

AN INDEXING SCHEME IN THE NETHERLANDS

BY

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Field inspection of nurseries with respect to virus diseases of fruit trees as described by VAN DE POL (1) needs a supplement to reach the purpose of supplying *the fruitgrower* with material which is virusfree as far as possible.

The way in which field inspection of nurseries with respect to virus diseases in the Netherlands is carried out nowadays only consists of selection on visual symptoms. Material that shows symptoms of known virus diseases is destroyed. Hence destroying is part of the inspection work. It would be an advantage if this could be avoided.

In our opinion this can be reached to a high degree by supplying the *nurserymen* with material guaranteed to be free of known viruses as far as possible. This can be reached only to a certain extent by regular visual inspection of the source material, i.e. the scion mother trees and the nursery beds of the vegetatively propagated rootstocks. However this method is insufficient because of the following reasons:

- a. the possibility of symptomless carriers;
- b. the possibility of overlooking faint symptoms which only occur in a few leaves;
- c. the possibility of prevention of symptom expression by climatic or other conditions influencing growth in a certain year;
- d. some virus diseases only show symptoms on the fruit skin, which can be observed in the case of scion mother trees but which can not be observed in the case of vegetatively propagated rootstocks.

Thus work supplementary to the field inspection of nurseries and of source-material has to be done in order to get material both of scions and rootstocks guaranteed to be free of known viruses. Up till now this supplementary work can only be done by indexing.

Field inspection of nurseries in the Netherlands already assures the *fruit-growers* of practically virusfree plants. Indexing will provide the *nurseries* with guaranteed virusfree source-material on the shortest term possible.

To this purpose a scheme was made for testing the mother trees of the leading fruit varieties grown in Holland.

With regard to vegetatively propagated rootstocks one can say that here in the first place international cooperation is possible and necessary. There is no sense in producing at the same time several tested clones of one type in different countries. We will await the development of international cooperation in this respect before we start work on it.

In our opinion mother trees of the fruit varieties have to be tested first of all by each country individually because of the differences between the lists of varieties. Evidently also in this respect international exchange of tested material is very desirable.

The scheme has been prepared during the past year and will be carried out by the Plant Protection Service. It is based on the experiences of a preliminary experiment on rubbery wood and on work done in England at East Malling Research Station by POSNETTE *et. al.* (2). The scheme was designed by the Plant Protection Service in close cooperation with:

- a. the Institute of Phytopathological Research (I.P.O.), which in future also will carry out the basic scientific research and will develop the test methods for the different virus diseases,
- b. the Institute of Horticultural Plant Breeding (I.V.T.) which will also supply information on special nursery techniques and
- c. the Netherlands General Inspection Board for Arboriculture (NAK-B) which in future will take care of large scale propagation of the guaranteed virusfree material and will deliver it to the nurseries.

The preliminary experiment was carried out in 1953 and 1954 by the I.V.T., the I.P.O. and the Plant Protection Service and showed that out of six NAK-B mother trees of Golden Delicious none was free of the rubbery wood virus and out of six NAK-B mother trees of Lord Lambourne four were free of this virus. Some of the tested M IX rootstocks were also infected.

The main fruit crops in Holland are apple, pear, cherry and plum. The scheme will start in 1956 with the apple, the main crop of these four. About four thousand mother trees of the NAK-B belonging to 27 varieties and spread over the country will be indexed. Four scions of each mother tree will be taken in four different places of the crown of the tree. Two of them will be indexed with one indicator, two with another. They will be indexed for the occurrence of the virus diseases of the apple known in Holland: rubbery wood, rough skin of the fruits, apple mosaic, proliferation and rosette. As it is necessary to await the formation of fruits for the observation of rough skin, it will be possible to observe at the same time the possible occurrence of chat fruit, which has not been known in the Netherlands up till now.

At first one-year-old seedlings will be used as rootstocks, as this is the only material now available which is guaranteed virusfree. As soon as possible we will change over to indexed M VII, which has the advantage of more uniform and weak growth.

The indexing method was described earlier by POSNETTE and CROPLEY (2). The indicator is grafted onto a scion of the mothertree and this combination is grafted upon a seedling. Two thousand five hundred mother trees will thus be indexed in this way in January and February 1956, another 1500 by double-budding in the summer of 1956. For the latter purpose two buds are put on each seedling, the top one from the indicator and the bottom one from the mother tree under test. Only the top one is allowed to grow, the other will be destroyed soon after.

There are two types of control plants. The positive control plants consist of grafts of a healthy indicator on a diseased indicator on a seedling. They are made to observe whether the virus concerned is transmitted and how the symptoms are expressed in that particular year. Positive control plants will be made for each virus disease concerned, one control tree per 40 trees. The negative control plants consist of an indicator scion immediately grafted upon a seedling.

They give the possibility to observe whether the indicator and the rootstock used were indeed virusfree.

The indicator varieties to be used are Goudreinette (Belle de Boskoop) and Lord Lambourne. With the first indexing will be possible for rough skin, proliferation, rosette and mosaic, with the second for rubbery wood, mosaic and for chat fruit, when necessary.

The first results may be awaited within two to six years: in two years for the diseases, which give symptoms in the leaves or wood, in at least six years for the diseases, which give symptoms on the fruits.

At first all the indexed mother trees which show to be free of the diseases observed will form the source for the nurseries. It is the intention to concentrate later on in a special field only a few of such trees, which will be indexed more thoroughly. Re-indexing will take place as often as may be necessary.

REFERENCES

1. POL, P. H. VAN DE, - 1956. Field inspection on virus diseases in the Netherlands, T. Pl.-ziekten 62: 79-82.
2. POSNETTE, A. F. and CROPLEY, R., - 1954. Distribution of rubbery wood virus in apple varieties and rootstocks, Rep. E. Malling Research Sta. 1953: 150-153.

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REPORT ON THE DISCUSSION ON INTERNATIONAL EUROPEAN COOPERATION IN FRUIT TREE VIRUS RESEARCH

On Saturday morning August 27, 1955, a general discussion was held on international European cooperation in tree-fruit virus research under the chairmanship of Dr R. V. HARRIS, head of the Plant Pathology Department of East Malling Research Station (G.Br.). As aims of such a cooperation were proposed:

1. To accelerate the acquisition of knowledge by pooling experience of the diseases under differing conditions.
2. To avoid the time-lags caused by delays in publication of research results, thus accelerating their application in practice.
3. To avoid the wide dispersal of viruses in infected plant material by collectively working towards the production and use of virusfree clones.
4. To avoid synonymy and confusion in the literature by
 - a. using agreed common indicator varieties and species.
 - b. exchange of visits, and agreement on nomenclature, prior to publication if possible.

Some proposals were made by Prof. R. CIFERRI and Dr G. SCARAMUZZI:

1. Establishment of a European Committee of nomenclature for fruit tree virus diseases, working in agreement with American research workers, with the purpose of the uniformity of the nomenclature.
2. The sub-Committee will also be charged with the centralization of dry and preserved specimens, coloured photographs and descriptions, for free consultation and reference.