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## CHALLENGES AND OPPORTUNITIES

The 2017 California avocado season presents both challenges and opportunities. Front and center, are the challenges of a small crop, the question of whether the drought will continue and as in all years, increasing costs.

Less obvious are the opportunities. A smaller Mexican crop, higher pricing as

the California season begins, larger on-tree sizes, flexibility to coordinate harvest with favorable market conditions and the chance to improve tree health.

The official Mexican avocado crop estimate calls for a large amount of exports into the U.S. market. Despite the estimate, actual shipments have been running behind last year and projections call for this trend to continue. The reduction in weekly volume may be in part due to Mexican growers holding their crop, but an industry

consensus is emerging that the total on-tree crop is smaller than anticipated.

Reduced weekly volume from Mexico coupled with increasing consumer demand has created higher sales prices for avocados during December and January. We anticipate that these attractive prices will continue into the spring and summer, partially helping to mitigate the impact of smaller yields in California orchards.

Also helping to offset lower yields are the

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larger sizes currently on trees. Larger sizes will add weight to the crop, produce higher returns and require less size picking, which will help to control costs. Larger sizes and smaller volumes will also allow the flexibility to better coordinate harvest with favorable market conditions.

Whether the increased rain we are experiencing will alleviate the drought remains an open question, but the combination of better rainfall and reduced stress from a lighter crop will allow trees to take a step toward improved health. In addition, the lighter crop may permit more aggressive cultural operations that will aid tree health and set the stage for increased production in the future.

The 2017 California avocado season will present multiple challenges for growers, but also has the potential to provide opportunities to realize high returns and prepare trees for the future.

**DANA THOMAS, President**

## SUPPLY UPDATE

2017 will be an exciting year in the worldwide avocado market. Supplies out of California and Mexico are down compared to 2016. Harvest levels are ahead of schedule in Chile, thanks to high prices throughout the Fall. The only country that appears to have more fruit available than last year is Peru, but heavy demand in Europe and elsewhere will help to limit the amount of Peruvian fruit destined for the United States.

The winter market is opening at significantly higher than the 2016 season.

Mexico is in month 7 of its crop year and is fully 20% behind on shipments vs their 2014/2015 crop. Despite an official budget set at 2 billion pounds for the Mexican Hass Avocado Importers' Association, Mexico will be unable to hit this volume by the end of its crop-year in June. The transition to 'Flor Loca' in July may see more fruit available toward the end of the California season. The entry of avocados from Jalisco is drawing closer and a Spring 2017 start date is a distinct possibility.



California growers are watching the market closely. With just over half of the volume to move in 2016 we expect very healthy demand for California avocados in the Spring and early Summer. There are also export opportunities in this late winter and early Spring as both Chile and Jalisco see historically early finish dates for their export seasons.

The official Peruvian crop estimate is expected in late January before the exporters head to the Fresh Fruit Logistica show in Berlin, Germany. Preliminary reports place the Peruvian crop in the 400-450 million pound range as new developments come into production primarily in the northern growing regions of Olmos and Trujillo. Less than 1/3 of this fruit is projected to head to the States as demand in Europe, Asia, and the Southern Cone (Chile, Argentina) countries all compete for Peruvian avocados from April-September.

Please be in close communication with your field representative as the season progresses. They will have the most up-to-date information concerning market developments and opportunities.

**GIOVANNI CAVALETTI, V.P., Sourcing**



## BIOCHAR

Even though it's been used in agriculture for thousands of years, there's been an explosion of renewed interest in biochar for its many agricultural benefits and impact on the environment. In fact Sir Richard Branson of the Virgin Earth Challenge, with its \$25 million prize, challenged market forces to fight global warming. Of an initial 10,000 contest submissions in 2007, 6 of the 10 final contestants, rely on biochar as the most promising way to fight global warming. The prize has not been awarded yet but, the implications of biochar are profoundly clear. The use of biochar is not common in the avocado industry, but in the interest of increasing production, we believe that a discussion to introduce biochar as a possible cultural tool is warranted.



### WHAT IS BIOCHAR?

Biochar is essentially charcoal made at a specific temperature (450 – 550 ° C) which is used to amend the properties of soil. It's made through a process known as pyrolysis

which is essentially biomass subjected to high heat under low oxygen concentrations. When incorporated into soil, biochar can significantly increase the cation exchange capacity (CEC) of a soil rendering the soil more capable of holding on to nutrients that might otherwise be leached from the soil or released to the atmosphere through nitrification. In soils where biochar has been applied, the amount of fertilizer needed to produce a crop can be significantly lowered and the overall health and quality of the crop can be increased as nutrients are generally more available than in a soil without biochar. Field testing suggests that maximum crop production, dependent on the particular crop, requires that 10% (by volume) of our soils should be biochar. In some cases, the use of biochar has accompanied about a 25% general increase in productivity.

Starting about 5,000 years ago, it was the Indians in the Amazon Basin area of South America who discovered the value of biochar. Their native soils lack fertility and they began amending their soil with biochar plus compost, feces and kitchen waste. After seeing significant improvements in their crops, adding biochar became a cultural tradition. These soils, called terra preta by the locals, are highly sought after by today's local farmers for their agronomic value. The fact that these soils still exist today prove the long lasting soil fertility improvements are possible even under the most unfavorable conditions like the high rainfall and temperatures associated with the Amazon Basin region. Those conditions accelerate both leaching and mineralization

and reduce soil fertility over time. Amazingly, entrepreneurs today dig those terra preta soils, remove the rocks and roots, and sell terra preta soils in big box stores in South America as potting soil.

### HOW DOES BIOCHAR IMPROVE MY AVOCADO GROVE?

As mentioned above, the incorporation of biochar into your soil increases the cation exchange capacity (CEC) rendering it more capable of holding nutrients. Biochar contains both cationic (positive) and anionic (negative) surface properties so it's able to attract and hold both anions and cations. Imagine a magnet which was passed over some nails which spilled on your garage floor. As the magnet passes over the nails they are picked up by the magnet. In the same way these positive and negative charges on the biochar attract both cations and anions and keep them in the root zone of the plant. This concentration of biochar and plant nutrients in soils allows a well-developed microbiological community to







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develop. Growers everywhere are now recognizing the enormous microbiological community in healthy soils are responsible for superior crop production. Unfortunately, it takes an average of three to five years for a microbiological community to develop. Positive results will begin to show the second year and will peak about the fifth year. Since many agricultural soils are seriously depleted by years of farming, incorporating biochar and compost often produces increased rates of production.

Fertilizers break down into cations and anions when put in solution or applied to the soil. For example, potassium nitrate breaks down into potassium ions which are cationic and nitrate ions which are anionic. Similarly ammonium sulfate breaks down into ammonium ions which are cationic and sulfate ions which are anionic. Over time even these components often break down even further in a process called mineralization. The one common characteristic of these breakdown components is that they carry either a cationic (positive) or anionic (negative) charge. Just like the example above with the magnet and nails, these charges are attracted by the opposite charges on the biochar which has both positive and negative charge sites on them and are held by the biochar and the microbiological community just like the magnet held the nails.

It is only when in their ionic or mineralized state that nutrients can be taken up by the plant. Their availability to the plant is limited by the type and age of soil they are in. If

your soil is very porous which is typical of a sandy or decomposed granite soil, there is likely very little cation exchange capacity and these nutrients are leached through the root zone of the plant because there is a very low CEC in the soil to hold them. Alternatively, if you have soil with a lot of clay the CEC value is likely higher. Unfortunately a predominantly clay soil has other properties which are generally considered undesirable. Biochar seems to help almost all weathered acidic soils. In porous soils, it holds up to 18% more moisture. In clay soils, it reduces the density of the soil and improves the aeration and tilth or workability of the soil. There are a number of articles written about the use of biochar in avocado culture which can be found at the links below.

I was impressed by the four year Australian study which showed a 100% increase in growth rate as compared to the control group after 18-months where the soil had been amended with biochar.

[http://swccnrm.org.au/wp-content/uploads/2014/06/Biochar-and-Avocado-Trial-Update\\_July-2016.pdf](http://swccnrm.org.au/wp-content/uploads/2014/06/Biochar-and-Avocado-Trial-Update_July-2016.pdf)

David Crowley from UCR has written about the use of biochar in the CAS yearbook. And significant improvements after applying biochar to avocado orchards have been revealed in the WANTFA publication.

The Insider by Index Fresh is a complimentary resource for interested avocado growers. To subscribe, contact your area field staff.

[http://www.avocadosource.com/cas\\_yearbooks/cas\\_95\\_2012/CAS\\_2012\\_V95\\_PG\\_045-062.pdf](http://www.avocadosource.com/cas_yearbooks/cas_95_2012/CAS_2012_V95_PG_045-062.pdf)

[http://www.wantfa.com.au/wp-content/uploads/2016/04/WANTFA\\_NF\\_Summer2015\\_Biochar-002.pdf](http://www.wantfa.com.au/wp-content/uploads/2016/04/WANTFA_NF_Summer2015_Biochar-002.pdf)

### WHERE CAN I GET BIOCHAR AND HOW IS IT APPLIED?

Biochar is surprisingly expensive with the current market price in large quantities going for about \$1,000 per ton. Any sort of biomass can be used to make biochar but avocado growers typically have plenty of waste wood available from pruning operations that has to be disposed of. Any sort of biomass can be used to make biochar. In fact, there have been a few publications using avocado pits as raw biomass to make biochar. Why not turn pruning waste into biochar and improve your crop?

There are many different ways that biochar can be made and many sources available on the web to show you how it's done. In the climate we live in especially after four years of drought, extreme care should be exercised if you're producing biochar yourself. New technologies to make biochar are slowly coming online for smoke-free clean emissions. In California where wildfires and air quality are of genuine concern, the method used and safety precautions play a significant role in what method and device are used to create biochar.



Ideally biochar would be dug into the soil before planting a crop. It will also work its way into the soil over time if broadcast like a dry fertilizer. If broadcast over bare soil, a mulch should be applied to reduce erosion of the biochar from wind and rain. In a typical avocado grove with a lot of leaf litter on the ground already this is probably not necessary.

### SMUDGE-POT BIOCHAR GENERATORS?

Years ago smudge-pots were used extensively to protect citrus and avocado crops during cold weather events but this practice was curtailed due to air quality concerns. Some of the biochar devices used today are very clean burning whose emissions surpass EPA discharge levels and generate a significant amount of heat. While there are still some challenges to overcome, efforts are currently being made to develop a smudge-pot biochar device which will comply with AQMD regulations, protect your crop from cold and produce biochar all at the same time. We will keep you updated on the progress of these efforts over time.

### CONCLUSIONS

Biochar is a valuable soil amendment which has the potential to significantly improve your yields and reduce fertilizer usage.

**JOHN CORNELL, Newsletter Editor**  
**NORMAN BAKER, PHD**



## FIELD FOOD SAFETY

Lisa Strickland joined the Index Fresh team as Field Food Safety Representative. In her role Lisa will be partnering with the Field Staff in supporting growers with Food Safety Compliance under GFSI and Global GAP modules.

Lisa brings with her in-depth Food Safety experience and most recently acted as the Food Safety Director for an organic leafy green grower.

Lisa's Food Safety education and training is extensive, including HACCP Certification and Primus Labs Facility and Auditor training. Lisa has also completed the PSA- Produce Safety Alliance, Certificate of Compliance for FSMA- Food Safety Modernization Act 2016.

She also earned her degree while attending Gavilan College and Santa Barbara College. Lisa will spend the majority of her time in the field working with growers and the Field Staff.

**DANA THOMAS President**

## FRESH FACTS APP

The 2017 California avocado season will be the first full year for the "FRESH FACTS BY Index Fresh" App. The App is updated on a daily basis during the season, and contains industry harvest, inventory, shipments and estimated grower return. In addition, the Fresh Facts App provides online access to Index's quarterly newsletter and articles of interest to California growers. The App may be accessed from both Apple and Android operating systems. The Fresh Facts will continue to be available by email and on the Index Fresh website, <http://indexfresh.com/fresh-facts/>.







## INDEX FRESH GROWER PROGRAMS

Index Fresh has developed a comprehensive informational booklet that outlines the services and programs we offer to California growers. The publication provides detailed information about volume rebates, GAP rebates, hauling credits, online services, our Cultural seminar series, technical GAP assistance and the comprehensive field service provided by the Index Fresh Field Staff.

Titled "Index Fresh Grower Programs for 2017" and mailed to growers in January, the booklet is also available from Index Field Representatives.

DANA THOMAS, **President**



## BUMPY GOODNESS

When you work with Index Fresh you can count on a few bumps...on the avocados, that is. But when it comes to our grower relationships, we keep things running nice and smooth.



800.352.6931  
IndexFresh.com





## FIELD STAFF

### VENTURA

Gary Nichols  
805.657.1747

Bailey Diloia  
805.570.9720

### SANTA BARBARA & SAN LUIS OBISPO

Giuseppe Bonfiglio  
805.341.3059

### SOUTHERN

Jose Avina  
909.213.0595  
Keith Blanchard  
760.514.7734

## EVENTS

### 2017 MARKETING MEETING

#### JANUARY 23, 2017

9:00 AM - 11:00 AM  
HILTON GARDEN INN  
2000 Solar Dr.  
Oxnard, CA 93036

#### JANUARY 24, 2017

9:00 AM - 11:00 AM  
PALA MESA RESORT  
2001 Old Highway 395  
Fallbrook, CA 92028

#### MARCH 9, 2017

9:00 AM - 11:00 AM  
EMBASSY SUITES  
333 Madonna Road  
San Luis Obispo, CA

## CONTACT

[www.IndexFresh.com](http://www.IndexFresh.com)  
[info@IndexFresh.com](mailto:info@IndexFresh.com)  
[fieldreps@IndexFresh.com](mailto:fieldreps@IndexFresh.com)  
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APP: Fresh Facts By Index Fresh

### JOHN CORNELL

Editor, Index Fresh  
[jcornell@indexfresh.com](mailto:jcornell@indexfresh.com)