



What's Key in this Issue

[Workshop News](#)

[What's New on the Website](#)

[Postharvest Calendar](#)

[Ask the Produce Docs on Avocado](#)

Director's Note

Fresh-cut Products: Maintaining Quality & Safety Workshop is next week, and we still have seats available! **We are excited to let you know the 2019 agenda includes new topics, presenters and hands-on demonstrations.** You can find out more about this [dynamic workshop here](#). As an introduction to the workshop, watch our video below. We hope you'll join us!



Center Director
Florence Zakharov



Updated Publication News

The 4th edition of Postharvest technology of Horticultural Crops will be available within the next 12 months. The entire book has been updated with the latest postharvest handling technology and practices. In addition four other UC ANR extension publications have been incorporated into the next edition. Commercial Cooling of Fruits, Vegetables, and Flowers and leaflets on highway, marine and air transport all have been revised and incorporated into two expanded chapters. The updates and added material have made the text significantly longer and the 4th Edition will be offered as a series of ten books.

1. Preharvest and Postharvest Operations
2. Cooling and Storage
3. Atmospheric Environment
4. Quality Evaluation

5. Disease and Insect control
6. Transportation and Destination Handling
7. Vegetable Crops, Herbs and Flowers
8. Fruit Crops and Tree Nuts
9. Fresh Cut Products and Processing
10. Extension Methods and Capacity Building

We need your help! We are soliciting input from you on how the forthcoming 4th Edition of Postharvest Technology is organized and priced. Please take **5 minutes** to complete this survey – we appreciate your assistance.

Postharvest Education at UC Davis

Still Taking Registrations!!

Fresh-cut Products: Maintaining Quality and Safety

Fresh-cut products are fresh fruits and vegetables that have been prepared (cleaned, washed, sanitized, cut), packaged, and held under refrigeration until consumption. The fresh-cut sector continues to develop innovative and convenient products.

Consumers demand safe, high quality fresh-cut products that have extended shelf-life and are delicious to eat. These demands require that fresh-cut processors and handlers meet rigorous standards. Our upcoming workshop will address many of these issues related to quality aspects to help in satisfying those consumer demands.

We will feature discussions on fresh-cut product physiology, sensory quality, transport, packaging, microbial control and safety, traceability residue valorization and new technological trends and advances. Our practical demonstration on the impact of temperature on packaged product quality, as well as new demonstrations on sensory quality and water sanitation reinforces all the concepts presented by our speakers.



[Enroll Here!](#)

On Our Website

Stay up-to-date with the Postharvest Technology Center by joining our [LinkedIn Group](#).



New Publications on our Website

Holstein, H., G.M. Crisosto and C.H. Crisosto. 2017. [Fertigation with potassium increases size and yield in fresh figs growing in California](#). Acta Hort. 10.17660/ActaHortic.2017.1173.30

M. Buccheri and M.I. Cantwell. [Fruit ripening conditions affect the quality of sliced red tomatoes](#). Acta Hort. 1141. ISHS 2016. DOI 10.17660/ActaHortic.2016.1141.18 Proc. III Int. Conf. on Fresh-Cut Produce: Maintaining Quality and Safety Ed.: M.I. Cantwell

Postharvest Calendar

- September 17-19, 2019. [Fresh-cut Products](#). Davis, CA
- October 8-11, 2019. [Postharvest Technology Course](#). Wageningen, Netherlands
- March 31-April 1, 2020. [Fruit Ripening & Ethylene Management](#). Davis, CA
- June 15-26, 2020. [Postharvest Technology of Horticultural Crops Short Course](#). Davis, CA
- November 9-13, 2020. [9th ISHS International Postharvest Symposium](#). Rotorua, New Zealand

Ask the Produce Docs



Q. I would really like to understand how to calculate the percentage of dry matter in the avocado. I know that the avocado is weighed after it is microwaved on medium power for 6 minutes. Any help you can give me about the specifics of this process would be appreciated. (C.G.)

A. I believe that you are interested in understanding how to measure dry matter in avocado using the microwave technique. Here is a [link to an article](#), which summarizes information regarding the current method used in California for dry matter determination. We did a lot of work in California to ascertain that a core sample taken at the equator of the fruit (widest point for Hass) gives a very good approximation of the entire dry matter of the fruit.

In terms of the actual protocol, the exact times for drying the samples and the power setting are dependent on the microwave you are using. If you plan to do many samples, you should use a commercial grade microwave, not an inexpensive one designed for home use. You should make sure that you have one that has a rotating tray so that you get more uniform drying of the samples.

In short, the protocol is the following:

- 1) Select your fruit sample. If you are doing multiple fruit from a grower lot, try to group the fruit by size. We normally record the entire fruit weight for reference purposes and also peel color.
- 2) You will need a scale that measures to at least 0.01, 0.001 is even better.
- 3) Take your sample. We prefer the coring method for easy sampling and less knife work. Remove the peel and any seed material including the seed coat.
- 4) Weigh your sample. This should be done promptly since the sample will immediately start losing weight. We try to have at least a 3 to 5 gram sample from the fruit.
- 5) We use watch-glasses to hold the sample. Small glass petri dishes also work. Plastic petri dishes oftentimes become warped during microwaving.
- 6) Place the sample in the microwave. We use 30% power for the microwave we have, the idea is not to burn the samples since this will give you erroneous readings.
- 7) We have found that it takes about 30 to 40 minutes at 30% power. We remove the sample and weigh after about 30 minutes. The sample is then again placed in the microwave for an additional 5 minutes. The sample is weighed again and if the weight has not changed, it is finished. If the weight has changed, then place back in the microwave for an additional 5 minutes. Continue this process until you reach constant weight. An alternative is to use a fruit dehydrator. The samples will not burn using a dehydrator but it will take 3 to 4 days for the samples to dry to constant weight. As with the microwave you will need to take the samples out after 3 days, weigh them, and place them back in the dehydrator for 24 hours before reweighing.
- 8) Try NOT to burn the sample, this is where the power setting becomes important.
- 9) Some hints:
 1. Low maturity fruit tend to burn more easily than samples from more mature fruit.
 2. Very low dry matter fruit (<20%) can even ignite in the microwave. Why this is, I don't know, but if they do, you have to start over with that particular sample.
 3. If you use the coring method you will have 2 plugs from the machine from opposite sides of the fruit (preferred). Try not to have the samples touch

each other since this reduces the problem of ignition in the microwave. Again, why... I don't know.

4. We have found that taking opposite cores from the widest point of the Hass fruit that is approximately 220 grams will give you about a 3 to 5 gram sample, depending on the size of the seed.
5. Try not to touch the samples themselves when putting in and taking out of the microwave. The oil from your hands can change the weights.
6. You can put multiple samples (petri dishes) in the microwave at once. Obviously then you must be able to track each petri dish. We have found that nail polish is a good way to label the petri dishes. It will sustain washing of the petri dish so that each time you do measurements, you don't have to re-label the petri dishes.
7. Make yourself an excel spreadsheet to do the calculations automatically for you. This is what we do.

The calculation for dry matter determination is as follows.

You need the following pieces of information:

Petri dish weight

Initial sample weight + petri dish

Final weight of sample + petri dish

The calculation is: $\text{Final weight}/\text{initial weight} * 100 = \text{Dry Matter } \%$

For example:

Petri dish weight = 20 g

Petri dish weight + initial sample = 25 g

Initial weight = $25 - 20 = 5$ g

Petri dish weight + final sample weight = 21 g

Final weight = $21 - 20 = 1$ g

Dry matter = $1/5 * 100 = 20\%$

I hope this is helpful to you. Since you are in Mexico, I would also check with APEAM which is the avocado growers' association. They should have some set protocols for you to follow as well for dry matter determination.

Mary Lu Arpaia

Postharvest Questions. If you have a postharvest question you'd like answered, please send it to postharvest@ucdavis.edu, and we'll see if one of our specialists can help.

Archived Items. Link to a data store of all our previous "Ask the Produce Docs" questions, or link to [archived copies](#) of our monthly e-newsletter as PDF documents.

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