From the Grove

Summer 2021

The Latest News from the California Avocado Industry

RETAILERS BUILD DEMAND FOR CALIFORNIA AVOCADOS WITH COMBINATION OF IN-STORE AND DIGITAL TOOLS

Read more on page 12

HOPE
ASPIRATIONS
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Each year brings new challenges and we are thankful for the hard work each farmer puts into growing their avocados. Del Rey Avocado remains committed to helping our extended grower family. Growing relationships is what Del Rey Avocado is all about.
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Grower and Packer
California Conventional and Organic Avocados

Grower Profile

24 Chuck & Pete Dal Pozzo
Carpinteria, CA

From the **Grove**

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Summer 2021

In This Issue

Departments

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Message from the President

Tom Bellamore

A Culture Worth Preserving

At the May 2021 California Avocado Commission Board meeting, CAC directors took another significant step toward succession planning as the organization edges ever closer to a transition in leadership. The process has been underway since 2017, when the board first developed a comprehensive succession plan, gaining steam in spring of 2020 with the engagement of consultant Jim DeLizia, a certified association executive with 30 years of trade and non-profit experience on management and leadership issues. Jim's assignment has three main components: 1) define CAC's long-term needs for staff leadership and a profile of the ideal CEO candidate; 2) set expectations for a CEO-Board partnership that will form a strong foundation for CAC's growth and success into the future; and 3) prepare the Board for a productive executive search process.

I must admit that it feels a little strange to sit and listen to the Board's deliberations about its next CEO. Jim DeLizia's facilitated discussion about the qualities desired in that person elicited many responses that were predictable: *proactive, forward looking, industry experience, crisis management and communications skills, marketing expertise, consensus builder* and so forth. But early in one of the breakout sessions, I was struck by a comment from a relative newcomer to the Board, district 4 grower Rachael Laenen. Rachael emphasized the importance of inspiring staff and building cooperative, productive relationships across all functions. Rachael's observation mirrors my own belief that the organization's most important asset is its people, and that every accomplishment — whether a marketing success, breakthrough on a critical issue, or financial solvency over time — has at its root one very fundamental thing: teamwork. Ask staff how often I have reminded them that no one accomplishes anything alone and the answer would be "*ad nauseum.*"

Teamwork as a concept is, perhaps, too simple, too overused. My preference is to think about the culture created within the organization arising from the interactions between staff, and the actions of each individual, especially the CEO. These relationships ultimately determine how productive, efficient, and successful the organization is and will become.

Korn Ferry, a global organizational consulting firm, recently conducted interviews with 105 CEOs and directors from 311 companies representing 11 different sectors. Insights from this study are numerous. For example, 86% of the participants see business and society becoming more interconnected, where businesses are increasingly challenged to demonstrate they are good corporate citizens and critical contributors to their local communities. Society is demanding that companies, both public

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

and private, serve a social purpose, one CEO said. Korn Ferry also found that companies in the top quartile of performance are 3.6 times more likely to include diversity and inclusion among their publicly professed values. All of this requires finesse, according to Korn Ferry, the ability to lead differently than before.

The comments of two CEOs, Beth Ford of Land O'Lakes and Mindy Grossman of Weight Watchers, really hit home for me. Grossman said, "*The thing that keeps me up at night is that I've got to have the right talent to be agile and envision the future, and not to be complacent, and to take the right risks. You're not just hiring for a specific skill; you're hiring people who have the capability for whole-enterprise thinking versus just thinking within their single function.*"

Small as CAC might be, this is how we have approached the business, and it works. Training across disciplines is an imperative, along with holistic thinking. Beth Ford's corporate philosophy is even more to the point. "*The top priority for me as CEO is to acknowledge that employee well-being is at the top of my agenda*," she said in her interview. And that's where organizational culture comes into play—it has enormous bearing on how employees feel about being, and staying, at work.

In its succession plan, CAC directors acknowledge that the Commission has a well-established corporate culture that promotes cohesion and employee retention. That culture has been cultivated over many years, and has as its tenets:

- Mutual support and respect
- Diversity in all forms
- Training across disciplines and team building
- Employee empowerment and autonomy
- Openness and fairness in all communications
- Continual learning and employee development
- Security and personal well-being
- Connection to the industry
- Efficient use of resources
- Recognition of collective and individual achievement and a job well done
- Proper work-life balance
- And, naturally, California avocado consumption!

It is this culture, I believe, that provides the underlying support and foundation for all the Commission has been able to achieve, by fostering a cohesive, focused staff singularly committed to advancing the California Avocados brand.

Of course, an incoming CEO will have his or her own ideas about how to approach the business and the relative importance of corporate culture. First on that person's mind will undoubtedly be the alignment of the California avocado industry behind a well-articulated, but perhaps shifting, industry strategy. These are tumultuous times, and the path forward calls for bold new initiatives, public posturing unlike before, and a healthy dose of courage. It is my fervent hope the CAC Board will recognize the oftentimes silent role organizational culture has played in the success of the California Avocado Commission and encourage its new CEO to value and improve upon it.

CAC staff members are an amazing group of individuals who have enabled the California Avocados brand to grow, flourish and maintain a prominent place in today's increasingly competitive market. It would be a comfort upon leaving, after 27 years of service to the industry, to know the culture they have forged together has further longevity and that their good work continues.

Chairman's Report

Rob Grether

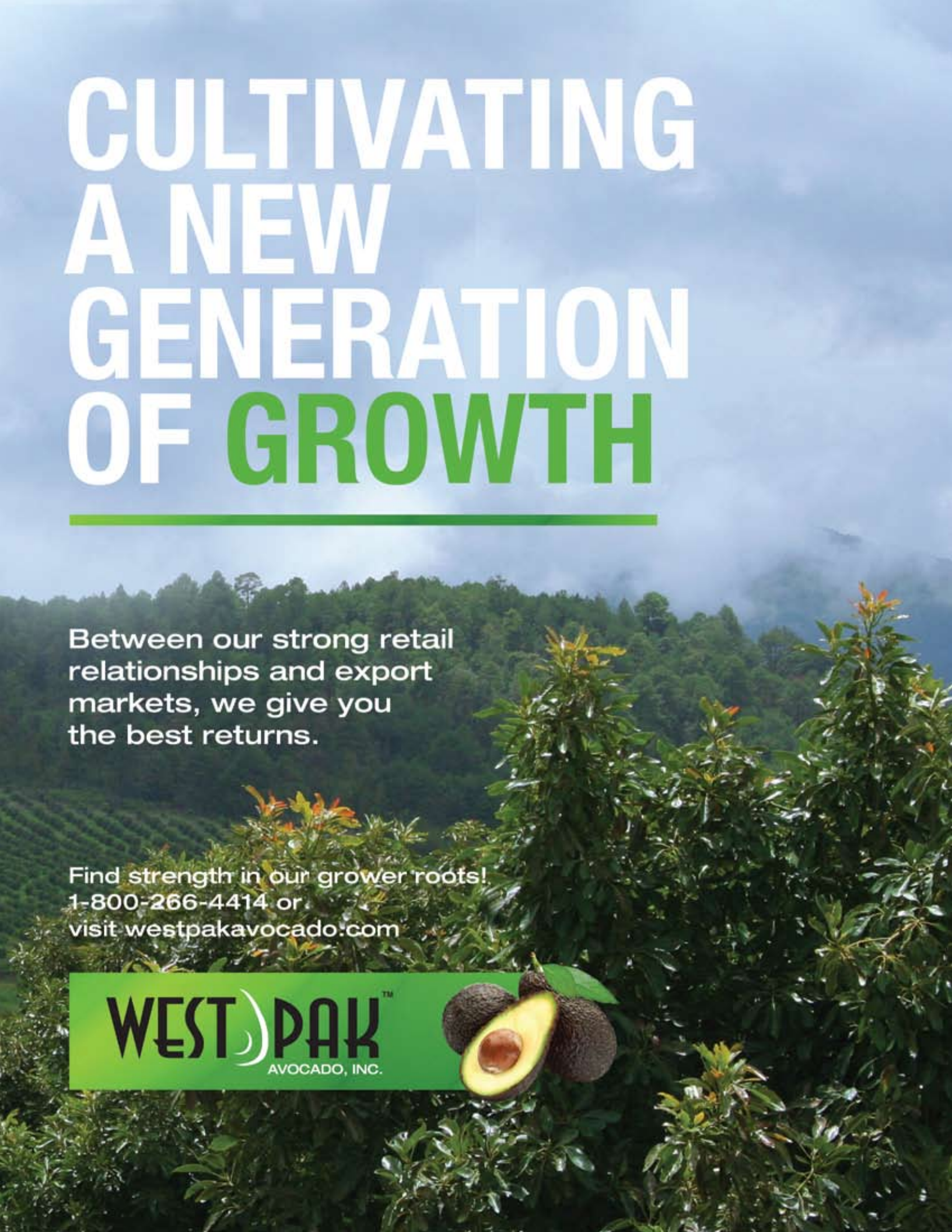
In mid-June, the California Avocado Commission's Marketing Committee convened with a packed agenda. They reviewed the consumer marketing campaign, current retail and foodservice promotional activities, and a report on the state of the U.S. avocado category, but much of the its focus was on the updated crop estimate. In late May, the CAC Finance Committee and the Board also reviewed the updated crop estimate, but in the midst of the first major heat wave of the summer, the mid-season estimate of 265 million pounds was starting to feel like the best-case scenario. Of course, June's heatwave was just the most recent of this season's numerous climatic challenges for our growers. Devastating wind events put a lot of our fruit on the ground and record-breaking drought has prevented much of the remaining fruit from putting on size. Wherever this crop wraps up, it will fall well short of the pre-season estimate of 325 million pounds. Lower revenue from reduced yields and a smaller size structure will have significant financial implications for many of our growers and for the CAC. Fortunately, fluctuations in the crop size and value are not new to the Commission, and the ongoing review by the Finance and Marketing Committees is just part of the CAC's systematic approach to minimizing the impact of a crop shortfall.

CAC's process for estimating the crop size and timing has been refined over the past 15 years. Prior to 2008, CAC conducted both a pre-season and mid-season grower survey. These paper surveys were mailed to 6,000 growers at significant expense, and despite the broad reach, the pre-season estimates were not particularly accurate. A preliminary pre-season estimate is still conducted to help set the budget in October, but CAC now relies on a narrower, emailed survey of the handlers at essentially no cost. As the crop matures through the winter, management surveys the handlers again in December and February and looks for further refinement of the crop volume and weekly harvest projections through meetings with handlers and grove managers.

In April, with the harvest underway and the threat of freeze past, the mid-season survey is sent out to all growers and handlers and generally leads to an official revised estimate. The mid-season crop estimate has historically been very accurate: in the past five years, the most it missed the final crop volume was by 3%, and in three of those five years it missed the final crop volume by less than 1%. Since 2018, CAC also has engaged LandIQ to conduct an annual statewide spatial land use survey using satellite and aerial imagery, proprietary algorithms and in-grove validation to refine our acreage records, the critical counterpart to yield-per-acre for estimating the state's crop. Notably, LandIQ's initial survey found an additional 5,000 planted acres across the state.

With the mid-season crop estimate in hand, management is in a better position to make immediate spending decisions and seek counsel from the Finance and Marketing Committees regarding the longer-term implications. Over the past decade, much of CAC's marketing program has shifted to digital and online, which is more efficient than traditional media and more flexible. If the crop estimate tightens, it is much easier to reduce or cancel ad buys, and conversely if the crop is going to run long, programs are easier to expand. With support from the Marketing Committee in June, Vice President Marketing Jan DeLyser and her team have already identified programs that will be pared down or canceled this season. Tactically, this is so we aren't promoting fruit that isn't available in the market; strategically this is informed by the multi-year financial modeling done by CAC President Tom Bellamore and Vice President of Finance and Administration Monica Arnett. CAC's Board and management team are committed to executing a highly effective marketing program, targeting a stable assessment rate, and maintaining adequate working capital. Given the uncertainty of the crop size through part of the year and crop pricing through most of the year, this financial modeling and healthy reserves are critical to accomplishing these objectives.

I am grateful to the growers and handlers who diligently participate in the crop estimating process and to the CAC staff and members of the Board for the thoughtfulness with which they approach their fiduciary duty. Collectively, your contribution is critically important to CAC's short-term execution of the marketing program and the systematic planning for its long-term effectiveness and financial health. The outlook for this year has dimmed for many of our growers and lower volumes will translate to lower revenue for CAC, but the organization is well-positioned to support California growers in brighter years ahead.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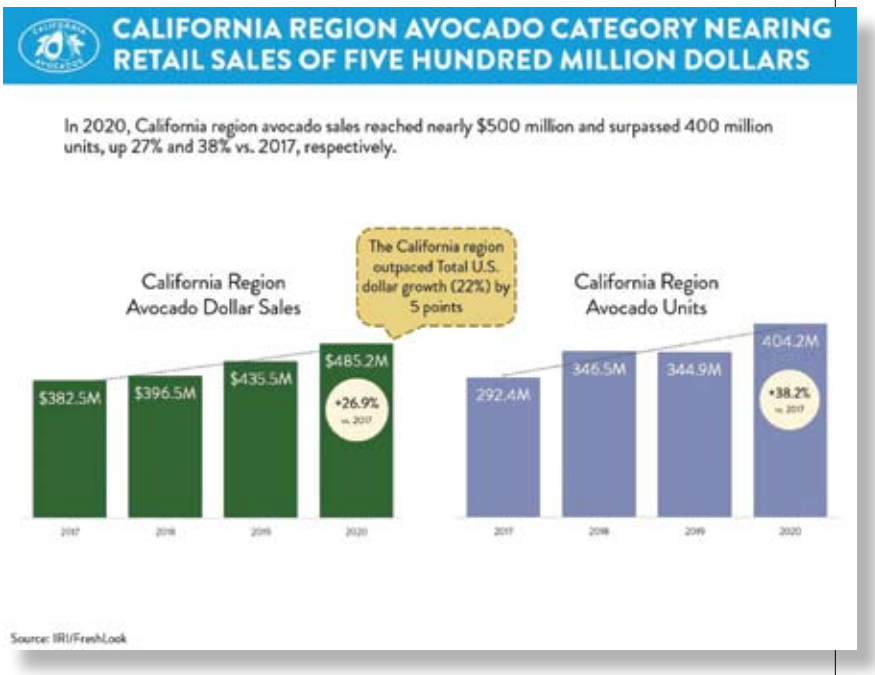
State of the Avocado Category Report

The State of the Avocado Category report, which uses IRI FreshLook data, provides an overview of long-term dollar sales and volume sales at retail for the total U.S. and the California region for the years 2017 through 2020. It also includes an overview of all the regions in the country. The study then provides a deep dive into the avocado category with particular attention paid to the retail sales in California, including bagged vs. bulk avocados, organic vs. conventional avocados as well as sales per week and average retail price. It concludes with sections that delve into the positive impact of the California season on retail sales and overall development of the category in both California and Western markets (where California avocados are primarily sold and marketed). While the report mostly focuses on the state of California and key markets in the Western United States, it also shows some national trends that can be used as a comparison.



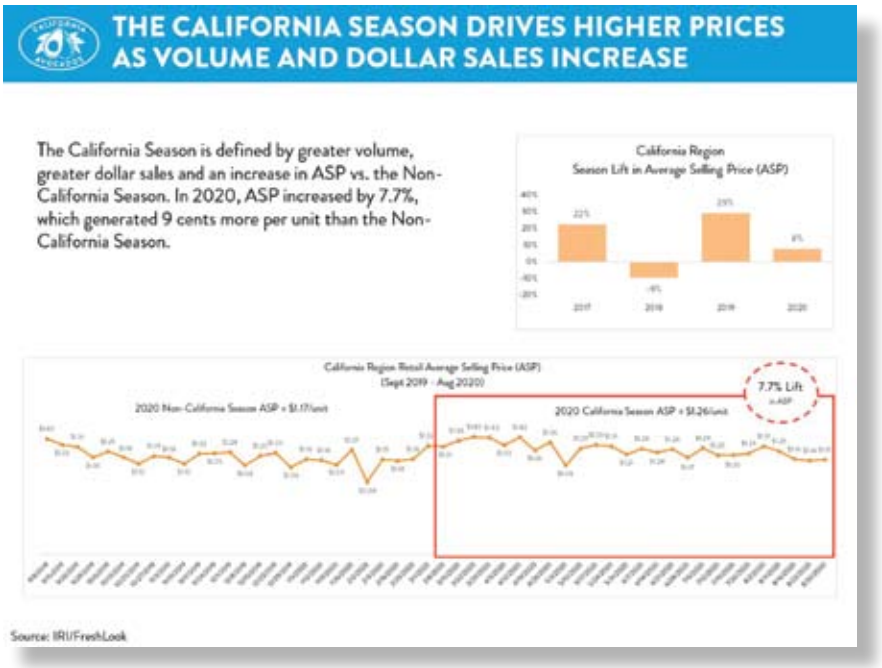
In 2020, California shoppers purchased more than 400 million avocados, which resulted in nearly half a billion dollars in retail sales. Over 62% of avocado sales growth occurred during the California season.

Key findings of the State of the Category report include:

- In California, the California season averages over $5.2 million more sales per week than the non-California season and the gap is widening
- In 2020, the California season lifted average weekly dollar sales by 33% and units by 23%
- California sales velocity is increasing at twice the rate of the rest of the U.S. (+103.1% vs. +47.9%, respectively)
- California bagged avocado sales velocity ($2,352/million All Commodity Volume) was nearly twice as high as the rest of the U.S. ($1,202/million ACV)
- In California, the average retail selling price was 8% higher during the California season
- Over the past four years, the average retail price of organic and conventional avocados in California has been consistently higher than the average price in the rest of the nation

"This report is thick with enlightening and actionable information that will allow us to further improve our marketing programs," said Jan DeLyser, California Avocado Commission vice president marketing. "It also provides data-driven results that demonstrate the strength and results of the California avocado program."

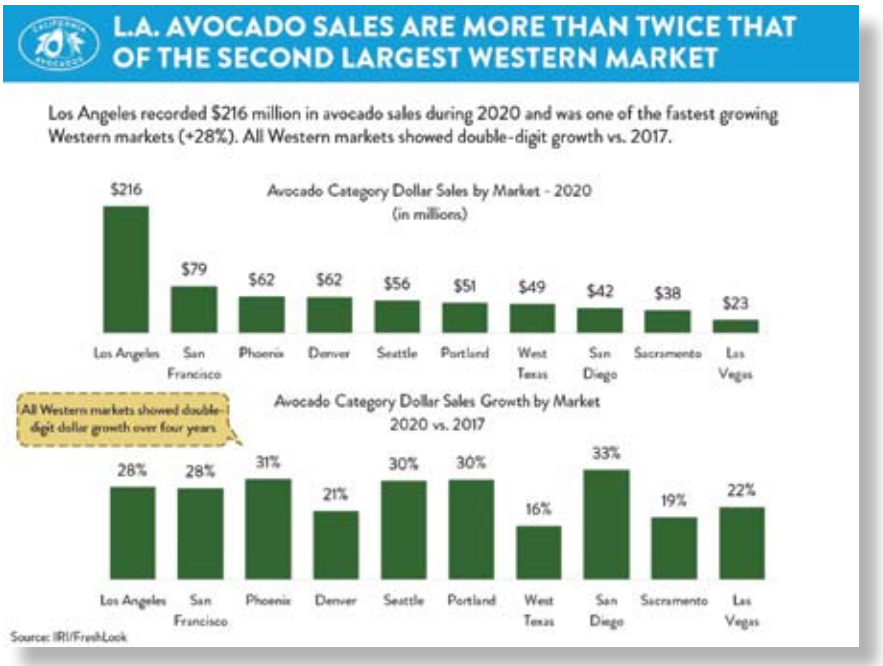
The State of the Avocado Category report was developed as a part of the California Avocado Commission's Tiered-Account program. It includes detailed information and data that provides staff and agencies a more robust understanding of the avocado category and the importance of the state of California and Western markets where California avocado distribution is the highest. These findings help to form insights that drive the development of the Commission's marketing programs and approach as well as to provide "data nuggets" that CAC retail marketing directors can share with



In California, during the 2020 California season, shoppers purchased more avocados, more often and were willing to pay a higher price (9 cents more per avocado than during the non-California season).

retail partners to grow the sales of California avocados.

Using this information and insights from the report to improve marketing programs ultimately helps build demand for California avocados, which in turn can assist growers by increasing the velocity of sales and bolstering FOB prices. The report also includes information that will be utilized in the development of trade press releases, articles and marketing materials, furthering the Commission's position as the industry leader.



All Western markets grew by double digits in 2020. Los Angeles retail sales hit $216 million. This represents growth of 28% in the market that is 2.7 times bigger than the next largest market.

By Ken Melban
Vice President of Industry Affairs

Commission Successfully Argues Threat of Avocado Seed Moth from Ecuador

In August 2018, the Animal and Plant Health Inspection Service published its proposed rule for the "Importation of Fresh Avocado Fruit From Continental Ecuador Into the Continental United States" in the Federal Register. California Avocado Commission staff, upon review of APHIS' pest risk assessment, determined that APHIS had failed to identify avocado seed moth, *Stenoma catenifer*, as a significant economic pest of concern for California avocado producers.

Based on research from Dr. Mark Hoddle, University of California at Riverside, Commission staff knew the avocado seed moth would pose a major threat if it were introduced into California avocado groves. Avocado seed moth is exotic, and unlike the current situation in Ecuador, the pest is not present or established in the United States. The Commission submitted extensive comments to APHIS based on the reasonable likelihood of avocado seed moth being associated with Ecuadoran avocados at the time of harvest and remaining with the avocados, in viable form, throughout the harvesting process. We argued that, if left unaddressed, the importation of avocados from Ecuador would represent a major threat to the quarantine security of the California avocado industry.

In addition, Commission staff traveled to Washington, D.C. to meet with senior APHIS staff and described in detail the scientific basis for our objection to APHIS moving forward with finalizing the proposal at that time. The Commission was calling for mandatory surveying of avocado production areas in Ecuador for avocado seed moth as part of the APHIS systems approach. APHIS' proposal and supporting documents, the Commission argued, were critically deficient because they failed to analyze for and address the potential presence of the avocado seed moth.

In April 2021, APHIS issued a revised proposed rule that included the Commission's demand for the surveying for avocado seed moth in the Systems Approach – phytosanitary measures put in place to safeguard against the introduction of pests. This was a direct result of the Commission's vigorous response and engagement with APHIS on their 2018 proposal. APHIS now recognizes the threat Ecuadoran-grown avocados pose to California avocado producers because of the avocado seed moth, and the likelihood for and consequences of the avocado seed moth if it were introduced into California.

In our comments on the April 2021 revised proposed rule, the Commission stated: "The visibility of the Systems Approach relies in large measure, on the continuing commitment, including resources, of both the foreign avocado producers and the Ecuadorean National Plant Protection Organization to adhere to the various conditions that are established. The Commission is hopeful that the commitment is demonstrated. Again, our principal concern is assuring quarantine security for our industry."

While the Commission cannot stop the importation of avocados into the United States, we remain vigilant in our efforts to ensure appropriate steps are taken to protect our industry from the introduction of invasive pests.

Based on the revised PRA, APHIS is proposing that commercial fresh avo-

cado fruit may be imported into the continental United States from continental Ecuador subject to the conditions outlined in the June 2018 proposed rule, as well as additional conditions designed to safeguard against avocado seed moth, *Stenoma catenifer*. These additional conditions are as follows:

- Avocados must be grown in pest free places of production for the avocado seed pest *Stenoma catenifer* that are established and maintained in accordance with international standards. APHIS must approve the survey protocol used by the National Plant Protection Organization of Ecuador to determine and maintain pest free status.
- If the avocados are grown in a municipality free of *Stenoma catenifer*, the municipality must be surveyed every six months (twice a year) for the pest. Representative areas of the municipality where there are avocado trees, including production sites and urban areas, must be sampled.
- If the avocados are grown in a municipality not completely free of *Stenoma catenifer*, the NPPO of Ecuador can certify individual places of production as pest free. The surveys for pest free places of production must include representative areas from all parts of each registered place of production and a buffer zone of 1 kilometer. The places of production and buffer zone must be surveyed monthly for *Stenoma catenifer* from two months before harvest until harvest is completed.
- If one or more *Stenoma catenifer* are detected during a survey or during any other monitoring or inspection activity, the place of production will be prohibited from exporting avocados to the continental United States until APHIS and the NPPO of Ecuador jointly agree that the risk has been mitigated.
- The NPPO of Ecuador must keep records of *Stenoma catenifer* detections for each place of production and update the records each time the places of production are surveyed. The records must be maintained for at least one year and provided for APHIS' review, if requested.

Retailers Build Demand for California Avocados with Combination of In-store and Digital Tools

Mollie Stone's ran colorful, eye-catching California avocado promotions during Easter.

Since the beginning of the 2021 California avocado season, retailers across California and targeted Western U.S. markets have shown robust support for the fruit with retail promotions ranging from sales and display contests and California avocado-branded point-of-sale materials, to digital coupons, ads, e-newsletters and social media posts. Thus far, retail partners include loyal upscale California retailers who transitioned to the California crop at the start of the season, as well as Western divisions of large national chains and select retailers inside and outside the West.

To secure promotions with targeted retailers, California Avocado Commission retail marketing directors met virtually with select retail teams to discuss promotional timing and the Commission resources available to them. In April, targeted retail key contacts received newsletters with avocado crop forecasts and marketing program information to ease their promotional planning concerns. A second newsletter was distributed in June.

The CAC retail team also sent the California Avocado Retail Resource Guide — with ready-to-use tips, recipes, images and content — to targeted retail communication teams composed of marketing, public relations and social media managers. To expand its reach and encourage retail dietitians and cooking school managers to share "why California avocado" messages with their customers, CAC provided them with a start-of-season package showcasing available Commission support tools. Each of these carefully planned activities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Gelson's displayed California avocados in bins featuring the new "the best avocados have California in them" thematic.

encourages targeted retailers to merchandise California avocados in season and provides support that encourages demand for the fruit while building loyalty to the California origin.

At press deadline, numerous local retail chains have run California avocado promotions in California and targeted regions of Oregon this season. Bristol Farms launched a Passport to Savings coupon using "the best avocados have California in them" creative to advertise large bulk California avocados' availability. Draeger's also advertised bulk avocados by running ads containing the CA GROWN logo and offering two bulk sizes of the organic fruit.

New Seasons Market, an early California avocado supporter, is testing bagged California avocados alongside its usual bulk avocado displays this summer. The Commission conducted a virtual "Farm Tour" for the New Season's Market produce director, store merchandiser and 10 store produce managers during which the new "California Avocados – History, Growers and Culture" video with picturesque grove photos was shown. During the "tour" the CAC RMD also discussed the difference California avocados offer at retail, shared quality education tips and the latest consumer campaign creative.

Nugget Markets supported both conventional and organic California avocados very early in the season using striking imagery coupled with the CA GROWN logo in their ad publication. Lazy Acres, part of Bristol Farms, announced the start of California avocado season with an Instagram post in February and Gelson's complemented its social media support with prominently placed display bins showcasing "first of season" fruit in March. To promote the availability of California avocados in its stores, Lunardi's ran ad promotions and sent an email newsletter showcasing the fruit.

Supermercado Mi Tierra promoted California avocados in its St. Patrick's Day and Easter promotions, while Mollie Stone's Markets conducted an Easter sales/display contest in all its stores using California avocado display bins.

Sam's Club digital demos featured in-store signage for California avocados with nutrition messaging.

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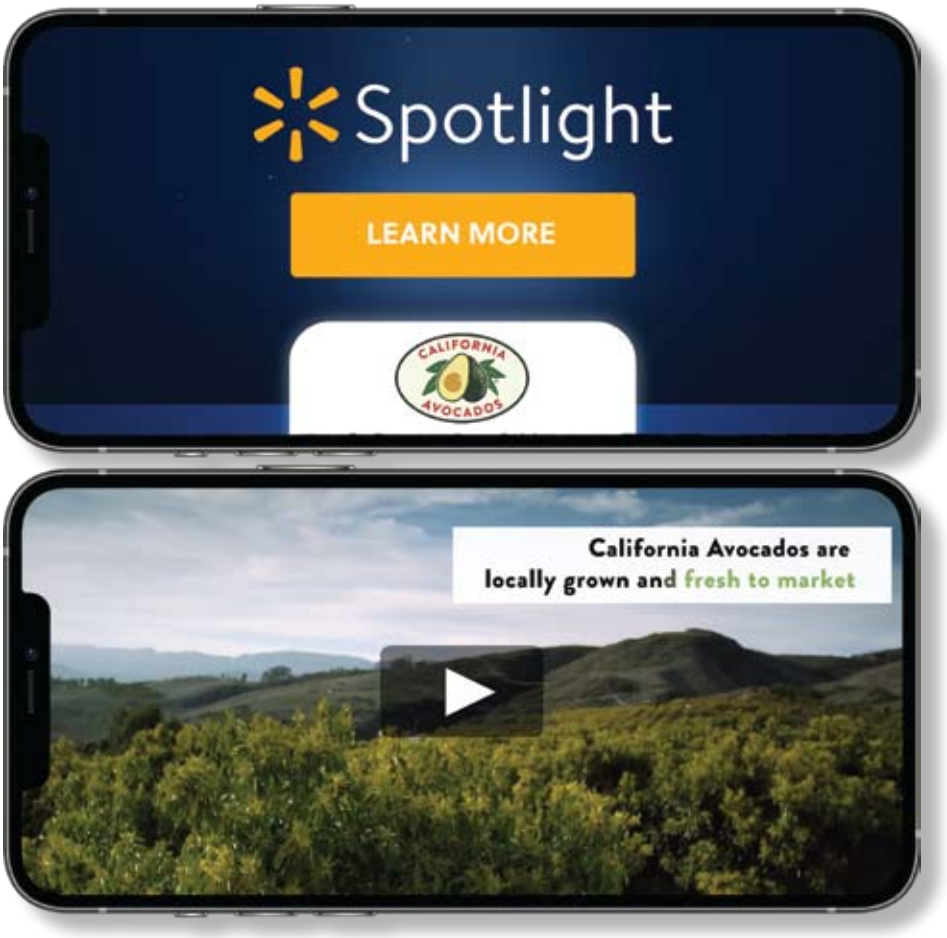

A Walmart spotlight recipe video announced California avocado availability.

Four national corporate accounts — Kroger, Costco Wholesale, Sam's Club and Walmart — also have merchandised California avocados thus far this season. Kroger's largest division, Ralphs, supported California avocado growers early in the season with bagged California avocados prominently displaying the origin of the fruit. Other Kroger divisions — Fry's, Smith's and Fred Meyer — joined Ralphs in promoting bagged California avocados for Memorial Day and the Fourth of July. The American Summer Holiday promotions ran in a total of 800 Kroger banners.

During the last week of April, 161 Sam's Club units in Arizona, California, Colorado, Kansas, Missouri, Nevada, Oklahoma and Texas conducted digital displays featuring California avocado-branded signage and a video loop. The Commission's partnership with the national chain expanded this year with the addition of the Kansas and Oklahoma locations.

In May, Costco Wholesale held a dedicated all-California event in its new Aurora, Colorado depot, which serves Colorado, New Mexico, Utah and Wyoming. The promotion included $1 off for 65,000 avocado bag purchases. Walmart also ran California avocado promotions in May with 721 stores in the West delivering a spotlight recipe video featuring the fruit that reached 1.6 million shoppers. A dedicated team of Walmart bloggers expanded the reach of the promotion with influencer posts across digital channels.

Reaching consumers beyond the Western region, Schnucks promoted four-count California avocado 70s in bags using display bins and in-store signage that showcase the grown-in-California origin. The promotions ran for all the major summer holidays — Cinco de Mayo, Memorial Day and the Fourth of July — and may continue through Labor Day pending availability of the fruit.

Additionally, feature ad activity highlighting the availability of California avocados has been increasing and is expected to continue through Labor Day.

Promotions such as these are critical to building demand for the fruit during peak season and help build sales movement that inspires retail loyalty to California avocados. The retailers showcased in this article are representative of the broader efforts of the Commission's retail marketing team members, who work throughout the season to secure additional promotions as the season progresses based on harvest timing and fruit availability.

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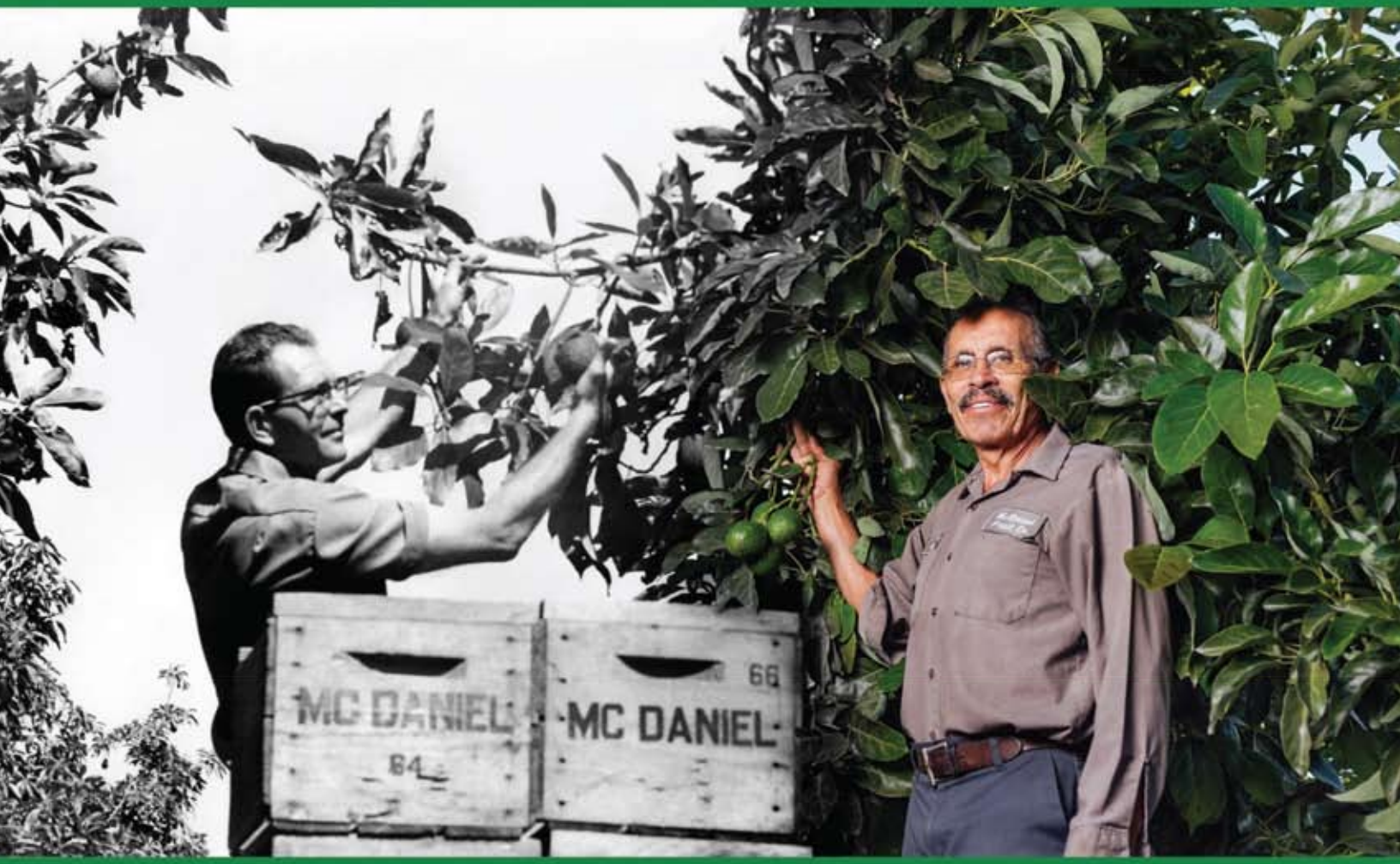

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By April Aymami
Industry Affairs Director

2021 CA Mid-Season Crop Update

As part of the California Avocado Commission's crop estimating efforts, an annual mid-season crop estimating survey is conducted among growers and handlers during the month of April. Both sets of surveys collect volume information, as well as variety distribution. Additionally, the handler survey requests each organization to provide harvest projections for the remaining months of the season. The results of these surveys are used to inform the industry of the total crop that is expected to come to market and as a guide that helps shape the timing of CAC's marketing efforts.

Results of both the 2021 grower and handler mid-season surveys were used to develop CAC's mid-season crop update of 265 million pounds, 27 million pounds less than the February 2021 handler estimate of 292 million pounds. The decrease in volume mostly comes from Hass (26 million pounds), however a slight reduction to the Lamb-Hass volume also has been made (1 million pounds). As a reminder, very early industry crop estimates in September 2020 projected a crop size of 333 million pounds, and in October the CAC Board approved the 2020-21 budget using 325 million pounds. Discussions with industry stakeholders indicate that the reduced volume this season is due in large part to multiple wind events and a lack of rain, which has resulted in smaller sized fruit.

2021 California Crop Harvest Projection						May 2021 Handler Survey Hass Distribution
Month	Hass	Lamb	GEM	Other	Total	
Jan	884,650	-	-	199,600	1,084,250	0.3%
Feb	5,692,407	-	-	163,300	5,855,707	2.2%
Mar	28,500,000	-	-	53,500	28,553,500	11.2%
Apr	46,000,000	900	493,300	37,100	46,531,300	18.0%
May	47,097,500	16,800	698,100	27,700	47,840,100	18.5%
Jun	48,029,200	222,900	695,200	198,100	49,145,400	18.8%
Jul	40,406,400	3,394,300	105,500	146,100	44,052,300	15.8%
Aug	25,681,200	2,143,100	4,300	51,500	27,880,100	10.1%
Sep	10,953,500	1,044,900	3,600	69,600	12,071,600	4.3%
Oct	1,755,143	175,800	-	12,300	1,943,243	0.7%
Nov	-	1,300	-	3,900	5,200	0.0%
Dec	-	-	-	37,300	37,300	0.0%
Total	255,000,000	7,000,000	2,000,000	1,000,000	265,000,000	100%

Monthly volume projections based on AMRIC handler survey.

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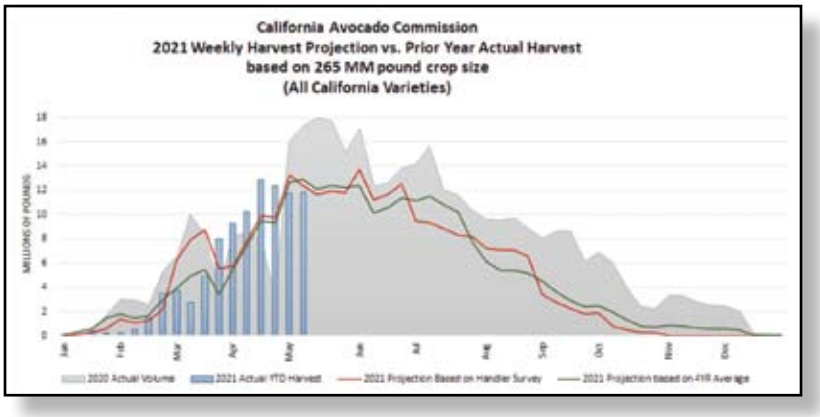
Utilizing information provided by handlers, CAC has created monthly and weekly harvest projections based on the 265-million-pound crop volume. Please note that projected volume for the beginning of the season, which has already been harvested, do not show weekly actuals, but instead how the 4-year average and handler forecasting models project a 265-million-pound crop would have come to market. As we move through the season, Commission staff will continue to track crop harvest and remaining volume closely, ensuring that CAC's marketing efforts are aligned when California fruit is in-season.



Four-year average and AMRIC hander harvest projections with actual 2020 and 2021 harvest overlays.

Four-year average and AMRIC handler weekly harvest projections revised to reflect 265-million-pound crop volume.

2021 California Crop Weekly Harvest Projection 4-Year Historical vs. AMRIC Handler Forecast All Varieties		
Week Ending	4-Year Historical Forecast May 2021 Update	AMRIC Handler Forecast May 2021 Update
10-Jan	54,200	22,800
17-Jan	346,500	175,300
24-Jan	579,000	277,100
31-Jan	1,430,600	609,000
7-Feb	1,824,500	1,370,400
14-Feb	1,454,100	1,072,800
21-Feb	1,673,200	1,228,800
28-Feb	2,967,800	2,183,700
7-Mar	3,919,000	6,291,600
14-Mar	4,936,400	7,933,600
21-Mar	5,464,300	8,781,600
28-Mar	3,448,900	5,546,700
4-Apr	5,513,400	5,766,800
11-Apr	7,493,500	7,837,700
18-Apr	9,484,500	9,914,200
25-Apr	9,341,100	9,762,500
2-May	12,676,100	13,250,100
9-May	12,873,900	12,412,900
16-May	12,077,400	11,645,400
23-May	12,411,700	11,975,800
30-May	12,246,200	11,806,100
6-Jun	12,373,100	13,690,100
13-Jun	10,134,000	11,207,700
20-Jun	10,545,600	11,678,300
27-Jun	11,375,100	12,569,300
4-Jul	11,164,300	9,510,700
11-Jul	11,483,600	9,309,700
18-Jul	10,809,200	8,793,500
25-Jul	10,210,300	8,297,700
1-Aug	7,703,500	8,140,600
8-Aug	6,104,900	7,198,600
15-Aug	5,402,100	7,050,400
22-Aug	5,411,800	7,090,800
29-Aug	5,153,200	6,540,300
5-Sep	4,494,900	3,420,800
12-Sep	3,627,400	2,761,000
19-Sep	2,904,100	2,226,200
26-Sep	2,393,500	1,801,300
3-Oct	2,478,300	1,862,300
10-Oct	1,992,000	834,700
17-Oct	1,297,200	516,100
24-Oct	795,600	320,600
31-Oct	712,900	271,900
7-Nov	887,400	1,300
14-Nov	769,300	-
21-Nov	658,000	3,900
28-Nov	583,000	-
5-Dec	561,800	-
12-Dec	486,500	16,000
19-Dec	69,000	-
26-Dec	96,000	8,700
31-Dec	106,100	12,600
Total	**265,000,000**	**265,000,000**

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Determining Whether You Should Pay for Avocado Pollination Services

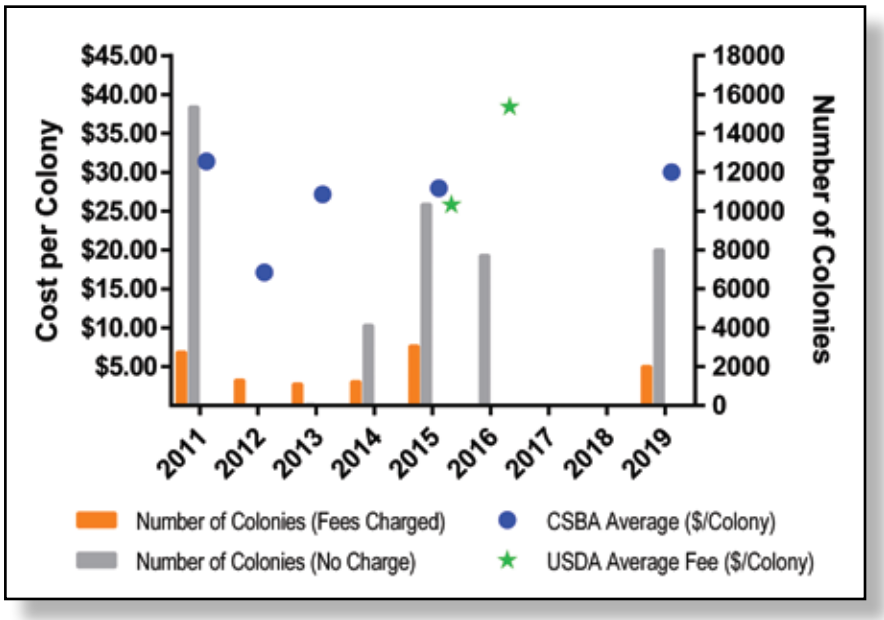
(**Editor's Note:** *This is a summary of an article authored by Brittney Goodrich, Assistant Cooperative Extension Specialist, Agricultural and Resource Economics, University of California, Davis. The original article was published in the Spring 2021 issue of the University of California Cooperative Extension Topics in Subtropics Newsletter. It can be found online at: ceventura.ucanr.edu/newsletters/Topics_in_Subtropics89472.pdf)*

In a new article published in the Journal of Applied Entomology, "The role of insect pollinators in avocado production: A global review," researchers note that in "19 out of 23 studies, insect pollinators contributed significantly to pollination, fruit set and yield." Further, they noted an increased density of pollinators can be of benefit to growers.

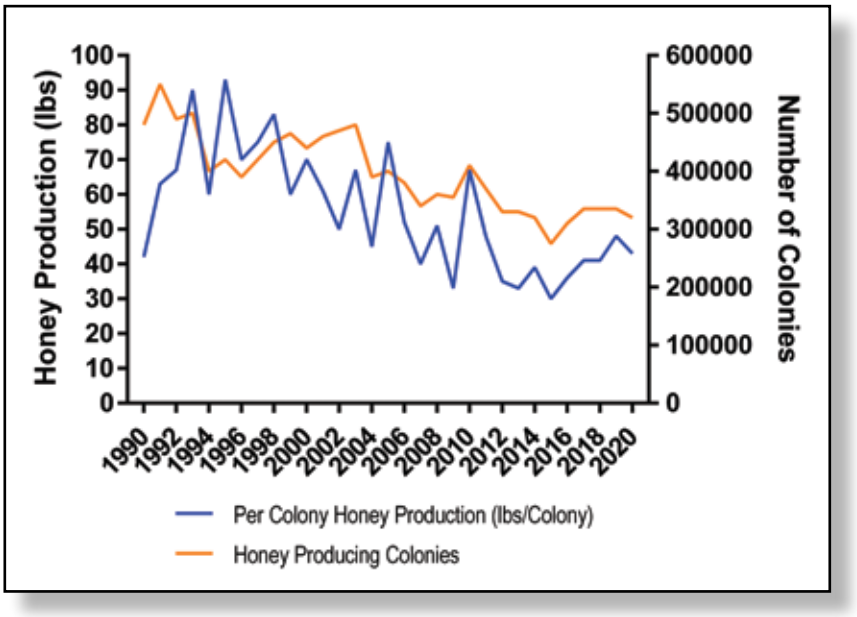
Dr. Timothy Spann notes one of the challenges California avocado growers face is that bees don't generally show a preference for avocado trees when they are flowering. "If there is something else nearby in bloom (e.g., citrus), the bees will fly right over the avocados and go there." For many California avocado growers, the question then is whether to place honey bee colonies within the grove and, if so, how much to pay for the avocado pollination services?

Dr. Brittney Goodrich, assistant Cooperative Extension specialist at University of California – Davis, addresses those questions in a new paper entitled, "Should I pay for avocado pollination services?"

According to Dr. Goodrich, the first thing to consider is whether your grove needs pollination services. Honey bees "typically seek out the least competitive forage sources" thus if your grove is located near an orchard that has honey bee colonies placed within it, your neighbor's bees are most likely also pollinating your grove and you may not need to pay for pollination services. However, if your neighbor is paying for those pollination services, they are essentially subsidizing your costs of production. In addition, if your grove is located near natural pollinator habitat then your grove may be sufficiently pollinated by wild insect pollinators.



Average avocado pollination fees (2019 dollars), total colonies rented, and total colonies placed for no charge, 2010-2019.
Sources: *California State Beekeeper's Association Pollination Fee Surveys, USDA NASS Cost of Pollination report.*
Notes: *Fees are adjusted to 2019 dollars using the Bureau of Economic Analysis GDP Price Deflator. No CSBA respondents reported placing colonies in avocados (either for a fee or no charge) in years 2017 and 2018.*



California honey producing colonies and per-colony honey production, 1990-2020.
***Source:** United States Department of Agriculture, National Agricultural Statistics Service, Honey report.*

For growers considering honey bee pollination services, one of the factors that impacts fees is the supply of available colonies. Dr. Goodrich notes that in 2020, approximately 2.4 million colonies were necessary to pollinate California almond orchards and about 2 million colonies from across the U.S. were shipped to the state to meet demand. Once the almond bloom is completed, beekeepers from central and northern states tend to keep their colonies in California until winter recedes and the spring bloom begins in these areas. Dr. Goodrich notes that traditionally beekeepers place their colonies near citrus orchards for honey production after the almond bloom.

"For example," she states, "a beekeeper might place colonies for no charge in an avocado orchard that needs pollination services simply to gain access to the prime honey-producing location."

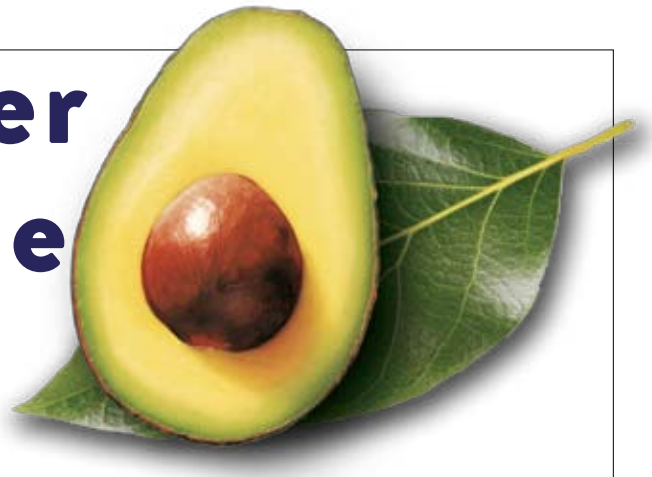
Dr. Spann adds, the almond bloom is "very intensive and the honeybee colony populations increase dramatically during almond bloom, but there isn't enough natural forage to support the strengthened colonies after the almond bloom. Many beekeepers like to bring their bees out to the coastal avocado groves following the almond bloom to rest their bees and for the great natural forage that exists in the coastal mountains. Avocado growers are rewarded with pollination services."

However, Dr. Goodrich has noted a downward trend in honey-producing colonies — and a decrease in the average amount of honey produced per colony — in California since 1990. She posits that the influx of bee colonies for the almond bloom may have encroached on forage resources and thereby reduced the potential for honey production. If that is the case, she argues citrus orchards may not be as valuable to beekeepers as they once were, making beekeepers less likely to place honey bee colonies in avocado orchards at no cost. At the same time, beekeepers do need some place for their bees following almond bloom and beekeepers prefer a natural habitat to simply feeding their colonies sugar syrup. Because such a high volume of bees is shipped to California and many of the bees must remain in the state until their home state has plants in bloom, these factors may place a downward pressure on pollination rental fees.

Dr. Goodrich calculated the annual average fee from 2010 – 2019 (in 2019 dollars) for avocado pollination was $27 per colony. Using this average rate, if a grower rented two colonies per acre, they would need to generate $54 per acre in increased value to offset the cost of the pollination fees. Further, she calculated that at an average price of $1.40/pound, the break-even yield increase would need to be about 39 additional pounds per acre to offset pollination costs. If you were to increase to five colonies per acre, the break-even yield increase would be 96 pounds per acre. Dr. Goodrich does note this simplified analysis does not take into consideration other costs associated with increased yields.

Ultimately, individual growers will need to assess the proximity of their grove to natural forage, citrus orchards, or paid pollination locations that may provide them with access to pollinator populations to determine whether bee colonies are necessary. If you opt to pay for pollination services, Dr. Goodrich notes growers should keep in mind beekeeper costs associated with the service, which include transportation, the risk of pesticide exposure and the competitive rates other growers — say those who grow apples or cherries — may pay for similar pollination services.

Grower Profile



Chuck & Pete Dal Pozzo:
Enjoying Their Second Careers

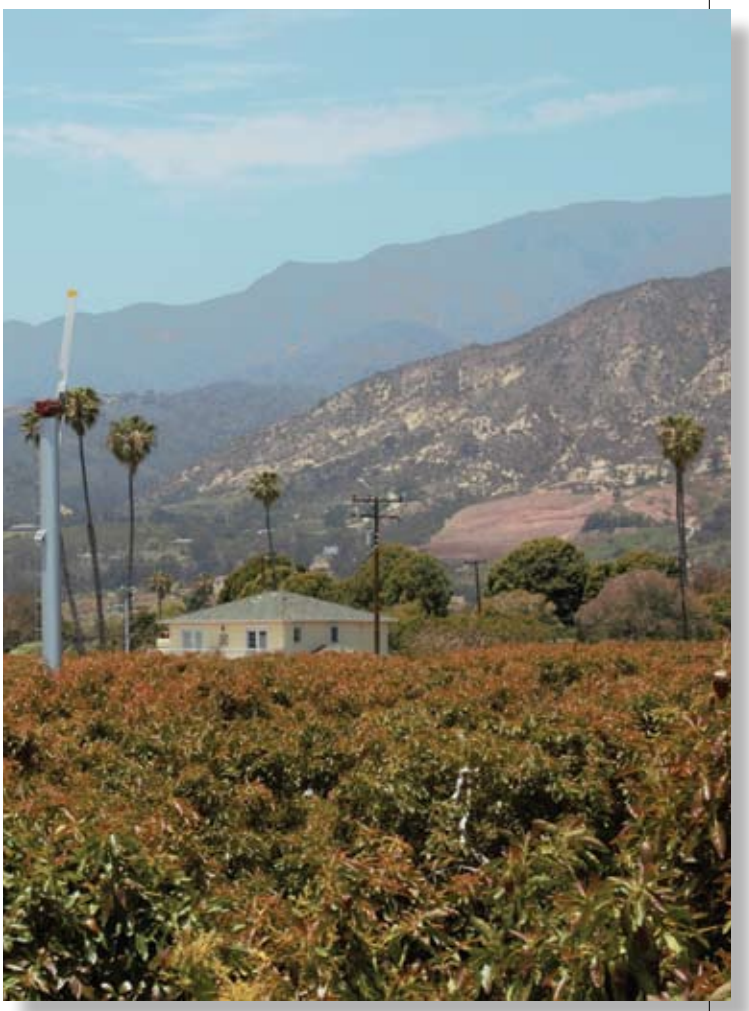
By Tim Linden

It is in retirement that Chuck and Pete Dal Pozzo have fully embraced the joys of farming and growing avocados. The two brothers are third generation growers on the California coast, but both enjoyed long careers before settling into running their Carpinteria ranch full-time.

The family farming history dates back to Charles James Dal Pozzo, the grandfather of the aforementioned pair of growers, who started farming in the Goleta area, north of Santa Barbara, in the 1920s and 1930s. When his son, Charles Francis Sr. (Charlie or Chuck Sr.), came back from World War II in 1945, they purchased a large ranch in Refugio Canyon in Goleta. Charlie (Chuck Sr.) contributed his military earnings to the new ranch and as partners, Charles James and Charlie grew a variety of crops, including tomatoes and lemons, in those coastal rolling hills. The father/son team farmed for the next 18 years at this location.

It was in 1963, as Charles James was phasing out of the business, that Charles James and Charlie (Chuck Sr.) sold the Refugio ranch property and bought the current 45-acre spread in Carpinteria, dubbed Dal Pozzo Ranch. "When our Grandpa and Dad bought the Carpinteria ranch in the early '60s, it was pretty rundown and mostly planted in lemons," said Pete. "As our Dad fixed it up, he started planting avocados between the lemons. People in the area thought he was crazy. They said it was too cold to grow avocados in Carpinteria."

The ranch, in fact, already included about five acres of avocados planted in the 1940s, so Charlie (Chuck Sr.) believed they could thrive. In fact, some of the rootstock from the original



Dal Pozzo Ranch looking northwest. Notice the height of trees in relation to the wind machine.

From left to right are Pete Dal Pozzo, Nick Florido Lopez, Chuck Dal Pozzo.

avocado plantings are still in play today. "We have rootstock that is 75 years old," said Pete, explaining that the rich, alluvial soil is great for avocado production. Combined with the natural shelter from wind and cold offered by the ranch's specific southeast Carpinteria location on Casitas Pass Road , the Dal Pozzos believe they have a perfect spot for avocados, despite the warnings of the early naysayers.

Chuck Jr., who was born in 1956, is two years older than Pete. "We grew up in Carpinteria and went to school here," he said. "Our father was a full-time farmer."

Chuck Jr. liked the agricultural industry and went to Cal Poly San Luis Obispo where he received a degree in agricultural business management. He spent more than 25 years as a pest control advisor and sales representative for several different agricultural chemical companies, and lived most of those years in the San Francisco Bay Area.

Pete went to the University of Arizona and received a degree in hydrology. He came back to the California area from which he was born and spent much of his career working for the United Water Conservation District in Ventura County.

As Charlie (Chuck Sr.) aged and fell ill in the early 2000s, running the farm's finances fell on the shoulders of his wife, Sally Dal Pozzo. Work on the grove was done then and still today by ranch foreman Nick Lopez. The two Dal Pozzo brothers helped out in the managing of the operation but did not yet have a hands-on connection. Being in nearby Ventura, Pete was a constant presence, with Chuck Jr. being a bit less so from his Bay Area perch.

Charlie (Chuck Sr.) passed away in 2007 and hands-on management became more important. In the ensuing years, both the Dal Pozzo brothers have moved back to the area and are involved in the day-to-day management. However, they both repeatedly said they could not run the operation without Lopez and Bartolo Montiel, another ranch hand. Lopez has been working on the grove for more than 40 years and lives on the ranch. Montiel is a 25-year employee.

"We are so indebted to Nick," Chuck said. "In fact, during the Thomas Fire we thought we were going to need all the help we could get if the flames got too close and so his kids drove up here to help out just in case. We ended up not having a problem but that meant a lot to us."

In fact, the Dal Pozzos list Nick's eventual retirement (he is in his 60s) as their biggest concern moving forward. "Nick is my age and those will be very big shoes to fill," said Chuck.

Pete added that Nick's retirement may cause the brothers to turn over the ranch to outside management as they do not know if they are up to starting fresh with a new ranch foreman. "Is our system sustainable?" Chuck asks. "Nick isn't going to be here forever, and it may not work without him."

They credit the ranch's longtime business model of doing

Dal Pozzo Ranch looking southwest. Shows some of the trees stumped in February-March 2021, a few of the trees stumped last year and a few of the new trees planted in April 2021.

most of the work in-house for making it a profitable operation. "Nick and his crew do all the pruning for us, and he also hires pickers as we do the picking ourselves," said Pete. "Nick and his crew also do all the spraying."

The Dal Pozzo Ranch yields an average of 15,000 pounds per acre, which the company's owners credit to great grove management and their excellent location. "We are in the Napa Valley of avocado production," said Chuck. "This is the perfect place to grow avocados. We have lots of water, little wind, no heat issues, good soil and flat topography. We don't have an alternate bearing issue. It's just the luck of the draw."

Pete added, however, that it wasn't just luck that they are located where they are. "Dad knew it was good soil," he said, adding that his father always bragged about it.

As far as grove management is concerned, the Dal Pozzos believe their pruning regimen is one of the most important things they do. "We top all our trees at 12 feet every year and open up windows in the trees to allow sunlight to get inside," said Pete.

He said it is a time-consuming hand task every year as there are no mechanical toppers suitable for avocado trees. It takes Nick and his crew several months to complete the pruning once they begin the effort following Labor Day. The crew tops about 100 trees a day so it takes the better part of two months to prune all 5,000 trees on the 45-acre ranch. Chuck said the topping offers many advantages including the crop is easier and safer to pick and the trees need less water. "It also means our trees produce larger fruit," he said.

Pete noted that the grove was originally planted on a 20-foot by 18-foot spacing scheme, with his father thinning out the trees over time. As they replant, they are reverting to the original spacing which their topping allows. Over time, they are expecting that more trees could produce a greater yield per acre.

While they have some concerns about how they will carry on without their foreman, the brothers Dal Pozzo have no doubt that avocado production in California will continue to be a solid investment with good returns. "I am optimistic about the future going forward," said Chuck. Pete added: "Avocados are a good product and this is a good industry."

Speaking to *From the Grove* in mid-May, Dal Pozzo Ranch had not yet begun its harvest. They were planning to start picking the crop in June or July and were very optimistic about this season. Markets are good and Chuck said: "This is supposed to be an off year (for the industry) but we have a full crop."

Redox

Summer is here and high heat is on the way. High temperatures can cause a decrease in photosynthesis and an increase in water loss leading to lower energy production in the tree.

Heat stress brings on a shortage of new growth and decreased fruit development - and in extreme cases - fruit death. In other words, increased abiotic stress causes poor quality and decreased yields in avocados, when left unchecked. **Learn more...**

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By Tim Spann, PhD
Spann Ag Research & Consulting

Avocado Best Harvest Practices

The California avocado harvest season is in full swing and high summer temperatures are upon us. That said, it's a good time to review best harvest practices to ensure harvested fruit maintain premium quality. It is important to remember that fruit will never be of a higher quality than the moment they are harvested. Everything that is done postharvest — timely transport to the packinghouse, cooling, ripening — is done with the goal of maintaining fruit quality, but fruit quality can never be increased postharvest. It is also critical to remember the postharvest period begins in the field at the moment of harvest, so let's review the factors and practices that influence fruit quality at harvest.

Rainfall

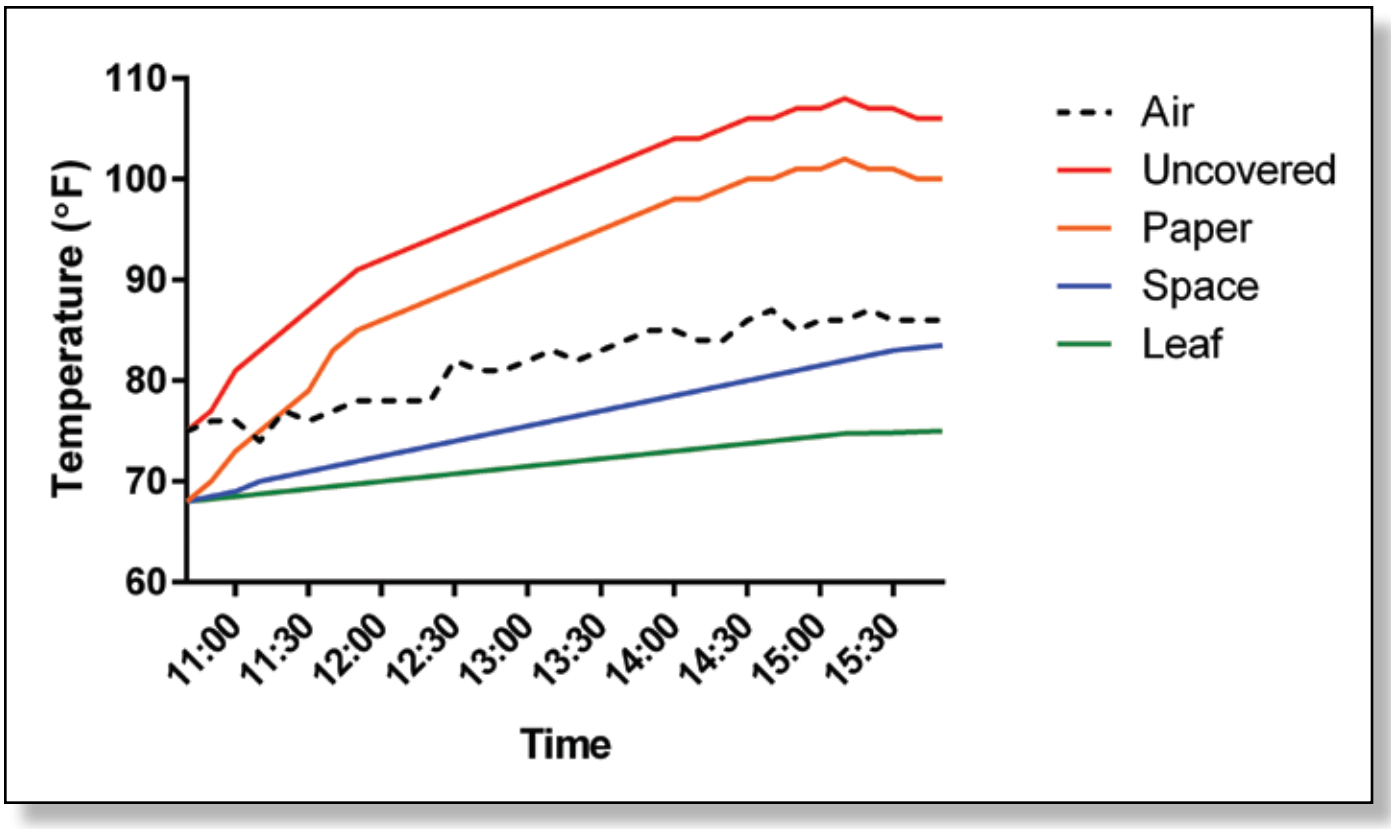
While this may seem like wishful thinking under California's current drought situation, late spring rain can be a factor in harvesting during the early season. Fruit should never be harvested when wet, or within 24 hours of more than 0.25-inch of rain. Immediately following a rain event, fruit will be fully hydrated. In this state, the lenticels — pores in the fruit peel — are susceptible to harvesting damage that can lead to poor fruit appearance and potentially fruit rot.

Temperature

In California, there is perhaps no more important factor to consider when harvesting than temperature, especially for inland growing areas. Harvesting should occur when air temperatures are less than 85 °F if possible, and never above 95 °F. This is especially important for late season fruit with advanced maturity. During hot weather, if harvesting cannot be paused, harvesting should begin early in the morning in the most sun-exposed areas of the grove — south and west facing slopes — and move to the more sheltered parts of the grove — north and east facing slopes — as the day warms up. The time from harvest to cooling the fruit should be minimized. If you are harvesting over several days, full bins should be picked up at least once a day rather than stored in the field.

Harvested fruit must be kept in a shaded location and the bins covered with avocado branches (preferably) or a reflective tarp (aka, space blanket), to

Lenticel damage on a Hass avocado. Photo courtesy of Mary Lu Arpaia, University of California.



Changes in fruit pulp temperature in the top of the bin as influenced by bin covering. Redrawn from: Arpaia et al., 1992, California Avocado Society Yearbook 76:93-97.

keep the fruit cool. Research conducted many years ago by University of California, Riverside retired plant physiologist Irv Eaks showed that when fruit is held above 86 °F after harvest, normal ripening can be inhibited.

Later research conducted by Mary Lu Arpaia in the 1990s demonstrated how different bin covers affected fruit pulp temperature of the top layer in the bin. With no covering, fruit pulp temperatures of fruit on the top of the bin (i.e., sun exposed fruit) rose to about 20°F above air temperature. Likewise, fruit in bins covered with brown kraft paper heated up nearly as much as the open bins. Mylar space blankets held fruit at slightly below air temperature, but fruit in bins covered with leaves stayed about 15°F below air temperature. The evaporation from the leaves is effectively an evaporative cooler and keeps the fruit the coolest. Keeping the bins covered, and fruit temperatures down, resulted in substantially lower fruit decay and discoloration during storage and ripening.

Physical Damage

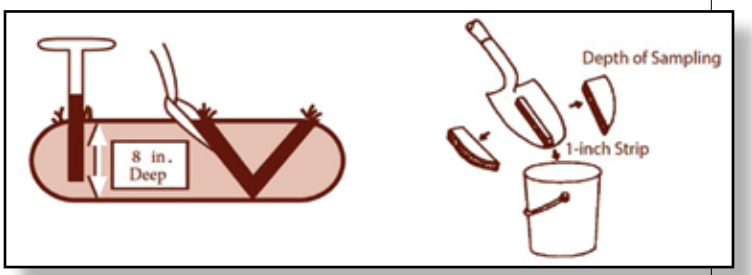
Although avocados are picked green and "rock hard," they are still susceptible to physical damage. Physical damage to the fruit must be minimized at all points in the handling process, beginning with harvesting. Individual fruit or picking sacks of harvested fruit should never be dropped to the ground from large trees. Not only can this cause significant damage to the fruit, but fruit that has been in contact with the ground is considered a food safety hazard and is prohibited under the Food Safety Modernization Act.

Picking sacks should be examined for debris (e.g., sticks or rocks) that may be picked up inadvertently during harvest and this debris removed every time the picking sack is emptied. Likewise, harvest bins should be inspected for debris or any physical damage that could damage the fruit. When fruit is being transferred to the bins, the picking sacks should be placed into the bins and the fruit emptied from the bottom of the picking sack such that the fruit do not fall more than about 4 inches. Do not overfill bins. If bins are overfilled, the top layer of fruit will be damaged when the bins are stacked for transport and the pressure could bruise lower fruit, which may not be evident until the fruit ripens.

Understanding Soil, Leaf and Water Analyses

By Tim Spann, PhD
Spann Ag Research & Consulting

Avocado growers should collect leaves every year, from mid-August to mid-October, for leaf nutrient analysis. Soil samples should be taken prior to planting a new block/grove and at least every couple of years thereafter. The timing of soil sample collection is not as critical as it is for leaf analysis and can be done in the spring or in late summer with the leaf sampling. Water samples should be taken annually, regardless of water source. In general, most growers are pretty good about collecting these samples and sending them off to the lab for analysis. But do you read the reports that come back? More importantly, do you know what the reports mean? This article will help demystify those reports and help you understand what they mean.



An illustration showing proper soil sampling technique for avocados using a soil probe or a shovel. Illustration adapted from: H.J. Savoy. 2017. Soil Testing (PB1061), University of Tennessee Cooperative Extension.

Soil Sampling Basics

When collecting soil samples, it's important to know how to collect a proper sample, including where in the grove to sample, how many samples to collect, and how to actually collect the sample. If you are taking samples before planting a new grove, you should sample based on variability – soil textures/types, slope, aspect (N, S, E, W). If you are not familiar with the ground you are planting and don't know what soil textures or types are present, the United States Department of Agriculture's Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm) is an excellent, free tool you can use to learn what soil types exist on your property. The American Farmland Trust has produced an excellent tutorial video to help you learn how to use the WSS (https://www.youtube.com/watch?v=ifAmQybESUM). If you are sampling an existing grove, your sampling should be done based on management blocks, which in most cases will be an irrigation block.

Samples should be collected from the rootzone where most water and nutrients are taken up. For avocados this is the top 6 to 8 inches of soil. The samples should be collected about halfway between the trunk of the tree and the edge of the canopy, which should also equate to the wetted area from your irrigation. You will want to collect a composite sample from each sampling area. How many individual samples you need to collect to make up the composite sample will be based on variability, but typically 10-20 individual samples will give a representative sample of an area up to about 10 acres. Individual samples should be placed in a clean 5-gallon bucket and mixed thoroughly. You will then take a sample from this composite to send to the lab of your choice according to their instructions.

Leaf Sampling Basics

As mentioned previously, leaf samples should be collected in late summer to early fall because this is when the nutrients in the tree are most stable. Leaf samples, like soil samples, should be collected based on a management block. To collect a leaf sample, select healthy, mature, spring flush leaves (4 to 6 months old) from non-fruiting, non-flushing branches. Do not sample terminal leaves or the worst looking leaf on a branch. Collect 30 to 40 leaves from across a block, being sure to collect samples from all four quadrants of the trees (N, S, E, W). Criss-crossing a block on several diagonals is a good way to ensure you collect a representative sample of the block. Leaf samples should be stored in paper bags, not plastic, and kept at room temperature until they are delivered to the lab.

Water Analysis Basics

Water samples should be collected based on your chosen lab's recommendations. Beyond basic chemical analysis, the Food Safety Modernization Act has specific requirements for routine biological contaminant testing. These samples require special handling, such as wearing gloves and being refrigerated and shipped with ice packs, so following your lab's specific instructions is critical.

Analysis Results

Depending on the lab you use the layout of your reports may or may not look like the examples shown, but should contain the same basic information: soil, water and leaf nutrient values and optimum ranges; pH; soil cation exchange capacity and percent base saturation; salinity and sodium adsorption ratio. Typically soil physical properties — textural classification and percentages of sand, silt, and clay — will not be part of a standard soil test. Depending on your lab, soil salinity and SAR may not be included as part of a standard analysis either but given the sensitivity of avocado to salinity these parameters are critical information to have and should be requested if not included in the basic analysis.

There are numerous terms that you will find on soil, leaf and water analyses that are important to understand in order to interpret your test results. Below are the key terms and basic information about each one. As you read through these definitions, refer to the accompanying sample reports for examples.

PPM: this stands for parts per million and is a concentration value. You will commonly find PPM on soil, leaf, and water reports. If you have a bowl of 1 million candies (wishful thinking, I know) and there are five blue candies in that bowl, the concentration of blue candies is 5 PPM.

mg/L: this stands for milligrams per liter and is a concentration value equivalent to PPM.

meq/L: this stands for milliequivalents per liter and is a measure of the charge concentration of a particular element per liter. You will find meq/L on both soil and water test results. Each element exists in a solution as an ion, which has an electrical charge, either positive or negative. Calcium for example exists in soil solution with a positive charge of two, which is usually written as Ca^{2+} or Ca^{++}. An equivalent of an ion is the atomic mass of the ion divided by its charge. Sticking with the calcium example, the atomic mass of calcium is 40.08. Thus, an equivalent of calcium is: 40 ÷ 2 = 20. PPM and meq/L are convertible since they are both concentration values.

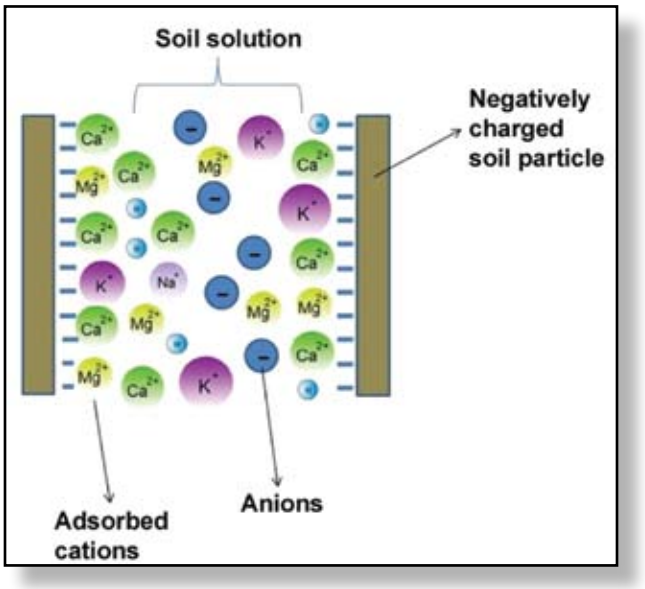
PPM = equivalent weight × meq/L
meq/L = PPM ÷ equivalent weight

Looking at the accompanying sample soil analysis, we can see this soil has 28.6 meq/L Ca. To convert this to PPM we multiply the equivalent weight of calcium by the meq/L concentration: 20 × 28.6 = 572 PPM. For future reference, the equivalent weights of the most common soil ions are shown in the accompanying table.

Ion Type	Ion Name	Symbol	Atomic Mass	Equivalent Weight
Cations	Calcium	Ca^{2+}	40	20
	Magnesium	Mg^{2+}	24	12
	Sodium	Na^{+}	23	23
	Potassium	K^{+}	39	39
Anions	Bicarbonate	HCO_3^{-}	61	61
	Carbonate	CO_3^{2-}	60	30
	Chloride	Cl^{-}	35.5	35.5
	Nitrate	NO_3^{-}	62	62
	Sulfate	SO_4^{2-}	96	48

Common soil nutrient ions, their chemical symbols, and equivalent weights.

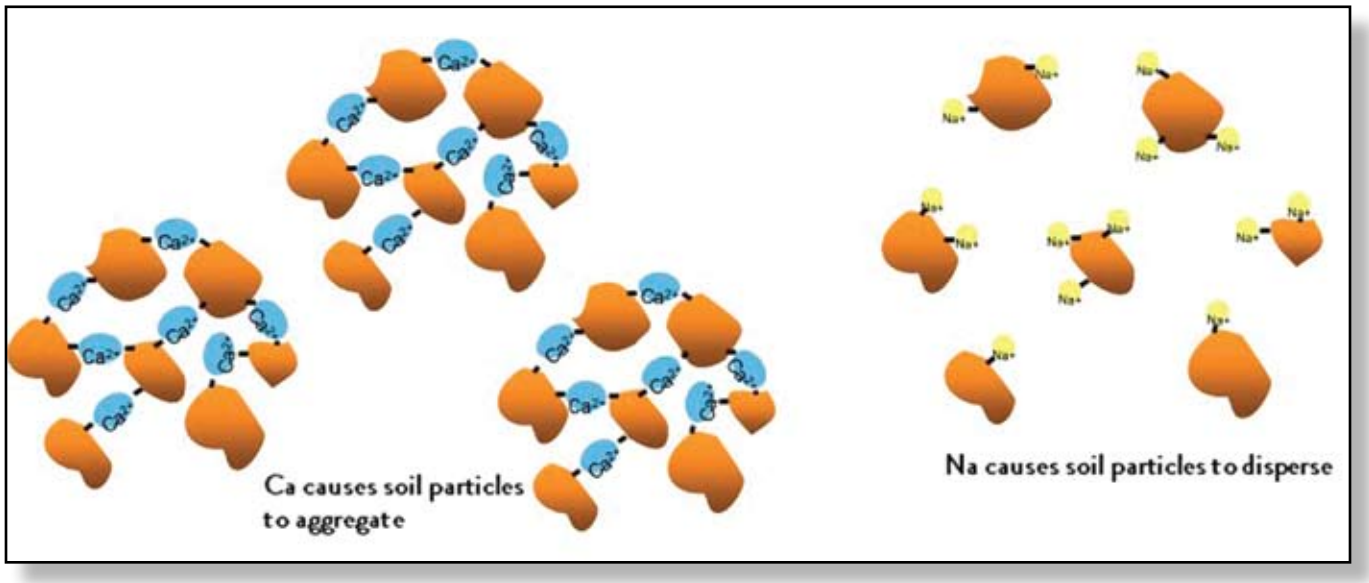
CEC: this stands for cation exchange capacity and is a measure of the quantity of cations (positively charged ions) that can be held by a soil. It is usually reported as milliequivalents per 100 grams of soil (meq/100 g). Since opposites attract, cations are held (adsorbed) by the negative charges on clay particles and organic matter. A high CEC value means the soil has a higher nutrient holding capacity (lower risk of leaching). The cations in soil solution — that is, those nutrients that can be taken up by plant roots — are in dynamic equilibrium with the cations adsorbed on the soil particles.



An illustration showing the Cation Exchange Capacity (CEC) of a soil. The calcium (Ca^{2+}), potassium (K^{+}), magnesium (Mg^{2+}) and sodium (Na^{+}) ions are held by the negative charges on the soil particles. The ions in excess of the soil's CEC are free in the soil solution and can be taken up by plant roots or leached below the plant's root zone.

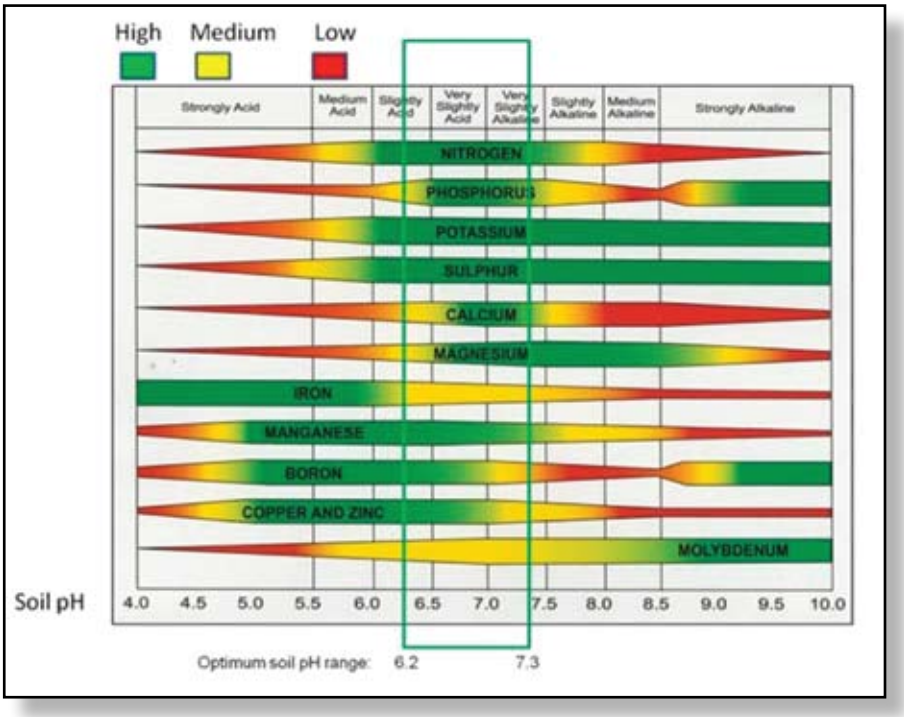
Exchangeable nutrients: nutrient ions held on the soil complex (by the CEC capacity of the soil) that may be replaced by other ions of like charge. Exchangeable nutrients are not leachable.

Soluble nutrients: nutrient ions in the soil solution (those in excess of the soil's CEC) that can be readily absorbed by plant roots. Soluble nutrients are leachable.



An illustration showing how calcium (or magnesium) ions help build soil structure. The double positive charge of calcium and magnesium ions binds soil particles together into aggregates, which give soil structure and allow for better water infiltration. In contrast, sodium ions only have a single positive charge and cannot bind soil particles together. In high sodium soils, the soil particles are dispersed, the soil has poor structure, and water infiltration is reduced. The sodium adsorption ration (SAR) of your soil tells you the balance of calcium and magnesium to sodium ions. To avoid water infiltration issues, the SAR should be less than 3.

pH: a unitless measure of acidity or alkalinity, which is a measure of the hydrogen ion concentration of a substance. pH is based on a logarithmic scale from 0 to 14. That is, for every unit change on the pH scale, the acidity or alkalinity changes by a factor of 10. For example, a pH of 6 is 10-times more acidic than a pH of 7. A pH of 7 is neutral; below neutral a substance is considered acidic and above neutral it is alkaline or basic. Soil pH is important because it affects the availability of nutrients for plant uptake. pH issues cannot be overcome simply by adding more fertilizer.

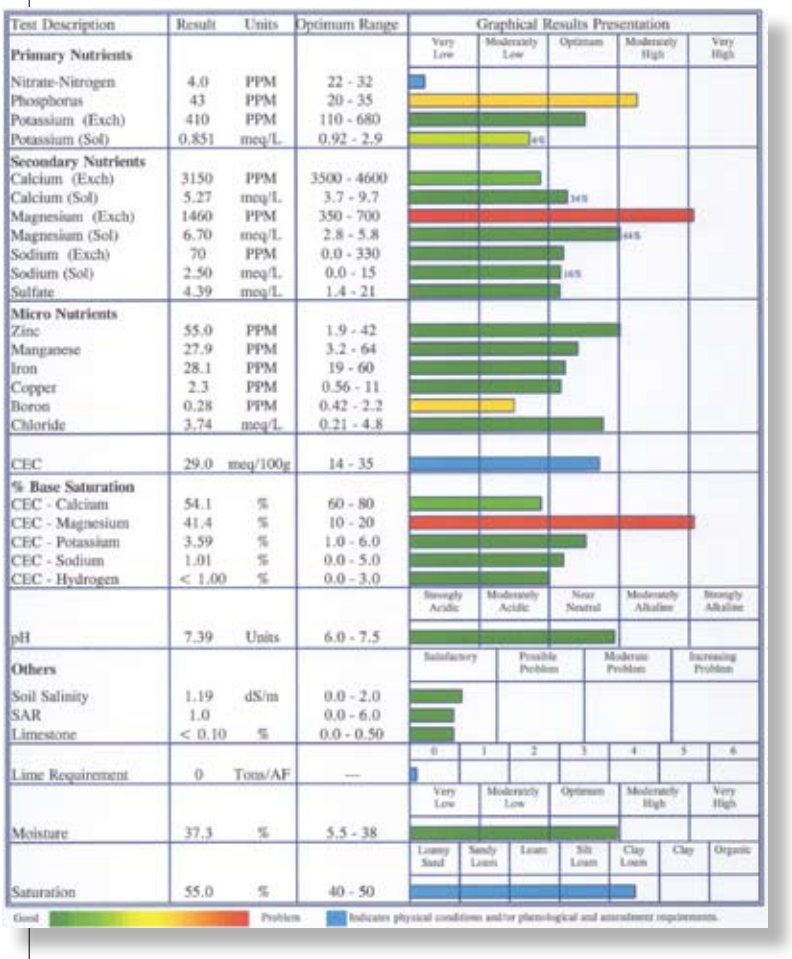


An illustration of how the availability of the different plant nutrients is affected by soil pH. In general, plants do best at a soil pH centered around 7 or neutral. Avocados prefer a slightly more acid soil, doing best at a pH of 6 to 6.5.

EC: stands for electrical conductivity and is a measure of the salinity of a solution. Pure water does not conduct electricity, but water with salts dissolved in it does. Chemically speaking, a salt is any substance that, when dissolved in water, dissociates (separates) into a cation and anion. Table salt, sodium chloride (NaCl), when dissolved in water dissociates into Na^+ and Cl^-. Most fertilizers are chemically classified as salts. For example, calcium nitrate [$Ca(NO_3)_2$] becomes Ca^{2+} and $2NO_3^-$ when dissolved in water. The more salts dissolved in a solution, the better it conducts electricity. EC is reported in units of decisiemens per meter (dS/m). EC can be divided into various components, most commonly EC_e and EC_w. EC_e is the EC of the extract of the soil solution and is a measure of the salinity your tree roots are exposed to. EC_w is the EC of water and represents the EC of your irrigation water.

SAR: this is the sodium adsorption ratio, which describes the relative activity of sodium ions (Na^+) to calcium (Ca^{2+}) and magnesium (Mg^{2+}) in soil solution or water. For avocados, an SAR below 3 is desirable and should not exceed 4. As the SAR increases, the permeability of the soil decreases and the risk of sodium toxicity increases. The mathematical formula to calculate SAR is:

$$SAR = \frac{Na}{\sqrt{\frac{Ca + Mg}{2}}}$$



Test Description	Result	Units	Optimum Range
Primary Nutrients			
Nitrate-Nitrogen	4.0	PPM	22 - 32
Phosphorus	43	PPM	20 - 35
Potassium (Exch)	410	PPM	110 - 680
Potassium (Sol)	0.851	meq/L	0.92 - 2.9
Secondary Nutrients			
Calcium (Exch)	3150	PPM	3500 - 4600
Calcium (Sol)	5.27	meq/L	3.7 - 9.7
Magnesium (Exch)	1460	PPM	350 - 700
Magnesium (Sol)	6.70	meq/L	2.8 - 5.8
Sodium (Exch)	70	PPM	0.0 - 330
Sodium (Sol)	2.50	meq/L	0.0 - 15
Sulfate	4.39	meq/L	1.4 - 21
Micro Nutrients			
Zinc	55.0	PPM	1.9 - 42
Manganese	27.9	PPM	3.2 - 64
Iron	28.1	PPM	19 - 60
Copper	2.3	PPM	0.56 - 11
Boron	0.28	PPM	0.42 - 2.2
Chloride	3.74	meq/L	0.21 - 4.8
CEC	29.0	meq/100g	14 - 35
% Base Saturation			
CEC - Calcium	54.1	%	60 - 80
CEC - Magnesium	41.4	%	10 - 20
CEC - Potassium	3.59	%	1.0 - 6.0
CEC - Sodium	1.01	%	0.0 - 5.0
CEC - Hydrogen	< 1.00	%	0.0 - 3.0
pH	7.39	Units	6.0 - 7.5
Others			
Soil Salinity	1.19	dS/m	0.0 - 2.0
SAR	1.0		0.0 - 6.0
Limestone	< 0.10	%	0.0 - 0.50
Lime Requirement	0	Tons/AF	---
Moisture	37.3	%	5.5 - 38
Saturation	55.0	%	40 - 50

A sample soil analysis showing soil nutrient content values as well as various soil chemical properties.

What Does a Soil Analysis Tell You?

Soil analyses tell you the nutrient content of your soil, which includes both the nutrients you've applied through fertilizer as well as those naturally available in the soil. Knowing how much of a nutrient is available in your soil on an acre basis requires some basic calculations. Average soils weigh 4 million pounds per acre-foot (1 foot depth over an area of 1 acre). Since avocados are shallow rooted, we'll assume most nutrient uptake occurs in the top 6 inches of soil. Six inches of soil over 1 acre (half an acre-foot) weighs approximately 2 million pounds. Thus, we can multiply a soil PPM value for a nutrient by two to get pounds per acre. In the sample soil analysis, the concentration of nitrate nitrogen is 4 PPM or approximately 8 pounds per acre.

A soil analysis will tell you the capacity of your soil to act as a reservoir of nutrients. With a high CEC, the soil can hold a lot of nutrients that will be released into solution over time. In low CEC soils (e.g., sands or low organic matter soils), there is little nutrient holding capacity and fertilizers should be applied at lower rates more frequently to prevent leaching, which wastes money and can cause pollution.

From your soil analysis you will know your soil pH. As mentioned previously, pH greatly influences the availability of nutrients for plant uptake. If your soil pH is out

of the optimum range, ideally 6 to 6.5 for avocado, your trees can show nutrient deficiency or toxicity symptoms that you will not be able to correct simply by adding or reducing fertilizer.

A soil test also will alert you to potential salinity and water infiltration issues. It is very important to have a soil analysis done at least every couple of years so you can track your SAR and soil salinity. Much of the irrigation water used for avocados in California is relatively high in salinity. Couple that with California's generally low rainfall — which means trees are almost exclusively watered with poor quality water and there is little natural leaching to wash salts from the soil — and it doesn't take long for salts to build up to damaging levels in the soil.

What Does a Leaf Analysis Tell You?

Leaf analyses are snapshots in time that tell you how well your nutrition program is working. Comparing leaf analyses over time can be very revealing. When reviewing leaf analysis results, you should have prior years' analyses at hand for comparison (if available), and it's important to consider what is happening in your grove. Do you have a heavy crop on your trees for next year? When did you harvest or do you still have the current year's crop on the tree for late season harvest? Did your trees produce a strong summer growth flush to have good bloom potential next spring or was the summer flush weak?

The answers to these questions will all factor into interpreting your results. For example, if you harvested early, have a light crop on the trees for next year and had a poor summer flush, then your trees have a relatively low nutrient demand. In this case, you may see values in the high or excessive range if you've been fertilizing based on the needs of a large crop. So, as you review your leaf tissue analysis consider where you've been and where you're going and talk with your farm adviser, grove manager, crop consultant or more experienced growers to develop a game plan to get where you want to be.

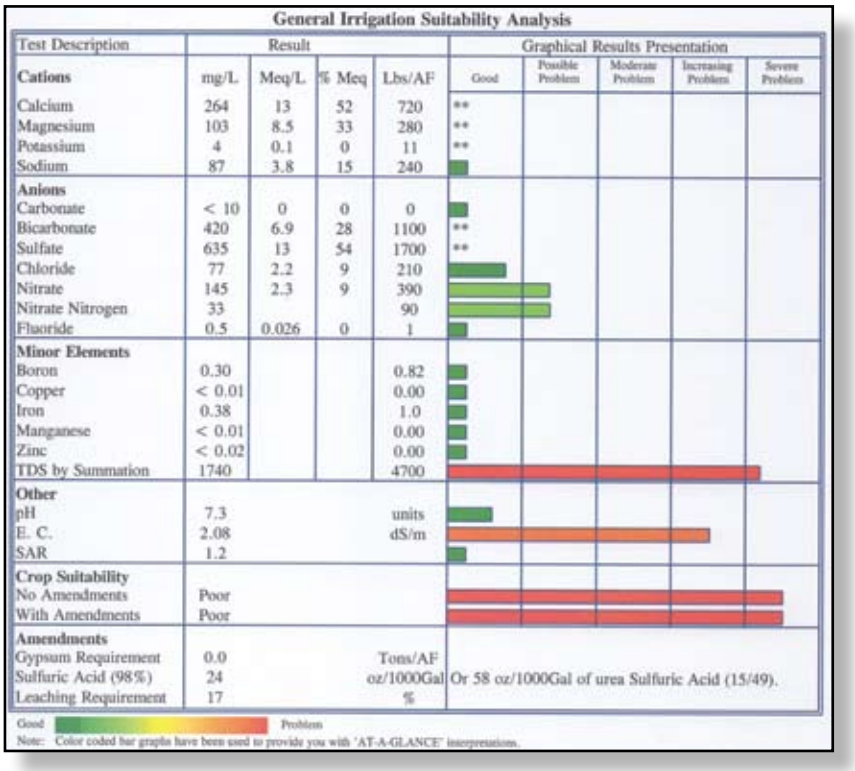
For a review of avocado leaf nutrient optimum values please refer to "Optimum Leaf Nutrient Concentration Ranges for the 'Hass' Avocado in California" in the summer 2020 issue of *From the Grove*. These optimum ranges may not necessarily align with those of the lab that did your analysis, but they are based on the latest science from an extensive analysis of nearly 30 years' worth of data.

HASS PLANT TISSUE ANALYSIS

Test Description	Result	Units	Optimum Range	Graphical Results Presentation (Deficient / Low / Ample / High / Excessive)
Macro Nutrients				
Total Nitrogen (Leaf)	2.31	%	2.2 - 2.4	
Phosphorus (Leaf)	0.19	%	0.080 - 0.44	
Potassium (Leaf)	0.675	%	1.0 - 3.0	
Calcium (Leaf)	1.45	%	1.0 - 4.5	
Magnesium (Leaf)	0.96	%	0.25 - 1.0	
Micro Nutrients				
Zinc (Leaf)	22.5	ppm	30 - 250	
Manganese (Leaf)	34	ppm	30 - 700	
Iron (Leaf)	51	ppm	50 - 300	
Copper (Leaf)	11	ppm	5.0 - 65	
Boron (Leaf)	14.4	ppm	12 - 100	
Sodium (Leaf)	0.011	%	0.0 - 0.25	
Chloride (Leaf)	0.111	%	0.0 - 0.25	
Nutrient Ratios				
Nitrogen:Potassium	3.42		1.7 - 2.2	
Nitrogen:Phosphorus	12.2		11 - 23	
Phosphorus:Zinc	84.4		20 - 50	
Potassium:Magnesium	0.702		1.5 - 3.5	
Nitrogen:Calcium	1.59		0.90 - 2.0	

Good — Problem

A sample avocado leaf tissue analysis showing the various essential plant nutrients, their concentration in the leaves, and the suggested optimum range for each nutrient.



General Irrigation Suitability Analysis

Test Description	Result				Graphical Results Presentation				
Cations	mg/L	Meq/L	% Meq	Lbs/AF	Good	Possible Problem	Moderate Problem	Increasing Problem	Severe Problem
Calcium	264	13	52	720	**				
Magnesium	103	8.5	33	280	**				
Potassium	4	0.1	0	11	**				
Sodium	87	3.8	15	240					
Anions									
Carbonate	< 10	0	0	0					
Bicarbonate	420	6.9	28	1100	**				
Sulfate	635	13	54	1700	**				
Chloride	77	2.2	9	210					
Nitrate	145	2.3	9	390					
Nitrate Nitrogen	33			90					
Fluoride	0.5	0.026	0	1					
Minor Elements									
Boron	0.30			0.82					
Copper	< 0.01			0.00					
Iron	0.38			1.0					
Manganese	< 0.01			0.00					
Zinc	< 0.02			0.00					
TDS by Summation	1740			4700					
Other									
pH	7.3			units					
E. C.	2.08			dS/m					
SAR	1.2								
Crop Suitability									
No Amendments	Poor								
With Amendments	Poor								
Amendments									
Gypsum Requirement	0.0			Tons/AF					
Sulfuric Acid (98%)	24			oz/1000Gal	Or 58 oz/1000Gal of urea Sulfuric Acid (15/49).				
Leaching Requirement	17			%					

Good — Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

A sample irrigation water analysis of some very poor quality irrigation water that would cause significant injury to avocado trees.

What Does an Irrigation Water Analysis Tell You?

Like leaf and soil analyses, your water analysis will tell you what nutrients are in your irrigation water. Depending on your lab, this information may be provided to you in PPM (mg/L), meq/L, pounds per acre-foot or some combination thereof. An acre-foot of water, that is water covering an acre of land 1-foot deep, weighs about 2.7 million pounds. Thus, to convert from PPM (or mg/L) to pounds of nutrient per acre-foot simply multiply PPM by 2.7. It's important to consider what your irrigation water is contributing to your trees' nutrient needs and deduct this amount from any fertilizer you plan to apply, especially nitrogen. In the accompanying sample water analysis, you can see this water is providing a lot of nutrients, even to the point of potentially being problematic (nitrogen). If you did not have an analysis of this water and just blindly fertilized your trees you would have major issues.

An irrigation water analysis also will tell you the water's pH, in the accompanying example 7.3. A water pH over 7 is problematic since we would like to grow avocados at a soil pH of 6 to 6.5. In this case, this water would best be treated with acid prior to use to adjust the pH. Adjusting the pH also would help neutralize the high levels of bicarbonates, which will cause sprinkler and dripper clogging. This lab provides acid recommendations along with what you can expect your water chemistry to be after treatment at the recommended rate.

Perhaps most importantly for avocado production is the water's EC and SAR. Recall that all fertilizers are salts. If your irrigation water has a high EC to begin with (2.08 dS/m in this example, which is already problematic) by the time you add fertilizer to the mix your EC will be very high and cause major issues. An analysis by Jim Oster and Mary Lu Arpaia some years ago revealed that avocado yield begins to decline when the EC_e (EC of the soil water extract) exceeds 0.4 dS/m. Beginning with an irrigation water EC of 2.08 dS/m means this water is essentially useless for avocado irrigation unless it can be run through a reverse osmosis system.

The final thing an irrigation water analysis should tell you is the leaching fraction (LF) or leaching requirement (LR). This will be expressed as a percentage, and it is the percent of irrigation water that needs to be applied in excess of the trees' needs to maintain an acceptable EC_e. The leaching fraction or requirement is based on the target EC_e and the EC_w using the following formula:

$$LF = \frac{EC_w}{(5 \times Ec_e) - EC_w}$$

In our example, calculating from the recommended leaching fraction of 17% would result in an EC_e of 3 dS/m. The trees may survive, but they will be unproductive.

Soil, leaf, and water analyses each tell you a part of the story about what is happening in your avocado grove. Taken together and viewed over time they can be of great help to managing your avocados, but they also can reveal potentially insurmountable problems that may make avocado production on a particular soil and water combination near impossible.

Commission Pursues Grower Profitability Study

By Ken Melban
Vice President of Industry Affairs

In the spring issue of *From the Grove*, California Avocado Commission President Tom Bellamore, in his "Coffee Shop Talk" article, discussed the ongoing conversation and speculation surrounding the financial health of the California avocado industry. Specifically, what does the spectrum of grower profitability look like? Are most growers in the black over a five-year average, or are many growers operating at a loss? And what is the correlation to the number of growers on either end of that continuum and their respective percentage of the industry's aggregate volume?

While the Commission tracks annual industry aggregate volume, total acres, average pricing and average per acre yield, we are unable to drill deeper into the existing data to better understand the spectrum of profitability for the industry. Without statistically sound data on the profitability of our industry, our ability to effect changes, to some degree, is diminished. Obviously, there are a myriad of factors contributing to a farmer's profitability. Some are universal: farm-gate pricing; labor costs and availability; along with water costs and quality. Others, however, are more individual to each grower's operation: fertilizer use, production yields, size curves and land-debt costs, just to name a few. While there may be some common expenses on the ledger, no two farming operations are the same.

The Commission hears firsthand from growers who are operating at a loss and understandably looking for answers. We also believe there are growers who are making a profit, although we do not typically hear from them directly.

You have likely heard of the "Pareto principle," better known as the 80/20 Rule. It is based on the work of Italian economist Vilfredo Pareto, who showed in 1896 that approximately 80% of the land in Italy was owned by 20% of the population. In business it has been said that "80% of sales come from 20% of clients."

Does this principal apply to the profitability of the California avocado industry? Without more factual data, the Commission's board and staff can only make assumptions, based on anecdotal evidence, as to the fiscal health of our industry. Are 50% of growers operating at a loss, representing 50% of the volume? Or are 25% of growers operating at a loss, representing 10% of the volume? Or...? We just do not know.

As Bellamore stated in his article, "What would be conclusive is the collective information from the ledgers of every commercial avocado grower in California, aggregated in such a way as to paint an accurate picture of bottom-line profit or loss for the totality of the industry."

While we realize that is not possible, the Commission's board has directed the Production Research Committee to oversee a grower profitability study. The purpose of the study is to determine the spectrum of profitability for California avocado farmers. If successful, a next step would be to identify the key drivers of profitability for California avocado farmers, and then determine if new opportunities exist for the Commission to provide help.

This is an ambitious goal for the Commission, and one that is completely dependent upon grower participation. A very short profitability questionnaire for growers is being developed and will likely be mailed to all commercial growers in August. For those of you who choose to participate, the questionnaire will be returned anonymously to an economist. If there is sufficient data, the economist will then be able to provide us with a more accurate picture of bottom-line profit or loss for the totality of the industry.

The success of this study will be determined by the breadth of the participating sample. The economist will use a stratified random sample, which involves the division of a population into smaller sub-groups known as strata. The strata are formed based on members' shared attributes or characteristics. For the California avocado industry, strata could include source of water, growing region and scale of operation, for example.

Your participation is critical for this project to successfully result in objective findings on the profitability of California's commercial avocado farming industry. Once the Commission has objectively determined the financial wellbeing of farmers, cause and effect can then be studied. Ultimately, with a comprehensive knowledge and understanding of profitability, or lack thereof, strategies that will target individual limitations, where possible, can be pursued. Each commercial California avocado grower enterprise is unique, therefore remedies to improve financial strength cannot be successful with a one-size-fits-all approach.

Regardless of where you are on the profitability spectrum, your participation is crucial to ensuring the true financial health of our industry is reflected in this study. Keep an eye out in August for the questionnaire, and please consider participating.

Chef Malarkey demonstrating how to safely cut and peel California avocados.

Consumer Public Relations Kicks-Off the 2021 Season

After an unexpected and challenging 2020, the California Avocado Commission celebrated a strong kickoff for the 2021 California avocado season in March by hosting a virtual cooking class for key media, retail contacts and brand advocates with Chef Brian Malarkey, a well-known, San Diego-based chef and Top Chef All-Stars finalist.

In partnership with the Commission, Chef Malarkey curated two new and unique recipes for the cooking class, starring California avocados. In total, 10 media contacts from national, regional and local consumer and trade outlets, as well as three retail contacts, attended this exclusive opportunity to build anticipation and awareness around the start of California avocado season. All attendees received fresh ingredient boxes, complete with locally sourced California avocados, in advance of the event where they then cooked the two new California avocado-inspired dishes alongside Chef Malarkey from the comfort of their homes. CAC also partnered with Daniella Malfitano – chef, cookbook author and culinary personality – to serve as a moderator for the event and keep attendees engaged. She currently serves as the public member on the Commission Board of Directors and had a wealth of knowledge to share with participants about the benefits of California avocados. Additionally, CAC provided attendees with an inside look at the rich history of the California avocado, as well as the commitment and dedication of the growers, by unveiling a new video, "California Avocados – History, Growers and Culture" (https://bit.ly/3ttcAtw), during the event.

By inviting credible, third-party reporters, retail contacts and brand advocates to attend the season opener event, CAC was able to expand its reach to various lifestyle, industry and foodie consumer audiences in an authentic manner, while also providing them with inspiration and a deeper knowledge of California avocados. Attendees shared their positive experi-

Chef Brian Malarkey cooking during the season opener virtual cooking class.

Malarkey's final dishes on display during the season opener virtual cooking class.

Chef Malarkey shared his California avocado-inspired recipes, such as the Dungeness Crab Stuffed California Avocado, with his more than 35,000 followers on Instagram (https://bit.ly/3ephbbH).

ences on both social and traditional media channels, resulting in more than 108 million impressions across outlets including Sunset Magazine, The San Diego Union-Tribune, NBC Los Angeles, The Produce Reporter and Fresh Plaza. Reporter Pamela Riemenschneider also shared her experience on her YouTube channel, Produce with Pamela (https://bit.ly/3etXqzP).

Momentum around California avocado season continued through summer with two additional consumer PR programs focused on communicating the unique California avocado differences, and encouraging consumers to purchase the fruit in-season. To celebrate California Avocado Month in June, the Commission partnered with regional publication Modern Luxury to host a recipe contest among a premium California audience, encouraging consumers to experience the fruit while creating their must-have California avocado recipe. Additionally, CAC hosted a socially-distanced drive-in movie event for Orange County families by screening 'Angels in the Outfield,' a classic family film that leans into California culture and lifestyle.

Throughout the season, the Commission continued to collaborate with talented food, wellness and lifestyle influencers as well as brand advocates to consistently create rich and engaging content featuring California avocados, such as recipes and videos, highlighting their versatility while educating and persuading consumers to look for the California label in stores.

CaliforniaAvocado.com

Now Even Faster and Easier to Use

The recipe redesign is optimized for mobile devices and adapts well to all modern screen sizes.

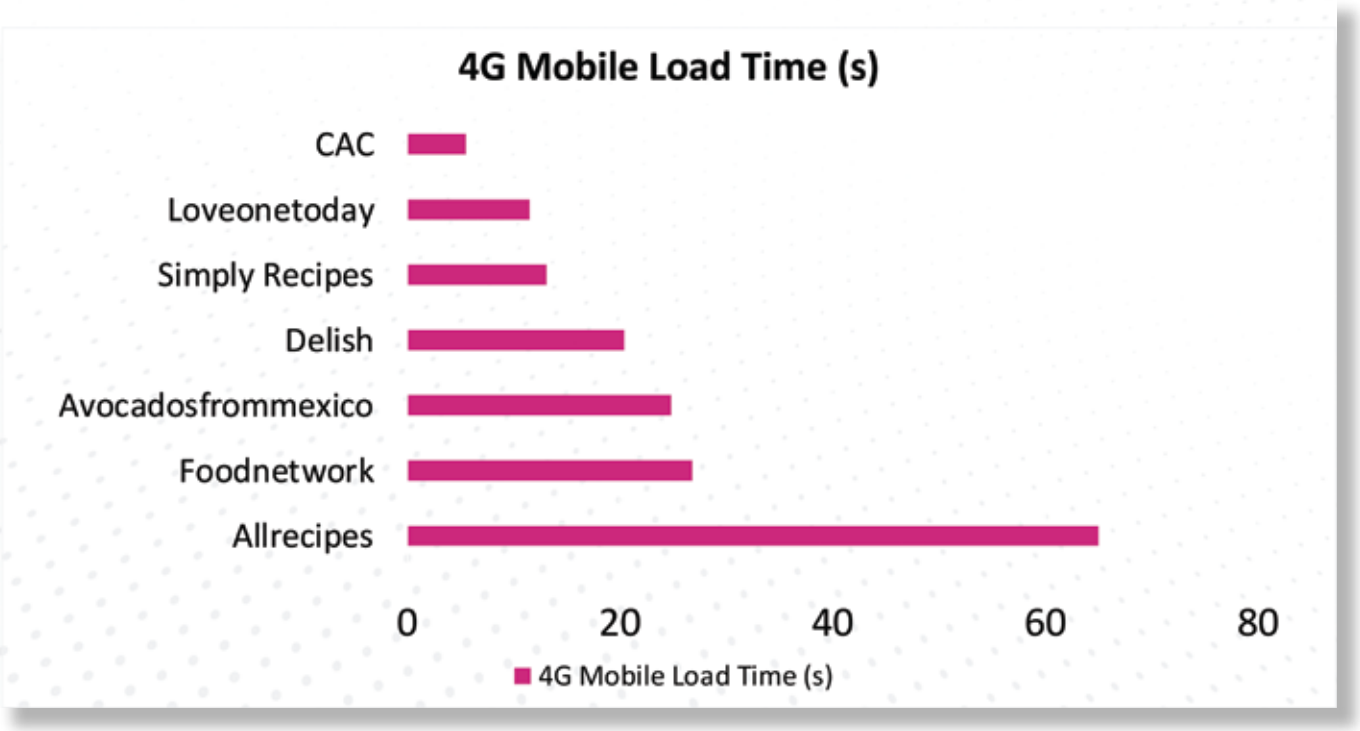
In just a little more than half a year since the redesigned CaliforniaAvocado.com launched, the site reached a significant achievement: it ranked first among the competition for site speed on mobile – the primary goal of the website re-launch. In addition, the recipes section of the website was updated to reflect the refined user experience and modern design of the rest of the site, and includes a series of tools to help visitors identify, shop for and cook with California avocados.

CaliforniaAvocado.com was relaunched with a completely new design and on a new technology platform on September 16, 2020. The Commission saw immediate improvements in the user experience and speed of the site after launch. This is important because site speed increasingly factors into how search engines rank individual websites, which in turn impacts how often consumers reach a site. Due to the amount of content on CaliforniaAvocado.com, there was still work to do this fiscal year to optimize the user experience and improve the speed of the site.

The more visitors there are to CaliforniaAvocado.com, and the more satisfied those visitors are with their experience, the more they are aware of California avocados and likely to seek them out when they shop. CAC audited the content and functionality of the website and implemented a sequence of content and code optimizations that resulted in significant improvements to the website. Since improving site speed helps attract more visitors, site speed optimization will continue to be an ongoing initiative.

Some of the more popular content on the website that attracts visitors is the recipe section, which showcases recipes featuring California avocados. The recipe pages on the site were not part of the first redesign and were the last remaining major parts of the site that needed to be refreshed with the new design.

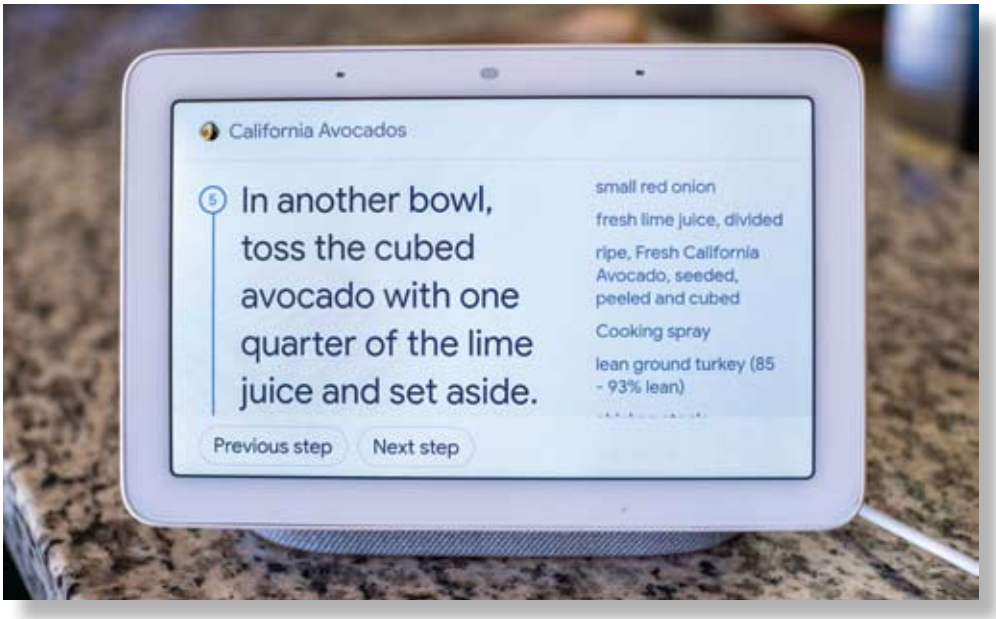
The design team created a new recipe detail page template (the page a recipe can be seen on) to adhere to the new user experience and design guidelines established when the rest of the site was updated. The refreshed recipe section lets visitors access those recipes in ways that are better suited to modern devices, such as smartphones, tablets, smart displays and even smart speakers. The new recipe pages also feature a series of tools including one to help visitors easily create shopping lists for the ingredients in each recipe. Naturally, every single recipe showcases California avocados, and having a tool that adds



CaliforniaAvocado.com is now the fastest loading site on mobile among the competition.

California avocados to shopping lists encourages sales of the fruit. This recipe redesign went live on April 14, 2021.

In addition to the technical improvements to the recipe pages, the Commission audited the recipe content to ensure the recipes align with the premium quality of California avocados and consumer interests. With the improvement in digital photography over the years, the visual appeal of some older recipes no longer fit today's quality standards. New photos were taken of high-performing older recipes to bring their look up to date, while other recipes were saved but removed from the website. On-going new recipe development continues to provide fresh content to CaliforniaAvocado.com visitors.



The recipe redesign supports step-by-step instructions on smart speakers and smart displays, allowing consumers to cook with California avocados using only their voice.

The Commission's foodservice video is a powerful tool that demonstrates the value and versatility of California avocados on the menu.

Full Slate of Programs Bring California Avocados to Restaurant Menus

Each year, the California Avocado Commission sponsors, participates in and hosts a variety of activities for target foodservice chain operators designed to demonstrate the Commission's leadership, communicate California avocado growing standards, showcase CAC's customized programs and resources and secure partnerships with targeted chains. In 2021, foodservice chains continue to streamline their operations and struggle to differentiate themselves to stay afloat during the pandemic. Thus, the Commission ensured its outreach efforts addressed these COVID-19 business concerns with creative and impactful promotional ideas to support the industry and drive sales of California avocados during an exceptionally difficult period.

The Commission produced a series of assets demonstrating the value of California avocados on the menu and the comprehensive and customized support CAC provides to chains, including a video that offers a collaborative menu ideation session as well as flexible menu promotion funds to fit chain-specific needs. In addition, the Commission sent research data to chain operators that showcased the perceived value diners place on California avocados and how and why California avocado menu items create a halo effect for chains who partner with the Commission.

To reach chain culinary Research and Development personnel, the Commission sponsored and participated in an industry panel discussion concerning "Seasonal LTO (Limited Time Offer) Menus." Commission panelists discussed the benefits of seasonal ingredients, such as California avocados on chain menus. In addition, culinary R&D chef partners from Another Broken Egg and The Grill Concept shared their perspectives concerning the effectiveness of featuring seasonal ingredients to differentiate themselves from the competition. CAC's demonstrated leadership and presence on the panel served to encourage foodservice teams to contact the Commission and explore partnership opportunities.

Throughout 2020, chains had to find ways to streamline operations in response to the decrease in foot traffic and sales. Often chains had to reduce the number of personnel and therefore cut back on their menu offerings because less staff was available to manage prep stations and kitchen equipment. Chains also rebundled their menus, offering family packs and

LTO website pop-ups like this one on the Super Duper Burgers website are an impactful way to build awareness of California avocado season as more diners visit chain websites to place online orders.

menu items more suitable for to-go and delivery orders. This season, to help chains fill the new menu item pipeline with creative solutions and reimagined to-go and take-out options, the Commission offered complimentary on-site and virtual menu ideation sessions for target chains. These sessions provide CAC with an opportunity to showcase the versatility of California avocados, present creative California avocado menu items that may not have been considered before, demonstrate the fruit's value on the menu and propose customized promotions that would entice diners and build sales. On March 3, the Commission hosted a virtual menu ideation session with Islands Restaurants that led to the chain requesting six of the 10 recipes presented.

To date, the Commission has secured promotions with Erik's DeliCafe (April 1 – May 31), Super Duper Burgers (April 15 – June 1), Del Taco (April 29 – July 21) and Denny's (Arizona, California and Nevada units, May 1 – September 30). CAC will reach out to potential chain partners on a monthly basis during the season to secure a partnership promotion. Because in-store foot traffic has decreased due to the pandemic, the Commission has expanded California Avocados branding beyond in-store POP with a focus on website and social media promotions. Chains have reported increased visits to their websites where diners review menus prior to placing online orders. Thus, the Commission has worked with chain partners to position the California Avocados brand logo on their respective websites near the menu item featuring the Golden State fruit to increase brand visibility.

In addition, the Commission is providing customized funding to help chains extend the reach of their California avocado promotions. Funds are based on the application of the California Avocados brand logo on the chain website and in-store POP materials. Additional bonus funds are added for social media promotions that boost awareness of California avocados on the menu.

The Commission has successfully established numerous chain partnerships that have brought back popular California avocado dishes on seasonal menus that diners have come to anticipate with the start of the California avocado season. And, just as importantly, the Commission has pitched imaginative new California avocado menu items that will build brand awareness, entice customers and encourage California avocado sales velocity.

The Erik's DeliCafe website features the California Avocados brand logo next to menu items featuring the fruit.

By Tim Linden

Good Summer Prices Anticipated for California Fruit

It has been well documented that this season's California crop will not meet early expectations as adverse growing conditions, including a lack of rain, have contributed to less fruit on the trees and an increase in smaller fruit, resulting in fewer pounds produced.

Indeed, elsewhere in this publication, the report of the mid-season survey of handlers and growers by the California Avocado Commission reveals a total crop estimate at this juncture of 265 million pounds. That is 27 million pounds less than the February 2021 handler estimate of 292 million pounds, and about 20% less than the very early September 2020 crop estimates of 333 million pounds.

The good news is that the smaller crop has resulted in excellent prices for most of the California fruit thus far and that situation is expected to continue through the end of the season. Through May, California avocado shippers sent close to 130 million pounds to market. In early June (when this is being written), it is projected that Golden State growers will pick, pack and market about 115 million pounds in June, July and August, with the remaining production coming in September and beyond.

Bob Lucy, president of Del Rey Avocado Co. in Fallbrook, CA, predicted in May that June might result in a softening of the avocado market. "But July and August should be really good," he added, noting that Mexico's production should drop off.

In fact, the Hass Avocado Board, using numbers provided by the various industry organizations representing points of origin, estimates that the week ending July 4 will be the last week until at least the fall that total avocado shipments in the United States top 60 million pounds. In fact, through July and August, the weekly projected average is right around 50 million pounds. Considering the U.S. market consumed an average of 60 million pounds per week through the first five months of 2021, it is not a stretch to guess that a 50 million pound average could bring with it a very strong marketing situation.

Rankin McDaniel Sr., president of the Fallbrook, CA-based McDaniel Fruit Company, agreed with that assessment. He predicted in May that the market price for California and Mexico fruit, as well as Peru fruit with pre-determined homes, should be solid this summer. He noted that there could be a two-tier pricing situation on Peru fruit with pre-sold volume at a higher price than spot market imports brought in by speculators trying to take advantage of the reduced volume. But he said California fruit should continue to receive a nice premium.

McDaniel did say that the lack of rain has resulted in a smaller size profile, which means more fruit in each box and reduced total tonnage.

Rob Wedin, Calavo's executive vice president of sales, was the third handler representative that agreed that a solid summer awaits California producers with fruit on the trees. He said avocado prices have been good and movement has been solid throughout most of the first half of the year, and that occurred without blow-out promotions by retailers. There are promotions but not at reduced prices. He expects more promotions during the summer, which should increase demand as volume falls.

With California reducing its estimate another 9%, Wedin remarked: "It should be a good June, July and August for Northern growers."

Del Rey has long been one of the last suppliers of California avocados in late summer/early fall as it has had a robust deal in the most northern avocado producing region of Morro Bay. It markets many of those avocados under a "Morro Bay" brand and sold the fruit into November last year. Lucy said that this year, the Morro Bay season will not last as long. He reminded us that extreme heat visited the Morro Bay production area during the Labor Day weekend of 2020 causing extensive fruit drop and reducing the size of this year's crop.

In addition, he noted that California has a short crop and growers have received solid grove prices for their fruit all season and will continue to do so throughout the summer. Many growers, he predicts, will take those good prices early rather than expose their fruit to more risk by leaving it on the tree. Lucy expects the Morro Bay season to shift to the late summer with few supplies in October and November.

Lucy also remarked on the excellent market that has existed all year for organic avocados, with the category often receiving a $20 premium over conventional fruit.

Wedin made the same observation, stating that for a couple of months, organic avocados have been getting that $20 premium on a consistent basis. He believes it is the result of California's smaller organic crop, which is not expected to last through the summer.

Wedin also made a quick comment looking forward to the 2022 crop. He said it was way too early to make any predictions about the ultimate tonnage that will be delivered to packing sheds next year, but there is a lot of fruit on the trees. He said little rain and mild temperatures have not stripped the trees of potential production as of yet. He doesn't want to jump too far ahead but said there is an opportunity that 2022 could produce a very good crop of California avocados.

By Tim Linden

Guatemala Avocado Group Looking at U.S. Market

About five years ago, Guatemala began exporting avocados to Europe and some of its Central American neighbors and now it is eyeing the U.S. market.

Producers in Guatemala have an organization – the Avocado Committee of the Guatemalan Exporters Association (Agexport) – and in May they held their first National Avocado Congress to discuss the industry and its challenges and opportunities. Among the topics on the agenda was the effort to export to the United States. A local Guatemalan newspaper reported on the event and some of that information was relayed to the general produce industry by freshfruitportal.com, an online media publication focused on providing daily news for the global produce industry.

That news organization reported that Guatemala officials are working on the avocado industry's phytosanitary challenges to gain access to the U.S. market. A speaker during the Congress revealed that the Ministry of Agriculture, Livestock and Food is currently taking an inventory of pests in the country's avocado crop to determine what hurdles it needs to jump over for U.S. access. During the meeting, a government official noted that Guatemala was planning to submit its application to U.S. authorities as soon as this summer, and it appears it has lofty expectations about the timetable for success. A representative from an avocado production company noted that the goal for approval from the United States was about 18 months.

The principal avocado regions of Guatemala, such as Antigua and San Cristobal Verapaz, are highlighted in red on the map above.

Since its foray into export markets a handful of years ago, Guatemala has focused on Europe and has not yet gained access to key Asian markets, according to reports from the Congress.

Rob Wedin, executive vice president of sales for Calavo Growers Inc., Santa Paula, CA, gave *From the Grove* a thumbnail sketch of the Guatemalan avocado industry. Guatemala currently has about 15,000 hectares (37,000 acres) of avocados under production. The main season is from December through May with off-bloom production in June and July.

The total production is estimated to be in the 100 million-pound-range with only 5-7% of that exported. Europe receives about 70% of those exports with 25% going to Central American countries and 5% to Canada.

These numbers do represent a significant increase in the last five years. In 2015, it was reported that Guatemala had 7,500 producing hectares when it launched its first export efforts.

Wedin said approval of phytosanitary requirements to ship to the United States is expected to take several years with 2024/25 being a more reasonable expectation.

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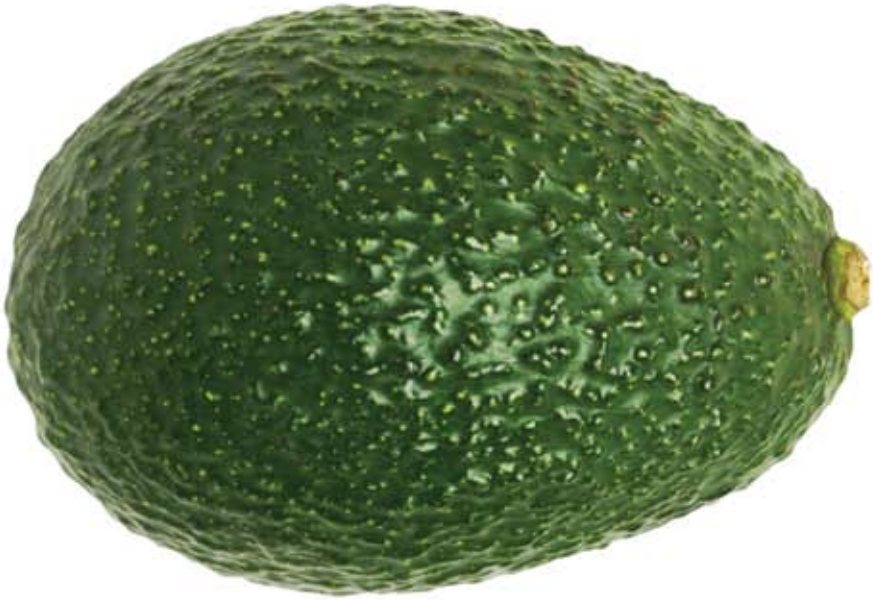

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