### Conclusion

From the surveys that have been conducted so far, it is concluded that at least 3 citrus virus diseases are present in Corsica: psorosis, xyloporosis, and stubborn.

These virus diseases must have been present in Corsica for a long time, since most of the symptoms can be found on old trees. Those virus diseases that are not transmitted by insects, such as psorosis, were probably affecting the trees at the time they were planted.

At the present time, the Experiment Station helps the growers, in pointing out to them the importance of clean budwood, in indexing healthy-looking trees with the hope of finding a virus-free one, and in producing nucellar material as a future source of healthy material.