

# Similarity between Florida's Blight and Decline of Citrus in the Argentine Northwest

M. A. Gonzalez, M. A. Garcia, and R. J. Tan Jun

In 1974, in one of the citrus plantations in northwest Argentina in the province of Salta (Orán), some plants of Calderon sweet orange grafted on trifoliolate orange about 20 years old developed unusual symptoms. These plants showed symptoms of deficiency in zinc, magnesium, and manganese, small leaves, serious defoliation, dead branches and a progressive wilt that was partial or general. "Pitting" of bark and wood of the rootstock or the scion was observed, but was not consistently present. The isolated, affected plants did not cause the growers any concern. These plantations had been propagated from plants brought from Misiones province, and it could be the same disease that occurs in Misiones (Argentina) where it is called "declinamiento" or "marchitamiento repentino" from Uruguay, or "young tree decline" from Florida (2). Dr. Ralph Schwartz believed that it could be the same problem.

Considering the big loss that this decline caused in the places where it appeared and knowing that it might be spread by possible vectors or by buds, its immediate elimination was suggested. This work was delayed and it began appearing in young plants under 12 years of age. Three years after it was first observed in the original location, it was found 100 km away in Ledesma, Jujuy in Valencia orange trees, grafted on Cleopatra mandarin, 23 years of age. The plants were not eliminated and in a short time a large increase in Valencia trees on Troyer citrange with classic symptoms of wilt occurred. Because of a constant in-

crease in the disease, Troyer citrange is no longer being used as a rootstock in these areas.

To confirm the possibility that it could be the same problem as blight in Florida (USA), Dr. Heinz Wutscher, U. S. Department of Agriculture, analyzed samples sent from Tucumán, Salta and Jujuy by atomic absorption spectrophotometry to compare with the test for blight in Florida (USA).

## MATERIALS AND METHODS

The samples were from healthy and adjacent affected plants on the same rootstock and of the same age from different places of Tucumán, Salta and Jujuy. The samples of wood shavings were obtained using a zinc-free drill. A hole 2.5 cm deep and about 20 cm above the union was made. Bark was eliminated before collecting the wood. The samples were dried at 60°C for 48 hours before being sealed in plastic envelopes and sent to the U.S. Horticultural Research Laboratory at Orlando for analysis (6).

## RESULTS

All affected plants from Salta (Valencia and Calderon sweet orange on trifoliolate orange) show features characteristic of blight: elevated zinc, potassium, magnesium, and soluble phenols (Table 1) (4, 6). Samples from Jujuy (Valencia orange on Cleopatra mandarin) show the presence of blight though their values are not as high as in Salta. The first analysis from "El Naranjo" (Tucumán) yielded values which do not coincide with those typical of blight. The results from a recent analysis from Sauce Huacho (Tucumán)

TABLE 1  
ANALYSIS OF WOOD FROM DECLINING AND HEALTHY TREES  
FROM SALTA, JUJUY AND TUCUMAN

Location	Scion/rootstock	Age (Years)	Condition	No. trees	Zn (ppm)	K (%)	Mg (ppm)	Phenols (mg/g)
Tabacal, Salta	Valencia/trifoliolate	10	Decline	3	4.0	0.287	756	5.60
			Healthy	2	2.0	0.205	448	2.80
Tabacal, Salta	Calderon/trifoliolate	20	Decline	2	7.5	0.295	534	6.00
			Healthy	2	3.0	0.217	449	3.30
Tabacal, Salta	Valencia/trifoliolate	20	Decline	2	4.85	0.337	—	4.48
			Healthy	5	1.94	0.187	—	1.74
Tabacal, Salta	Valencia/trifoliolate	20	Decline	2	4.85	0.223	—	4.30
			Healthy	1	2.80	0.140	—	3.30
Tabacal, Salta	Valencia/sweet	25	Decline	2	3.60	0.230	—	3.65
			Healthy	2	1.90	0.123	—	2.60
Yuchan, Jujuy	Valencia/Cleopatra	23	Decline	22	2.55	0.152	398	—
			Healthy	13	1.05	0.111	305	—
El Naranjo, Tucumán	Valencia/Troyer	15	Decline	7	1.85	0.161	338	4.08
			Healthy	7	1.71	0.133	338	4.91
Sauce Huacho, Tucumán	Valencia/Cleopatra	25	Decline	2	4.05	0.138	—	3.05
			Healthy	2	2.30	0.137	—	2.55

yielded values with great similarity to "marchitamiento repentino" but lower than for blight in USA, Cuba, and Brazil (1, 3). Results shown in table 1 show decline in plants on sweet orange rootstock. In Brazil, disease incidence has been low on sweet orange rootstock.

### CONCLUSION

According to the results obtained in Tucumán, Salta and Jujuy, we think that there is a similarity between the decline in

plants in northwest Argentina, blight in Florida, the rapid wilt from Uruguay, and with the decline in Misiones (5), although we are still working to confirm this.

Considering the potential danger of the disease to northwestern Argentina, especially because of susceptibility of rootstocks used in the area, it is urgent to continue the research to understand and characterize the disease and to avoid its spread to other areas that are free of this problem.

### LITERATURE CITED

1. COHEN, M., and H. K. WUTSCHER  
1977. Diagnosis of trees with citrus blight (YTD). Proc. 1977 Int. Soc. Citriculture 3: 884-886.
2. DuCHARME, E. P.  
1972. Tree loss in relation to young tree decline and sandhill decline by citrus in Florida. *The Citrus Industry* 53(5): 15-17, 20-21.
3. SALIBE, A. A., J. C. TUCCI, P. B. GIRARDIN, and H. G. CAMPIGLIA  
1976. "Marchitamiento repentino", an infectious disease of citrus trees. p. 152-156. *In Proc. 7th Conf. IOCV. IOCV, Riverside.*
4. SMITH, P. F.  
1974. Zinc accumulation in the wood of citrus trees affected with blight. Proc. Fla. State Hort. Soc. 87: 91-95.
5. WUTSCHER, H. K., H. G. CAMPIGLIA, C. HARDESTY, and A. A. SALIBE  
1977. Similarities between marchitamiento repentino disease in Uruguay and Argentina and blight of citrus in Florida. Proc. Fla. State Hort. Soc. 90: 81-84.
6. WUTSCHER, H. K., M. COHEN, and R. H. YOUNG  
1977. Zinc and water-soluble phenolic levels in the wood for the diagnosis of citrus blight. *Plant Dis. Rep* 61: 572-576.