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Texas Agricultural Extension Service

Texas Citrus Viral Diseases

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Four virus diseases which occur on citrus in the Lower Rio Grande Valley are exocortis, xyloporosis, tristeza and psorosis. The first three cause rootstock diseases, but psorosis causes bark shelling on the trunk and branches of trees older than 8 to 10 years. These four viruses are bud-transmissible. Certain aphids also are responsible for spread of tristeza virus. Damage caused by virus diseases varies with rootstock-scion combination. Some viruses result in only a slight reduction in growth rate. Others result in yield loss, severe stunting, decline and eventual death.

Because citrus viruses can be transmitted by budding, careful selection of budwood is an effective control method. Tolerant rootstock-scion combinations should be used if virus-free trees are not used. Citrus trees that have been certified to be tristeza- and psorosis-free by the Texas Department of Agriculture should be used as sources of budwood.

Exocortis

This virus causes bark-shelling and stunting of trees on trifoliate orange, trifoliate hybrids and Rangpur lime rootstocks. In the early stages of the disease, gum exudes from pustules at the base of the trunk and may extend from below the soil line to the bud union. New bark forms beneath the pustules, and the outer bark sloughs off, forming the characteristic bark-shelling. The rate of tree decline varies with tolerance to the exocortis virus. Some affected trees live for quite a number of years, while others die within the first 2 or 3 years.

Sour orange and Cleopatra mandarin rootstocks are tolerant to exocortis. Because most of the Valley's citrus is budded on sour orange, exocortis is seldom seen in Texas. Troyer and Carrizo citrange and Swindle citrumelo are rated as moderately resistant. As long as sour orange remains the dominant rootstock in Valley orchards, exocortis should not be a major threat.

Grapefruit infected with exocortis growing on rough lemon (left) and on trifoliate orange (right) rootstocks.

Psorosis

Psorosis, also known as scaly bark, has been the most serious virus disease of mature citrus trees in Texas. It spreads chiefly by budding nursery stock with budwood from infected trees. Certain strains of psorosis, however, are capable of being transmitted through seed. Sweet orange, grapefruit and tangerines are severely affected. Most rootstocks used in the Valley are susceptible to the virus; thus, the incidence of psorosis historically has been high.

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Bark scaling from psorosis on the trunks and larger limbs of mature citrus trees.

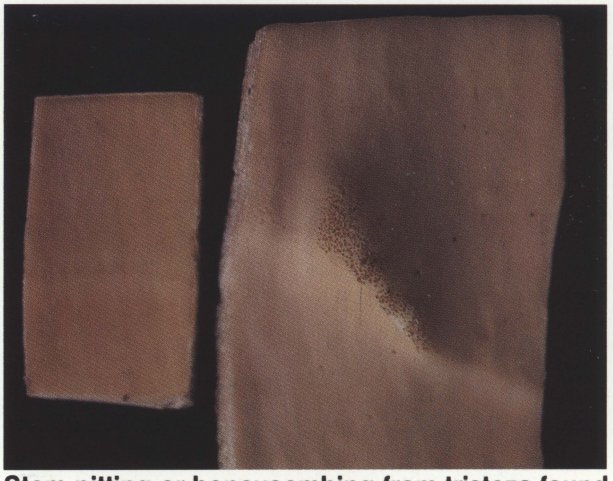
Several known strains of the psorosis virus have common leaf symptoms but different trunk and branch symptoms. Leaf symptoms are used to identify psorosis-infected nursery stock on young trees. This method of detection has been used effectively in selecting psorosis-free parent trees for budwood. Bark scaling of the trunk and larger branches is typical of psorosis symptoms in citrus trees 8 to 12 years or older. The earliest bark symptom is scaling. As the disease progresses, the tree declines rapidly and eventually becomes unproductive.

Psorosis no longer is a major problem in the Valley because most of the infected trees were removed after the 1951 freeze and replaced with psorosis-free trees obtained through the virus-free bud certification program.

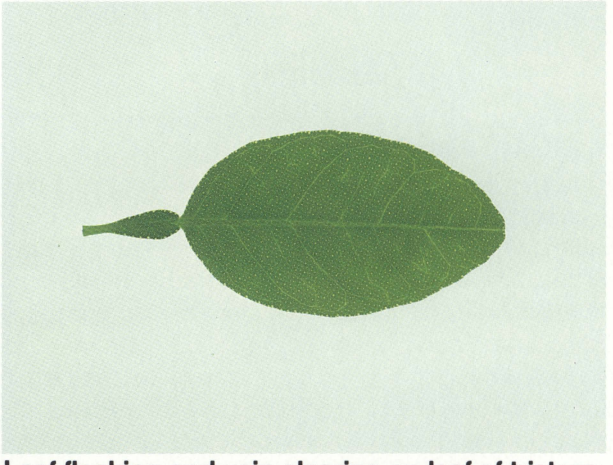
Bark separations from psorosis.

Tristeza

This virus has caused serious losses in the citrus-producing areas of South America, South Africa, Australia, California and Florida, but not appreciably in Texas. Because of its severity on the highly susceptible and commonly used sour orange rootstock, it has the potential of being the most devastating disease of Valley citrus. Infected trees found in Texas have been traced to introductions and propagation of infected Meyer lemons and sutsuma mandarin. The black citrus aphid, the most important vector, has not been found in the Valley.



Stem pitting or honeycombing from tristeza found when bark is removed at bud union.



Leaf flecking and vein clearing on leaf of tristeza-infected tree.

Sour orange and limes, among other rootstocks, are highly susceptible to tristeza. Swingle citrumelo

and Troyer and Carrizo citrange are rated resistant. Rough lemon, mandarin, trifoliate orange and its hybrids generally are tolerant to the virus. Because of the danger of tristeza becoming established in Texas, the new citrus rootstocks are commonly investigated in an attempt to find a tolerant rootstock adapted to Valley conditions.

Symptoms of tristeza-infected trees are similar to those resulting from root injury, including retardation of growth, thinning of foliage, twig dieback and tree collapse under severe conditions. The inside of the bark of tristeza-infected trees shows a honeycomb appearance that can be seen with the naked eye and is used by many as a diagnostic symptom for the disease.

In Texas, where the disease has been found with no evidence of insect transmission, no control measure is needed as long as growers plant tristeza-free trees.

Extensive damage from tristeza on a Florida orchard of orange trees growing on sour orange rootstock.

Xyloporosis

Xyloporosis affects many old-line commercial citrus varieties in the Lower Rio Grande Valley. Sour orange, the most common rootstock, is tolerant to the virus. No external symptoms are observed when sweet orange and grapefruit are infected. Orlando tangelo is highly susceptible.

Symptoms of xyloporosis resemble those of other virus diseases. The main symptoms are wood-pitting, bark-scaling and the filling of infected tissue with gum, particularly near the bud union. The pittings can be so numerous that infected tissue resembles a sieve. The bark is at first discolored, splitting later as the disease progresses. Infected trees are stunted and production is greatly reduced.

Infected varieties growing on tolerant rootstock are not affected by the virus. As long as sour orange remains the principal rootstock, xyloporosis is not expected to be a problem in Valley orchards.

Gumming under the bark of Orlando tangelo is a characteristic symptom of xyloporosis.

Acknowledgement

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