CALIFORNIA AVOCADO COMMISSION
PRODUCTION RESEARCH COMMITTEE
MEETING MINUTES

May 9, 2017

A meeting of the Production Research Committee (PRC) of the California Avocado Commission (CAC) was held on Tuesday, May 9, 2017 in the CAC board room in Irvine, California with the following people present:

MEMBERS PRESENT:
John Burr
Jim Davis
Dan Grant
Darren Haver
Derek Knobel
Ed McFadden
Leo McGuire
Tom Roberts
Ryan Rochefort

GUESTS PRESENT:
Susan Estrada
Steve Wede

CAC STAFF PRESENT:
Dr. Tim Spann
April Aymami
Tom Bellamore
Jan DeLyser
Ken Melban

MEMBERS ABSENT:
Tyler Cobb

ITEM #1 CALL TO ORDER

Leo McGuire, Production Research Committee (PRC) Chairman, called the meeting to order at 9:00 a.m. with a quorum present.

ITEM #2 OPPORTUNITY FOR PUBLIC COMMENT

Susan Estrada, a California Avocado grower from the San Marco area, introduced herself, she is the new editor for the California Avocado Society Weekly Newsline. She explained that her background is in internet infrastructure and only recently started to grow avocados. She also noted that she is very interested in avocado research.

ITEM #3 APPROVAL OF MINUTES OF MARCH 7, 2017 PRODUCTION RESEARCH COMMITTEE MEETING

MOTION
To approve the minutes of the March 7, 2017 Production Research Committee meeting. (Burr/Davis) MSC Unanimous.

Motion 9-5-17-1

ITEM #4 RESEARCH PROGRAM DIRECTOR'S REPORT

Dr. Spann began with an update of the University of California's discussion regarding the collection of indirect costs on research projects. Dr. Spann was informed that the university has postponed making a decision on whether or not to charge indirect costs until July 1, 2018. Dr. Spann discussed that CAC will continue to make a strong case to not have indirect costs charged on CAC research projects.

A. Gem avocado licensing update

Dr. Spann informed the Committee that an avocado handler had recently contacted CAC with an issue regarding the export of Gem avocados. The handler was told by the University of California, Riverside (UCR) that they would not be able to export the fruit out of the United States because of a non-export clause in the licensing agreement with Westfalia. Tom Bellamore, Ken Melban and Dr. Spann visited with the UCR Office of Technology Commercialization and it was conceded that the plant patent on Gem avocados does not restrict fruit movement, and that UCR did not intend to restrict California growers from exporting Gem fruit. Dr. Spann noted that this may not be the case for other new varieties and that UCR legal counsel is still looking into the matter to clarify their position on the Gem avocado.

The Committee then discussed the maturity standard for Gem avocados. Dan Grant supplied a document titled, *Gem Maturity and Ripening Evaluations at Brokaw Nursery LLC*. The Committee discussed the information provided in the document and the possibility of a research project to help determine the release dates for Gem avocados.

B. Update on grower outreach and education from March 7, 2017 PRC meeting

Dr. Spann informed the Committee that the topic of additional grower education and outreach by CAC was discussed, and well received, at CAC's annual grower meetings.

The Committee discussed the logistics of providing more outreach, which included: Dr. Spann meeting with growers in their groves, having small group discussions with several growers who have a common issue and field days at Pine Tree Ranch to discuss these issues as a larger group.

Discussion ensued regarding the need to balance the number of grower meetings scheduled by CAC with the meetings that are scheduled by other groups; as well as establish a curriculum for the meetings, an annual calendar to help growers plan their attendance and to provide more website content from the meetings.

ITEM #5 DISCUSSION ITEMS

A. Avocado scion breeding discussion

Dr. Spann informed the Committee that there are at least three entities that UCR is negotiating with to maintain the avocado scions and to continue the avocado breeding

program. There is also a potential private party that would like to partner with CAC to help maintain the scions and to continue the avocado breeding program.

Discussion ensued regarding having a third party fully fund the scion breeding and maintenance program, having CAC partner with a third party or have CAC continue to fully fund the program. Discussion included the need to provide the best opportunity for California Avocado growers and to determine how interested the avocado industry is in developing new varieties.

The Committee's consensus was to pursue an option where CAC would be involved in the program as a cost-sharing partner with another entity.

B. Production Research goals and priorities

This discussion continued from the March 7, 2017 PRC meeting. The Committee discussed a variety of topics for possible research projects or grower outreach and education, including: Updating canopy maintenance and pruning techniques to increase production or rehabilitate trees; real world validation of the nutrient values used in the decision support tool; growing with trellises; water technology including the removal of chlorides from water, ultra-low-flow irrigation, irrigation strategies and water blending; and the use of new tools including drones and mobile apps for tree counting, disease monitoring and crop estimating.

C. 2017-18 production research strategy

The Committee discussed how a call for proposals may not be needed this year. The consensus of the Committee was to keep a placeholder in the budget for a research project that could come about as a result of information gained through grower outreach or grower meetings.

D. Future meeting dates and locations

The Committee discussed that the next PRC meeting would be on July 25, 2017 at the University of California, Riverside to tour the Agriculture Operations facility and to see the avocado germplasm.

The Committee also scheduled a meeting for September 26, 2017 at Pine Tree Ranch in Santa Paula.

ADJOURN MEETING

Leo McGuire, Production Research Committee (PRC) Chairman, adjourned the meeting at 12:21 p.m.

Respectfully submitted,

_____

Timothy Spann
Research Program Director

EXHIBITS ATTACHED TO THE PERMANENT COPY OF THESE MINUTES

EXHIBIT A May 9, 2017 Production Research Committee AB 2720 Roll Call Vote Tally Summary

EXHIBIT B Gem Maturity and Ripening Evaluations at Brokaw Nursery LLC

CALIFORNIA AVOCADO COMMISSION
Production Research Committee
AB 2720 Roll Call Vote Tally Summary

To be attached to the Meeting Minutes

Meeting Name:	**Meeting Location:**	**Meeting Date:**
California Avocado Commission Production Research Committee Meeting	*California Avocado Commission 12 Mauchly, Suite L Irvine, CA 92618*	*May 9, 2017*

Attendees Who Voted	***MOTION 9-5-17-1***
Leo McGuire, Chair	Yea
John Burr	Yea
Jim Davis	Yea
Dan Grant	Yea
Darren Haver	Yea
Derek Knobel	Yea
Ed McFadden	Yea
Tom Roberts	Yea
Ryan Rochefort	Yea
Outcome	**Unanimous**

Consuelo Fernández
Rob Brokaw
05/08/2017

Gem maturity and ripening evaluations at Brokaw Nursery LLC

Four years ago (2013-14 season) at Brokaw Nursery we initiated a Dry Matter Evaluation Program that consists of taking weekly samples of different cultivars from three different locations where we grow avocados close to Santa Paula, CA. We started monitoring dry matter content at Cheravo, Mupu and Faught Ranches. The main objectives that we set were to determine, *when the fruit is at its optimum eating quality* as well as *the best time for harvest*. Variables that come into play from year to year include weather conditions, differences in exposure/cumulative temperatures at the different locations at the farms and tree age. Several avocado cultivars have been tested throughout the years. In particular, given our increasing plantings of the Gem variety, we wanted to understand its ripening behavior in order to produce the best quality fruit from the cultivar.

Our sampling process usually starts each year in the first week of October, continuing on a bi-weekly basis until the cultivar at a given location reaches 19% of dry matter. At that point, we test on a weekly basis and start harvesting three extra fruit for post harvest observations. We ripen these fruit at room temperature, at which point we perform basic evaluations such as observations on shriveling, color, days from harvest to ripening, and most importantly, eating qualities.

The following is a short summary of our observations and conclusions regarding the optimum dry matter levels for Gem, as well as the timing of its maturity:

Optimum Dry Matter levels for Gem:

In our evaluations, we have observed that Gem fruit with about 24-25% of dry matter is usually a good tasting fruit, but most of the fruit exhibits a slight degree of shrivel at this level. Our experience has indicated that in most cases Gem fruit will stop shriveling if picked with a dry matter of 27% or more. The fruit maintains very good flavor at 27%, so we have established 27% as our in-house minimum dry matter standard for Gem.

Our experience indicates that the fruit can be kept on the tree until it reaches 35% or greater dry matter without compromising flavor. We have not yet found a maximum dry matter value at which the fruit develops rancid flavors.

For context, if we apply our flavor/fruit quality criteria to Hass, we conclude that 23% is an appropriate minimum dry matter value.

Optimum harvest time:

When compared to Hass we consider Gem fruit to be later in maturity due primarily to our adoption of the 27% dry matter standard. This higher dry matter level is reached at 4-10 weeks following the legal maturity for Hass fruit (20.8%) at the same location, depending on the year, age of the tree and fruit load.

Consuelo Fernández
Rob Brokaw
05/08/2017

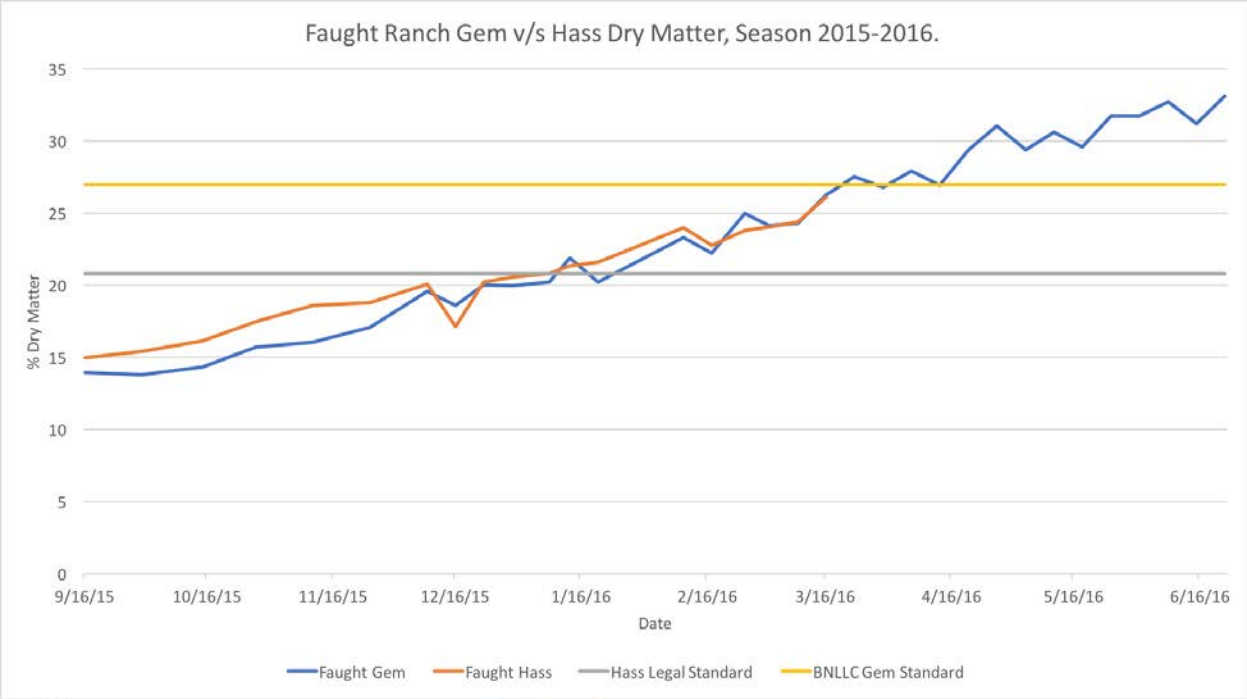

Figure 1 Faught Ranch Gem v/s Hass Dry Matter, Season 2015-2016. While Hass reaches its minimum dry matter legal standard during the first half of January 2016, Gem only reaches it during the first half of April 2016.

In our limited experience with Gem, we have been testing fruit both from topworked trees as well as from nursery trees, from young trees as well as from adult trees. We have come to believe that young trees tend to mature their fruit earlier in the season when compared to adult trees.

Consuelo Fernández
Rob Brokaw
05/08/2017

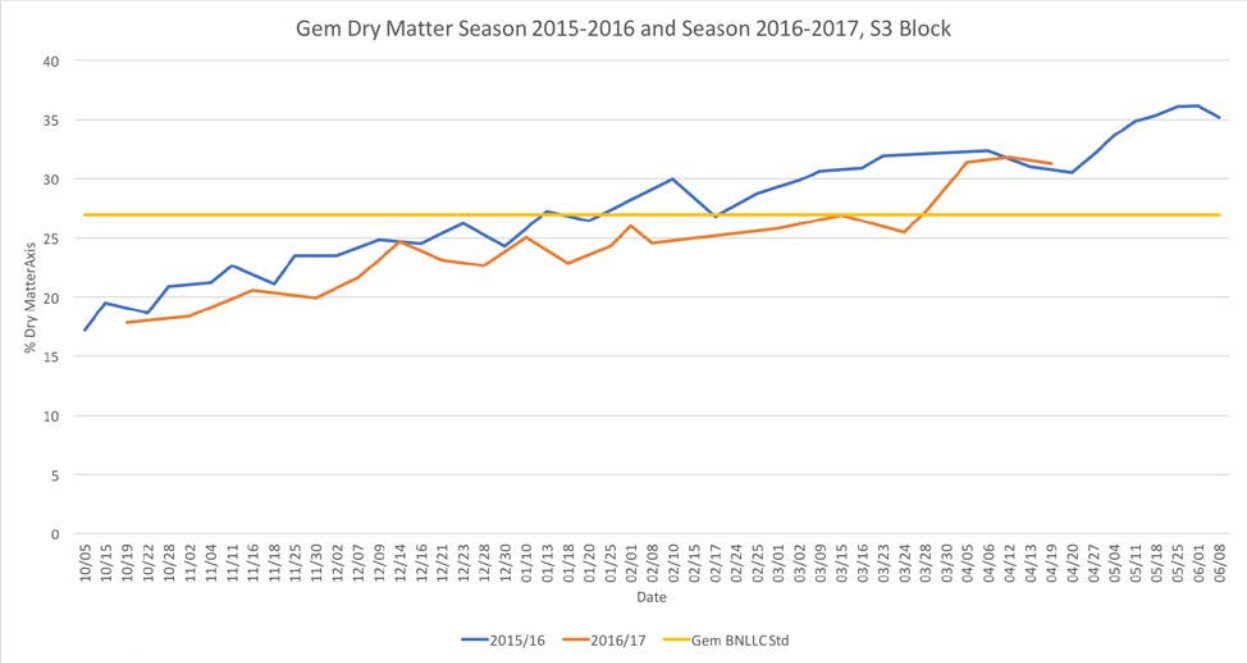

Figure 2 Gem Dry Matter curve for 2015-2016 season and 2016-2017 season. S3 block at Cheravo Ranch. Trees were planted during 2013. The yellow line marks the 27% dry matter that we have set as the minimum standard for Gem. A big difference in seasonality can be observed when the trees are two years old (second half of January) and three years old (first half of March).

In addition to the tree age variable, we believe that timing of maturity is closely correlated with the amount of fruit present on the trees. Our observations at Faught Ranch in adult trees (6 ft. x 14.5 ft. spacing) indicate that in lower yield years (14,000 lb./A) the fruit can be ready to harvest (27% dry matter) as early as the beginning of March, while on the same trees, in a heavy yield year (28,000 lb./A) the fruit is ready to harvest in the first week of April. Therefore from year to year for adult trees there can be a difference of an entire month. Neighboring Hass didn't show this difference when reaching maturity. Therefore we believe it is not due to weather difference. We still need more data to support this theory.

In conclusion, after four years of testing and basic research on maturity of avocado fruit at Brokaw Ranches we conclude that there are significant distinctions in maturation behavior even between properties that are a few miles apart or even contiguous. Temperatures, tree age and possibly fruit load influence timing of maturity. These factors become complex and can result in significant differences in timing of fruit readiness from year to year. In our experience this is also true of the Hass variety.

It is important to bear in mind that trees we have studied can be ready for picking as early as February, or as late as mid-April.

Considering the above, our practice at Brokaw Ranches has been to conduct extensive sampling of each sector of Gem orchard so that we are confident that we are supplying high quality fruit to the market.