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Almond Outlook: Risk of Oversupply?

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Inside…

Key Points:

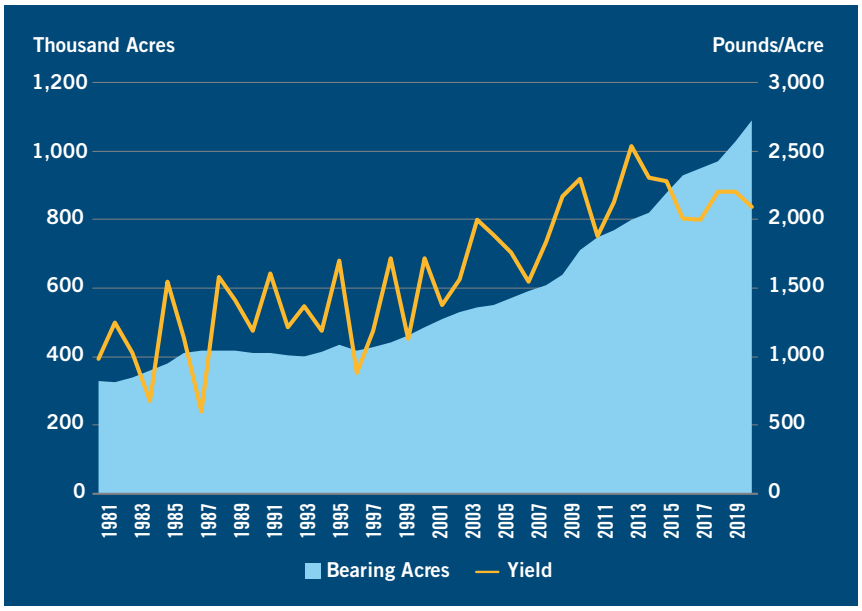
- The risk of an oversupply of almonds over the next five to 10 years depends heavily on what happens with yields. Two wildcards affecting U.S. almond yields are weather and California's Sustainable Groundwater Management Act (SGMA).
- Some in the industry expect SGMA will keep yields flat. Because southern California is more reliant on ground water, we could expect growth of almond acreage to concentrate in the north. However, per-acre yields in northern California are 28% less than in southern California, meaning that overall yields would flatten. In this scenario, the industry may be undersupplied and unable to meet almond's expected strong demand growth. Prices would increase to incentivize greater acreage growth.
- Others in the industry believe that a return of normal weather patterns would mean a return to the growth of pre-2014 trend yields and create oversupply. In this scenario, prices would drop to stimulate additional export demand, namely from China and India. However, with this high demand potential, prices would not have to drop very far to achieve the needed growth.
- Ongoing trade disputes, though, could remain unresolved in the years ahead and significantly raise the risk of oversupply – particularly if almond yields return to trend in the U.S.

Introduction

The almond industry has enjoyed over 20 years of robust demand growth, acreage growth, and generally favorable economic returns. Yet, over the past five years, a number of weather-related challenges such as frosts and droughts have kept yields relatively flat.

The result is tight supplies coming out of 2018-19. The industry is sitting with the tightest stocks-to-use ratio in 12 years and USDA's July objective almond production estimates for 2019-20 have come in 12% below May expectations and 3.5% below last year.[1] In the meantime, the current pace of sales is up over last year. The tight supply and strong demand are driving almond prices up, and with it, the expected pace of near-term almond acreage plantings.

EXHIBIT 1: Acres and Yield



Source: USDA, NASS

However, the acreage growth creates a looming concern – what if the industry goes through an extended period of good weather? Could demand keep up with increasing yields, or would the industry be at risk of becoming oversupplied? (For purposes of this analysis over/under supply refers to production levels relative to an assumed demand – not quantity utilized. In reality, prices will adjust to reach market equilibrium.)

To address this question, we analyzed raw data as well as insights from interviews with 12 almond industry representatives. They included processors, growers, associations, and farm credit lenders spread geographically across California's key almond-producing regions.

Potential Long-Term Supply Scenarios

California's average almond yields grew 150% between 1980 and 2013 but have hovered around 2,100 pounds per acre since then *(Exhibit 1).* For the past five years, yields have been held flat by bad weather and bloom issues, as well as a transition of marginal land into almond production.

While yields over the next five to 10 years are uncertain, knowing the factors supporting flat vs. growth scenarios are valuable in assessing and understanding risk and opportunities. In reality, the most likely good weather yield outcome will be somewhere in between these two scenarios.

Almond Acreage

The elevated almond planting rates of the past five years will be felt over the next several years. As noted above, with current tight supplies and strong almond prices, we expect planting rates to remain elevated in the short-term.

However, provided that the short-term supply situation is resolved and favorable yields follow, we can expect planting rates to fall to more historic averages in coming years, or even lower if SGMA has significant negative impacts on almond acreage. Additionally, a large number of older trees are expected to be culled over the next several years as they approach the end of their 20-25 year lifespan.

Our analysis considered two scenarios in which the planting rates continue at the elevated levels seen over recent years and one in which the planting rates fall as low as 20,000 acres per year (low end of past 20 years).[2,3] However, since these scenarios were not nearly as impactful as the above yield scenarios, we utilized an average of these two in this analysis.

Potential Production

So, using the averaged acreage scenario described above and assuming yields remain relatively flat, production should be roughly 3.2 billion pounds by 2028. If yields resume their pre-2014 trend, production could reach 4.3 billion pounds.

Factors	Scenario 1: Yields Could Remain Flat If…	Scenario 2: Yields Could Return to their Pre-2014 Growth Levels If…
Weather	**Bad Weather Patterns Continue**	**Weather Returns to "Normal" Patterns:** If, weather has been the primary factor behind the flat yields experienced over the past several years, trend yield growth could resume under "normal" weather.
Regulations	**Regulations Slow Acreage Growth in Southern California:** Increasing water regulation (and potential increases in air regulations) may slow almond acreage growth rates in southern growing regions relative to northern growing areas. Due to climate, almond yields in northern California are generally lower than southern production regions. Therefore, state average yield growth will be moderated as acreage growth in the north increases relative to the south.	**The Impact of SGMA on Southern Acreage Growth is Minimal:** While the impact of the Sustainable Groundwater Management Act (SGMA) is largely unknown, the expected loss of acreage in southern California will likely have a bigger impact on less economical crops than on almonds. The expected increase in the growth rate of northern almond acreage relative to the south may be less pronounced than some are expecting, which is a key factor in the flat yield scenario.
Land Conversion	**Marginal Land Conversion Continues**	**More Good Quality Land Converts from Other Crops:** Rising costs for labor and production may lead producers to convert good quality land from fruits and vegetables to almonds, which would result in less yield drag than the conversion of marginal land.
Technology & Innovation	**Returns on Irrigation Technology Diminish:** Yield increases related to irrigation technology advancements may not be maintained at levels seen over the past decade.	**New Varieties Bear Fruit:** Producers expect a small yield boost as new varieties planted over recent years – and anticipated to be planted in coming years – come online. **Producers Use Advanced Technology to Boost Marginal Land Yields**

Why is the Sustainable Groundwater Management Act a Wildcard?

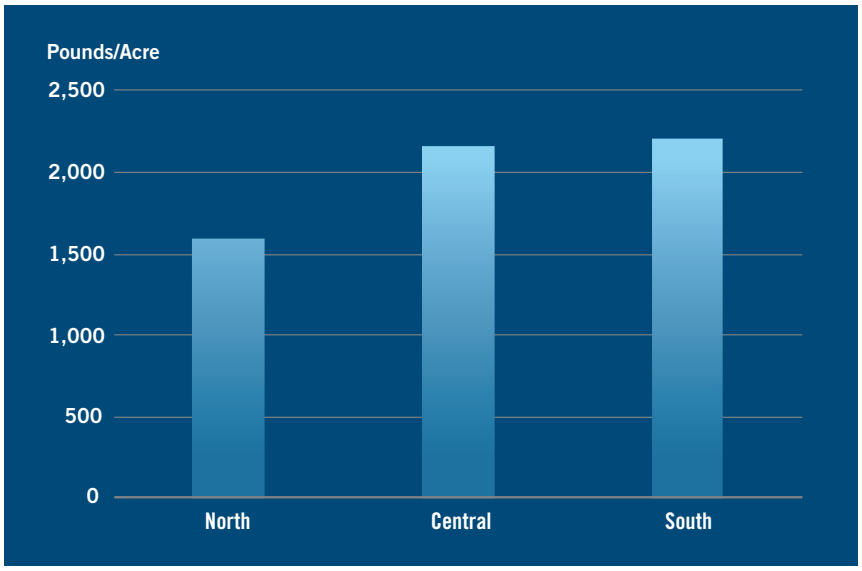
The Sustainable Groundwater Management Act (SGMA), the result of three bills that were signed into California law on Sept. 16, 2014, is a framework for sustainable groundwater management. SGMA requires local governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. To do this, local agencies must develop Groundwater Sustainability Plans (GSPs).

The SGMA set Jan. 31, 2020, as the date when critically-overdrafted high and medium priority basins be managed under a GSP and Jan. 31, 2022, for all other high or medium priority basins.[4]

As such, southern California almond production areas that rely more heavily on groundwater from priority basins will be more impacted than northern production areas, which are less reliant on groundwater. That could induce growth of almond acreage to concentrate in the north.

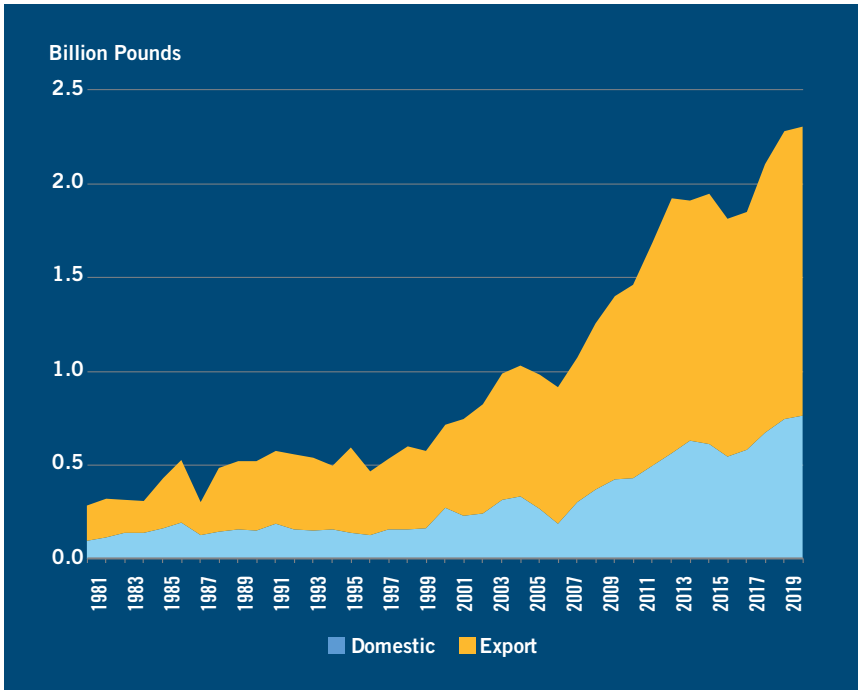
Because per-acre yields in northern California are 28% less than in southern California *(Exhibit 2)*, overall yields would flatten.

EXHIBIT 2: 2018 Regional Yields



Source: Land IQ and USDA, NA

EXHIBIT 3: Historic Almond Utilization



Source: USDA, ERS (domestic); U.S. Customs via Global Trade Tracker (Exports)

Building Long-Term Demand

Under the production scenarios presented above, will demand be able to keep up? We analyzed historic trends and key drivers of demand to help address this question.

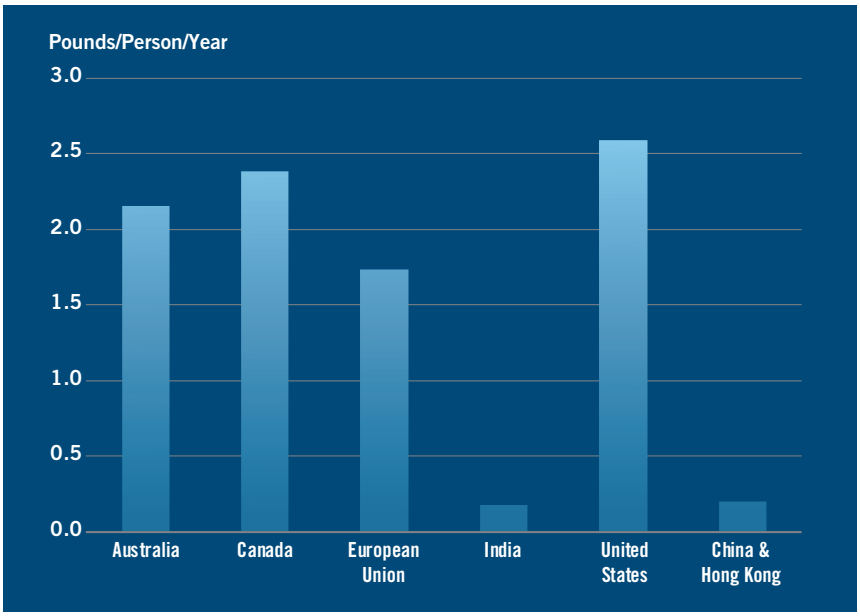
Domestic Demand Growth

Domestic almond utilization has grown at an average annual rate of 6% over the past decade.[5] This growth has been driven by a number of factors, including:

- Consumer trends (e.g., low carb, gluten free, plant based protein)
- Product innovations (e.g., almond milk, flavored almond snacks, almond nut thins, almond flour)
- Growth in the health-based snack market
- Population growth

Thanks to enduring consumer trends, the U.S. almond industry is in a good position to sustain this domestic demand growth *(Exhibit 3).* Many of the fast-growing product markets are not yet fully mature and still have room to grow. Additionally, new product innovations, such as almond flour and almond protein, are in the early pipeline stages and have the potential to boost demand as consumer packaged products and as a low carb/high protein ingredients in food manufacturing.

EXHIBIT 4: 2018-19 Per Capita Almond Consumption



Sources: FAS (consumption) and UN (population)

Global Demand Growth

U.S. almond exports have increased at an average annual rate of 5% over the past decade.[6] Global almond demand growth has been driven by many of the same factors as the general "protein" market – expanding population and rising incomes.[7,8]

Key potential growth markets for U.S. almond exports over the next five to 10 years include:

- **India** - There is significant per capita consumption growth potential. Current per capita almond consumption in India is estimated at around 0.18 pounds per year relative to the 2.59 pounds per year consumed in the U.S.
- **Europe** – Despite the large gains in European almond production over the past five years, it has not kept up with consumption growth. As a result, net imports have been increasing.
- **China and Hong Kong** – Like India, the per capita consumption of almonds in China/Hong Kong has substantial room for growth. Current almond consumption is at 0.20 pounds per capita *(Exhibit 4).*

Negligible Export Competition

Because there are so few countries in the world with the right climatic conditions for almond production, the threat of increased competition is small relative to many other crops. Based on USDA, FAS data, the U.S. accounts for roughly 80% of world almond production. While production is certainly rising in some countries and regions, the U.S. remains the dominant player and there is not a significant competitive threat that would hinder U.S. almond export growth.

Potential Demand

Demand growth trends are strong and it is reasonable to assume that with available supply, the industry can sustain growth rates experienced over the past decade. For purposes of this analysis, a range in trend demand was projected by using two different methods: 1) extending the linear trend and 2) maintaining the 5% annual growth experienced over the past 10 years *(Exhibit 5).*

Here's a summary of how demand trends compare to our yield scenarios, and our analysis of the risk of oversupply:

		Yield Scenario	
		Flat Yield	**Pre 2014 Trend Yield**
Demand Trend Method	**Linear Trend**	Balanced	Oversupply
	Maintain Annual 5% Growth	Undersupply	Moderate Oversupply

Conclusions – Risk of Over (or Under) Supply?

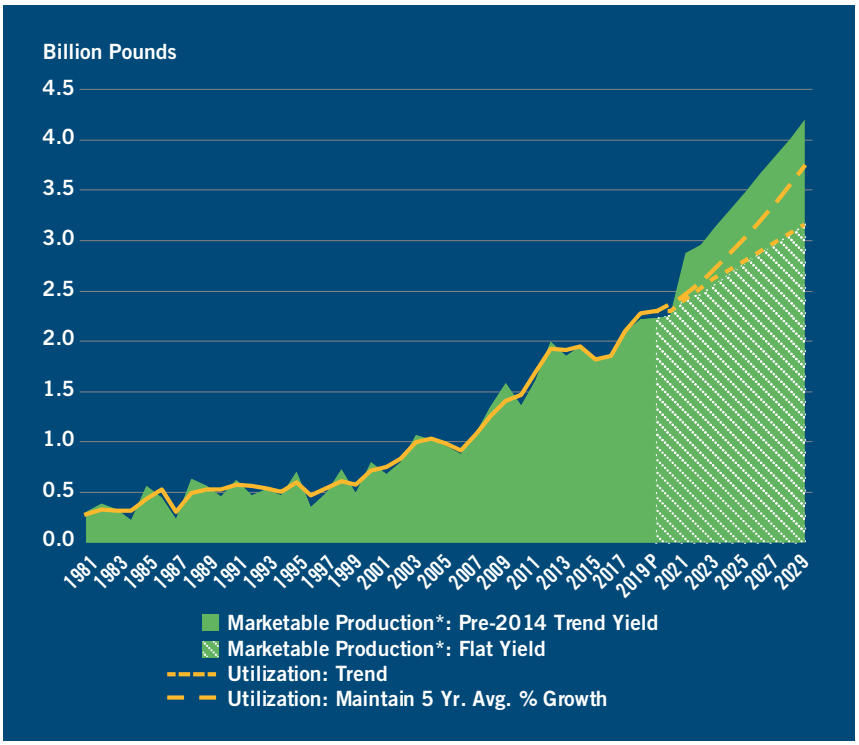
Yield is the big unknown in the answer to the potential oversupply question. Good weather could help return yields to trend, or regulation could lead to greater acreage growth rates in the comparatively lower yield northern regions and hamper growth in state average yields.

If yields stay relatively flat and demand trends continue, the industry may find itself undersupplied. In this case, prices would remain high to incentivize greater acreage growth and/or maintain acreage in the higher-yielding southern areas.

If pre-2014 growth trend yields return, the industry is at risk of oversupply, even if demand holds at the healthy 5% annual growth rate experienced over the past decade *(Exhibit 5).* In this situation, prices would be reduced to incentivize above trend demand and demand would have to grow at an average annual rate of 9% to keep up with supply. However, assuming that trade disputes are resolved over the next couple years, there is substantial demand growth opportunities. Even slight price reductions could stimulate further demand growth – namely India and China.

Not resolving the trade disputes represents a significant risk, particularly if yields return to trend under good weather, and even greater price reductions would be required to stimulate needed demand from U.S. consumers, India and other global markets. ■

EXHIBIT 5: Production vs Demand Scenarios



*Marketable production outlook – assumes a 2% loss/exempt reduction relative to production.

Sources: USDA (historical production and domestic demand), U.S. Customs via Global Trade Tracker (historical exports)

Endnotes

[1] USDA National Agricultural Statistics Service 2019 California Almond Objective Measurement Report. Released July 3, 2019. Accessed Nov. 8, 2019. https://www.nass.usda.gov/Statistics_by_State/California/Publications/Specialty_and_Other_Releases/Almond/Objective-Measurement/201907almom.pdf

[2] One CoBank interviewee anticipates a reduction in total almond acreage due to SGMA.

[3] Source: CoBank analysis of California NASS data. https://www.nass.usda.gov/Statistics_by_State/California/index.php

[4] California Department of Water Resources SGMA Groundwater Management. Accessed Nov. 8, 2019. https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management

[5] USDA Economic Research Service. Fruit and Tree Nut Yearbook Tables. Raw data. Accessed Nov. 8, 2019. https://www.ers.usda.gov/data-products/fruit-and-tree-nut-data/fruit-and-tree-nut-yearbook-tables/

[6] Global Trade Tracker data. Accessed Nov. 8, 2019. https://www.globaltradetracker.com/start/

[7] USDA Foreign Agricultural Service Production, Supply and Distribution data. Accessed Nov. 8, 2019 https://apps.fas.usda.gov/psdonline/app/index.html#/app/home

[8] UNdata population statistics. Accessed Nov. 8, 2019. http://data.un.org/

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