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Determining the Optimum Time to Pick Gwen

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Predicting optimal harvest dates is about as complicated as predicting weather. The situation is made still more complex by the need to respond to market demand and maximize dollar return. With only two years' market exposure, handlers of Gwen have been hesitant to recommend picking dates, uncertain of both fruit quality and best dollar return.

Basic Picking Season

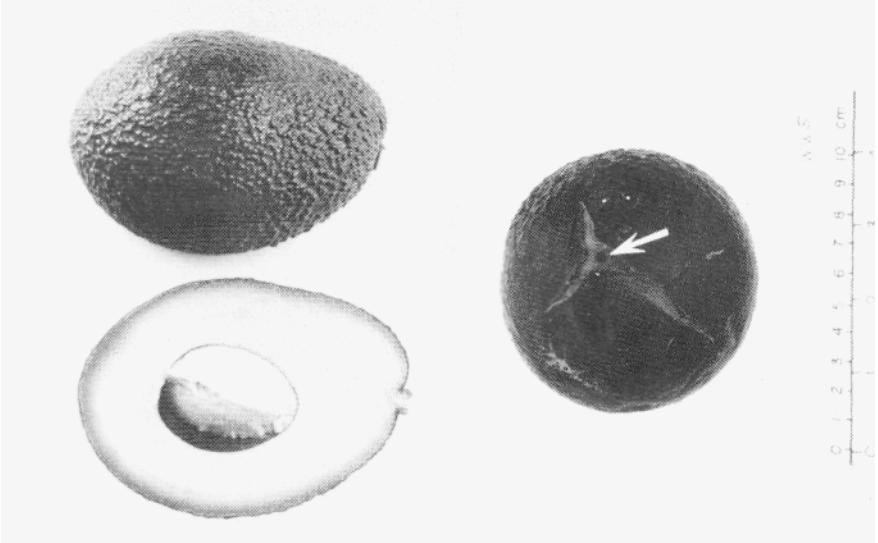
Initial U.C. Gwen maturity date recommendations were given cautiously, as Bergh *et al.* (1985) suggested that it "reaches palatable maturity about the same time as Hass." Later, this was redefined by the Gwen Growers' Association. In the fall 1988 second edition of 'The Gwen Avocado — a primer for interested growers,' the Association writes: "The Gwen harvest season starts later than that of Hass and tentatively begins April 15 in inland San Diego County. ... At the other end of the picking period, it has been reported to hang up to two months longer than Hass.". . .

How Early?

This autumn (1988), many new crop Gwens were unusually large-fruited. Moreover, a Pauma Valley grower reported "mature" dry weight levels in early December — four months ahead of "schedule." What happened?

In the first place, early edible maturity of Gwen is nothing new. Over the last 10 years or so, we have found it to be good to eat usually by mid-February, and acceptable about early January. But its stiffer skin causes it to crease objectionably during early-season ripening, unlike Hass fruit. Because skin creasing is objectionable, it can also safeguard substandard fruit from reaching the consumer. A similar case can be made for green-skinned fruit showing ugly blemishes, rots, and bruises, subsequently culled before the point of sale, resulting in consumer protection. The contrast is with ripening dark-skinned fruit that can hide indications of deterioration. Both skin creasing and green skin discoloration are "bad" features that have good quality-control benefits.

The second current reason for early Gwen maturity is that this 1988-89 crop season happens to have exceptionally early general maturity, presumably due to exceptional weather. Earlier maturity may be accompanied by larger fruit size; larger fruit size can also result from better tree care.



Factors influencing picking time. ***Upper left:*** *Gwen fruit picked February; has brown seed coat and will taste fine, but flesh is still pale and skin will likely crease on ripening.* ***Upper right:*** *WW5 fruit with blossom and cracks and arrow pointing to root tip of germinating seed; not dropping but clearly past its picking season.* ***Lower:*** *Gwen nursery tree planted May 1984, photographed November 1985; has suffered water stress - fruits will likely drop early and may have inferior quality.*

So, how early should Gwen fruit be picked commercially? About April 1 seems to us a safe general recommendation. Especially when introducing a new variety, it is best to err on the side of caution, so that the variety is not rejected because of judgment based solely on fruit that is either under-mature or over-mature. (For example, in the 1944 Yearbook, the California Avocado Society's Committee on Varieties gave the season of

the new Hass variety as "May - July" — yet now it is harvested nearly year-round.)

The suggested April 1 basic recommendation will have to be confirmed by extensive testing. The Avocado Inspection Service plans to begin such testing of Gwen in 1989. Several years' results will be needed for a final determination. Such year-to-year variation as exists means that it will never be possible to give a permanent specific starting date; but a dry weight standard should be possible.

How Late?

This last year (1988), Gwen caught the interest of some San Diego handlers because of its outstanding fruit quality late in the summer season. Its fruit exhibited good tree storage with acceptable drop and little or no taste-discernible over-maturity of the flesh. There was industry speculation that Gwen might provide a valuable link with early-maturing new crop Pinkerton (or Hass) and therefore earn independent recognition apart from its label as a Hass competitor.

How long can the Gwen be safely left on the tree? This is a different question. There are two limitations for avocados: fruit drop, and the development of objectionable flavor ("off, "cheesey", "unpleasant"). With regard to the latter, a number of people report finding Gwen superior to Hass. The Gwen seems slower to develop late-season rancidity.

Fruit drop is a different matter. The Gwen, perhaps because it tends to have huge production, tends to have ongoing fruit drop. This is not always the case; better tree management reduces it, and it may become insignificant as we learn Gwen tree-care needs. For now, we have one or two reports that Gwen hangs no longer than Hass, and several reports that Gwen fruit both hangs longer and stays in better condition.

Taste Tests

Taste performance records for Gwen are available beginning the summer of 1976. At that time, Gwen was known as T225 and was one of several dozen selections routinely monitored. Beginning fall of 1979, comparative ratings were made with the Hass standard. Samples consisted of 3-6 fruits that best represented the average crop condition. Harvests were made irregularly year-round, at the South Coast Field Station, from trees and fruit subjected to the normal vagaries of seasonal heat, cold, wind, and sundry problems.

In the past 10 years, a total of 74 joint-evaluations of Hass and Gwen were recorded in detail for characteristics of size, peel, internal and external appearance, flavor, and unusual points of interest.

In connection with the comparative seasons of Hass and Gwen, the senior author of this paper examined all University of California fruit evaluations where the two varieties were both rated. This yielded a large number of head-to-head contrasts. The ratings were by Bergh, sometimes with an assistant, on fruit with non-commercial storage and handling. The flavor ratings (Poor to Very Good) were converted to numerical values which gave monthly averages. These averages were then plotted on axes whose coordinates are

flavor over time. Least-squares polynomial regression analysis then yielded the curves of Figure 1, with:

$$\text{Hass} = 3.12 + 1.18\,(x) - 0.0929\,(x^2)$$

$$\text{Gwen} = 2.86 + 1.10\,(x) - 0.0698\,(x^2)$$

The parabolas are statistically very highly significant: R-square values were 75.6% for Hass and 78.2% for Gwen.

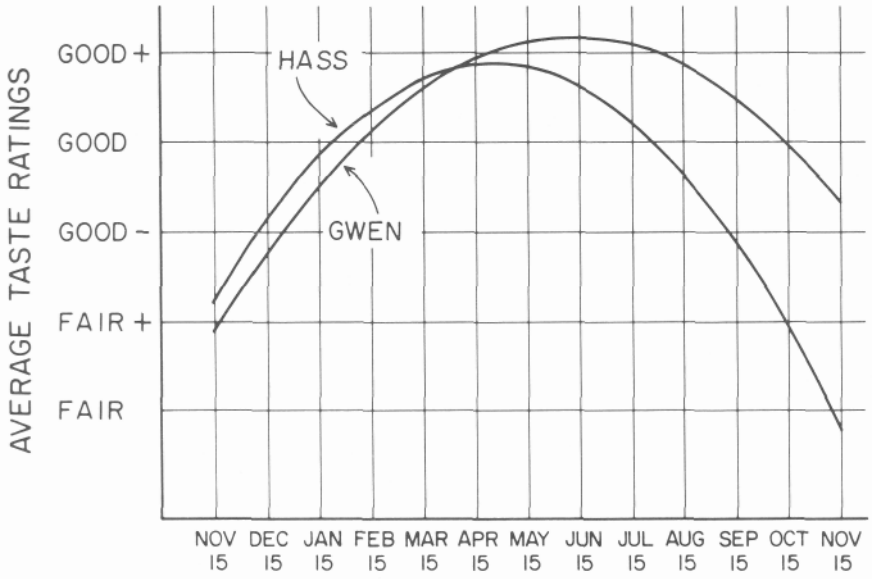


Figure 1. Average monthly taste test comparisons of Hass and Gwen, as computer generated curves that best fit the raw data. (S.C.F.S. 11/79 - 11/88).

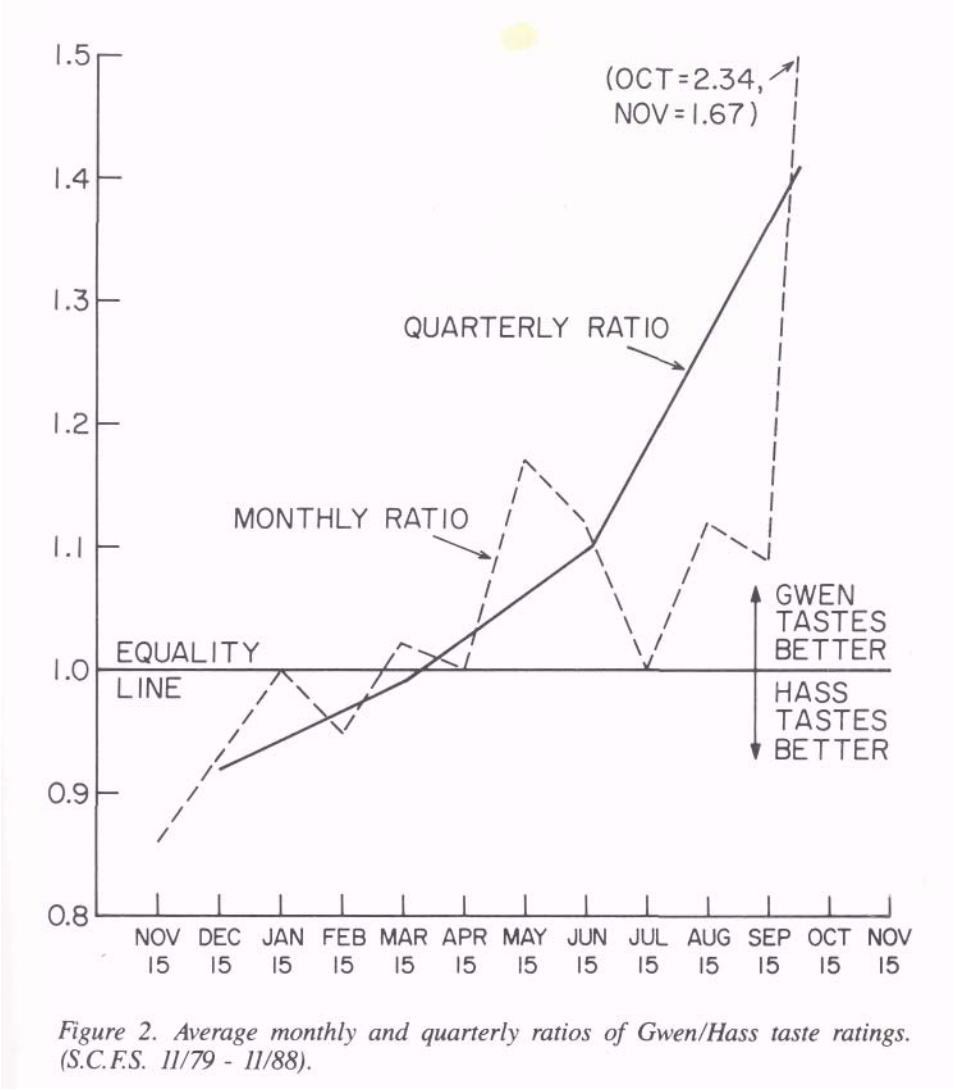


Figure 2. Average monthly and quarterly ratios of Gwen/Hass taste ratings. (S.C.F.S. 11/79 - 11/88).

Figure 1 clarifies some interesting observations. The long-term flavor rating averages show:

Hass

1) Reached what we consider acceptable flavor (good-minus) by mid-December and was above that level for about 9 months. (This turns out to approximate the Hass harvest period for the S.C.F.S. region as published by the Variety Committee of the California Avocado society [1988]).
2) Had "good" flavor by February 1 and maintained that rating about 6 months.
3) Reached maximum quality about May 1.

Gwen

1) Reached acceptable flavor about January 1 and maintained that level

about 11 months. (But note that it will probably have objectionable skin creasing in the early part of this period.)

2) Had "good" flavor by mid-February and maintained such for about 8 months.

3) Reached maximum quality about mid-June.

4) Was given our highest "good-plus" monthly average rating for over 3 months.

5) Came up to Hass quality at about the April 1 date when early- season Gwen harvest is recommended, and thereafter is increasingly superior.

In Figure 2, a variety ratio was obtained by dividing the Hass mean into the Gwen mean for that month. So values below 1.0 indicate that Hass was rated superior to Gwen; values above 1.0 indicate the reverse. The monthly ratios in Figure 2 are disconcertingly erratic. This is presumably a result of both fruit variability (by season, tree, fruit-to-fruit) and human taste variability (time of day, previous food consumption, etc.).

These variabilities are largely balanced out by quarterly averages: the heavy line in Figure 2. This shows that for the November - January quarter, Hass is clearly superior. For the quarter February through April, the two varieties are approximately equal in flavor. The May - July quarter has Gwen clearly superior. The final four month "quarter" greatly increases the Gwen advantage.

Literature Cited

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2. Variety Subcommittee, California Avocado Society. 1988. Avocado varieties for commercial planting in California 1988. California Avocado Soc. Yrbk. (1987) 71: 39-47.