'Lamb Hass' Maturity and Fruit Quality Study

Continuing Project; Year 2 of 3

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Benefit to the Industry

This project will develop the database that can used to determine the minimum maturity standard for the 'Lamb Hass' cultivar. Simultaneously, we will also collect information on the comparative ripening and storage characteristics of the 'Lamb Hass' at various points of the commercial season. This information will help both growers and packers to develop harvesting and marketing plans for the variety. In this way, we can hopefully insure that the maximum profitability for the variety can be achieved.

Objectives

A. Assess changes in dry matter content of 'Lamb Hass' avocado throughout the season as compared to 'Hass' from varying growing conditions.
B. Assess changes in postharvest fruit quality of 'Lamb Hass' avocado as the season progresses as compared to 'Hass' from varying growing conditions.
C. Develop maturity release date for 'Lamb Hass'.

Summary

In December 1998 the Avocado Inspection Committee of CAC initiated a 3-year project to develop an information base on the changes in dry weight over the commercial season for both 'Hass' and 'Lamb Hass'. This information will be used to develop recommendations to growers and packinghouse personnel on how the 'Lamb Hass' should be handled in comparison to the

'Hass'. Below we present our observations from the first year of the project and a summary of the trends in dry weight that we observed in 2000. We have just finished data collection for 2000 and the data is now being entered for statistical analysis and summary. We will present this information at a later date.

Methodology. We identified grower cooperators in the field who allowed us to visit their groves approximately every 3 weeks for dry weight sampling and every 6 weeks for storage sampling. A 7 fruit sample of each variety was taken from a selected group of trees at each sampling time for dry weight determination. An approximately 150 fruit sample was used for the storage evaluation. The fruit was sized picked each time so that a uniform fruit sample could be obtained. We targeted a 6.5 to 8.5 ounce 'Hass' and a 10.5 to 12.5 ounce 'Lamb Hass' for all sampling. The dry weight sample was taken to UC, Riverside for determination on an individual fruit basis. The storage sample was taken to the UC Kearney Agricultural Center in Parlier for subsequent evaluation. We completed the first year of fruit sampling in September 1999 and the second year in August 2000. The first year of sampling included 5 sites for dry weight changes and 3 sites for postharvest fruit quality evaluation. The sites in the first year (1999) were located in Somis, Camarillo, Rancho California, Fallbrook and Bonsall. The 7 sites in the second year (2000) were located in Somis, Moorpark, Rancho California, Irvine, Fallbrook (2 sites at same ranch) and Bonsall. In 2000 we stored fruit from 2 sites (Fallbrook and Irvine).

Dry Weight Determinations. We found that although the absolute dry weight between the two varieties differed significantly from each other at each sampling date the dry weight for both varieties increased at the same rate over the season. Figure 1 shows the changes in dry weight of 'Hass' versus 'Lamb Hass' averaged across all sampling sites for the 1999 fruit season. Figure 2 shows the data for 2000. It is clear from both of these figures that throughout the season the 'Hass' had consistently higher dry weight at a particular sampling date as compared to the 'Lamb Hass'. These trends were similar at all sampling sites.

Storage behavior of the 2 cultivars. Probably the most significant result from 1999 was the observation that the 'Lamb Hass' consistently takes longer to ripen than the 'Hass' variety (Figure 2). This difference was apparent for all harvests especially when the fruit was not stored prior to ripening. Even though ethylene stimulated ripening in the 'Lamb Hass' the fruit still took longer to ripen as compared to the 'Hass'. Other differences we noted but were not able to quantify in this first year included the appearance of "strings" in the flesh of the ripe 'Lamb Hass' in the early part of the season and greater difficulty in determining by "finger" pressure when the fruit was ripe. We looked at these characteristics more closely during the second year of this project.

Sensory evaluation. We conducted 6 tests to ascertain whether an untrained taste panel could detect differences in the flavor of 'Hass' versus 'Lamb Hass' in 1999. Results show that in 4 of the tests the panel could detect a difference between the two cultivars ($P \leq 0.05$). This was not a preference test but rather we determined differences in the perception of flavor between the two varieties. We also conducted similar evaluations in 2000.

What does this data mean so far? The data collected thus far highlights that although similar in fruit appearance, the differences in the 'Lamb Hass' and 'Hass' go far beyond the apparent

differences in tree vigor and growth habit. Our preliminary results strongly suggest that the 'Lamb Hass' should be treated as a distinct variety in handling and marketing.

Figure 1. The average dry weight (%) for all sampling sites in 1999 for 'Lamb Hass' and 'Hass'.

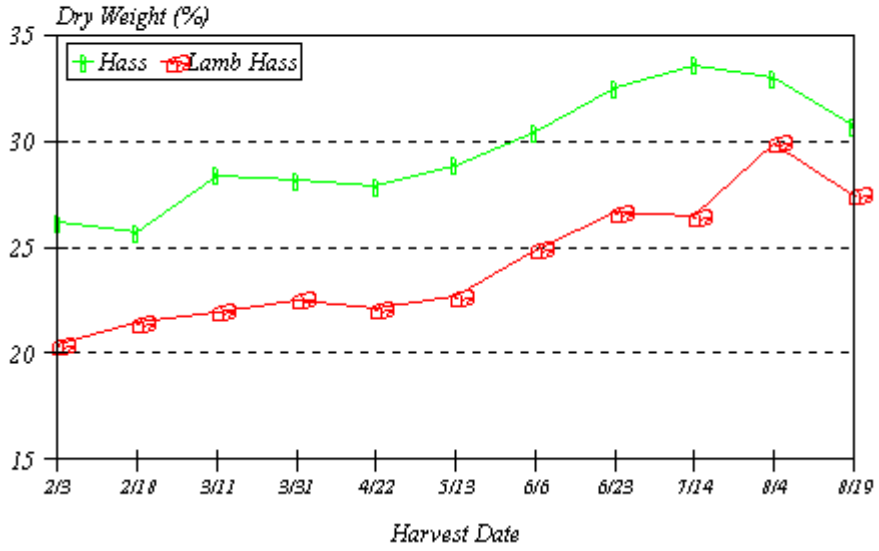

Figure 2. The average dry weight (%) for all sampling sites in 2000 for 'Lamb Hass' and 'Hass'.

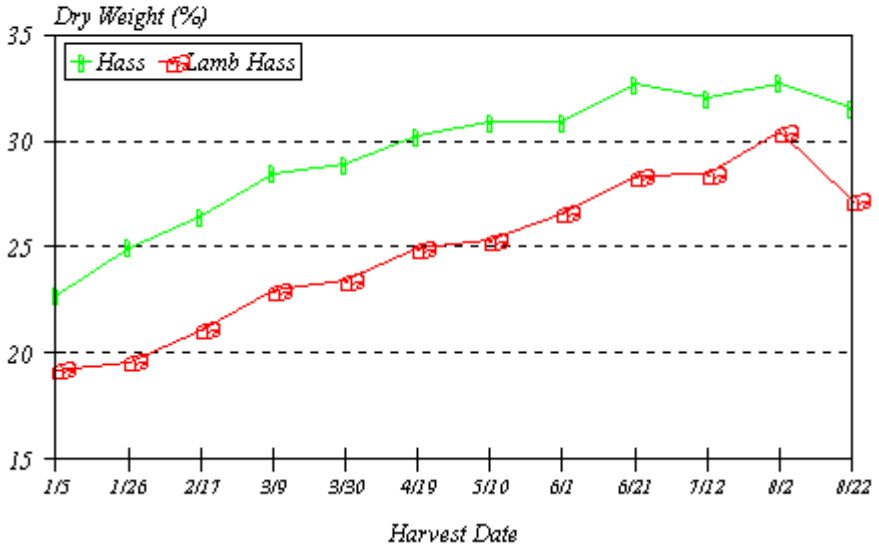

Figure 3. Average Days to Eating Ripeness (1.5 lbf) for 'Lamb Hass' and 'Hass'. Significant differences between varieties for each harvest date is fo
$P < 0.05$ (*), < 0.01 (**) and < 0.001 (***).