



# your Lake County HORTICULTURAL NOTES

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KIWIFRUIT UPDATE  
September 1990

## USING TOTAL SOLIDS TO MEASURE KIWIFRUIT MATURITY

For the past three seasons, Extension Post-harvest Specialist Gordon Mitchell has been developing an improved kiwifruit harvest maturity index. The currently used harvest soluble solids (HSS) fails to accurately predict ripe fruit quality after storage. This is because HSS is a "moving target", and only accounts for soluble solids content (e.g. sugars, acids, etc.) at the particular moment of measurement. Insoluble solids, e.g. starches, convert to sugars as fruit ripens, thus final maturity cannot be predicted well at harvest.

Mitchell has found that total solids (TS), or dry weight, measured in the field, more accurately correlates with ripe fruit soluble solids (RSS), which is the final indicator of fruit quality. RSS represent a large proportion of TS, thus there is a closer relationship. The relationship holds well between seasons and among growing areas. Also, unlike HSS, which can only be measured at harvest, TS and RS can be measured at harvest or after up to 6 months.

This season, the California Kiwifruit Commission is performing field tests relating TS at harvest to RSS in order to determine if the method may be practically used commercially and to begin to establish standard levels based on stored fruit quality. The key to practical application is a workable method for sampling TS. Currently, samples must be weighed, dried in a microwave oven, and then re-weighed, which takes over 1 hour. If 1) a practical method is found and 2) minimum TS levels are decided upon, then an accurate, predictable maturity index will have been found.

For more details on Mitchell's research, contact me for a copy of his 1989 report presented at the Kiwifruit Industry Annual Meeting held January 26 in Monterey. Also, see the November 1989 Hort Notes Kiwifruit Update for a description of how the TS sample is taken.

For current criteria used to schedule harvest, see October 1988 Hort Notes Kiwifruit Update or contact me.

## KIWIFRUIT NUTRITIONAL NEEDS AND RELATIONSHIPS

Nutritional thresholds for California are beginning to be developed. Emphasis of research is on nitrogen, potassium and chloride especially in relationship to storage quality. In addition to collecting baseline data in California, Extension Specialist Scott Johnson has been gathering information from various kiwifruit producing regions. Here is "food for thought" in considering your own nutritional needs:

Nitrogen - Leaf nitrate levels appear to vary widely at harvest. Post-harvest Specialist Gordon Mitchell is finding that, as in many fruit crops, fruit storage life decreases as nitrate level increases. This agrees with New Zealand findings, although fertilization studies have so far failed to correlate with post-harvest performance.

Potassium - Kiwifruit vines apparently remove 65 lbs. K per acre per ton fruit harvested, or 45 lbs. K per 2000 trays. July 1989 levels in 10 California vineyards averaged 1.0 - 1.5%, which is considered marginally deficient. New Zealanders apply K to replenish vine needs.

Boron - New Zealand has found that excess boron may also shorten storage life.

Nutritional deficiency and excess levels are now being correlated with symptoms in California. Growers who are interested in sampling for nutritional status should contact me.

## FACTORS AFFECTING FRUIT SIZE

Researchers in New Zealand found that several factors determined fruit size:

- more seeds (adequate pollination) mean larger fruit
- if number of seeds are equal; larger fruit are obtained from:
  1. long, vigorous laterals
  2. earlier-opening blossoms
- heavy crops inhibit growth of fruit with few seeds (under-pollinated).

PUBLICATIONS OF INTEREST (contact us)

\* = new UC publication

1) Actinidia Enthusiasts Newsletter (\$10.00/copy)

contact: Friends of the Tree Society  
Post Office Box 1466  
Chelan, WA 98816

\*2) Kiwifruit Pest Management Guidelines

UCPMG Publ. #20 13 pp. 65 cents

Specific identification/monitoring/control guidelines for insects, diseases, nematodes and weeds. A MUST!

\*3) The Kiwifruit: A Home Gardeners Guide

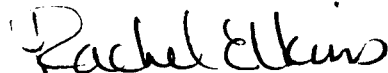
UCDANR leaflet #21469 14 pp. \$1.50

Sections on climate/bearing, pollination, varieties, propagation/nurseries, planting, soil, water, fertilization, training, pests, harvest, storage and food value.

IMPORT/EXPORT STATUS

Major kiwifruit producers face stiff competition for markets around the world. "Horticultural Products Review, April 1990, provides a detailed synopsis of the production and market opportunity status of 13 kiwifruit import/exporting nations. THIS IS VERY INTERESTING READING! Contact our office for a copy.

Sincerely,



Rachel Elkins  
Farm Advisor