

From the **Grove**

Summer 2026

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From the **Grove**

Volume 16, Number 2

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Summer 2026

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By Ken Melban
President

Fair Trade, Not Free Trade at Any Cost

California's nearly 3,000 avocado growers deserve a fair opportunity to compete. That's the principle driving the California Avocado Commission's efforts to secure a tariff-rate quota (TRQ) on Mexican avocados. There is no sugarcoating, it's an uphill battle, but one worth fighting.

As many of you are aware, the review of the U.S.-Mexico-Canada Agreement (USMCA) is now underway. I attended the second round of negotiations in Washington, D.C., in April, and as this issue of *From the Grove* is printed, I'll be preparing to attend the third round of negotiations in Mexico City at the end of July. I am participating as a cleared advisor on the U.S. Trade Representative and USDA Agricultural Technical Advisory Committee (ATAC) for Fruits and Vegetables, providing input on behalf of our industry throughout this process.

The Commission is pursuing every possible avenue to make our case. We recently produced a seven-minute video (https://www.youtube.com/watch?v=VuWRM3bQj_E) explaining why a TRQ is necessary and how it would create a fairer competitive environment for California growers. We are meeting with policymakers, engaging stakeholders and telling your story.

We are not trying to stop trade. We are asking for fair trade.

Imports play an important role in supplying consumers year-round. A tariff-rate quota is not about closing our borders. It is about ensuring California growers have a fair opportunity to compete during our harvest season while providing consumers with year-round access to avocados.

The opposition to changing the status quo under USMCA is well financed and well organized. They argue that imports support American jobs and that our nation's food security depends on imports from Mexico and Canada. I disagree! Food security begins at home. The opposition's arguments overlook the livelihoods of California farm families and the thousands of jobs supported by domestic agriculture. Relying on another country for an increasing share of our food supply is not what I consider true food security.

There is another issue that deserves attention: the growing influence of organized crime in Mexico's avocado-producing regions. Mexico's avocado shipments are produced in Michoacán and Jalisco where, as widely reported, the cartel extorts growers, controls portions of the supply chain, and uses violence and intimidation to maintain control and exploit Mexico's multi-billion-dollar avocado industry. That reality has implications for Mexico's growers and the integrity of the supply chain serving the U.S. market.

President Trump designated the cartels as Foreign Terrorist Organizations on his first day in office. At the same time, the U.S. Department of State maintained a Level 4 "Do Not Travel" advisory for all of Michoacán. United States Department of Agriculture inspectors are expected to inspect avocado groves there, yet travel restrictions prevent them from safely accessing many of those areas. It is fair to ask whether the inspection program can function as intended when U.S. personnel cannot safely enter the areas they are responsible for inspecting.

The economic realities facing our growers are equally compelling. During the first quarter of 2026, Mexico shipped



Ken Melban

approximately 300 million pounds of avocados into the U.S. market above their projection. To put that into perspective, California's entire 2026 crop is expected to total about 330 million pounds. That tremendous oversupply pushed prices to unsustainable levels, forcing many California growers to accept returns nearly 50% below last year's levels. When California growers are paying approximately \$20 per hour in wages while competing against unfairly low labor costs in Mexico, it is nearly impossible to overcome the effects of an oversupplied market.

A TRQ would not stop trade. It would help bring greater stability to the marketplace during California's harvest season while preserving year-round access to imported fruit. Most importantly, it would provide California growers with a fair opportunity to compete.

I know this won't be easy, and I know success is far from guaranteed. But I also know that no one will fight harder for California avocado growers than your Commission. We owe it to every grower and every family whose livelihood depends on this industry to do everything we can to create a level playing field and a fair opportunity to compete.

California avocado growers have spent generations building the California Avocado brand and your Commission is dedicated to protecting what we have collectively created. 🥑



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Working Inside and Thinking Outside of the Box

I recently joined the California Avocado Commission Marketing team in a brainstorming session related to marketing activities, U.S. market trends and new, exciting promotional ideas. The meeting started with a reminder about the things we can and cannot control, nor influence, with CAC marketing programs — and this really struck me. While we, as growers, often look to the Commission to solve all our problems, the organization has a very well-defined scope and a pretty rigid box within which it may operate.

CAC is a marketing and trade commission governed by the California Department of Food and Agriculture. Additionally, because the Commission receives an 85% rebate of assessments paid to the Hass Avocado Board that means CAC is overseen by the U.S. Department of Agriculture. The funds CAC receives from HAB can only be spent on marketing. Further, everything the Commission does must comply with the legislation that created the organization and the by-laws that set out in more detail how the Commission is operated and conducts business. While the legislation and by-laws provide a broad scope, there also are very definitive restrictions and constraints concerning what CAC can and cannot do. For us growers, it may be frustrating at times because the workings of the Commission can sometimes seem slow and hobbled by set procedures. But it's important to remember that these "bumpers" have been put in place to protect and ensure the best outcomes for California growers.

When it comes to marketing, the Commission can — and very actively does — work to grow demand and loyalty

for California avocados. We can work to build consumer preference and willingness to pay a premium price for California avocados. And we can create a measurable impact. While we don't have complete and perfect metrics that quantify exact dollar amounts throughout the supply chain, our marketing team uses tried and true marketing measurement techniques to quantify the impact of the individual elements of our campaigns. The entire marketing program — brand building, food service and retail promotion — is completely rooted in and focused on these objectives.

What marketing cannot do is ensure individual grower profitability. Marketing cannot address where, along the supply chain, the price differential between California and other countries of origins goes. And CAC marketing cannot influence the overall market supply, how much fruit is coming in and from which countries.

The Commission's marketing program needs to stay singularly focused on what we can achieve to ensure customers and consumers continue to choose California. Our messaging needs to remain positive and highlight all the reasons why California avocados are better. Positive marketing has a far greater impact than any type of negative messaging. And the Commission's marketing is working — our Retail Marketing Directors have been able to encourage retailers to move to California earlier and stay longer and they are lining up retailers already for next year. Our brand marketing receives unprecedented completion rates — meaning people don't skip our ads on Hulu or other streaming platforms!



Rachael Laenen

As for the things marketing can't influence, we do have other tools available. Our CAC assessment is unrestricted, which means we can spend it on anything within our scope — advocacy, production research, data collection, etc. These are the tools we use to help with the other elements by making information available to help growers increase their productivity, working with our legislators to highlight our challenges and pushing for a level playing field. That said, these funds are not unlimited. While to us, as growers, the CAC budget seems huge, it pales in comparison to what other countries are spending to promote their avocados in our market and what other commodities are spending to advocate for theirs. That means the Commission needs to continue to be strategic with its focus to make sure we are getting the most from every dollar assessed from growers. Let's remember that growers have enjoyed a temporary reduction in the CAC assessment over the last few years as the Commission strategically drew down its reserves.

Beyond marketing, the CAC board remains committed to the strong advocacy and production research work being done at the moment and as such, the assessment rate going forward will need to reflect that. The Board will discuss and approve the Commission's budget and assessment rate in the fall. With that in mind, please make certain to speak with your CAC representatives to share what is important to you. 🍷

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CAC Accepting Nominations for the Upcoming 2026 General Election

In October 2026, the California Avocado Commission will conduct its regularly scheduled general election to fill available seats on CAC's Board of Directors. As a reminder, the election will be conducted with the new four district composition that will take effect November 1, 2026. Additional details concerning the new districts can be found in the Redistricting article on page 9 of this issue.

The election will fill two Producer Member seats and one Producer Alternate Member seat in each of the four CAC districts. In addition, one Handler Member, Handler Alternate Member, Public Member and Public Member Alternate seat is being filled. Elected individuals shall serve either one- or two-year terms ending on October 31, 2027, and October 31, 2028, respectively. Ballots will be mailed to producers and handlers September 28, and ballots must be returned by October 19.

Qualifications for the producer positions are as follows:

- Nominee shall certify they meet the definition of a producer/grower as defined by CAC: "engaged within this state in the business of producing, or causing to be produced, avocados for market." It should be noted the definition does not include persons whose average annual production is less than 10,000 pounds of avocados in the three preceding market years.
- Nominee shall certify they are not a handler or employee of a handler under the same entity that qualifies them as a producer.
- Nominees can be nominated in only one district — those who produce avocados in more than one district must select one district for their nomination.
- Nominees must complete and submit all required documents and maintain their qualifications throughout the term of their office.

Qualifications for the handler positions are as follows:

- Nominee shall certify they meet the definition of a handler as defined by CAC: "has a financial interest in handling avocados for market either through ownership, employment or membership in a legal entity which is actively and directly engaged in the handling of avocados."
- Nominee shall certify that the handler entity they represent must have handled no less than 1% of the total industry volume of avocados in the preceding marketing year.
- Nominees must complete and submit all required documents and maintain their qualifications throughout the term of their office.

The election will again be conducted using a ranked choice voting method, with the candidate receiving the highest number of first choice votes offered their choice of available seats. The candidates with the highest combined total of first, second and third choice votes will be offered the remaining seats. The California Department of Food and Agriculture will announce the results of the election November 2, and seat new Board members at the November 10 Board meeting.

Nominations for the open seats are now being accepted through August 17. Nomination forms can be found at CaliforniaAvocadoGrowers.com/commission/cac-general-election or by scanning the QR code below. Nomination documents can be emailed to CACElections@avocado.org. For additional information, contact the Commission at 949.341.1955 or email cac.iaf@avocado.org. 🥑



Commission Reapportions Districts

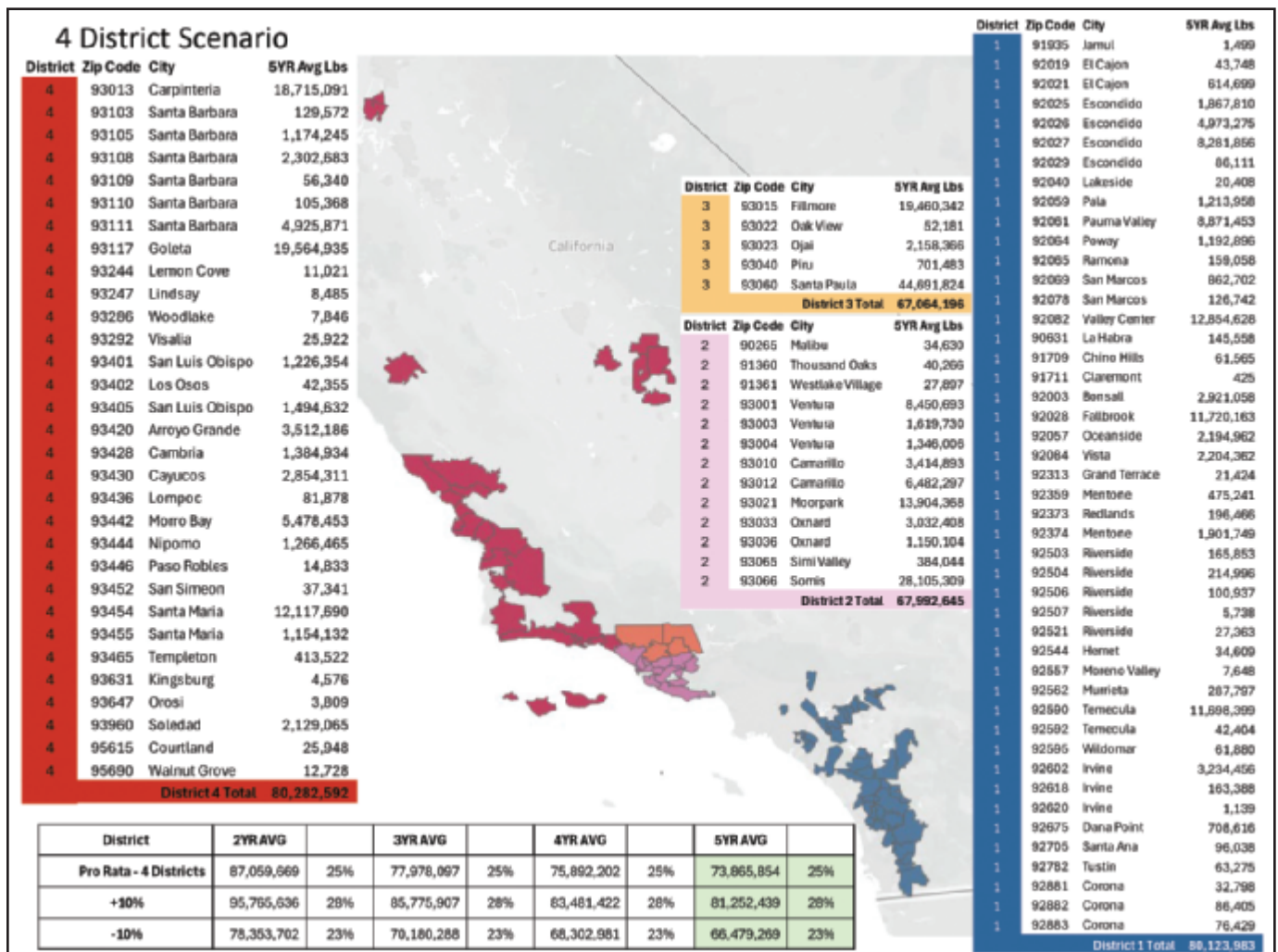
Per California Avocado Commission law, every fifth year the Commission must reapportion its districts to ensure they represent approximately the same percentage of California avocado production. Further, CAC law provides that the Commission can establish no fewer than three and no more than five districts.

Following CAC redistricting procedures, on February 18 CAC's

Redistricting Committee met to discuss the reapportionment requirement and review 2021-2025 production data to determine if existing district lines continued to equitably represent the California avocado industry. Upon review of the data, the committee determined reapportionment was necessary and recommended moving from five to four districts. The lines, per CAC law, were redrawn using production volume

by zip code (see figure below) to ensure the avocado producing areas are as contiguous as practicable and represent a relatively equal production percentage.

The Board approved the committee's recommendation at their March 5 meeting. The new district lines will be in effect November 1, 2026 – October 31, 2031. 🍋



California Outpaced the Nation in Avocado Sales Growth During Cinco de Mayo

Strong California avocado supply helped meet robust Cinco de Mayo demand this season, with the California region leading category unit growth. During the week ending May 3, 2026, avocado unit sales increased 20% year over year in the region, more than double the 9% growth recorded across the rest of the U.S. The holiday week generated an additional 2 million units for the category.

Bagged avocados were a primary growth driver, increasing 28% versus the prior year and contributing more than 82% of incremental unit sales (1.7 million units). This holiday perfor-

mance highlights the importance of convenient grab-and-go avocado formats during major seasonal celebrations.

The source for this information is Circana, a syndicated data provider that provides analytics on customer behavior and retail sales. The Commission subscribes to this information to keep a pulse on retail avocado sales, to report trends and key analyses to California avocado growers and to use with retail customers to inform future programs. The Cinco de Mayo sales report helps growers because it reinforces the value of California avocados during one of the category's most important seasonal demand periods. 🥑

California Posts Double-Digit Cinco de Mayo Growth

California avocado unit sales grew more than 2x as fast as the rest of the U.S. during Cinco de Mayo 2026.



12 Million
Retail Units Sold

\$13 Million
Retail Dollars

82%
of Incremental Unit Growth
Driven By Bagged Avocados

Source: Circana, California vs. rest of U.S. MULO+, week ending 05-03-2026 vs. prior year

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2026 Public Relations and Influencer Campaign Brings to Life the California Avocado Story

To build excitement and demand for California avocados leading up to and throughout the season, the California Avocado Commission executes strategic and nimble public relations efforts, along with a targeted, seasonal influencer program that weaves locally rooted grower stories, media outreach, regional influencer content and strategic partnerships into a compelling narrative across a variety of channels. This program supplements the Commission's brand and retail advertising, encouraging consumers to seek out California avocados at their local retailers to incorporate into their summer menus.

The core of the program focuses on securing media coverage and producing influencer content during the fruit's peak season from April through August. To closely target California avocado consumers, the program focuses on securing results in five core California markets where fruit is readily available —

Los Angeles, Sacramento, San Diego, San Francisco Bay Area and Santa Barbara/San Luis Obispo. Broader Western region markets also are targeted with digital and social campaigns to further amplify California avocado season messaging.

This season, CAC has partnered with a team of trusted local influencers, who live within the core markets and have a high percentage of local followers, to create crave-worthy California avocado content that runs on the influencers' social media channels. The content is designed to share that the locally grown fruit is available in stores and to inspire the influencers' followers to purchase the fruit at their local markets. Each influencer is crafting quick-and-easy California avocado recipes and utilizing their storytelling talents to showcase the locally grown, sustainably farmed and deliciously fresh nature of the in-season fruit throughout the spring and summer.

The Commission also secured an array of local TV segments



Dietitian Ashley Hawk shares California avocado recipes, nutrition education and seasonal California avocado messaging during her appearance on Good Day LA.



The host from San Diego's FOX5 The Localist encouraged viewers to look for California on the label when picking up their avocados during a segment with CAC spokesperson dietitian Ashley Hawk.

in the five key California markets by working in partnership with a variety of spokespeople, including California avocado growers, registered dietitians and lifestyle experts. Each of the targeted segments, which have appeared on local news and lifestyle programs and their corresponding social channels, highlights the availability of California avocados in the local market. By expanding its network of spokespeople beyond California avocado growers to include lifestyle experts and registered dietitians, the Commission has strengthened its media credibility, expanded its connection with local communities and further piqued media interest.

The growers who make appearances on behalf of the Commission are provided with media training, talking points and ongoing support to ensure they confidently represent the California avocado industry. Showcasing the diverse perspectives of California avocado growers brings to life their multigenerational stories and industry expertise in a manner that engages targeted consumers. California avocado grower media segments this year to date include CAC Chair Rachael Laenen, who appeared on KEYT-TV, which serves the central coast of the state, and San Diego County avocado grower Robert Jackson, who discussed the California avocado season on San Diego's KOGO AM radio. Additionally, San Luis Obispo grower Daryn Miller was featured in

a *Food and Wine* story and Ventura-based grower Maureen Cottingham shared tips for an *Eating Well* piece.

The PR and influencer program is rounded out with targeted consumer media outreach including customized outlet-specific pitches, press releases and syndicated articles selectively placed with respected media outlets in key markets throughout the California avocado season. 🥑

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Retail Promotions Bolster Sales of California Avocados

Retail promotions are fundamental elements of the California Avocado Commission's marketing support. In 2026, the Commission directed a greater percentage of the marketing budget for these programs to strengthen distribution and sales of California avocados throughout the season.

Retail programs in spring and early summer included sales contests, demos, ad flyers, shopper marketing campaigns, digital coupons and more. Sales contests with major retailers featured customizable in-store display bins and signs that spotlighted California avocado growers. CAC partnered with

the organization CA Grown for in-store demos centered around soccer watch party-themed recipes. Shopper marketing campaigns with national retailers promoted locally grown and showcased recipes to online shoppers. Digital coupons provided extra value to online and mobile shoppers when purchasing bagged California avocados, and ad flyers promoting the Golden State fruit encouraged peak season sales. Retail promotions were bolstered by in-store video ads that complemented the consumer advertising campaign at participating chains. 🥑



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Retail promotions continue throughout the California avocado season and will be reported on in the next edition of *From the Grove*.



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To contact a CAC representative, please visit:
CaliforniaAvocadoGrowers.com/Commission/your-representatives

Grove Well Output Calculator

By Tim Spann, PhD
Spann Ag Research & Consulting

& David Shea
Aspiring California Avocado Grower

In the Spring 2024 issue of *From the Grove* there was an article titled, "Do You Have Enough Water to Grow Avocados?" written by Tim Spann. Fast forward almost two years when Tim was contacted by David Shea in late 2025. David is a retired FBI Agent and an aspiring California avocado grower. David had stumbled across the above-mentioned article as well as others in the CAC archives and had questions. Tim and David have been communicating ever since.

David is not someone to jump into something without doing his due diligence. He understands that avocado production is fraught with risk and he wants to be as well-prepared as possible before going into business with Mother Nature. As you may imagine, "preparing" for someone with David's background involves spreadsheets. Tim was never really a big fan of spreadsheets until he began farming for himself in 2020 and he now understands they can be an extremely valuable tool for farming.

As part of his preparation for becoming an avocado grower, David wanted to be certain he would have enough water on any property he purchases. He took the information from the Spring 2024 article along with other information available online and brought in Claude to help build a spreadsheet. Claude is the AI bot from the company Anthropic. David shared the resulting spreadsheet, Avocado Grove Well Output Calculator, with Tim and offered to share it if Tim found value in it. Tim was impressed. It is worth sharing.

The Spreadsheet

We are going to assume that you have a rudimentary knowledge of spreadsheets for the purposes of this article. The current version of the spreadsheet (Avocado_GPM_Calculator_v.16) is available for download on the CAC website here: californiaavocadogrowers.com/GPM-calculator. Currently the spreadsheet is only available in Microsoft Excel.



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The spreadsheet is composed of four pages. Each page is accessible by the tabs at the bottom of the Excel window. The pages are GPM Calculator, Spacing Chart, CIMIS Stations and Crop K_c Values (**Figure 1**). Most of your interaction with the spreadsheet will be through the GPM Calculator page and it is the most involved page so we will discuss it last.



Figure 1. The main GPM Calculator page of the Avocado GPM Calculator spreadsheet with the three additional pages shown in the tabs at the bottom of the page.

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SPACING CHART. This page of the spreadsheet has no user modifiable inputs (**Figure 2**). The purpose of this page is to provide growers with the “trees per acre” variable they will need when inputting data on the GPM Calculator page.

Tree Spacing Table — Number of Trees Per Acre

Source: Tree Spacing Table, California Avocado Commission. Row = one dimension (ft), Column = other dimension (ft). Note: spacings do not allow for special drive roads. To use: find your spacing, read trees/acre, enter in GPM Calculator cell C5.

Spacing (ft x ft)	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
6 ft	1,210	1,037	908	807	726	660	605	558	519	484	454	427	403	382	363	346	330	316	303
7 ft	1,037	889	778	691	622	565	519	479	444	415	389	366	346	328	311	296	283	271	259
8 ft	908	778	681	605	545	495	455	419	393	364	341	320	303	287	272	260	248	237	227
9 ft	807	691	605	538	484	440	404	373	346	323	303	285	269	255	242	230	220	210	202
10 ft	726	622	545	484	436	396	364	336	311	291	272	256	242	229	218	208	198	189	182
11 ft	660	565	495	440	398	360	330	305	283	264	248	233	220	208	198	189	180	172	165
12 ft	605	519	454	403	363	330	303	279	260	242	227	214	202	193	182	173	165	158	151
13 ft	558	479	419	372	335	305	279	258	240	224	210	197	186	177	168	160	152	146	140
14 ft	519	444	389	346	311	283	260	240	222	208	195	183	173	164	156	148	141	135	130
15 ft	484	415	363	323	290	264	242	224	208	194	182	171	162	153	145	138	132	127	121
16 ft	454	393	340	303	272	248	227	210	195	182	170	160	151	143	136	130	124	118	114
17 ft	427	366	320	285	256	233	214	197	183	171	160	151	142	135	128	122	116	111	107
18 ft	403	346	303	269	242	220	202	186	173	161	151	142	134	127	121	115	110	105	101
19 ft	382	328	287	255	229	208	191	177	164	153	143	135	128	121	115	109	104	99	95
20 ft	363	311	272	242	218	198	182	168	156	145	136	128	121	115	109	104	99	95	91

Green cell = 20x20 ft (109 trees/acre) — standard Hass spacing | Blue diagonal = square spacings | To use in GPM Calculator: find your spacing, note the trees/acre value, enter it in cell C5 on the GPM Calculator sheet

Figure 2. The Spacing Chart page of the calculator. There are no user modifiable options on this page.

CIMIS STATIONS. Like the Spacing Chart page, this page does not have any user inputs (**Figure 3**). It is used to complete the required inputs on the GPM Calculator page.

CIMIS Station Reference — Active Stations with Monthly ETo (inches) by ETo Zone

To use: find your nearest station, note the Sta # and ETo Zone. Enter the Sta # in cell C10 of the GPM Calculator sheet, and replace the monthly ETo values (blue cells D13:D26) with the Zone values from this table. Source: CIMIS cimis.cesr.ucdavis.edu. ETo Zone values: LOWRUC Davis Reference ETo Zones, 2012.

Sta #	Station Name	City	County	ETo Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann. Total
234	Atascadero	Atascadero	San Luis Obispo	5	1.24	1.85	3.10	4.53	5.58	6.28	6.82	6.20	5.27	3.72	2.13	1.40	47.99
232	Nipomo	Nipomo	San Luis Obispo	2	1.24	1.63	2.24	3.93	4.96	5.68	5.99	5.68	4.65	3.10	1.83	1.24	41.86
126	Paso Robles	Paso Robles	San Luis Obispo	5	1.24	1.85	3.10	4.53	5.58	6.28	6.82	6.20	5.27	3.72	2.13	1.40	47.99
236	Templeton	Templeton	San Luis Obispo	5	1.24	1.85	3.10	4.53	5.58	6.28	6.82	6.20	5.27	3.72	2.13	1.40	47.99
123	Grolier	Grolier	Santa Barbara	3	1.55	2.13	3.41	4.53	5.27	5.78	6.20	5.89	4.93	3.41	2.13	1.55	46.48
231	Lompoc	Lompoc	Santa Barbara	2	1.24	1.63	2.24	3.93	4.96	5.58	5.89	5.58	4.65	3.10	1.83	1.24	41.86
14	Cuyama	New Cuyama	Santa Barbara	5	2.17	2.79	4.65	6.23	7.75	6.68	9.51	8.99	7.13	4.96	2.79	1.66	67.50
111	Santa Maria	Santa Maria	Santa Barbara	2	1.24	1.63	2.24	3.93	4.96	5.58	5.89	5.58	4.65	3.10	1.83	1.24	41.86
64	Santa Ynez	Santa Ynez	Santa Barbara	5	1.24	1.85	3.10	4.53	5.58	6.28	6.82	6.20	5.27	3.72	2.13	1.40	47.99
165	Siquique	Siquique	Santa Barbara	2	1.24	1.63	2.24	3.93	4.96	5.58	5.89	5.58	4.65	3.10	1.83	1.24	41.86
44	Gilroy	Gilroy	Santa Clara	6	1.40	2.13	3.41	5.11	6.20	6.82	7.44	6.82	5.58	3.72	2.13	1.40	52.10
86	Watsonville	Watsonville	Santa Cruz	4	1.12	1.63	2.79	3.93	4.65	4.88	4.96	4.65	2.72	2.79	1.63	1.09	37.83
148	Tulare	Tulare	Tulare	18	1.24	2.17	3.87	5.27	6.82	7.75	8.37	7.44	5.58	3.41	1.86	1.09	54.87
148	Yuba	Yuba	Sierraville	10	1.24	2.17	3.87	5.27	6.82	7.75	8.37	7.44	5.58	3.41	1.86	1.09	54.87
52	Bodega Bay	Bodega Bay	Sonoma	1	1.12	1.54	2.48	3.63	4.34	4.88	5.27	4.96	3.90	2.79	1.53	1.09	37.39
54	Closterdale	Closterdale	Sonoma	6	1.40	2.13	3.41	5.11	6.20	6.82	7.44	6.82	5.58	3.72	2.13	1.40	52.10
168	Petaluma	Petaluma	Sonoma	1	1.12	1.54	2.48	3.63	4.34	4.88	5.27	4.96	3.90	2.79	1.53	1.09	37.39
172	Sonoma	Sonoma	Sonoma	6	1.40	2.13	3.41	5.11	6.20	6.82	7.44	6.82	5.58	3.72	2.13	1.40	52.10
164	Crows Landing	Crows Landing	Stanislaus	11	1.71	2.48	4.03	5.58	6.82	7.75	8.37	7.75	6.20	4.34	2.17	1.55	58.75
254	Crows Landing #2	Crows Landing	Stanislaus	11	1.71	2.48	4.03	5.58	6.82	7.75	8.37	7.75	6.20	4.34	2.17	1.55	58.75
86	Modesto	Modesto	Stanislaus	11	1.71	2.48	4.03	5.58	6.82	7.75	8.37	7.75	6.20	4.34	2.17	1.55	58.75
165	Newman	Newman	Stanislaus	11	1.71	2.48	4.03	5.58	6.82	7.75	8.37	7.75	6.20	4.34	2.17	1.55	58.75
21	Oakdale	Oakdale	Stanislaus	11	1.71	2.48	4.03	5.58	6.82	7.75	8.37	7.75	6.20	4.34	2.17	1.55	58.75
187	Patterson	Patterson	Stanislaus	11	1.71	2.48	4.03	5.58	6.82	7.75	8.37	7.75	6.20	4.34	2.17	1.55	58.75
183	Turlock	Turlock	Stanislaus	11	1.71	2.48	4.03	5.58	6.82	7.75	8.37	7.75	6.20	4.34	2.17	1.55	58.75
209	Live Oak	Live Oak	Butter	17	1.71	2.48	4.34	6.89	7.44	8.37	9.30	8.37	6.51	4.34	2.17	1.55	62.47
210	Yuba City	Yuba City	Butter	17	1.71	2.48	4.34	6.89	7.44	8.37	9.30	8.37	6.51	4.34	2.17	1.55	62.47
152	Corning	Corning	Tehama	17	1.71	2.48	4.34	6.89	7.44	8.37	9.30	8.37	6.51	4.34	2.17	1.55	62.47
24	Gorber	Gorber	Tehama	17	1.71	2.48	4.34	6.89	7.44	8.37	9.30	8.37	6.51	4.34	2.17	1.55	62.47
225	Red Bluff	Red Bluff	Tehama	17	1.71	2.48	4.34	6.89	7.44	8.37	9.30	8.37	6.51	4.34	2.17	1.55	62.47

Figure 3. The CIMIS Stations page of the calculator. Scroll through the list of stations to find the one nearest to you or that best approximates the conditions at your location. You will enter the station number on the GPM Calculator page.

CROP K_c VALUES. To fully understand what K_c values are, we encourage you to read, “Re-evaluating Avocado Water Needs: What is the True Avocado Crop Coefficient?” in the Spring 2026 issue of *From the Grove*. Briefly, a K_c or crop coefficient is a number used to adjust a reference evapotranspiration (ET_0) value, which is usually based on a well-watered grass, to the evapotranspiration of our crop (ET_c). For example, if the ET_0 is 1 inch for a seven-day period and the K_c for our crop is 0.5, our ET_c is 0.5 inch. In other words, we need to run our irrigation system to supply 0.5 inches of water per unit area (e.g., an acre).

K_c values for avocados in California have never been very good, until recently. Dr. Ali Montazar, UC Irrigation and Water Management Advisor, recently completed a multi-year project to determine the actual K_c values for Hass avocados in California (unfortunately we do not currently have accurate K_c values for other varieties). These K_c values are shown on the Crop K_c Values page of the spreadsheet along with the

average values from the study and the option to insert user-defined values (**row 11; Figure 4**).

Why would you want to enter user-defined K_c values? Because Dr. Montazar’s study could not determine the actual K_c value for every avocado grove, some interpolation of his data may be required. For example, Tim suggested to David that a piece of property he was looking at may best be represented by an average of the K_c values for sites AV3 and AV5. This average is shown by default in row 11 when you open the spreadsheet. Row 12 of the Crop K_c Values page provides some additional information to consider how to blend Dr. Montazar’s data to suit your grove.

This page also provides K_c values for many other common fruit and vegetable crops in California, along with source references, should you wish to use this calculator for something other than avocados. However, as designed, the spreadsheet will only provide good calculations for tree crops without modifications.

Crop	Variety / Notes	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Source
AVOCADO — Montazar et al. (2025) Confirmed Actual K_c act Agric. Water Mgmt. 313:109481 Spann (2026) From the Grove Spring 2026														
Hass — AV1 — San Pasq	Inland valley, S-facing 44% slope, large canopy 88.7% — HIGHEST K_c [Montazar 2025]	0.85	0.85	0.80	0.73	0.73	0.72	0.70	0.70	0.71	0.73	0.78	0.81	Montazar 2025 / Spann 2026
Hass — AV2 — Tomecula	Inland valley, high elevation 1,490 ft, SE-facing 20% slope [Montazar 2025]	0.77	0.81	0.74	0.69	0.66	0.65	0.63	0.64	0.65	0.66	0.71	0.73	Montazar 2025 / Spann 2026
Hass — AV3 — Irvine	Transitional, moderate coastal influence, reclaimed water [Montazar 2025]	0.75	0.76	0.74	0.68	0.65	0.57	0.55	0.59	0.60	0.65	0.70	0.74	Montazar 2025 / Spann 2026
Hass — AV4 — West Sal	Coastal/marine fog, nearly flat 3%, low elevation 164 ft — LOWEST K_c [Montazar 2025]	0.72	0.73	0.70	0.65	0.63	0.58	0.55	0.58	0.59	0.62	0.69	0.70	Montazar 2025 / Spann 2026
Hass — AV5 — Santa Pau	Inland Ventura/SB, gentle S-slope 4%, older trees 10 yr [Montazar 2025]	0.76	0.75	0.72	0.66	0.64	0.59	0.57	0.59	0.62	0.64	0.64	0.74	Montazar 2025 / Spann 2026
Hass — Study Mean (AV)	Average of 5 representative sites — use when site conditions uncertain	0.77	0.78	0.74	0.68	0.66	0.62	0.60	0.62	0.63	0.66	0.70	0.74	Montazar 2025 / Spann 2026
Hass — My Grove	Enter your own K_c values — blend the site rows above or enter custom values	0.735	0.745	0.72	0.665	0.64	0.575	0.55	0.585	0.595	0.635	0.695	0.72	User-defined
Source: Montazar, A. et al. (2025) Agric. Water Mgmt. 313:109481. Summarized in Spann, F. (2026) From the Grove, Spring 2026, CAC. Site guidance — Spann (2026) Inland S. CA → AV1/AV2 Coastal SD → AV3 Coastal N. CA (Ventura/SB coast) → AV4 Inland Ventura/SB → blend AV5+AV3+AV2 Los Alamos, CA → 50% AV4 + 50% AV5 recommended. 'My Grove' row type: [dropdown] Selecting 'My Grove' in the dropdown will pull those values automatically.														
TREE FRUITS — Subtropical & Tropical (non-avocado)														
Citrus — Navel Orange	Mature, no cover crop	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	
Citrus — Lemon	Mature, no cover crop	0.60	0.60	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	
Citrus — Grapefruit	Mature, no cover crop	0.65	0.65	0.65	0.65	0.70	0.70	0.70	0.70	0.65	0.65	0.65	0.65	
Citrus — Mandarin	Mature, no cover crop	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	
TREE FRUITS — Deciduous														

Figure 4. The Crop K_c Values page of the calculator. On the GPM Calculator page you will select one of the five established sets of K_c values, the average of the five sets or custom K_c values that you enter here.

GPM CALCULATOR. This is the page of the calculator that you will interact with most and it is the page the spreadsheet will open to by default. This page is divided into five sections, and we'll go through each one.

A. Your Grove Inputs: In this section you will change the values in **BLUE**. The first input is CIMIS Station number. This can be found on the CIMIS Stations page. Select the CIMIS station nearest to your grove location or the station that you know from experience best matches your grove location. The Station/County/Zone cell will be automatically populated when you enter your CIMIS Station number.

Next enter the number of trees you have or are planning to plant followed by the trees per acre, which is obtained from the Spacing Chart page.

Next enter your irrigation system's distribution uniformity (DU). Don't know your system's DU? We won't judge. Visit the Cal Poly Irrigation Training and Research Center's website for some helpful information about what DU is and how to measure it: <https://www.itrc.org/projects/evals.htm>.

The next value you need to enter is your leaching fraction. This should be based on a water quality analysis of your water source. Your testing laboratory will be able to provide you with a leaching fraction estimate.

The next two items you need to enter are based on your level of risk tolerance. How many hours every day do you want to run your well and how many days per week? As mentioned in the Spring 2024 article, all equipment eventually fails. If you plan to run your irrigation all day every day there's no time left for the inevitable failure, which means something is going to go without water when that breakdown happens. Decide how many days per week you want to run your system and how many hours each day you want it to run and enter those values in cells C10 and C11.

Lastly, select which of the Crop K_c Values you wish to use from the drop-down menu. The drop-down menu is accessed by clicking the small down arrow in the lower right corner of cell C12. When you make your selection, the K_c values in Section C will be automatically populated.

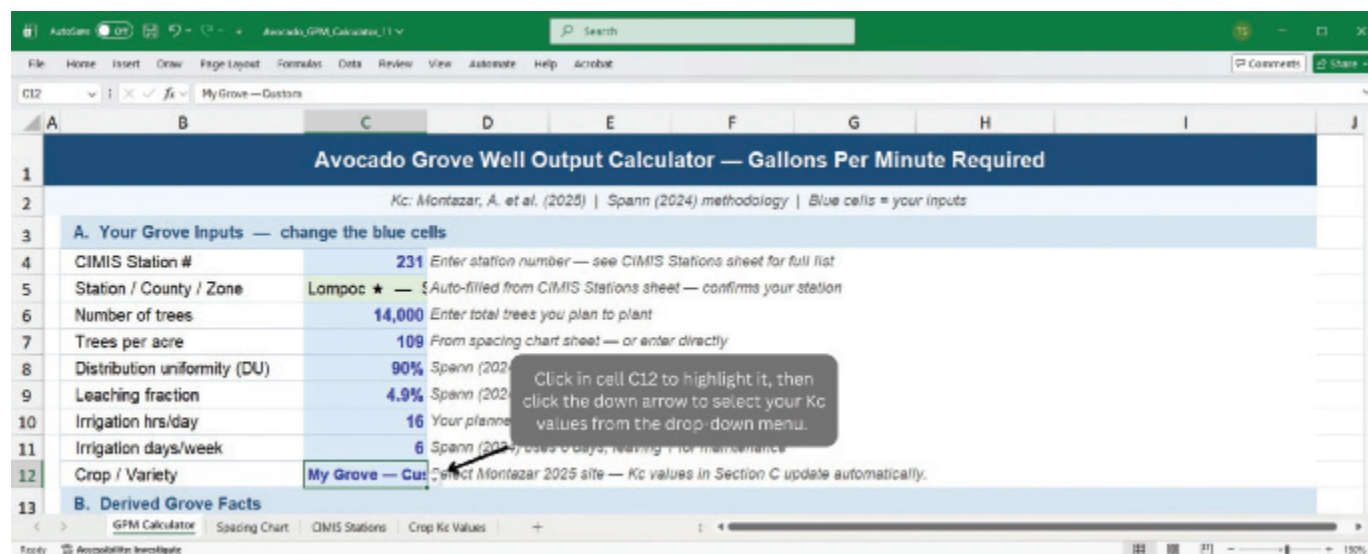


Figure 5. Section A of the GPM Calculator page is where you enter the details about your grove.

B. Derived Grove Facts: There are no user modifiable values in this section. The grove area and peak-month irrigation minutes values are automatically calculated based on the inputs in Section A.

C. Monthly Water Budget: In this section you will again change the values in **BLUE**, which refer to the ET_o for the CIMIS Station you selected in Section A. You can copy and paste these values from the CIMIS Stations page to the appropriate cells on the GPM Calculator page.

The screenshot shows the 'Avocado GPM Calculator' spreadsheet. Section B, 'Derived Grove Facts', shows a grove area of 128.1 acres and 25,509 peak-month irrigation minutes. Section C, 'Monthly Water Budget', is a table with columns for Month, Days, ET_o (in/mo) CIMIS Stn 231, K_c (auto), ET_c (in/mo) = $ET_o \times K_c$, Applied (in/mo) + DU, Gal/tree /month, and GROVE TOTAL gal/month. The table lists monthly values from Jan to Dec, with July highlighted as the peak month. The annual total for ET_c is 26.14 inches.

Month	Days	ET_o (in/mo) CIMIS Stn 231	K_c (auto)	ET_c (in/mo) = $ET_o \times K_c$	Applied (in/mo) + DU	Gal/tree /month	GROVE TOTAL gal/month
Jan	31	1.24	0.74	0.91	1.06	265	3,713,824
Feb	28	1.68	0.75	1.25	1.46	364	5,100,090
Mar	31	2.24	0.72	1.61	1.88	469	6,571,929
Apr	30	3.90	0.67	2.59	3.03	755	10,568,140
May	31	4.96	0.64	3.17	3.71	924	12,935,225
Jun	30	5.58	0.58	3.21	3.75	934	13,074,177
Jul ★	31	5.89	0.55	3.24	3.78	943	13,200,498
Aug	31	5.58	0.59	3.28	3.81	950	13,301,554
Sep	30	4.65	0.60	2.77	3.23	805	11,274,109
Oct	31	3.10	0.64	1.97	2.30	573	8,021,355
Nov	30	1.80	0.70	1.25	1.46	364	5,097,646
Dec	31	1.24	0.72	0.89	1.04	260	3,638,032
Annual Total	365	41.86	—	26.14	30.54	7,607	106,496,580

Figure 6. Section B of the GPM Calculator page shows calculated values based on the information you entered in Section A. Section C of the GPM Calculator page is where you will enter the reference evapotranspiration (ET_o) values for the CIMIS Station entered in Section A.



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D. Required Well Output: Again, this section has no user modifiable values but is the product of the data entered into in the previous sections, i.e., it's the answer! This section tells you the peak month for water demand, the peak volume of water in gallons and acre-feet for that month, and the number of available irrigation minutes for that month based on your irrigation hours per day and days per week in Section A.

The next values provided are the well output in gallons per minute (GPM), gallons per hour (GPH) and gallons per day for the peak irrigation month. You are then provided with a recommended pump capacity in GPM. This value has a built in 25% buffer. That is, if your maximum required well output came out to 400 GPM the spreadsheet would recommend a pump capacity of 500 GPM. Again, you never want any

of your equipment to be working at maximum capacity. You could adjust this value if you want a larger or smaller safety margin.

The last two values are the estimated total water need for the grove in gallons per year and acre-feet per year.

E. Formula Basis: This section provides the basic formulas that were used to make all the calculations and some of the sources used to build the spreadsheet.

We hope that you find this tool helpful. If you use it and have any questions, please reach out to Tim at tim@spannag.com. If you have ideas for other tools like this that may be helpful, please let us know and we'll see what Claude can whip up. 🍌

The screenshot shows a spreadsheet titled "Avocado Grove Well Output Calculator — Gallons Per Minute Required". It is divided into two main sections: D and E.

Section D: Required Well Output — Gallons Per Minute

Row	Label	Value	Notes
32	Peak month	July	
33	Peak grove volume	13,200,498 gallons (July)	
34	Peak grove volume	41.1 acre-feet (July)	
35	Total irrigation minutes	25,509 minutes available in July	
36	Required well output	517.5 GPM	← KEY RESULT
37	Required well output	31,050 GPH	
38	Required well output	425,823 gallons per day (July avg)	
39	Recommended pump size	646.9 GPM	(+25% safety — Spann 2024)
40	Annual grove total	106,496,580 gallons/year	
41	Annual grove total	326.8 acre-feet/year	

Section E: Formula Basis (Spann 2024 / UC Riverside / CIMIS Zone 2)

Row	Formula / Description
43	Step 1: $ET_c (in/mo) = ETo \times Kc$ (Kc auto-populated from crop selection via INDEX/MATCH)
44	Step 2: $Applied\ water (in/mo) = ET_c + DU + (1 - Leaching\ Fraction)$
45	Step 3: $Gallons\ per\ tree/mo = Applied (in) \times 27,154\ gal/ac-in \div Trees\ per\ acre$
46	Step 4: $Grove\ total\ gal/mo = Gal/tree \times Number\ of\ trees$
47	Step 5: $Required\ GPM = Peak\ grove\ gal (July) \div Total\ irrigation\ minutes\ in\ July$
48	$Total\ minutes = 31\ days \times (Irrigation\ days/wk \div 7) \times Hrs/day \times 60\ min/hr$
49	Source — ETo : CIMIS Zone 2 (Lompoc Sta 231), DWR/UC Davis Reference ETo Zones, 2012.
50	Source — Kc : Montazar, A. et al. (2025). Quantifying Evapotranspiration and Crop Coefficients of California 'Hass' Avocado. Agric. Water Mgmt. 313:109481. Summarized in: Spann, 7
51	Source — Method: Spann, T. (2024). Do You Have Enough Water? From the Grove, Spring 2024, CAC.

Figure 7. Section D of the GPM Calculator page shows the results of the calculations and Section E shows the equations used to make the calculations and the sources for the information used to develop the calculator.



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Carbohydrates:

Plant Currency That You Should Understand

By Tim Spann, PhD

Spann Ag Research & Consulting, LLC

Carbohydrates — organic molecules made up of carbon (C), hydrogen (H) and oxygen (O) typically in a 1:2:1 ratio — are the energy currency with which everything in plants operates, and understanding their metabolism is critical to understanding plant growth and development.

In plants, carbohydrates are produced via photosynthesis. Using the sun's energy, plant carbohydrate factories (aka, leaves, specifically the chloroplasts within leaves) take carbon dioxide (CO_2) from the atmosphere and combine it with water (H_2O) taken up by roots and turn them into carbohydrates and oxygen (**Figure 1**). The simplest carbohydrate is glucose, $\text{C}_6\text{H}_{12}\text{O}_6$, and is the product of photosynthesis.

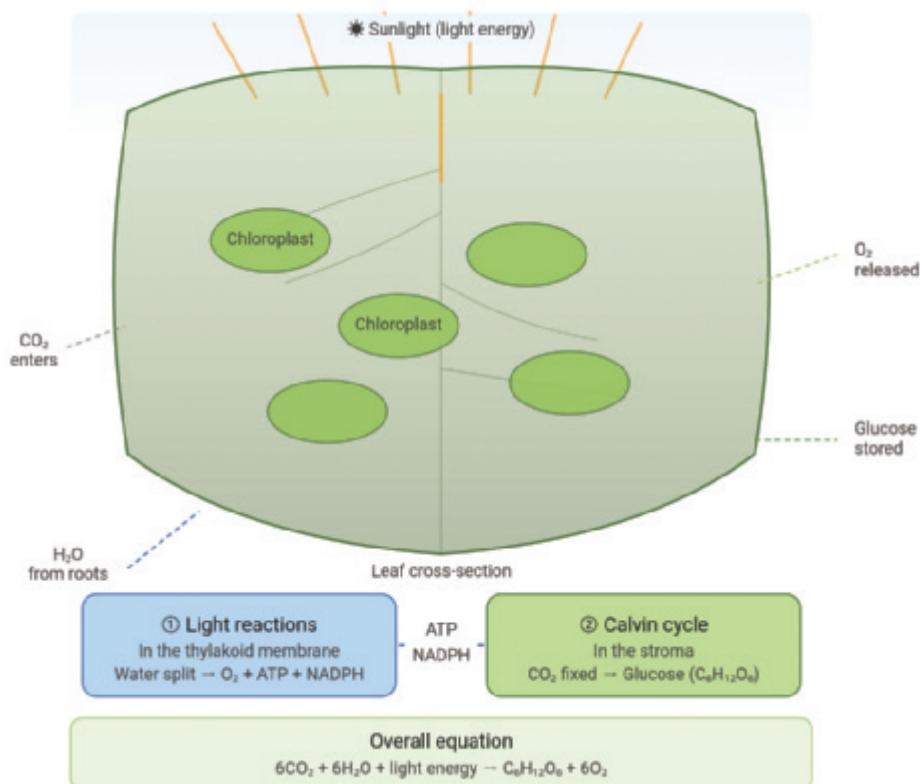


Figure 1. A diagram of a leaf cross-section showing the chloroplasts where photosynthesis reactions take place. First, water (H_2O) from the roots is split into hydrogen (H_2) and oxygen (O_2) in what are called light reactions. Second, carbon dioxide (CO_2) taken from the atmosphere is combined with the hydrogen from the light reactions to produce glucose. It takes six molecules of carbon dioxide and water to produce one molecule of glucose. The byproduct of photosynthesis is oxygen, which is released back to the atmosphere.

Glucose is converted to sucrose ($C_{12}H_{22}O_{11}$; essentially two glucose molecules combined) and transported by plants in phloem tissue to wherever energy is needed – sinks, such as growing shoots, fruit, and roots, generally in a downward direction (**Figure 2**). The counterpart of the phloem is xylem, which transport water up from the roots and out to the atmosphere through leaves via transpiration.

If there is an excess of energy available, plants can link thousands of glucose molecules together into starch (a complex carbohydrate) for storage until it is needed. Starch can be stored at the source of carbohydrate production, leaves, or formed in other tissues after sucrose is transported to them. Typically, starch can be found at some level in all plant parts, but certain plant tissues are known for accumulating very large quantities of starch, such as potato tubers.

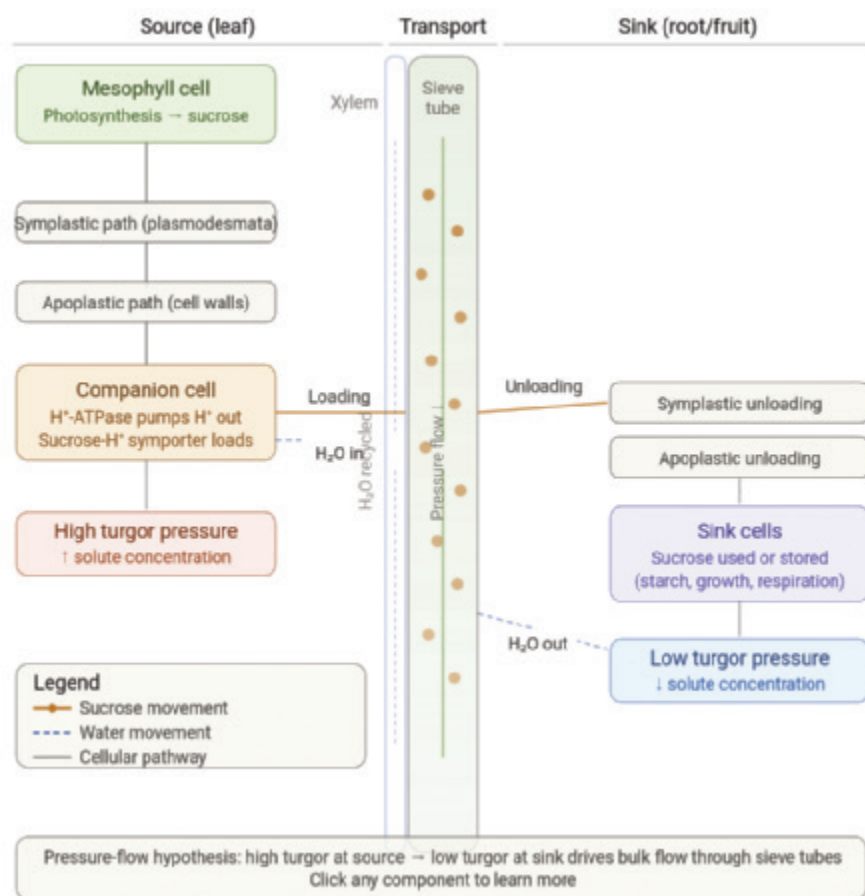


Figure 2. A diagram showing how glucose produced in leaves (source) is converted to sucrose for transport in the phloem to where energy is needed (sinks). The flow into, through and out of the phloem is by osmosis and concentration gradients. There is a high concentration of sucrose near the source (leaves) where sucrose is being loaded into the phloem and a low concentration at the sinks where sucrose is being removed from the phloem.

In a tree, such as avocado, the xylem tissue is wood, with the layers closest to the outside of the tree being active. The phloem is the “bark”. Separating the xylem and phloem is the cambium, a tissue that is only a few cells thick, whose sole purpose is to create new xylem cells to the inside and new phloem cells to the outside (**Figure 3**). Because the cells of the cambium are (nearly) constantly dividing and producing new cells they are not held together tightly, which is why the bark can be easily peeled off a tree when it is actively growing. This can be useful horticulturally such as when we are trying to graft plants.

Anything that disrupts the flow of carbohydrates down through the phloem will result in an accumulation of starch above the disruption as the concentration of glucose builds up. This is the basis for girdling, the process of removing a thin strip of bark around the circumference of a branch, to temporarily disrupt the phloem for horticultural reasons. In addition to the accumulation of starch, girdling also results in hormonal changes that can result in desirable changes above the girdle.

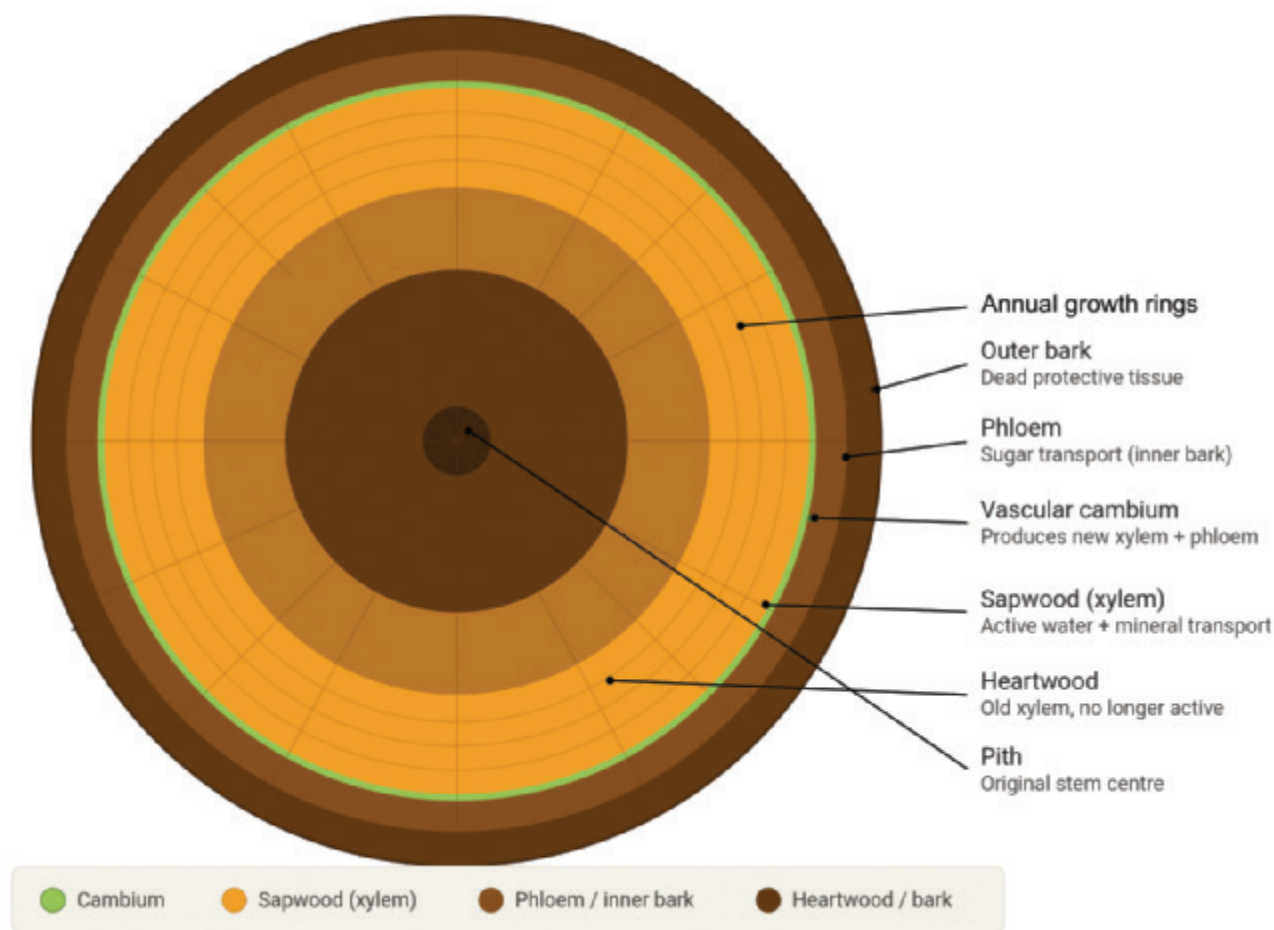


Figure 3. A diagram of a cross-section of a tree trunk. The green layer is the cambium, a thin layer of actively dividing cells that produce xylem to the inside and phloem to the outside. The youngest, active xylem tissue is what is commonly referred to as sapwood and older, inactive xylem is heartwood. The phloem closest to the cambium is active and as new phloem cells are produced the older cells die and are pushed to the outside to become bark.

What Do Carbohydrates Have to Do with Avocados?

The avocado is notorious for producing an abundance of flowers — reportedly as many as 1 million flowers per tree — but very few fruit — several hundred fruit per tree is considered a very good yield. Dr. Iñaki Hormaza, Professor at the Spanish National Research Council, has reported that the success of natural pollination, that is the percent of flowers produced on an avocado tree that eventually become fruit, is about 0.15% at 18-weeks after flowering. The natural tendency is to assume that this is due to poor pollination. However, when flowers are hand pollinated, they were only able to increase fruit-set to 2.8%. This suggests that something else is happening.

Dr. Hormaza and his team asked the simple question, “Are all avocado flowers equal?” The scientific literature suggests that flower quality, as defined by starch content of the flowers, plays a role in determining whether a flower can produce a fruit. This has been documented in olive and sweet pepper. Starch content can be easily quantified because it reacts with iodine, producing a dark blue-black color. Plant tissues can be briefly dipped in iodine and the level of staining quantified. Dr. Hormaza and his team performed this starch test on avocado flowers and found a ten-fold variation in flower starch content (**Figure 4**).

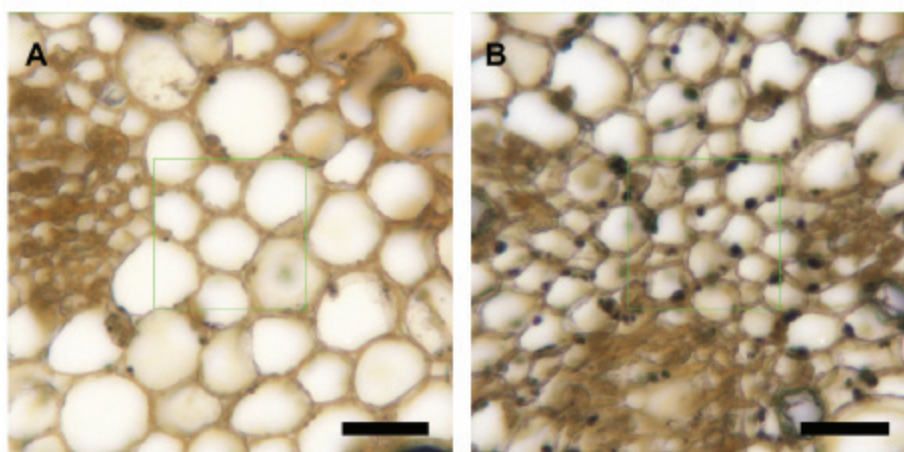
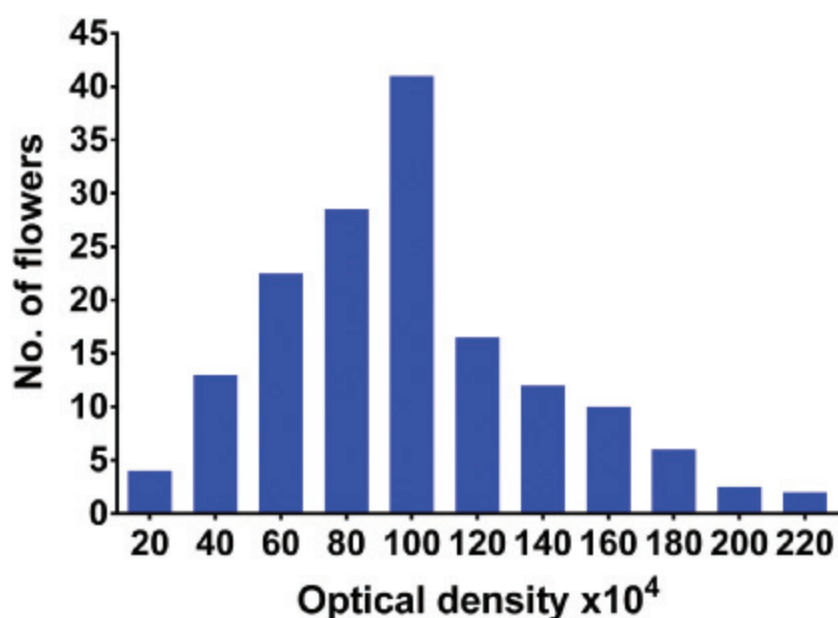


Figure 4. The starch content of individual avocado flowers measured as optical density of starch staining (top; redrawn from Hormaza, 2014, *Factors Influencing Avocado Fruit Set and Yield*). Iodine-stained sections of Hass avocado flowers with low (A) and high (B) starch content in the style (Image from: Alcazar et al., 2013).

The team then needed to figure out how to measure flower starch content, a destructive measurement, and determine if the flower they destroyed would produce a fruit. The female part of a flower, called the pistil, is composed of three main parts: the stigma, style and ovary (**Figure 5**). The stigma is a surface at the tip of the pistil where pollen grains (male) land and germinate. When the pollen grain germinates it produces

a pollen tube that grows down inside the style where it eventually reaches the ovary. Through the pollen tube passes the sperm cells that fertilize the ovule within the ovary to form the embryo inside the future seed. The fleshy part of the ovary eventually forms the flesh of the fruit. The pollen tube grows quickly and takes less than 24 hours to reach the ovary.

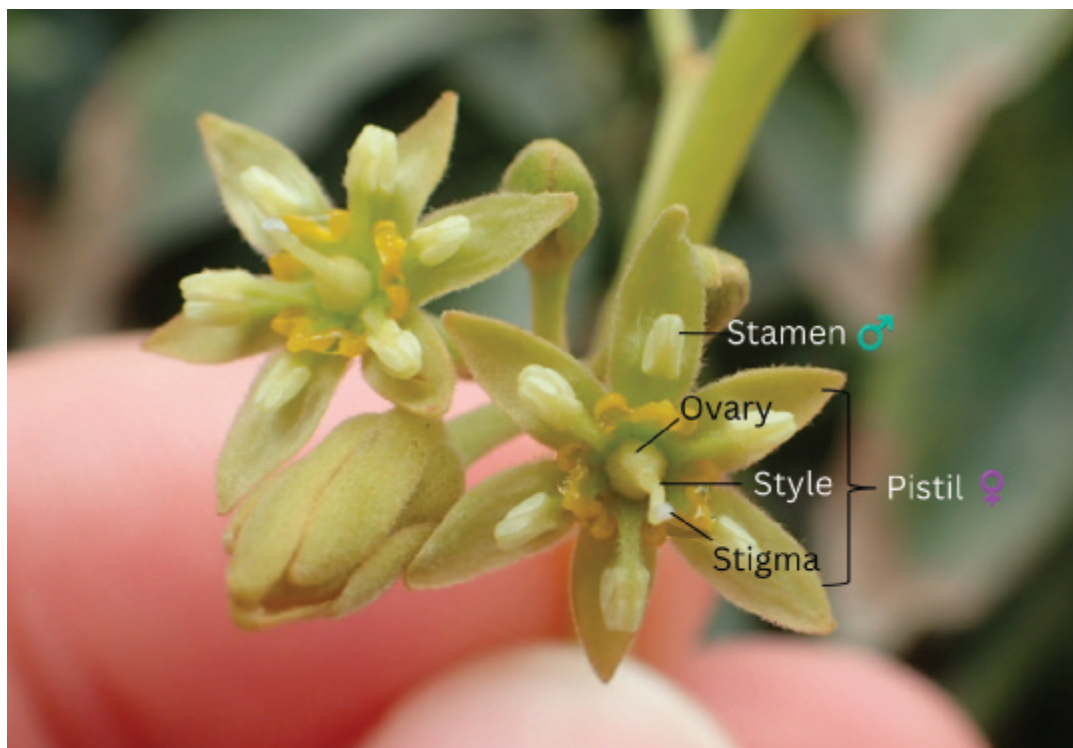


Figure 5. An avocado flower open in the female phase showing the pistil (female part of the flower) composed of the stigma, style and ovary, and the stamens (male parts of the flower) laid out flat around the flower and not shedding pollen.

The team found that they could remove the style 24 hours after pollination without affecting the fate of the flower. This allowed them to test the style for starch content, indicating the quality of the flower, while still tracking the fate of the flower (whether it produced a fruit) (**Figure 6**).

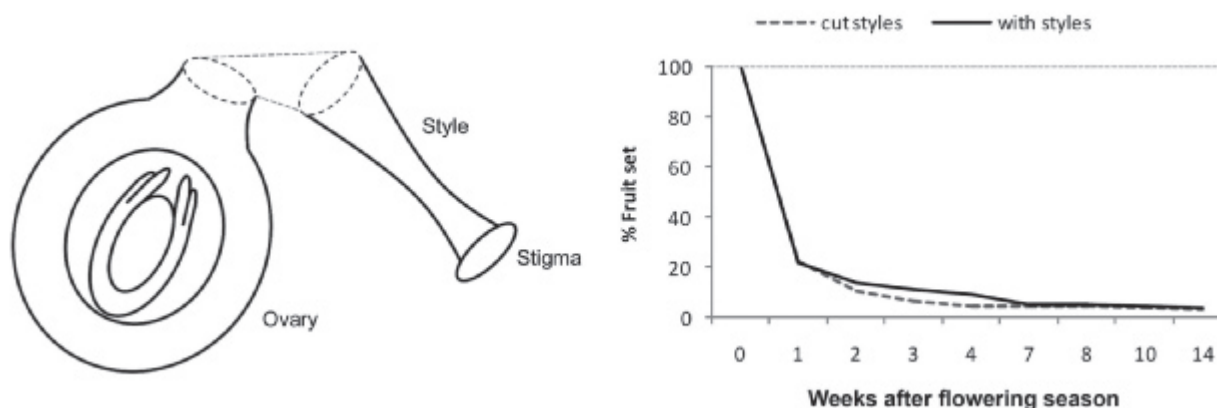


Figure 6. A diagram representing the pistil of an avocado flower showing how the style and stigma are removed (left; from Boldingh et al., 2016). Data showing that flowers with intact styles and flowers with cut styles perform the same 14 weeks after pollination and style removal (right, from Hormaza, 2014).

SAFEGUARD & STRENGTHEN YOUR TREES THIS SUMMER



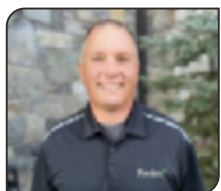
Summer can be tough on avocado trees. Heat, wind, and salinity all put added stress on your orchard when trees should be focused on producing a strong, vigorous crop.

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GROW BEYOND

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Dr. Hormaza's team initially conducted this work in Spain where they hand pollinated 597 individual Hass flowers on three different trees with Fuerte pollen. One day after pollination they removed the style from each flower to quantify the starch content and continued to track the fate of the flowers. Their data clearly indicated a strong correlation between starch content and fruit-set, with the flowers with the highest starch content having the highest chance of setting a fruit (**Figure 7**).

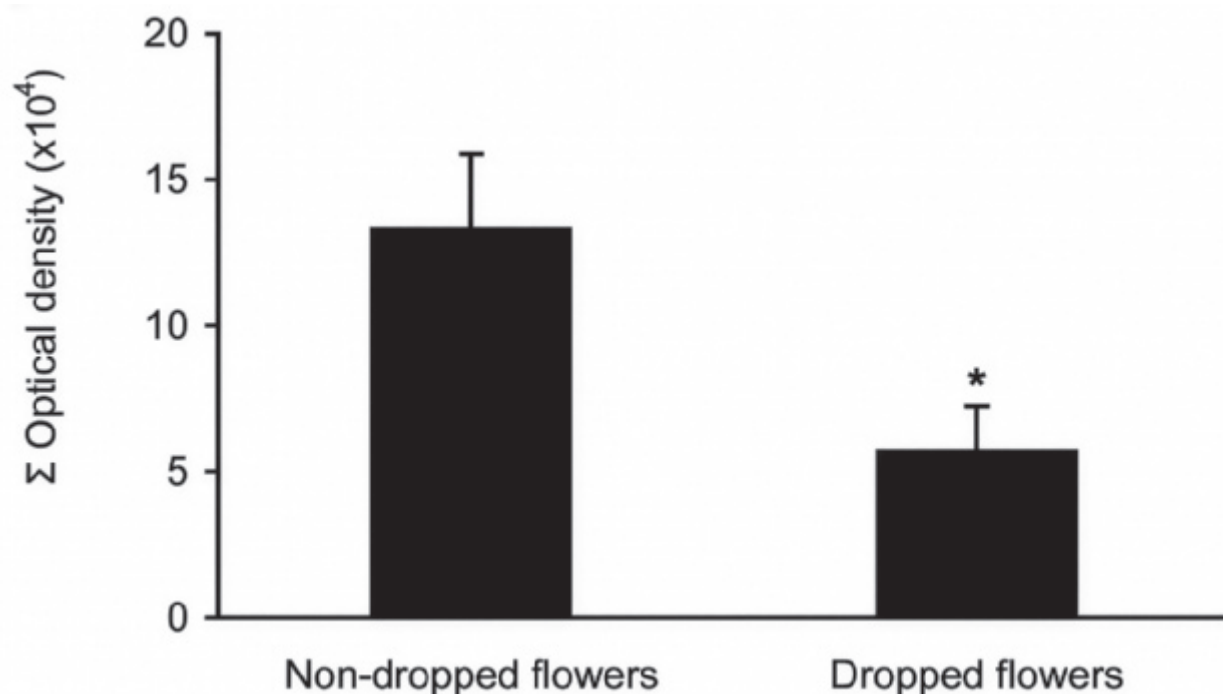


Figure 7. Starch content, reported as optical density, in the styles of flowers that produced a fruit (non-dropped flowers) and those that did not produce a fruit (dropped flowers).

A similar study was later conducted in New Zealand as well as Spain and looked at not only starch content of the styles, but also the content of different types of sugars and boron content. This study found similar results to the previous work conducted only in Spain with some variation between Spain and New Zealand (**Figure 8**). The amount of total sugars and starch in the flowers was highly indicative of the fate of the flower. However, the relationship of individual types of sugars varied between the two countries. Interestingly, boron levels were strongly indicative of flower fate in New Zealand but not in Spain. The researchers attributed this to the low levels of boron found in New Zealand soils and the need for boron fertilization, whereas in Spain boron levels were higher.

Can You Affect Flower Quality?

A definitive study showing a relationship between cultural practices and flower quality has not been completed. However, we know that maintaining healthy leaves will naturally result in more photosynthesis and more carbohydrate production so it is logical that anything we can do to maintain or

improve leaf health will ultimately affect flower quality.

If your water source is high in salinity, proper leaching is critical to leaf health. If leaves show signs of tip burn, they are not photosynthesizing at optimal levels, which may be affecting flower quality.

Pest infestations also can reduce leaf health and photosynthesis. The two most important pests to be mindful of are perseia mite and avocado lace bug, which can significantly decrease leaf health if not properly controlled.

Proper fertilization also is very important. If your trees become yellow and partially defoliate during bloom, they are hungry. The yellowing is the result of nutrients, primarily nitrogen, being pulled from the leaves to support the bloom. You may consider several light nitrogen applications during the winter to boost your trees' nitrogen status prior to bloom. And as the New Zealand study showed, boron is very important. Make sure you are taking annual leaf samples in September or early October to assess your trees' nutrient status and work with your analytical lab, field rep or an agronomist to be sure your fertilizer program is optimized. 🍌

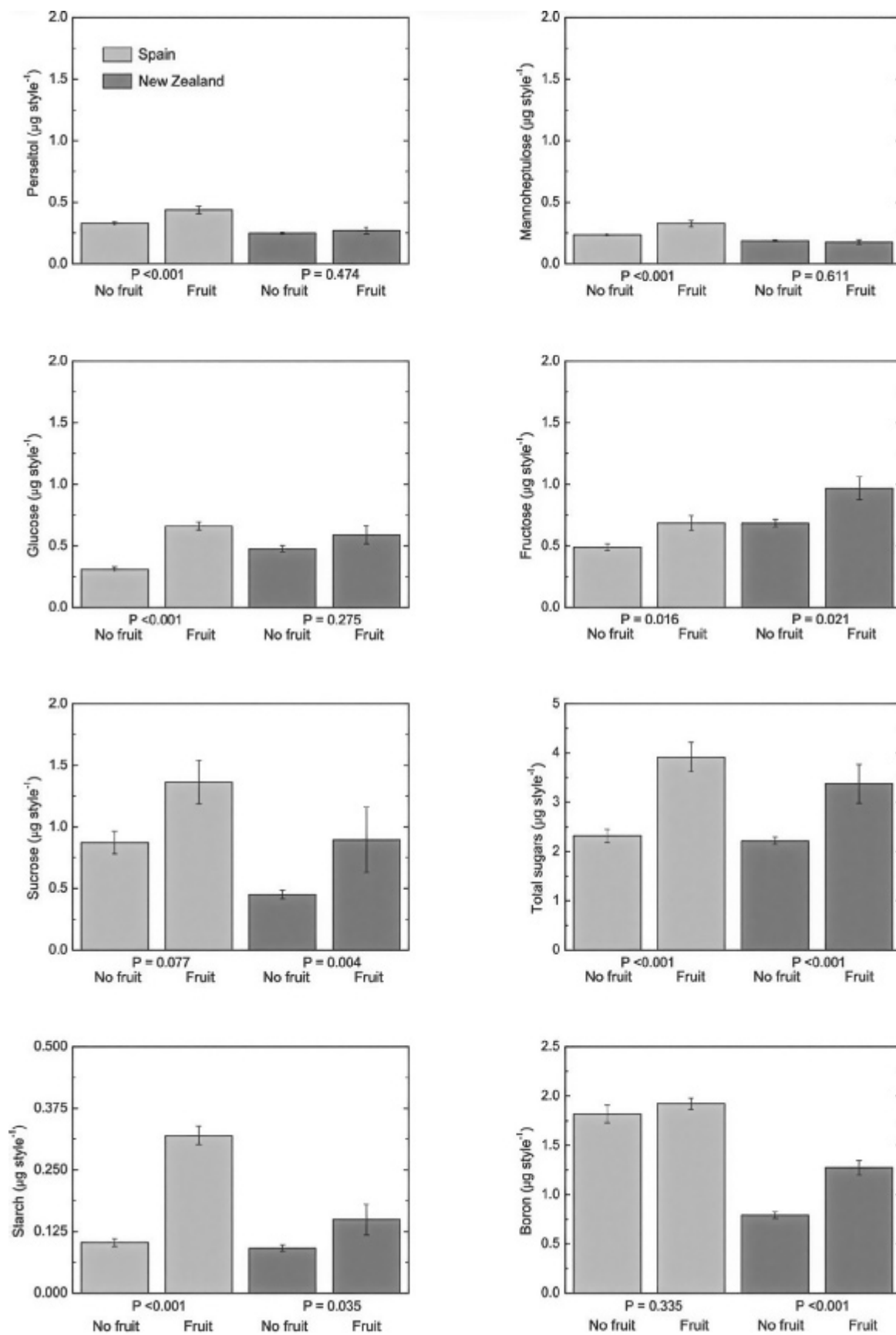


Figure 8. Carbohydrate (sugars and starch) and boron content of the styles of Hass avocado flowers at bloom in Spain and New Zealand. Styles were grouped based on whether the flowers from which they were harvested were successful (fruit) or unsuccessful (no fruit). Image from: Bolding et al., 2016.

Summer Recipes: Hamburgers and Hot Dogs with California Avocados

Did you know there are more than 100 grilling recipes on CaliforniaAvocado.com? Grilling season closely aligns with peak California avocado availability, making it an ideal time to give consumers fresh usage ideas for when they go shopping and are planning warm-weather meals. Summertime favorites like hamburgers and hot dogs are among these popular recipes, and two are showcased below.

The California Avocado Commission develops and shares recipes to inspire shoppers to buy California avocados and use them more often. These recipes also support multiple marketing efforts beyond the website, including retail programs, public relations outreach, email newsletters and social media. 🥑

California Guacamole Dog

Serves: 8

Time: 15 minutes

Ingredients

- 8 traditional, turkey or vegan hot dogs
- 8 whole grain hot dog buns
- Zesty California Guacamole, as needed (see recipe below)

Instructions

1. Place hot dogs on a preheated grill, about 4 inches from a medium flame. Cook for about 6 to 10 minutes or until cooked through.
2. When hot dogs are about one minute away from being done, open buns and place them on the grill to warm.
3. Place cooked hot dogs in buns and top with Zesty California Guacamole.

Zesty California Guacamole Ingredients

- 1 Fresno chile (or red jalapeño)
- 4 ripe, Fresh California Avocados, quartered, seeded and peeled
- 1/2 cup minced red onion
- 1 Tbsp. lime juice
- 1/2 tsp. ground cumin
- 1/4 tsp. red chile flakes
- 1/2 tsp. salt, or to taste

Zesty California Guacamole Instructions

1. Remove stem from chile and discard. (For a milder guacamole, discard the seeds or keep them for a spicier guacamole.) Mince chile and place in a medium bowl.
2. Add remaining ingredients to the bowl and mash together, leaving some chunks of avocado. Season to taste and serve.



Hot dogs are an American tradition. Topped with Zesty California Guacamole they become a whole new taste sensation. If you prefer, use your own favorite California avocado guacamole recipe to savor on hot dogs, grilled bratwurst and other sausages.

Grilled Turkey Burgers with California Avocado and Caramelized Onions

Serves: 4

Time: 25 minutes

Ingredients

- 2 ripe, Fresh California Avocados, peeled, seeded and cut into 1/2-inch dice
- 5 Tbsp. extra virgin olive oil, divided
- 3 Tbsp. freshly squeezed lime juice
- 2 Tbsp. chopped fresh oregano
- Salt, to taste
- Freshly ground black pepper, to taste
- 2 Tbsp. unsalted butter
- 1 large red onion, diced
- As needed salt, to taste
- 1/4 cup white vinegar
- 1 Tbsp. cracked black pepper
- 1 lb. ground turkey (dark meat, if available)
- 2 Tbsp. extra virgin olive oil
- 4 brioche hamburger buns, split and grilled or toasted
- 4 slices sharp white cheddar cheese
- 1 Roma tomato, cored and cut into 1/4-inch dice



Included in the burger patties and the tasty topping, California avocados are the star of this turkey burger. The recipe, developed by renowned chefs and restaurateurs Mary Sue Milliken and Susan Feniger, also includes caramelized onions and is perfect for summer entertaining.

Instructions

1. In a medium mixing bowl, combine avocados with 3 Tbsp. olive oil, lime juice, oregano, salt and pepper, to taste. Divide mixture, reserving half to add to the ground turkey and half to use as a topping on the cooked burgers.
2. Melt butter in a medium skillet over low heat. Cook onions with salt to taste, stirring and shaking pan frequently, until onions are golden brown, about 15 minutes. Pour in vinegar, turn heat up to high and reduce by half. Remove from heat and stir in cracked pepper. Cool to room temperature.
3. Add turkey, caramelized onions and olive oil to a large mixing bowl and combine thoroughly. Using hands, gently mix in half the avocados and form turkey mixture into 4 burger patties.
4. Preheat grill, broiler or sauté pan over medium-high heat. Season turkey burger patties with salt and cook until lightly browned on bottom, about 3 to 4 minutes. Turn burgers and top with cheese slices. Continue cooking until turkey is just cooked through and cheese is melted.
5. Arrange buns, grilled or toasted side up, on plates. Place burgers on bottom halves of buns. Stir tomato into second half of reserved avocados and spoon mixture onto top halves of buns. Serve immediately.

Copyright Mary Sue Milliken and Susan Feniger.

**Large avocados are recommended for these recipes. A large avocado averages about 8 ounces. If using smaller or larger size avocados adjust the quantity accordingly.*

California avocado growers: your recipes and usage tips are needed for use in Commission programs! Please call 949.341.1955 or advise one of the CAC staff if you have a California avocado recipe to share.

Slow Start to 2026 Season Could Lead to Strong Finish

Handlers report that despite the slower-than-typical start to the California avocado season, movement picked up in late spring and it appears that there will be a solid finish with volume meeting the pre-season estimate.

"The pre-season estimate of 330 million pounds still appears to be on track," said Mission Produce Senior Vice President of Global Sourcing Keith Barnard, adding that the California Avocado Commission's mid-season survey results and revised industry estimate should provide a clearer picture of where the crop stands in early July.

Index Fresh Field Manager Keith Blanchard concurred, noting that the GEM variety has performed very impressively this year. "The season started slowly due to less than attractive pricing," he said. "As conditions have improved, growers are increasing harvest to catch up to the typical volumes we would expect at this point in the season. The crop is on track to meet the preseason estimate. This season, GEMs were forecast at an impressive 11 million pounds, a volume never before seen by California growers. As of June 18, the industry had already harvested more than 13 million pounds, and by the time the season wraps at the end of June, GEM volume is likely to



reach a historic 15 million pounds."

He reported that Index Fresh is California's largest marketer of GEMs, and its nationwide promotions of the variety were having a real marketplace impact. "Growing consumer interest in limited time specialty produce varieties, combined with promotable GEM supply, has allowed California Crema GEMs to reach shelves across the country with prominent features in retail circulars," Blanchard said adding that the 15 million pounds were being strategically harvested to align with retail demand and promotion calendars.

Blanchard also said that in the

depressed spring pricing environment, GEMs proved to be a bright spot.

Barnard said that while crop movement started more slowly than it did in 2025 largely due to softer market conditions early in the season, harvest activity for all varieties picked up in April and May, with weekly movement reaching levels comparable to the previous year. June saw peak volume with July and late summer volume expected to experience its typical seasonal decline. "While California fruit is expected to remain available into October, handling timelines typically depend on retail demand, market conditions,

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Get Involved with the Campaign!

Timeline — Filming and capture will take place in late 2026 or early 2027

Who — Growers from a variety of backgrounds, female growers, multi-generational families and new growers

Selection — Final participants will be chosen based on the specific creative needs of the campaign

Help the Commission build the California Avocados brand. **Contact Zac Benedict at zbenedict@avocado.org or any CAC staff member.**



and the pace of the remaining harvest as the season progresses,” he said.

The Mission executive said another bright spot is that there were some additional forays further east this year for California avocados. “Whenever possible, California fruit stays close to home, particularly in the western U.S., where demand is strongest and logistics line up most efficiently,” Barnard said. “This season, some volume has also moved to the East Coast to support customer programs. Export activity has been limited overall, but California fruit has made its way to markets including Canada, Japan, Korea and Taiwan.”

Blanchard and Index Fresh saw similar movement for California fruit. “Export volume has been in a typical range, and Index Fresh refunds the HAB assessment on exported fruit, which makes these opportunities more attractive to our growers,” he said. “We have also been moving California fruit farther east than in a typical season, with a notable increase in volume moving into Texas and the Midwest.”

Another topic of conversation that is of huge interest to the California avocado industry is the potential for El Niño weather conditions later this year. “California growers tend to view El Niño forecasts as a positive sign, since those patterns are often associated with warmer winters and more rainfall,” Barnard said. “Added rain can reduce irrigation demand, support tree health, and build up soil moisture going into the 2027 season. At the same time, the industry anticipates some storm-related challenges, so growers are wise to prepare early — maintaining drainage, monitoring erosion-prone areas, and making sure grove access and irrigation systems are ready before the rainy season sets in.”

Blanchard said growers will continue to combat high temperatures

with adjusted irrigation schedules and careful cultural management practices wherever possible. “Index Fresh’s agronomist, Gerardo Aldunate, works with partner growers across the state on best practices for extreme weather and offers practical, sitespecific solutions to help mitigate the impact,” he said. “Rain is generally welcome in California orchards, within reason, but

severe rain events can create challenges when large amounts fall in a short period of time. New trees planted on berms benefit from improved drainage and grade, so flooding is typically less of an issue; however, growers will still need to address erosion and manage runoff to protect orchard health over the long term.” 🥑





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