

Abstract

INFIELD YIELD VARIATION OF CITRUS IN TRINIDAD

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The ratio of high, medium and low orange, tangor and mandarin yield levels within fields suggests that substantial yield increase can occur by improving the performance of low and medium yielding trees in any field. The factors that influence the variability needed elucidation in order to make recommendations for this transition.

This study sought to investigate the relationship of yield with some factors that influence production. These included nutritional, morphological, phenological and physiological factors and the effect of pests and diseases.

The study was started in 1995 with field investigations being conducted at Todds Road citrus estate in central Trinidad. Yield pattern, level and attendant fruit quality of 'Valencia' orange (*Citrus sinensis* [L.] Osbeck), 'Portugal' mandarin (*C. reticulata* Blanco) and 'Ortanique' tangor (*C. sinensis* x *C. reticulata*) are presented and discussed.

The dominant patterns of yielding were irregular and alternating and only the 'Ortanique' plot showed, additionally, a pattern of trees giving low yields consistently. This cultivar had a high proportion of citrus tristeza virus (CTV) infected trees which reduced yield. Greasy spot (*Mycosphaerella citri* Whiteside) disease index showed a weak but significant negative relationship with yield of

'Valencia' and 'Ortanique'. While footrot symptoms were more prevalent in 'Valencia' and 'Ortanique' initially, their presence was followed by high tree death in 'Portugal' mandarin only.

Nutritional studies indicated widespread deficiency of Ca, Mg, Fe, Zn and Mn at all yield levels. Percent fruit set was associated with the Ca/Mg ratio in 'Portugal' mandarin leaves as well as foliar concentration of Cu in 'Valencia' orange and 'Portugal' mandarin. The most commonly derived relationships of nutrition and fruit quality were the negative relationship of leaf N concentration with fruit weight in 'Valencia' orange and 'Portugal' mandarin and a positive relationship of leaf Mn concentration with peel thickness of 'Portugal' mandarin.

High leaf ammonia level in May was followed in July with a lesser secondary elevation which showed limited evidence of a positive relationship with off-season fruit count.

It is concluded that several factors including physiology (drought stress) and diseases contributed to overall yield reduction but that nutritional factors accounted for most of the within-field yield variation.