The Citrus Budwood Indexing Program of the Citrus Experiment Station of Acireale

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THE CITRUS BUDWOOD indexing program of the Citrus Experiment Station of Acireale, Sicily, was started in 1961 (3, 4, 5, 6). A careful survey was conducted of several orchards in the principal citrus areas, and adult trees of each commercially important variety were chosen for the program.

Materials and Methods

These trees were observed for several years to ascertain their horticultural and varietal characters. Selection of trees of superior phytosanitary status was based on the following criteria: absence of psorosis symptoms on young leaves, fruits free of impietratura symptoms, bud-unions without gum, and general absence of all symptoms suggesting virus infection.

On this basis, 32 trees of sweet orange [*Citrus sinensis* (L.) Osb.] and 4 of Clementine mandarin (*C. reticulata* Blanco) were selected. The sweet oranges were budded on sour orange (*C. aurantium* L.) and the Clementines on *Poncirus trifoliata* (L.) Raf. At the same time seedlings of indicator plants were grown.

Two indexing schedules were planned, a short-term one for psorosis and a long-term one for exocortis and xyloporosis-cachexia viruses.

INDEXING PROCEDURE.—The following seedlings were used as indicator plants: sweet orange, sour orange, lemon [*C. limon* (L.) Burm. f.], and King mandarin for psorosis; Palestine sweet lime [*C. aurantifolia* (Christm.) Swing.] and Orlando tangelo (*C. paradisi* x *C. reticulata*)

for cachexia-xyloporosis; *P. trifoliata*, Rangpur lime (*C. reticulata* var. *austera* hyb.), and Etrog citron (*C. medica* L. var. *ethrog* Engl.] 60-13 for exocortis (1).

PSOROSIS.—The tests for psorosis virus were made in the greenhouse. Of 4 seedlings of each indicator plant per pot, 2 were inoculated with a budwood stick from the plant to be indexed; the other 2 served as controls.

CACHEXIA-XYLOPOROSIS.—For the cachexia-xyloporosis tests, seedlings of Palestine sweet lime and Orlando tangelo were grown in the field. Six of the former and 3 of the latter were inoculated with buds from each individual tree to be indexed.

EXOCORTIS.—For the exocortis tests, seedlings of *P. trifoliata* and Rangpur lime were grown in the field. Three of the former and 2 of the latter were inoculated with buds from each tree to be indexed. The psorosis tests were started in 1961, whereas those for cachexia-xyloporosis and for exocortis were started in 1963.

Results and Discussion

PSOROSIS.—Of 36 trees tested, only nine were psorosis-infected. The high rate of survival no doubt resulted from the careful inspection and selection of plants for testing in the program. When the results from the psorosis indexing were known, mother trees free of psorosis virus were planted at the experimental field of Palazzelli. Thus, we were able to distribute psorosis-free budwood early in the program.

Establishment of new plantings free of this virus is worthwhile progress because psorosis is widespread and is perhaps the most serious virus disease affecting Italian citriculture.

EXOCORTIS.—Only 27 plants were indexed for exocortis and xyloporosis viruses because the psorosis-infected trees were removed. Because *P. trifoliata* reacts slowly and Etrog citron was not inoculated until the summer of 1966, only the results of the tests carried out on the Rangpur lime are known. Nine of the 27 trees tested on Rangpur lime reacted positively, eight have shown no symptoms, and six are questionable and must be rechecked. Four were not tested because the 26-year-old mother trees were budded on *P. trifoliata* and do not show symptoms of exocortis.

CACHEXIA-XYLOPOROSIS.—In these tests, ten of the 27 Palestine sweet lime trees showed symptoms, 14 were virus-free and 3 were doubtful. Nine Orlando tangelo trees reacted positively, 15 were virus-free, and 3 were doubtful.

Conclusions

Of the 36 trees indexed, only five were surely free from psorosis, exocortis, and cachexia-xyloporosis. Six were questionable in the exocortis tests, and four were doubtful in the xyloporosis tests. Four trees were infected with exocortis alone and four trees were infected only with xyloporosis. These results strengthen the conclusion arrived at during the surveys in several orchards, namely, that the old lines of our varieties have a high percentage of virus-affected trees (2). On the other hand, 13.8 per cent of the carefully selected trees appear to be free of the three viruses considered.

Literature Cited

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