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Authors

Malaguti, Gino
Knorr, L. C.

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Psorosis in Venezuela—An Emendation

IN 1954, following a survey of Venezuelan citrus groves, Malaguti and Stoner (5) announced the presence of psorosis in the country. The original report that most types of psorosis are present in Venezuela rested on a comparison of symptoms in citrus groves with those described in the literature (1, 2, 3). Conclusions based on these comparisons are now considered specious in view of (a) subsequent observations by the senior author, (b) recent publications of various investigators (4, 6, 7), and (c) findings of the junior author during a visit to Venezuela in January and February of 1960.

Bark lesions of various types are common in Venezuelan citrus trees. Some resemble those described for psorosis "A." When, however, subsequent to 1954, trees bearing such bark lesions were examined periodically at different seasons of the year, none—regardless of type of bark shelling—developed young leaf symptoms of psorosis. Nor did such symptoms develop when buds from suspected trees were grafted into sweet-orange indicator plants.

Circular leaf spots in hardened leaves and in fruits were interpreted in the 1954 report as being the chlorotic spots described by Fawcett *et al.* (2) under mature leaf and fruit symptoms of psorosis "B." Circular spot came to attention originally in the citrus groves of the Escuela Practica at Maracay; since then the trouble spread in the same groves and became known in other citrus-growing areas of the country.

In 1956, to test the transmissibility of circular spot and to attempt confirmation of the diagnosis of psorosis "B," 16 seedlings each of sweet orange, sour orange, grapefruit, rough lemon, and sweet lime were

grafted with buds from sweet-orange trees affected by circular spot. A year later, circular spot was observed wherever the foliage of grafted plants was sweet orange (whether in the stock or in the scion), but failed to appear in any of the other varieties mentioned. This reappearance of circular spot in the foliage of stock portions of trees on sweet orange suggested at first the transmissibility of psorosis "B." Further inspection, however, revealed the presence of circular spot also in nearby sweet-orange seedlings that had never been budded, thus casting doubt on the relationship between circular spot and psorosis. Further inquiry into the nature of circular spot showed it actually to be *lepra explosiva*, the South American form of leprosis (4); confirmation lay in finding the causal *Brevipalpus* mites in association with circular spot and in controlling the further spread of the disease with applications of sulfur-containing acaricides.

The above considerations settle certain questions regarding psorosis in Venezuela; but they also raise additional ones. Why, for instance, have the immature leaf symptoms of psorosis not yet been observed in Venezuela—neither in the course of examinations by the first author extending over the past 6 years, nor during the survey made by the second author the early part of 1960 when the "spring" flush was in excellent condition for production of symptoms? It can hardly be imagined that psorosis virus has not yet been introduced into the country for, after all, much of Venezuela's citrus originated from importations of budwood from California, Florida, and other areas where psorosis is troublesome. Might it be that psorosis virus is inactivated under the high-temperature conditions prevalent in the tropics or that leaf symptoms are obscured or masked? In this connection, it would be interesting to learn the experience of others with psorosis in the tropics.

Conclusion and Summary

In view of the above considerations, much, if not all, of what had previously been described as psorosis in Venezuela is actually foot rot, crotch rot, Rio Grande gummosis, concentric canker, mechanical injury, and physiological gumming rather than psorosis.

The circular spots in fruits and hardened leaves, which were thought to be symptoms of psorosis "B," are now known to be symptoms of *lepra explosiva*.

There is as yet no evidence—whether of psorosis scaling, psorosis decline, flecking, or oakleaf patterns in grove trees, or from transmission

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studies with sweet-orange indicator plants in the greenhouse—to indicate that psorosis virus is present in Venezuela.

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