# OTHER SUBJECTS

## Virus Disease Influence in Citrus Plantations in Tucuman and Salta-Argentina

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After the citrus in northern Argentina was destroyed between 1950 and 1960 by tristeza virus, the general use of sour orange rootstock was discontinued and replanting of new citrus was on Cleopatra mandarin rootstock (8).

We had to avoid the mistake of having few rootstocks, so the evaluation of new rootstocks of known resistance against the most common diseases of economic incidence was intensified.

This problem created the need to know the virus status of the commercial scion varieties in the province. The goal of this research was to evaluate commercial trees for the presence of exocortis, xyloporosis and psorosis, to consider their possible use as budwood sources.

### BACKGROUND

Northwestern Argentina contributes 39% of the national citrus production including 60% of the fruit for export. This gives an idea of how economically important this area is for the country.

Through history, citriculture has had various sanitary problems. The first observation of a virus disease, tristeza, in this country was made in Bella Vista (Corrientes) in 1930 (5). In 1938, Fawcett found psorosis in Tucumán province transmitted by grafting of contaminated material that came from the U.S.A. (6).

Starting in 1974 in northwestern Argentina, decline produced by tristeza was observed (4).

After that, in studies done in Tucumán it was found that 40% of tangerine, orange and grapefruit plants were affected by exocortis. Ruby blood orange was also found to be affected by xyloporosis (10).

The presence and spread of these viruses were due, basically, to the entrance of affected material from other citrus areas from our country and the world (9, 14). Later multiplication of diseased material and the vector spread of some viruses spread these diseases and caused serious damage to the economy as, for example, the so called "podredumbre de raicillas" (tristeza) in the 1950's and 60's.

Virus diseases have a negative economic impact by reducing production 42% (1) and reducing longevity of the trees (2).

Due to the lack of therapeutic treatments for viruses, prevention is of fundamental importance.

Th use of tolerant or resistent species or those free of virus, is the surest way to prevent these diseases.

Budwood certification programmes have been the most effective way to eliminate virus diseases problems in many countries and have been suggested for Argentina (7, 8, 12, 13).

### MATERIALS AND METHODS

Research was started in 1965, with materials collected from good

commercial citrus plantations. Places of work were: Tucumán citrus areas: Famaillá, Lules, Burruyacú and Tafí Viejo; Salta citrus areas: Colonia Santa Rosa, Zanja del Tigre, Zenta and Orán. Materials tested and collected were: Sweet oranges cultivars Tangerina, Hamlin, Mediterranean sweet, Jaffa, Ruby blood, Valencia, and Lue Gim Gong; grapefruit cultivars Henninger's Ruby, Foster, and Duncan; the lemon cultivar Geneve (Genova); and the mandarin cultivar "Criolla" or common.

Tests done were for:

1) exocortis (E) using trifoliate orange as an indicator with branch observations made 6, 12, and 18 months after inoculation (15); or Etrog citron 60-13 on Rangpur lime rootstock with observations for leaf epinastzy made two months after inoculation (13).

2) Xyloporosis (X) with Orlando tangelo on Rangpur lime rootstock as the indicator at 6, 12, and 18 months after inoculation (3).

3) Psorosis (P) with Saint Victoria sweet orange as the indicator.

The number of replications varied between 3 and 10 for each virus (16).

The total number of candidate plants was 457, of which 320 were tested for E, X and P; 80 for E and X; 36 for E and P and 21 for E only.

## RESULTS AND DISCUSSION

Table 1 shows that the percentage of completely healthy plants is low.

This shows that the indiscriminate use of buds for commercial plantations without previous knowledge of their health could represent a danger. The necessity of using healthy material arose, because the first multiplications on new rootstocks such as Troyer citrange and Rangpur lime showed problems with exocortis.

Although the effect of existing viruses on productivity was not studied consciously, the effect was clear. In general, the depression in those plants with three viruses was greater than in those with 2 and 1 respectively. From the economic point of view even those that had the three viruses had good yields which may be due to existence of weak virus strains or high productivity of the scion sources, or both.

## CONCLUSION

According to the results obtained we conclude that:

—A high percentage of trees (65%) are affected by all and/or some of the viruses studied in the commercial plantations in Tucumán and Salta.

—It is advisable to use only plants proved to be healthy, from tested old clones or nucellar clones.

TABLE 1
VIRUS EVALUATION OF CITRUS PLANTS FROM COMMERCIAL ORCHARDS FROM TUCUMÁN AND SALTA

| Tests done | | | Number of candidate plants | Numbers of plants with negative tests |
|---|---|---|---|---|
| Exocortis | Xyloporosis | Psorosis | | |
| X | X | X | 320 | 131 |
| X | X | — | 80 | 20 |
| X | — | X | 36 | 5 |
| X | — | — | 21 | 5 |
| | Total | | 457 | 161 |
| | % | | 100 | 35,2 |

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