

## Cristacortis and Impietratura

### Effect of Cristacortis on Growth and Productivity of Tarocco Sweet Orange

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CITRUS IN ITALY is budded almost entirely on sour orange rootstock, a rootstock very intolerant of cristacortis virus irrespective of the scion. Furthermore, cristacortis is widespread in Sicilian citrus. These considerations led us to investigate the effect of cristacortis on growth and production of citrus trees.

#### *Procedures and Results*

Plots of Tarocco sweet orange trees on sour orange rootstock, of different ages in several locations, were selected for study. They were as follows.

*Plot A.*—310 trees in a grove near Scordia; in a clay-calcareous soil with a tendency to compact; spacing 5 m × 5 m; trees 16 years old when the data were collected in 1966.

*Plot B.*—132 trees in a grove named Palazzelli; in deep loam soil; spacing 5 m × 5 m; trees 6 years old when data were collected in 1967.

*Plot C.*—69 trees in Palazzelli; in

deep loam soil; spacing 5 m × 5 m; trees 8 years old when data were collected in 1967.

*Plot D.*—113 trees in Palazzelli in sandy loam soil; spacing 4 m × 6 m; trees 11 years old when data were collected in 1968.

The trunk and branches of each tree in the plots were inspected for symptoms, and the trees were accordingly designated as being affected or not affected by cristacortis. The trees were not indexed for other viruses.

In plot A the growth of the trees was measured by evaluating the size of the canopy. The data (Table 1) revealed a correlation between reduction in tree size and incidence of cristacortis,  $r = 0.994 \pm 0.004$ , which is significant at the 0.01 level.

In plot B the circumference of the trunk 15 cm below the bud union averaged 18.3 cm for 66 affected trees and 19.8 cm for 66 nonaffected ones. The difference, 1.57 cm, or 8 per cent, was significant at the 0.01 level.

TABLE 1. EFFECT OF CRISTACORTIS ON THE SIZE OF TAROCCO SWEET ORANGE TREES

Class	Number of trees		Percentage of trees affected	Relative canopy size
	Affected	Not affected		
Vigorous	12	71	14.4	1
Normal	35	62	36.0	3/4
Subnormal	62	22	73.8	1/2
Stunted	45	1	97.8	1/4
Total	154	156	49.7	

TABLE 2. EFFECT OF CRISTACORTIS ON YIELD AND FRUIT QUALITY OF TAROCCO SWEET ORANGE TREES

	Affected	Not affected	Significance
Age of trees (years)	11	11	
Number of trees	31	82	
Trunk circumference (cm) <sup>a</sup>	37.8	40.6	c
Yield (kg)	57.6	74.5	c
Number of fruit per tree	371.8	531.2	c
Weight of fruit (average)	157.4	144.4	b
Total soluble solids/acid	9.90	8.3	c

a. Measured 15 cm below the bud union.

b. Significant at the 0.05 level.

c. Significant at the 0.01 level.

In plot C the average production of 23 affected plants was 10.86 kg; that for 46 nonaffected plants was 13.84 kg. The difference, 2.98 kg, or 21.5 per cent, was not statistically significant.

From the data of plot D (Table 2), it is apparent that cristacortis significantly affects yield and quality of fruit as well as tree size (circumference). However, the reduction in growth seems to decrease with age

of tree, the percentage reduction in trunk circumference being 6.8 per cent in 11-year-old trees but 8 per cent for trees 6 years old. The reduction in yield was due to a decrease in number of fruit—the average fruit on affected trees was actually larger. The higher maturity ratio (solids/acids) of affected trees is probably the result of a girdling effect of the disease, which slows the movement of elaborated food.