

Virus Indexing For 'Clean' Citrus Bud Source Trees

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Much too frequently cries are heard from owners of older citrus groves, "What is happening to my trees? They refuse to grow or produce fruit no matter what I do."

Unfortunately, and again too frequently, a simple examination of the roots, trunks, and bud-unions of declining trees shows tell-tale symptoms of virus infection. And worst of all is the fact that there are no lasting, effective cures for the several virus-caused diseases of citrus. All that remains to the luckless grower is to remove the affected trees as soon as they become non-productive.

Budwood Source is Important

All of the virus diseases of citrus may be transmitted in the budding procedure. With only one exception, bud transmission is the usual method of spread for these diseases. Tristeza or "Quick Decline" may be spread also by aphids but luckily, tristeza is not found in commercial groves in Arizona.

For years it has been standard practice for citrus nurserymen and growers to select their "better" trees as budwood sources. Too often this custom is a serious entrapment and results in major losses in the groves.

Virus diseases of citrus must be identified by the symptoms they cause. Some of the viruses may be present in apparently healthy trees for 15 or 20 years before the trees show symptoms and begin to decline. For this reason the virus diseases have been unknowingly transferred in buds to young nursery stock. Eventually, these diseased trees decline uncontrollably after they have been planted in groves.

Help is in Sight

A citrus virus indexing program for obtaining virus-free varieties has been started at the Yuma Mesa Citrus Experiment Station.

By budding very susceptible indicator citrus seedlings it is possible to determine accurately whether a specific bud-source



THIS GREENHOUSE at the UA Yuma Mesa Branch Experiment Station, is the battleground where citrus viruses are being attacked. Susceptible indicator seedlings are grown in the hot-bed. After transferring seedlings to individual cans they are budded with candidate buds and kept in the screenhouse and greenhouse until virus disease is proved present or absent. (Photo by Lewis Robison, Yuma County Farmer)

tree is healthy or diseased. The time required for the process ranges from a minimum of three months for psorosis and tristeza to three or four years for such diseases as cachexia, xyloporosis, exocortis, and Rangpur Lime disease. An even longer period may be needed for determination of Stubborn Disease which probably is caused by a virus also.

The short term tests are being made in an insect-proof screenhouse or in a plastic-covered greenhouse. This prevents all possible introduction of tristeza by aphids. Long term tests are made in a field index nursery nearly two acres large. A complete test series for a single candidate budwood-source tree requires the budding of at least three seedling trees of each of eight or nine different species of indicators.

Fifty-nine entries are now being indexed in this program. This figure includes 27 varieties of citrus imported into the state within the past five years. Also included in the program are 32 local entries. Some of this group are presently popular bud-source trees or are those that have served in this capacity in past years during the expansion of the citrus industry in Arizona.

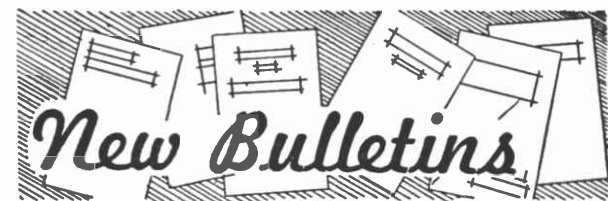
Goal is "Clean" Bud Source

Undoubtedly, some of the present entries in the indexing program will prove to be free of most, if not all, of the known citrus viruses. The goal of the program is the establishment of bud-source trees which are known to be absolutely free of bud-transmitted diseases.

Arizona citrus growers and the general public will reap benefits from the indexing program. The nurserymen and growers can be assured that the buds they use for propagation of new trees will be free of virus diseases. Clean trees will have a

longer, more productive field life. Also, a wider choice of rootstocks can be made. Certain of the viruses have prevented the use of desirable rootstocks which are especially susceptible to these viruses.

More scion varieties and strains within these varieties will be available, thus allowing for even more rapid expansion of the industry in the state. Better crop production can be expected at no increase in standard production costs. And perhaps best of all, the growers and consumers will profit from better quality fruit produced in an increased number of types and varieties.



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