



Agricultural Investment Strategies

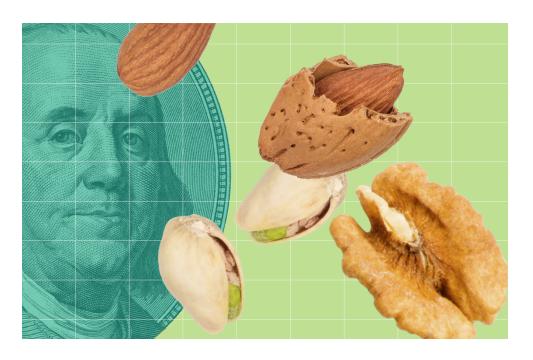
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WELCOME TO OUR INAUGURAL STATE OF THE HARVEST REPORT

This is our first Annual State of the Harvest Report, which provides an overview of selected commodity markets. In this issue, we discuss the market for almonds, walnuts, and pistachios and analyze the factors impacting the performance of these farmland assets. We also highlight how diabetic drugs like Ozempic, Wegovy, and Mounjaro, all glucagon-like peptide-1 receptor agonists (GLP-1), could potentially impact consumer demand for healthy foods like walnuts, pistachios, and almonds. Finally, we discuss our near and longer-term outlook for the nut sector.

Economic Overview

The present state of the world is not conducive to economic growth. The Federal Reserve Bank (Fed) is aggressively combatting inflation by raising the cost of capital and suppressing consumption, and Central Banks worldwide are following suit. The 10-year Treasury yield reached 4.9 percent during the 37th week of this year, its highest rate since August 2007. While inflation has subsided in the United States, it remains elevated above the Fed's long-run target of 2 percent. The increase in the cost of capital—and the Fed's recent forward guidance that rates will be higher for longer—is pressuring asset prices downward as asset return rates must equilibrate with the higher risk-free rate.



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ABOUT AGIS CAPITAL

AgIS Capital acquires and manages high-quality, investment-grade farmland assets. When opportunities exist to create and capture additional value for clients, we also invest in related operating companies involved in agricultural commodity processing. At present, AgIS is emphasizing investments in U.S. permanent croplands because we believe that sector's value proposition is more consistent with the risk and return objectives of institutional investors. We also strategically review offshore opportunities that complement our investment operations in the United States.

Many factors are creating turbulence in all markets. Oil production cuts by the Organization of the Petroleum Exporting Countries have depleted inventories and placed upward pressure on prices, which weighs on growth. Additionally, collections of Federal student loans resumed in October for the first time since March 2020, and that debt also began accruing interest. In addition, 34,000 of the 150,000 United Auto Workers employed by Ford, General Motors, and Stellantis are currently on strike, directly impacting those workers and rippling through the supply chain.¹



The present state of the world is not conducive to economic growth.

There are also active wars between Russia and Ukraine and between Hamas and Israel, and geopolitical tensions between the U.S. and China remain heightened. In conjunction with lower prospects for economic growth, the U.S. dollar's status as a safe haven likely contributes to the strong relative value of the U.S. dollar, as portrayed in Figure (1).

Continual federal budget deficits, especially the recent COVID-19 relief packages, have resulted in mounting U.S. debt, which is now more than \$33.5 trillion. Higher interest rates have drastically increased the U.S. government's interest payment expenditures. Public and private investment spending will wane as the proportion



of government spending on interest payments increases, which erodes the prospects for productivity, innovation, and economic growth. And investors could demand even higher rates if the government's debt-servicing ability becomes a concern. The chance of such a circumstance was recently increased: after passing a temporary funding bill averted a federal shutdown on Sept. 30th, keeping the U.S. Government running until November 17th, eight House Republicans and 208 House Democrats voted to oust the House Speaker, Kevin McCarthy, which increased the risk of a government shutdown after November 17.

This turbulence contributes to a challenging environment for agriculture commodities, especially almonds, walnuts, and pistachios, because reduced economic growth would likely reduce disposable income, which could decrease demand and pressure output prices. In the chaos, there is opportunity. In what follows, we present our case for why the upcoming year may be the best time to invest in the almond, walnut, and pistachio complex.



=2010 to 2019

2000 to 2009

Figure (1) Monthly Real Narrow Effective Exchange Rate of the U.S. Dollar: 01/1964 to 08/2023

1990 to 1999

Source: FRED

2020 to 2022

Anderson Economic Group, LLC Reports UAW Strike Sets New Record for Total Economic Loss

Almonds

The 2022 marketing year (August 1, 2022, through July 31, 2023) was the third consecutive year in which almond prices received at the farmgate level were below the average per pound cost of production. The USDA has not finalized its aggregate average price for the 2022 crop, but the figure is expected to be a 15year low in nominal terms. Interestingly, California's average yield per acre in 2022 is expected to be the lowest in 18 years. Such an unlikely occurrence—low yields and low prices—resulted from several economic factors.

Regarding supply, growers responded to relatively high average pricing between 2012 and 2015 by planting significantly more almonds. Consequently, the annual average increase in bearing area between 2017 through 2020 was 70,000 acres. During the previous four-year period, the average yearly increase in bearing area was 37,500 acres. Bearing acreage increased 52.4 percent from 820,000 acres in 2012 to 1,250,000 in 2020. The bearing area in 2023 was 1,366,000 acres.

As a result of the increasing bearing area, almond production rose for six consecutive years beginning in 2014,

HEADWINDS

- Additional bearing acreage and a strengthening of the U.S. dollar resulted in supply outpacing demand, reducing prices to at or below the break-even cost of production.
- The potential exists to have a large crop in 2024.
- Slower economic growth could negatively affect consumer demand for almonds.

TAILWINDS

- Low prices have caused growers to remove a record number of acres.
- Low prices should promote consumption, especially considering average domestic food inflation is up 20.6 percent for the three-year period ending September 2023; almonds are a very affordable and healthy snack.
- Groundwater regulations will increase the rate of acreage removals in the coming years.
- Potentially smaller than estimated 2023 crop due to weather at bloom and excessive navel orange worm damage.
- India recently removed its retaliatory tariff on U.S. almonds.

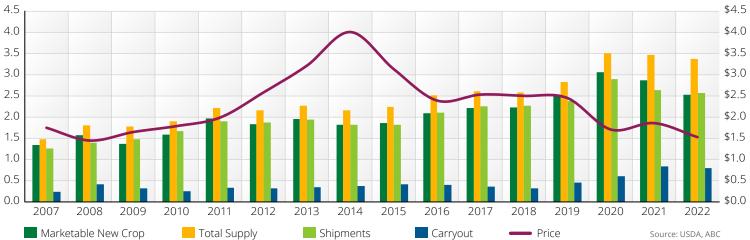
which was unprecedented: the previous record was three consecutive increaseswhich occurred four times since recordkeeping began in 1919. Production peaked at 3.1 billion pounds in 2020, falling to 2.9 billion in 2021 and 2.6 billion in 2022 (see Figure (2)).

The marketable new crops in 2020 and 2021 exceeded shipments by 158

million and 229 million pounds, respectively. Carryout—or ending stocks—reached a record of 837 million pounds going into the 2022 crop year, up 85.9 percent from the pre-pandemic record of 450 million pounds in 2019. The 2022 marketable crop was just over 2.5 billion pounds, down 528 million pounds



Figure (2) Almond Prices and Balance Sheet Components: 2007 to 2022, billion pounds, dollars per pound, 08/01 to 07/31 growing season



(17.3 percent) from the record set in 2020. The record level of ending stocks largely offset the lower production, and the total marketable supply during the 2022 season was only down 141 million pounds (4.0 percent) from the record 3.5 billion total supply in 2020.

participants was that the forecast was too high and resultant prices were too low. Figure (3) details how the first three quarters of the 2022 marketing year exceeded the prior year (dark green, light green, and yellow areas). Still, shipments during the fourth quarter (blue area) fell

Figure (3) Quarterly California Almond Shipments as a Percentage of Total Supply: 2010 through 2022, marketing year



Source: Almond Board of California (ABC)

The large supply of almonds during the 2022 crop year weighed on prices, which remained low but stable between August and early November before gradually reaching a trough in early January 2023. The weather during bloom in February and March was unusually cool, rainy, and windy. The questionable weather during pollination created uncertainty about the size of the 2023 crop, and shipments and prices began to firm. Shipments during the first quarter of the 2023 calendar year set a record.

Early crop estimates released in April 2023 by private companies put the crop at around 2.3 billion pounds, propelling prices upward, eventually reaching a season-high in early May. Shipments slowed in April as buyers and sellers waited for the USDA to release its subjective crop estimate, which came in at 2.5 billion pounds on May 12th. Prices fell immediately in the wake of the surprisingly optimistic figure. Shipments fell, too, as the consensus among California industry off, and shipments as a percentage of the marketable supply remained flat relative to the 2021 crop year.

Regarding demand, the continual appreciation of the U.S. dollar from 2011 to 2019 eroded foreign consumers' relative purchasing power. In 2018, two major export destinations, China and India, imposed retaliatory duties on U.S. almond exports, further eroding the purchasing power of their consumers. Then COVID-19 introduced itself to the world in 2020, the same year California produced its record crop. Economic uncertainty, significant supply chain disruptions, and lockdowns ensued, hindering the ability of the industry to ship its three largest crops in 2020, 2021, and 2022. Notably, though, India recently dropped its retaliatory tariff on shelled and in-shell almonds, which is important because India is the U.S.'s largest export destination. The tariffs were equivalent to 3.3 cents per pound for in-shell almonds and 11.0

cents per pound for kernels. India's pre-2019 tariffs remain in place.

Going forward, favorable vegetative growth this year indicates that a heavy crop is possible in 2024. Southern California typically experiences more rainfall during El Niño winters, while Central and Northern California conditions are generally average. Therefore, the predominant growing regions in California are expected to have sufficient water for a large crop next year. If conditions permit—low frost and good weather during pollination and bloom-the 2024 crop can reach 3.0 billion pounds.

Factors that could negatively impact the price estimates include reduced economic growth in countries that consume almonds, particularly the U.S., because such an occurrence would likely reduce disposable income and decrease the demand for almonds. Higher inflation and interest rates would have a similar impact.

Factors that could positively impact the price include a weakening of the relative strength of the dollar, which would be most welcomed. Almond acres fell for the first time in 2022 and are expected to creep lower in the foreseeable future as the cost of production per pound to grow almonds has exceeded the price received for the past three years. This circumstance is likely to persist for the next two years. Given depleted working capital, growers may have cut corners with their cultural practices, which would lower the productive capacity of their orchards in future years. Additionally, if almond acreage removals were to accelerate, the remaining well-capitalized growers would benefit from higher prices. As the Sustainable Groundwater Management Act (SGMA) will reduce groundwater availability, many bearing

acres will be removed in the coming years. It is estimated that over 77,000 acres were removed last year.

Walnuts

HEADWINDS

- Global supply for many competing nuts is also increasing.
- The 2023 California crop is expected to be 760,000 tons.
- Slower economic growth could affect consumer demand.

TAILWINDS

- Total shipments are now up
 14 percent year-over-year.
- Growers are rapidly removing bearing acreage in response to very low prices, and low prices should increase consumption.
- Chilean inventory should be depleted once the U.S. begins shipping this fall.

According to its statistics released in late September, the USDA expected world walnut production to increase 12.5 percent to 5.7 billion pounds in 2022. U.S. walnut production regularly accounts for around 28.0 percent of world production and is the second-largest producer nation behind China, which generates roughly

47.0 percent of world production.² Chile is the third largest producer, with around 8.0 percent of world production.

The USDA estimated walnut-bearing acreage to be 375,000 in 2023, down 6.3 percent from 2022, marking the first reduction in bearing acreage in over 30 years. AgIS Capital estimated non-bearing acres to be 49,000 acres in 2023.³ Bearing acreage has doubled since 2000, while non-bearing acres are estimated to be at the lowest level since 2013 when there were 45,000 acres. While exact walnut acreage data by county does not exist, inference from survey data indicates that 42.5 percent of California walnut plantings are in the San Joaquin Valley. Much of the remaining acreage is in the Sacramento

Valley. The California Walnut Board estimated that 23,000 total acres were removed in 2023 and not reflected in the 2023 statistic; private industry expects the figure to be closer to 30,000.

Additionally, the 2023 statistic still needs to include abandoned but not yet removed orchards, which could be up to another 10,000 acres.

The USDA forecasts the 2023 California walnut production to be 1.5 billion pounds, the second largest production on record (see Figure (4)). The final shipping reports indicate total shipments increased 14.0 percent year-over-year to 1.6 billion pounds. Export shipments of in-shell equivalent walnuts fell 0.7 percent to 921.6 million pounds, while domestic shipments rose 44.1 percent to 655.2 million pounds. Exports of shelled and in-shelled product to Germany—the largest importer of U.S. shelled walnuts—

was off by 28.9 percent, while

shelled product exported to Japan and Korea the second and third largest export market of shelled walnuts was down 10.5 and

2.6 percent, respectively. Domestic shipments of shelled walnuts increased by 32.2 percent to 257.4 million pounds.

Elevated temperatures before harvest reduced the color and quality of many walnuts. As a result of the inferior quality and large crop in Chile in 2022, the average pricing for the 2022 crop is expected to be lower than the initial USDA statistic of \$0.35 per pound, which is less than half the cost of production. The USDA recently committed to purchasing 57 million pounds to help support pricing.

Prices are expected to rebound slightly for the 2023 crop, largely because of higher crop quality, size, and color, the smaller crop in Chile, and fewer acreage in production in 2024. Pricing beyond 2023 should increase because of increased demand for pistachio and almond farmland in the Sacramento Valley and the consequent removal of older walnut plantings.

Figure (4) California Walnut Price and Production: 1980 to 2023, dollars per pound, billion pounds



² The accuracy of Chinese walnut acreage and production statistics is unknown.

³ Non-bearing walnut acreage is estimated every other year. The last estimate released by the USDA was acreage in 2021 was 55,000. AgIS Capital estimated non-bearing acreage to be 49,000 in 2023.

Pistachios

Global pistachio production is estimated to reach a record of 2.3 billion pounds in 2023, up 36.8 percent from 1.6 billion pounds in 2022. The increase was attributable to record high production in the U.S. (1.4 billion pounds, up 61.7 percent year-over-year, see Figure (5)) and Iran (440.9 million pounds, up 88.7 percent year-over-year) (It is important to note that pistachio production typically exhibits an alternate bearing nature in which a heavy crop follows a light crop. Both Iran and the U.S. experienced an "on year" in 2023). Turkey's production is expected to fall 5.0 percent to 418.9 million pounds. U.S. pistachio production regularly accounts for just over half of world production. Over the past two years, the U.S., Turkey, and Iran combined crops averaged 95 percent of world production. However,

HEADWINDS

- The global supply of pistachios is expected to reach a record in 2023.
- The 2023 California crop is expected to set a record of between 1.3 and 1.5 billion pounds.
- Non-bearing acres are expected to begin reaching maturity, which could increase supply.

TAILWINDS

- Total open-in-shell shipments were up 5.8 percent despite 2022 supply being down 13.2 percent.
- Low carry-in from the 2022 crop.
- Export shipments were up 11.7 percent despite the strong dollar.
- Reports of water issues in Iran continue to make headlines.
- 4 Pistachio Exports Earn Over \$360 Million During 11 Months
- 5 Pistachios: climate change costs Iran dearly
- 6 These estimates are based on the report <u>Projected Pistachio</u> <u>Production: 2023 through 2031</u>

Figure (5) California Pistachio Price and Production: 1980 to 2023, dollars per pound, billion pounds



reports of water issues in Iran continue to make headlines as the lower water table in Kerman, the primary growing region in Iran, continues to drop.^{4,5}

The primary export destinations for pistachios (all types) were China and Hong Kong (28.3 percent), Turkey (10.1 percent), and Germany (9.53 percent), the latter having fallen from 14.2 percent of total U.S. exports for the 2021 crop.

Export destinations remain well diversified, with Europe accounting for 30.1 percent, Asia for 41.9 percent, and the Middle East and

Africa at 21.0 percent, while Canada and Mexico combined for 5.7 percent.

California pistachio acreage in 2023 was estimated to be 583,384 acres, up 5.1 percent year-over-year. Bearing acres rose 6.2 percent to 453,741, while non-bearing acres rose 1.5 percent to 129,643.6 The USDA estimated that 35,000 acres were planted. Given the solid shipments for the 2022 crop, ending stocks appear to be the lowest since the short crop in 2019. Despite the recordhigh production, pistachio prices for the 2023 crop year are expected to remain above \$2.00 per pound.



New Weight Loss Drugs Could Impact Consumer Demand

Another development could help to increase the consumer demand for nuts in the medium to long term. Glucagon-like peptide-1 receptor agonists (GLP-1) were designed to suppress blood sugar levels in people with Type II diabetes. Mounjaro, Ozempic, and Wegovy are some of the currently available brands of GLP-1s. These drugs have since shown the propensity to reduce appetites and help with weight loss. For example, clinical trials of Ozempic involving people with a body mass index of over 30, conducted over 68 weeks, found that participants lost over 33 pounds on average. While these drugs are approved to treat Type II diabetes, many people take them off-label to lose weight. And drug makers have already begun the trials needed to get them approved for weight loss.

Doug McMillon elaborated a bit more, saying, "We still expect food, consumables, and health and wellness primarily due to the popularity of some GLP-1 drugs to grow as a percent of the total..."

Questions regarding the impact of GLP-1s on the demand for food indeed remain. Will a large swath of consumers adopt GLP-1s to lose weight? If so, how will their food expenditures change?

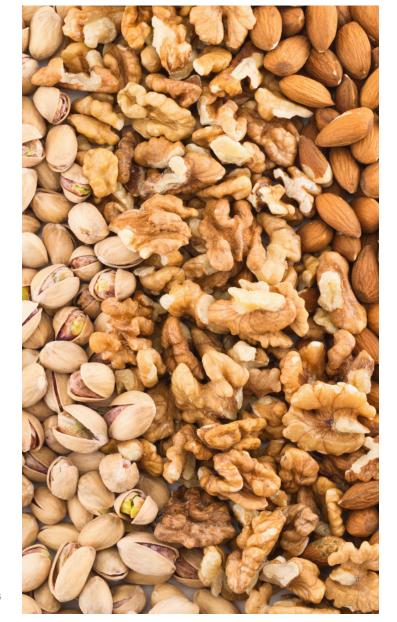
The future adoption rate of GLP-1s will likely be a function of whether the Food and Drug Administration approves the drugs for weight loss and whether insurance companies decide to cover the service. An article in the Wall Street Journal highlighted the results of a recent 5-year study of Wegovy in which the medication



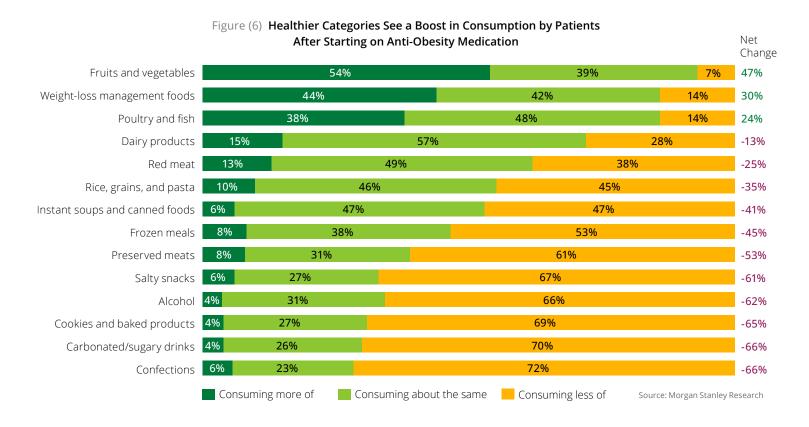
Given the substantial proportion of people in the U.S. who are overweight or obese, large-scale adoption of GLP-1s could drastically alter consumer demand for food.

Being overweight or obese increases the risk of developing significant health problems, such as Type II diabetes, high blood pressure, heart disease, stroke, joint problems, liver disease, some types of cancer, and sleep and breathing problems. Recent statistics from the National Health and Nutrition Examination Survey found that, in the U.S., 30.7 percent of people who are twenty years or older are overweight, and 42.4 percent are obese. Therefore, 73.4 percent of Americans aged twenty or older are overweight or obese.

Given the substantial proportion of people in the U.S. who are overweight or obese, large-scale adoption of GLP-1s could drastically alter consumer demand for food. Walmart recently analyzed the spending habits of consumers taking GLP-1s. Bloomberg reported that John Furner, the CEO of Walmart U.S., said, "We definitely do see a slight change compared to the total population, we do see a slight pullback in overall basket...Just less units, slightly less calories." Walmart President and CEO



- 7 Once-Weekly Semaglutide in Adults with Overweight or Obesity
- 8 National Institute of Diabetes and Digestive and Kidney Diseases, Overweight and Obesity Statistics
- 9 Ozempic Is Making People Buy Less Food, Walmart Says



was associated with a significant reduction in the risk of heart attack and stroke. The article outlined how continued evidence could pave the way for greater insurance coverage, eventually leading to Medicare coverage.¹⁰

The current price tag for a one-month supply of Mounjaro is north of \$1,000, though the manufacturer has provided rebates that drop the price by up to 50 percent for uninsured

individuals. This cost is prohibitive, but Bloomberg also reported that roughly 40 companies are developing similar weight loss drugs, and the additional competition from generics should lower prices in the coming years.

Despite the cost, Trilliant Health reported that U.S. healthcare providers wrote nine million prescriptions for GLP-1 medications during the fourth quarter of 2022.¹¹ Recently released research from Morgan Stanley estimates that seven percent of the U.S. population—24 million people—will take GLP-1s by 2035.¹²

Regarding the impact of GLP-1 on food expenditures, no one has conducted an empirical, peer-reviewed study that provides



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inference about how these drugs might change the composition of food expenditures. However, the research by Morgan Stanley cited above was based on a survey of more than 300 people taking GLP-1s and two other weight loss drugs (Qsymia and Contrive). Figure (6) contains some of the results from their survey. Of note, only three product categories—fruits and vegetables, weightloss management foods, and poultry and fish—exhibited a net increase in consumption by people on weight-loss medication. Survey results by Jefferies found that 71 percent of people taking GLP-1s became more aware of the nutrition in their food and beverages since beginning the medication. ¹³

A litany of research indicates that regularly eating nuts is associated with lower body weight, reduced low-density lipoprotein cholesterol and triglycerides, increased metabolism, and other benefits. Therefore, inference from initial survey data suggests consumer demand for almonds, pistachios, and walnuts could increase in the near future from people on GLP-1s.

¹⁰ The Obesity Drug Revolution Just Got Real

^{11 2023} Trends Shaping the Health Economy

¹² Could Obesity Drugs Take a Bite out of the Food Industry?

¹³ Weigh to Go: Survey Suggests Weight Loss Drug Impact on Food Preferences

¹⁴ For a good summary of the available research, see <u>How Eating Nuts Can Help You Lose Weight</u>

Final Thoughts

AgIS Capital expects the price of almonds, walnuts, and pistachios to remain suppressed throughout the marketing campaigns of the 2023 and 2024 crops. The strong relative strength of the U.S. dollar continues to erode the relative purchasing power of foreign consumers, negatively impacting U.S. nut prices. Additionally, in the near term, muted or negative economic growth in export markets will likely impact disposable income and consumer demand.

Adding to the negative pricing pressure from the strong dollar and our concern about economic growth in the near term is the significant increase in the production capacity of walnuts, almonds, and pistachios attributable to the increase in bearing acreage. In response to relatively high nut prices, new orchards were planted on a large scale between 2011 and 2017. Then COVID-19 hit, supply chain issues ensued, and the dollar's relative value strengthened, as seen by the real narrow effective exchange rate (RNEER) in Figure (7). In the near term, supply appears to have overshot demand, which lowered prices to unsustainable levels for almonds and walnuts and pressure prices for pistachios.

In the longer term—beyond the 2024 crop season—acreage reductions will bring supply back into balance with demand. Figure (8) plots the total acreage of nuts in California from 1994 to 2023. In 2014, the State of California instituted the Sustainable Groundwater Management Act (SGMA) to, among other things, stop the over-

drafting of groundwater because over-pumping was depleting aquifers, which increased the concentration of nitrates in the remaining water and lowered the water table, which led to land subsidence. Therefore, in 2014, the State of California recognized that groundwater pumping was unsustainable.

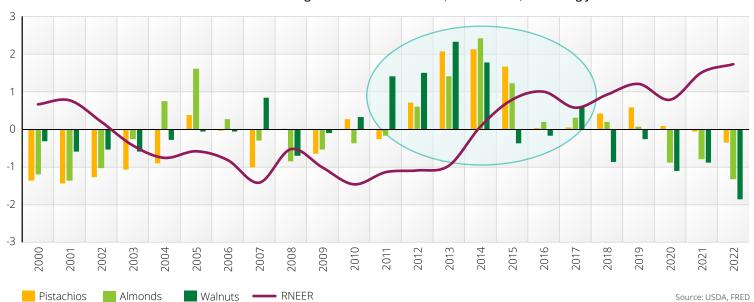
Since 2014, the total (bearing and non-bearing) acreage of almonds, walnuts, and pistachios increased by 49.1 percent or 860,577 acres (see Figure (8)). Part of the SGMA legislation effectively forced landowners and water users to work together to submit a plan to the State by 2021, which outlines how their Groundwater Service Area (GSA) will bring groundwater pumping into balance by 2040. The State will make periodic checks to ensure each GSA acts according to its plan.





In the longer term—beyond the 2024 crop season—acreage reductions will bring supply back into balance with demand.

Figure (7) The Real Price of Walnuts, Almonds, and Pistachios and the Real Narrow Effective Exchange Rate in Standard Score; 2000 to 2022, marketing year

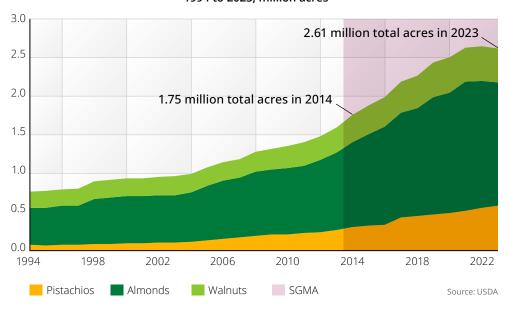


A considerable number of almond and pistachio acres are in areas without sufficient surface water. Therefore. assuming no technological advances in irrigation occur, many acres must be removed to comply with SGMA. Reducing acreage will lower the sector's production capacity and bring supply in balance with demand. AgIS Capital expects the structural adjustments required to comply with SGMA will begin in 2025. However, growers are already pulling out almond and walnut acreage because the price they received was likely below the cost of production in the past few years.

The return prospects for nut investments in California appear bleak in the near term. The strong dollar, higher interest rates, meager economic growth prospects, and increased production volumes have

negatively impacted output prices. These lower output prices have reduced expectations of future farm income, which has led to a softening of land and orchard values. We expect significant buying opportunities will soon present themselves. Given our expectations for a reduced supply of almonds, pistachios, and

Figure (8) Total Almond, Walnut, and Pistachio Acreage: 1994 to 2023, million acres



walnuts in the medium term—attributable to SGMA legislation—and our expectation for an increase in consumer demand for almonds, pistachios, and walnuts—attributable to the adoption of GLP-1s—we believe 2024 will provide institutional investors an excellent opportunity to acquire nut orchards.



Contact

AGIS CAPITAL LLC

46 Plympton Street, Floor 4 Boston, Massachusetts 02118 515-528-0520 agiscapital.com For questions and more information on this analysis, please contact:

Cody Dahl, Ph.D.
Vice President of
Acquisitions and Strategy
217-840-2639
cdahl@agiscapital.com

For more information on the investment services offered by AgIS Capital LLC, please contact:

Stephen Kenney

Vice President of Business Development 515-528-0520 skenney@agiscapital.com

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