

Nitrogen and Crop Level Effects on

CANNED FREESTONE PEACH QUALITY



L. C. BROWN • E. L. PROEBSTING

In comparing nitrogen levels, peaches from highly fertilized trees (240 pounds nitrogen per acre) were rated lightest in color and best in appearance by the taste panelists. In comparing crop production levels, panelists rated peaches from the medium crop production trees (1200 peaches per tree) to be the lightest in color and have the best appearance.

These taste panel observations concluded a study conducted in 1959 and 1960 to determine what effect various levels of nitrogen and tree production have on the eating quality of canned freestone peaches. An 18-year-old Elberta orchard north of Hanford in Kings County was selected for the experiment. The previous yield records of the orchard were high, varying from 18 to 24 tons per acre.

Three nitrogen levels were established on certain trees, the rates used were 40#, 140# and 240# of nitrogen per acre. Three crop levels were maintained on the same trees during the two-year period. The crop levels were 600, 1200, and 1800 peaches per tree. By varying the three nitrogen levels and three crop levels, a total of nine combinations of crop and fertility levels were established.

Measurements of the peaches were obtained both years as they were harvested to provide an indication of the type of fruit being canned and the effect of the nitrogen and crop level upon the raw product. In both years of this experiment, the largest diameter fruit (measuring 50 peaches per tree) was obtained from the medium fertility plots of 140# nitrogen per acre.

Fruit size was also affected by crop level. The largest fruit came from the low crop trees and decreased in size as the crop level increased. The 1960 Elberta crop was canned and evaluations were made seven months later.

Acidity, soluble solids and color were determined on the canned product. To determine acidity, peaches and juices were blended and filtered. The acidity was found to be highest from the high fertility trees and in the peaches from the low crop group (600 peaches per tree). Soluble solids were highest in fruit from the medium crop trees (1200 peaches per tree) and the medium fertility group (140 pounds of nitrogen per acre).

Color of the canned freestones was measured objectively by the Gardner color meter to compare with taste panel results. All of the samples, regardless of nitrogen or crop level, made choice grade in color, according to the U.S.D.A. grading system. Researchers have found that the color meter has been less sensitive to color changes than the human eye.

Firmness, which is a measure of maturity, was highest both years on fruit from trees with a small crop (600 peaches per tree)—indicating that trees with a light crop would have more immature fruit at a certain date than trees with a normal or heavy crop.

Leaf samples

Leaf samples were taken three times during the growing season. The late June, or midseason sampling, was taken as being representative of the nitrogen uptake of the trees. The percentage of nitrogen in the leaves of the low fertility trees was 2.67 per cent; in the medium fertility trees 2.75 per cent and in the highly fertilized trees 3.19 per cent. There was no significant difference between nitrogen uptake in the low and medium fertilizer plots. However, there was a significant difference between nitrogen uptake in the highly fertilized trees as compared to the other two treatments.

The percentage of nitrogen uptake by the plant, as indicated by leaf nitrogen,

Color and appearance of canned freestone peaches are affected by fertility levels and crop production levels according to taste panelists at Davis. Crop and fertility levels were also found to influence the size, soluble solids, acidity and firmness of the freestone peaches.

was related to the amount of nitrogen applied to the trees. When comparing nitrogen percentage of the leaf to crop production, it was found that the nitrogen percentage was inversely related to the crop level. As the crop production level increased on the tree, the nitrogen percentage in the leaf decreased.

Lyndon C. Brown is Farm Advisor, Kings County, University of California. E. L. Proebsting is Professor of Pomology and Pomologist in the Experiment Station, University of California, Davis.

AVERAGE SCORES BY THE TASTE PANEL OF THE CANNED FRUIT

(Values are Mean Scores of 8 Samples Each Evaluated by 5 Judges)

	FERTILITY LEVEL			Sig. Level
	Low (40# N/A)	Medium (140# N/A)	High (240# N/A)	
Color	6.63	6.68	6.12	1%
Appearance ..	5.26	5.06	5.81	.1%

	CROP LEVEL			Sig. Level
	Low (600 fruit/tree)	Medium (1200 fruit/tree)	High (1800 fruit/tree)	
Color	6.70	6.25	6.80	5%
Appearance ..	5.06	5.54	5.26	.1%

Color	Appearance
0 = Very pale yellow	0 = Poor
5 = Yellow	5 = Fair
10 = Deep orange yellow	10 = Very good