STATUS OF CITRUS NURSERIES AND ORCHARD IN THE PHILIPPINES
AND NEED FOR DEVELOPMENTAL TECHNOLOGY

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One of the factors that brought about the spread of dreadful diseases, particularly the Citrus Greening (locally called leaf mottling) in the Philippines is the transport of infected plant materials coming from private nurserymen. A quarantine measure through an administrative order prepared by the Bureau of Plant Industry was issued by the Department of Agriculture to prohibit the entry of infected citrus planting materials into the healthy areas, i.e., places where citrus are growing apparently healthy and no symptom of the disease. While it is a known fact that the Greening disease is the main cause of the devastation of the citrus plantings in Southern Luzon provinces from the early 1960s up to 1980, the citrus nurseries still flourish in Southern Luzon and Southern Mindanao regions. Landowners found out that citrus growing is profitable in areas which have not been growing citrus before and where the soil and climate is highly adapted for this fruit. The initial findings of the citrus technicians of the Department of Agriculture — Bureau of Plant Industry Research Stations on the identify of the disease, its symptomatology and insect vector control by chemical spraying within the diseased area has encouraged land owners in nearby island and island provinces which are still healthy areas to establish citrus orchards. Citrus trees which have grown apparently healthy and not affected by the greening disease produced high value fruits. On account of that situation citrus plant materials are in high demand yearly at the start of the rainy season in such areas. The demand of citrus growers for planting materials has run up against the existing quarantine regulations. In many instances, not only are nurserymen in infected areas tempted to sell their budded plants to outside growers, but the growers themselves in healthy areas, in their desire to plant citrus, have connived by smuggling in citrus budlings. It is under this condition that nurserymen continue to produce budded citrus. It is estimated that since 1981 the citrus nurserymen in Talisay, Batangas province, Luzon area have produced and distributed about three million citrus budded plants that comprise the existing citrus plantations now in Southern Luzon provinces of Batangas, Oriental Mindoro, Laguna, Rizal and Quezon while two million more citrus planting materials have been delivered and planted in orchards scattered through other provinces of Luzon. About 80% of the plant materials distributed by nurserymen consist of the local Szinkom mandarin and 20% of Calamondin. In the citrus growing areas of Davao province, Southern Mindanao, the citrus nurserymen concentrated in producing planting materials of Pummelos and King mandarin while in the semi-temperate highlands of Northern Luzon the nurserymen are propagating sweet oranges demanded by growers. From 1970 to 1980 the area of citrus orchards in the Philippines went down from
about 19,000 hectares to 13,000 hectares on account of the greening disease but the area increased again to 25,150 hectares in 1985 and further increased to about 33,800 hectares in 1989. This goes to show that citrus are continuously being planted.

PRESENT PROBLEMS

Majority of the citrus nurserymen and small citrus farm owners do not have ample knowledge about the seriousness of the Greening disease. The information drive on the part of the agriculture extension is rather limited. Even agricultural extension technologist assigned in areas with citrus plantings lack the technical know how in identifying the nature of the disease, the insect vector and how the disease is being spread much more or how it could be prevented. Therefore, most of the extension technicains at present attend only to the technology dissemination of other crops. The well-organized and large citrus farms have an advantage because they usually started their own nursery outfit and have the means to consult the citrus technologist in the citrus research stations. In such case the big and well maintained citrus farms have the knowledge to eradicate infected trees, replant healthy budlings, monitor the insect vector occurrence and keep their orchard trees free of infection by scheduling chemical sprays to prevent the disease. Although there is a sort of citrus nursery guidance initiated by the citrus research workers in our citrus stations in Lipa City (Luzon area) and Davao City (Mindanao area) such are only informative orientation of citrus nurserymen in nursery areas accessible to the research station to remove rootstock seedlings and budlings with symptoms or similar symptom of Greening disease and calendar spraying schedule to protect from the upsurge and population of the insect vector Diaphorina citri. The problem is the nurserymen are not organized and not all citrus nursery operators could adhere to the recommendations of the research stations citrus technicians. In view of the lack of specific regulations for citrus certification scheme and nursery registration there is much risk that quantities of citrus plant materials from private nurseries sold to the citrus growers are infected by the disease. Like the present citrus plantings in Southern Luzon area these are contiguous small scale citrus farms owned by small farmers and a situation exist wherein there could be trees in the citrus orchards infected with greening disease because the source of planting materials came from nursery outfit which did not pass any certification scheme. In many existing orchards even when most trees planted are possibly disease-free and healthy, the proximity of infected trees and more if growers do not spray lead to the introduction of the disease when insect vector is present. The usual practice of the small scale citrus growers, even informed of the greening disease infection, is to allow infected tree in the orchard until the last few fruits can be obtained for the market. This situation brought about faster increase in intensity of the disease within trees and disease incidence become faster in the plantation much more when there is no spraying schedule to control insect vector. Allowing disease infected trees in the citrus orchard is the major cause for the decline of citrus trees due to Greening disease at the present situation in the Philippines.

NEW PROGRAM FOR CITRUS REHABILITATION AND DEVELOPMENT

The Department of Agriculture through the coordination of the Bureau of Plant Industry is starting to implement a new program for citrus rehabilitation and development. The UNDP-FAO Project RAS / 86 / 022 activities is built-in to this program. The technology obtained from the result of the activities of the Project which was appropriately prioritized shall
be adopted in the implementation of the program. The priorities of the program in developmental technology are as follows:

1) Production of disease-free foundation trees: The DA–Region 4 Roxas Memorial Regional Research Station in Lipa City for Luzon area and the BPI–Davao Experiment Station, Davao City for Mindanao area are now producing level 1 foundation trees produced from biological text (laboratory indexing) and shoot top grafting (STG).

Substantial scion grove or scion trees shall be established in the following places with the supervision of experiment station technical personnel trained on citrus production management:

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<th>Luzon Area</th>
<th>Visayas and Mindanao Area</th>
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<td>Region 1 – Sual, Pangasinan Province; Region 2 – Ilagan, Isabela Province; Region 4 – Lipa City, Batangas Province and Oriental Mindoro Province; Region 5 – Albay, Albay Province</td>
<td>Region 6 – La Carlota, Negros Occidental Province; Region 11 – Davao City, Davao Del Sur Province</td>
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2) Biological control of the insect vector *Diaphorina citri*: The DA Region 4 Regional Research Station in Lipa City for Luzon citrus areas and the BPI Davao Experiment Station in Davao City for Mindanao citrus areas are now raising the imported parasite *Tamarixia radiata* and programming its release to citrus orchards in both areas to eradicate the insect vector so that new plantings of disease-free citrus budded plants would be free of Greening disease infection.

3) Insect vector monitoring by the use of effective types of trap: Setting of effective type of traps year round in known citrus areas in collaboration with the agricultural extension group or the Department of Agriculture to determine priority and timing for the release of parasite as well as chemical control spray schedule to be integrated with the prevention of other citrus pests.

4) Training and technology dissemination: In coordination with the DA–BPI Plant Materials Certification Project and the DA–Agricultural Training Institute short term trainings and seminars will be conducted for extension agricultural technologist assigned in citrus areas and for private nursery operators propagating citrus as well as undertake organization of nurserymen to facilitate direct link to the Department of Agriculture in the implementation of regulations for registration and certification.

REFERENCES

