

sponds well with results of an experiment carried out in an Indian River Valencia orange grove with similar soil (5).

There exists no entirely satisfactory method of leaf, soil, or fruit analysis by which the nitrogen status of a tree may be satisfactorily determined. The nitrogen status of citrus trees in soils such as used in this experiment is heavily dependent upon weather conditions. It is suggested that Indian River growers compare their current nitrogen programs, for grapefruit groves on soils similar to the one used in this experiment, with the 116-pound figure found to be optimum on this site. If a distributor throwing fertilizer into the water furrow is used, proportionate increase in rate should be considered. Observations on foliage, fruit color, and tree condition will thereafter be the best guide to further adjustment of the nitrogen program in each specific grove. Optimum fresh fruit quality was obtained from trees having only moderate green leaf color, and not those intensely green.

SUMMARY

An experiment concerning the nitrogen fer-

tilization of Marsh grapefruit trees on a hammock soil in the Indian River area was conducted over a seven-year period. The optimum rate of nitrogen under the conditions of the experiment appeared to be approximately 116 pounds per acre per year.

Arsenic was found to be equally effective at all nitrogen rates used in the experiment.

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RECENT DEVELOPMENTS IN PRUNING CITRUS

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Pruning of deciduous fruit trees is a common horticultural practice. However, until recently very little pruning of citrus, other than sprouting or dead wood removal, has been practiced in this country. There has been little research in Florida relative to the responses of mature bearing citrus trees to pruning.

Early work in California by Hodgson (2) with young mature trees indicated pruning to be of dubious value, but he conceded that pruning might be useful in rejuvenating old trees. During the past decade, hedging and topping of lemons and oranges in California have been reported (3, 4) highly beneficial

and are becoming a common practice. Rather severe pruning has been intensively practiced on citrus in Spain for many years. Bowman (1) reports that research in Australia showed a favorable response with lemons and mandarins to thinning-out pruning and that citrus trees were successfully rejuvenated by cutting back entire trees to limbs about two inches in diameter.

As Florida plantings have become crowded, as the cost of land has skyrocketed, and as harvest labor has become scarce, the need to investigate the influence of pruning on rejuvenating old trees and on facilitating management and harvesting has become not only apparent but imperative.

The development of the hedging machine by Prosser (6) served as an immediate solution for facilitating grove management and, as pointed by Norris (5), hedging possibly increases yield and external quality of some varieties. However, more research is needed to substantiate this.

In 1958, comprehensive research was initi-

ated concerning the responses of citrus to pruning, pruning procedures to facilitate harvesting and grove management, and the testing and development of mechanized pruning equipment. This paper is a progress report of some of the work conducted to date.

PROCEDURES

Citrus Experiment Station Block IX.—This experiment was designed to study the response of crowded grapefruit trees to various types of pruning. The trees are 30 years old and spaced 25 by 25 feet. The initial pruning was done during March 1959, using pneumatic high-speed circular saws or other hand equipment. Treatments consisted of 1) unpruned check; 2) hedge on four sides and top at 15 feet; 3) narrow hedge to a tree six feet wide (fan shape) and top at 15 feet (Figure 1); 4) hedge four sides; 5) hedge two sides. The hedge treatments consisted of hedging cuts made nine feet from the trunk at the lower portion of the canopy and slanting inwardly to seven and one-half feet at the 20-foot height. All cuts over one inch in diameter

were painted with a water base asphaltum pruning compound. Each treatment was replicated four times and each plot contained six trees. With the exception of the unpruned checks, the pruning treatments were not buffered but were so placed to provide maximum protection from the influence of adjoining plots. The trees of Treatment 3 have received an annual pruning to maintain the six-foot width and 15-foot height. The experiment was complicated by having four varieties of grapefruit, Duncan, Excelsior, Walters and Marsh, uniformly present in each treatment of each replication. The varieties are on rough lemon rootstock.

Minute Maid Lynchburg Groves.—With the preliminary observations from the previous experiment as bases for further study, two fairly comprehensive experiments were established in early 1960 on 45-year-old Duncan grapefruit and 60-year-old Valencia oranges on rough lemon rootstock. The spacing in each block is 18 by 24 feet and the trees were severely crowded and canopied. The produc-

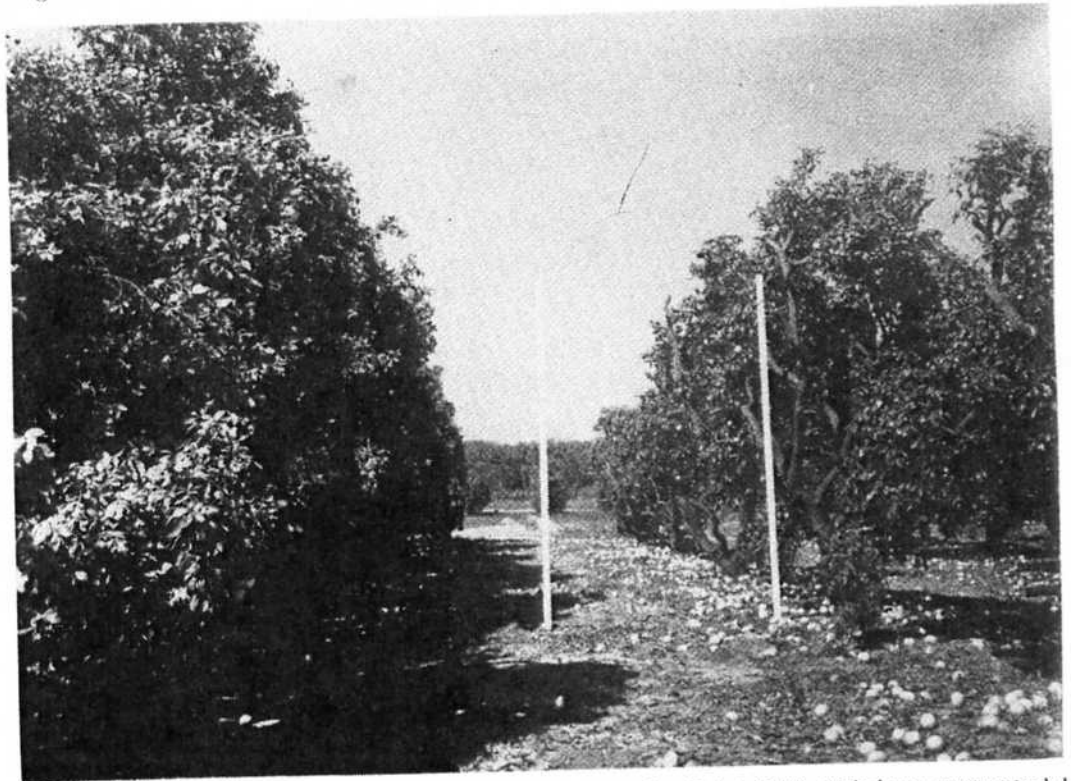


Figure 1. Narrow hedged grapefruit trees six feet wide and topped at 15 feet (right). Original tree canopy extended to the white stake in the center of the photograph. Trees on left hedged on two sides; note sloping cut.

